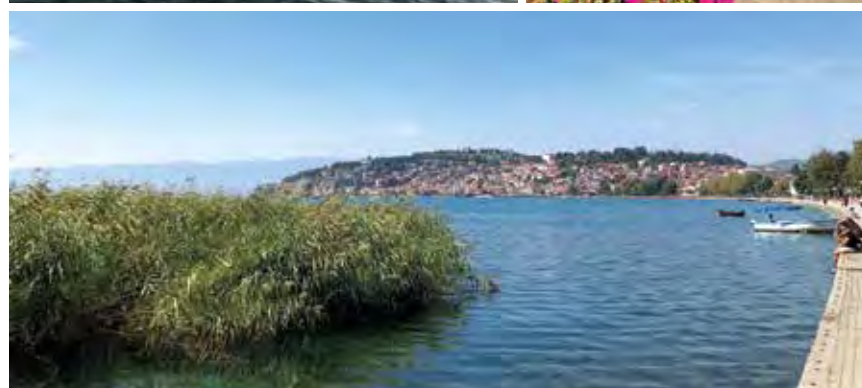


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Third Review



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NORTH MACEDONIA

Third Review



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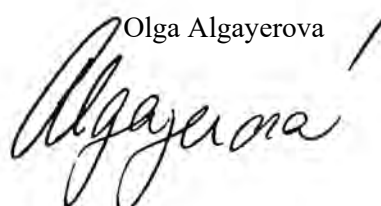
Foreword

The third Environmental Performance Review (EPR) of North Macedonia builds on the substantial experience accumulated by ECE and its member States in using the EPR tool to regularly assess progress achieved in reconciling national economic and environmental objectives. Over two decades, EPRs have resulted in stronger institutions for environmental management, improved financial frameworks for environmental protection, advanced environmental monitoring and information systems, better integration of environmental concerns into sectoral policies, strengthened public participation and increased international cooperation. They bring together good practices and a wealth of experience from all ECE member States in a mutually-enriching learning exchange.

During the last eight years North Macedonia advanced its environmental legislation by adopting few new laws and focusing on amending existing laws and developing subsidiary legislation. Further action is needed to effectively implement it, especially in the area of issuing permits, extended producer responsibility and waste management, protected areas and noise. The policy framework for environment and sustainable development is centered around the 2010 National Strategy for Sustainable Development for the period 2010–2030 and the annually revised National Programme for the Adoption of the *Acquis Communautaire*. Since 2011, North Macedonia enhanced and deepened substantially the use of economic instruments in environmental protection. The country could expand its experience in greening the economy by joining the Batumi Initiative on Green Economy (BIG-E).

The third EPR equips the Government of North Macedonia and interested stakeholders in the country with recommendations to inspire future work on the achievement of the goals and targets of the 2030 Agenda for Sustainable Development and commitments under the international environmental agreements. North Macedonia established its national institutional framework to drive sustainable development in the country nearly 10 years ago and more recently entrusted it to guide the achievement of Sustainable Development Goals. Revitalising and upgrading this framework and enhancing the ownership and awareness of civil servants and the public at large about the Sustainable Development Goals, would enable the country to meet the demands of the 2030 Agenda.

I trust that this third review will serve as a powerful tool to support policymakers and representatives of civil society in their efforts to improve environmental management and achieve the Sustainable Development Goals in North Macedonia. ECE wishes the Government of North Macedonia further success in carrying out the tasks involved in meeting its environmental objectives, including through the implementation of the recommendations in the third review. I also hope that the lessons learned from the peer review process in North Macedonia will benefit other countries throughout the ECE Region.



Olga Algayerova

Executive Secretary
Economic Commission for Europe

Preface

This third EPR of North Macedonia takes stock of progress made by the country in the management of its environment since it was reviewed for the second time in 2011 and assesses the implementation of the recommendations made in the second review. It covers legal and policy frameworks, greening the economy, environmental monitoring, public participation and education for sustainable development. Furthermore, the EPR addresses issues of specific importance to the country related to air protection, biodiversity and protected areas, as well as water, waste and chemicals management. The review further provides a substantive and policy analysis of the country's climate change adaptation and mitigation measures and its participation in international mechanisms. The review has an additional thematic angle on the Sustainable Development Goals: it includes an assessment of relevant targets and recommendations related to the achievement of Sustainable Development Goals.

This EPR of North Macedonia began in February 2018 with a preparatory mission to agree on the structure of the report and the schedule for its completion. A team of international experts took part in the review mission on 17–26 September 2018. In December 2018, the draft report was sent to North Macedonia for comments and was submitted to the ECE Expert Group on Environmental Performance Reviews for consideration. During its meeting on 9–10 January 2019, the Expert Group discussed the draft report with a delegation from North Macedonia, focusing on the conclusions and recommendations made by the international experts. The recommendations, with suggested amendments from the Expert Group, were then submitted for peer review to the ECE Committee on Environmental Policy at its twenty-fourth session on 30 January 2019. A high-level delegation from North Macedonia participated in the peer review and the Committee adopted the recommendations in this report.

The Committee and the ECE secretariat are grateful to the Government of North Macedonia and its experts who worked with the international experts and contributed their knowledge and expertise. ECE would also like to express its deep appreciation to the German Federal Ministry for Environment, Nature Conservation, Building and Nuclear Safety and the German Federal Environment Agency for their support by providing funds through the Advisory Assistance Programme, and to Norway and Switzerland for their financial support to this review.

Sincere thanks also go to Germany, Hungary, Sweden and the United Nations Environment Programme (UNEP) for having provided their experts to this review. Furthermore, ECE is grateful to the United Nations Development Programme (UNDP) for its support of this review.

ECE also takes this opportunity to thank Germany, Norway, Portugal and Switzerland for their financial support to the EPR Programme in 2018 and expresses its deep appreciation to Belarus, Estonia, Georgia, Germany, Hungary, Italy and Switzerland for having provided their experts for the ECE Expert Group on Environmental Performance Reviews, which undertook the expert review of this report.

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KEY ABBREVIATIONS AND ACRONYMS

AFOLU	agriculture, forestry and other land use
BAU	business as usual
CDM	Clean Development Mechanism
CPH	(regional) centre of public health
CSO	civil society organization
CSR	corporate social responsibility
EBRD	European Bank for Reconstruction and Development
ECE	Economic Commission for Europe
EEA	European Environment Agency
EIA	environmental impact assessment
ELV	emission limit value
EMAS	Eco-Management and Audit Scheme
EMEP	European Monitoring and Evaluation Programme
EMS	environmental management system
EPR	extended producer responsibility
ERC	Energy Regulatory Commission
ESD	education for sustainable development
EU	European Union
FOLU	forestry and other land use
GCF	Green Climate Fund
GDP	gross domestic product
GEF	Global Environment Facility
GHG	greenhouse gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GMO	genetically modified organism
HCFC	hydrochlorofluorocarbon
HMS	National Hydrometeorological Service
HPP	hydropower plant
IEP	integrated environmental permit
INDC	intended nationally determined contribution
IPA	Instrument for Pre-Accession Assistance
IPPC	integrated pollution prevention and control
IPPU	industrial processes and product use
IUCN	International Union for Conservation of Nature
LEAP	local environmental action plan
LSGU	local self-government unit
MEA	multilateral environmental agreement
MEIC	Macedonian Environmental Information Centre
MSW	municipal solid waste
NBSAP	National Biodiversity Strategy and Action Plan
NEAP	National Environmental Action Plan
NERP	National Emission Reduction Plan
NGO	non-governmental organization
NPAA	National Programme for the Adoption of the Acquis Communautaire
NSSD	National Strategy for Sustainable Development
ODS	ozone-depleting substance
OXO	Association for Education, Communication and Consulting
PCB	polychlorinated biphenyl
POP	persistent organic pollutant
PEMF	Public Enterprise “Macedonian Forests”
PRTR	pollutant release and transfer register
RBMC	river basin management council
RBMP	river basin management plan
RES	renewable energy source(s)
RIA	regulatory impact assessment

SAICM	Strategic Approach to International Chemicals Management
SBUR	Second Biennial Update Report on Climate Change
SEA	strategic environmental assessment
SEI	State Environmental Inspectorate
SEIS	Shared Environmental Information System
SoER	State of the Environment Report
SSO	State Statistical Office
TTP	thermal power plant
UNCCD	United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
VET	vocational education and training
VOC	volatile organic compound
WBA	waste batteries and accumulators
WEEE	waste electrical and electronic equipment
WFD	Water Framework Directive
WHO	World Health Organization
WWTP	wastewater treatment plant
ZELS	(Association of Local Self-Government Units)

SIGNS AND MEASURES

..	not available
-	nil or negligible
.	decimal point
€	euro
US\$	United States dollar
cap	capita
eq.	equivalent
g	gram
Gg	gigagram
GWh	gigawatt-hour
ha	hectare
kg	kilogram
km	kilometre
km ²	square kilometre
kt	kiloton
ktoe	kiloton of oil equivalent
kW	kilowatt
kWh	kilowatt-hour
l	litre
m	metre
m ²	square metre
m ³	cubic metre
Mg	megagram
MW	megawatt
pkm	passenger kilometre
t	ton (1,000 kg)
tkm	ton kilometre
toe	ton of oil equivalent
TWh	terawatt-hour

CURRENCY CONVERSION

Exchange rate (period average)
Monetary unit: Denar

	NCU per Euro	NCU per US\$
2010	61.51	46.45
2011	61.53	44.25
2012	61.53	47.89
2013	61.58	46.38
2014	61.62	46.45
2015	61.61	55.55
2016	61.60	55.68
2017	61.58	54.64
2018	61.51	52.11

Source: ECE Statistical database. Accessed on 14.1.2019.

Note: NCU: national currency unit

Executive summary

The Third Environmental Performance Review of North Macedonia assesses the progress made by the country in managing its environment and in addressing new challenges since the Second Environmental Performance Review in 2011, including progress in achieving Sustainable Development Goals.

Sustainable Development Goals

In North Macedonia, the formal institutional framework for coordination of the implementation and monitoring of the Sustainable Development Goals of the 2030 Agenda for Sustainable Development is established; however, it is not active. The national institutional framework includes the Cabinet of the Deputy Prime Minister responsible for Economic Affairs and Coordination with the Economic Sectors, and the National Council on Sustainable Development. The Cabinet of the Deputy Prime Minister oversees sustainable development policies and coordinates the implementation and monitoring of the Sustainable Development Goals. The National Council, established in 2010, has the role of the political body mandated to guide implementation of the Sustainable Development Goals. However, the Council last convened in 2015.

The national policy framework is still under development. No document adopted at the national level refers to the Sustainable Development Goals. Efforts are made to update the 2010 National Strategy for Sustainable Development for the period 2010–2030 by mainstreaming the Sustainable Development Goals in the Strategy. A Rapid Gap Assessment was prepared during 2016 through a multi-stakeholder consultation process but it was neither adopted nor made available to the public, ministries and stakeholders. The country did not make any specific effort to mainstream the Sustainable Development Goals into sectoral policy documents.

The Government has not conducted any assessment of the costs of implementation of the Sustainable Development Goals. The Cabinet of the Deputy Prime Minister responsible for Economic Affairs and Coordination with the Economic Sectors intends to undertake an assessment of costs and prioritization of the Sustainable Development Goals and targets.

The national availability of Sustainable Development Goals global indicators was not assessed. In 2018, the State Statistical Office published a book entitled “Sustainable Development” that included a compilation of sustainability-related data; some Sustainable Development Goals global indicators are covered in this book.

Ownership of the Sustainable Development Goals is low, as is awareness of them among local government authorities. Government officials have heard about the Sustainable Development Goals but believe that specific instructions should come from the Cabinet of the Deputy Prime Minister responsible for Economic Affairs and Coordination with the Economic Sectors, asking their institution to commence any work towards achieving them. While the general public’s level of awareness of the Sustainable Development Goals is also quite low, the level of awareness is much better among civil society organizations (CSOs).

North Macedonia uses the Partnership for Sustainable Development in its efforts to achieve Sustainable Development Goals. The Partnership is the United Nations strategy for 2016–2020, structured around five focus areas: employment, social inclusion, good governance, environmental sustainability and gender equality. The Partnership provides a framework for activities aligned with the Sustainable Development Goals, European Union (EU) accession, the National Sustainable Development Strategy and sectoral strategies in the country.

Overall, North Macedonia is at the inception stage for setting the premises for delivering on many targets reviewed in the Environmental Performance Review. However, the country took some action to support achieving several targets. The status of the country vis-à-vis relevant targets is addressed in each chapter, as appropriate, including progress made and challenges faced by the country. In many cases, a comprehensive analysis of the Sustainable Development Goals and targets is hindered by the lack of data and information.

Concerning achieving target 8.4 to improve resource efficiency in consumption and production and decouple economic growth from environmental degradation, *North Macedonia took policy action in the waste management sector.* The country established targets related to material resource productivity within the framework of the

extended producer responsibility (EPR) policy, with a view to creating incentives for producers to prevent waste at the production stage, take environmental considerations into account at the product design stage and support public recycling and materials management goals.

Regarding targets 16.7 and 16.10 related to good governance through participatory decision-making and access to information, *North Macedonia established two Commissions* – the State Commission for Decision-Making in Administrative Procedures and Labour Relations Procedures in Second Instance and the Commission for the Protection of the Right to Free Access to Public Information – *enabling the right of the public to challenge decisions on environmental matters and to file complains for non-provision of environmental information*.

To deliver on target 11.4 to strengthen efforts to protect and safeguard the world's cultural and natural heritage, *the country has appropriate legal measures in place for the protection of cultural heritage*, in particular the 2004 Law on Protection of Cultural Heritage. The National Strategy for Culture Development 2018–2022 identifies most related policy priorities for this target and the Ministry of Culture represents the institutional framework.

North Macedonia has data for reporting on achieving target 11.6 to reduce the adverse environmental impact of cities, including air pollution levels. However, the achievement of this target already presents a challenge for the country, given that the whole population is exposed to PM₁₀ concentrations exceeding the annual limit value of 40 µg/m³, since there is exceedance of the annual limit value recorded at all measurement stations throughout the country.

Concerning delivering on target 15.4 to ensure the conservation of mountain ecosystems, including their biodiversity, *as at 2017, North Macedonia's value on the Mountain Green Cover Index was 96.5 per cent*, while coverage by protected areas of important sites for mountain biodiversity accounts for some 23 per cent of Mountain Key Biodiversity Areas and remains unchanged since 2006.

Legal, policy and institutional framework

The implementation of existing legislation remains a challenge, especially in the areas of issuing permits, EPR and waste management, protected areas and noise. However, the speed of the approximation process in the environmental area has been commensurate with the national capacities for implementation.

Although the integration of environmental requirements into sectoral legislation has seen some progress, it is still limited in the spatial planning, mining and tourism sectors, and remains insufficient in the energy, industry, agriculture, transport and health sectors. The mechanism for intersectoral consultations preceding the adoption of laws, amendments to laws and subsidiary legislation is not used to its full potential to advance the environmental agenda of the economic sectors.

North Macedonia has started to integrate environmental requirements into sectoral policies, though not at an adequate level. Especially in spatial planning and energy development, they are scarcely reflected at all. Environment-related objectives in policy documents related to forestry, transport, agriculture and health have been implemented insufficiently. No policy document addresses environmental impacts from mining, despite high levels of public concern about the impacts of new mines.

Delayed adoption of strategic documents and a persistent lack of reporting on implementation are bottlenecks for efficient strategic planning in North Macedonia. Some policy documents are never adopted despite the significant efforts made to develop them. Preparing a national environmental action plan (NEAP), which is supposed to underpin planning in the environmental field, was discontinued following the second NEAP 2006–2012.

North Macedonia committed to the full and efficient use of the SEA instrument, in line with the best international practice, by ratifying in 2013 the Protocol on Strategic Environmental Assessment (SEA). The country has limited practical experience with conducting transboundary consultations as part of the SEA procedure.

The number of national planning documents undergoing SEA has increased during the past five years. However, some national planning documents are prepared by sectoral ministries and adopted without an SEA procedure,

despite the legal requirement to conduct one. The quality of SEA reports also remains an issue. No regular training and capacity-building on SEA at the national and local levels takes place.

The separation of the State Environmental Inspectorate (SEI) from the Ministry of Environment and Physical Planning in 2014 constitutes the major environmental institutional change since 2011. An environmental protection agency has not been established.

The Ministry of Environment and Physical Planning has yet to establish a policy to lead environmental protection efforts by its own example and demonstrate opportunities for functioning in an environmentally friendly way to other governmental bodies and non-governmental stakeholders. Green procurement is not practised for the purchase of goods and services in the framework of projects coordinated by the Ministry.

A system for regular training of staff of the Ministry of Environment and Physical Planning is in place but it does not function properly. Despite the provisions for specialized training in the annual training programme, such training lacks resources allocated from the state budget and it is solely project based. Training and professional development on environmental issues for staff in sectoral ministries is lacking.

Municipalities face significant difficulties with the implementation of their environment-related competences. The provision of guidance and assistance by the Ministry of Environment and Physical Planning is at an insufficient level. Regular consultations and meetings with the local self-government units (LSGUs) on environmental policy issues, as well as specialized training, are not organized by the Ministry.

Regulatory and compliance assurance mechanisms

The legislation for and implementation of single-medium environmental permitting are generally well in place. Since 2011, the Ministry of Environment and Physical Planning has put significant efforts into the issuance of the A- and B-type permits in the country. No public register of the permits issued was established. The current integrated environmental permitting (IEP) process is not implemented according to the relevant EU directives.

Relevant best practices for control of the issued A- and B-type permits are not applied. Enforcement capacity does not keep up with the pace at which legislation and rulebooks are being enacted. The reports of the inspections are not publicly available or are outdated. The self-monitoring reports submitted each year by the operators of the permitted installations are not validated by SEI and are not used for the national pollutant release and transfer register (PRTR).

The administrative capacity of LSGUs to process applications for B-type permits and monitor their implementation is limited. Therefore, the Ministry of Environment and Physical Planning helped compensate for delays at the municipal level with the issuance of B-type permits. As a result, visible progress was made in IEP issuance, with 140 A-type and 180 B-type permits issued in the period 2011–2018. Even though the Ministry oversees the issuing of all B-type permits, there is a lack of systematic communication and support from the central to the local level. In the period 2015–2016, the country strengthened the administrative capacity of LSGUs in the framework of a twinning project.

The existing procedure, by which the Ministry has both policy development functions and those of policy implementation, including environmental permitting, environmental impact assessment (EIA) and environmental elaborates proceedings, monitoring, assessment and reporting, is in contradiction with good practice in environmental governance and limits access to justice in environmental decision-making.

The legislation on EIA does not provide for a clear EIA screening process and does not set out clearly the decision-making process. The list of activities does not follow the annexes of the relevant EU EIA directives and, at the same time, the listed activities do not refer to national classification of activities.

The state environmental inspectors have put in a lot of effort to discipline operators and to change their behaviour towards the implementation of environmental legislation, as proven by the amount of written decisions and minutes. In 2014–2017, 100 per cent of the inspections carried out by SEI produced minutes with conclusions and the total number of written decisions directed to the operators to undertake certain actions was 1,530.

The Ministry of Economy undertook the only initiative to encourage corporate social responsibility (CSR) by organizing an annual national award for the best CSR practice. Since 2011, the country did not establish any voluntary compliance promotion instruments on the environment.

Greening the economy

During the past decade, North Macedonia enhanced and deepened substantially the use of economic instruments in environmental protection. In terms of energy taxes, excise duties are applied to all energy products used for transport and heating, with the major exception of electricity and coal. The country levies user charges for water abstraction and the extraction of minerals.

In the absence of cost-reflective tariffs for water and waste services, water and waste companies face operational difficulties due to the lack of sufficient funds for maintenance, repair and new investments. To address this concern, as of 2018, the country delegated the regulation of water tariffs to the Energy Regulatory Commission (ERC), with the mandate to establish the principle of full cost recovery of production of water services. The user pays principle has been strengthened with that tariff reform.

To upgrade and modernize the waste management sector, LSGUs are considering adopting cost-reflective user fee policies for waste collection and disposal tariffs. In addition, potential economies of scale from regionalization of waste management have yet to be exploited. Bill collection rates at the household level are in general quite low. Measures to ensure higher rates of waste service fee bill collection are lacking.

The role of renewable energy sources (RES) in total electricity supply has been promoted with an effective system of feed-in tariffs. Most of the electricity market is now liberalized. The country's efforts are ongoing to improve energy efficiency with a system of government subsidies. Electricity tariffs have approached cost-reflective levels and cross subsidies from business entities to households have been reduced.

The Government operates since 2014 a subsidy programme for the promotion of RES and improvements in energy efficiency in households. The total budget amounts to 50 million denars (€0.8 million) in 2018. Skopje operated a similar programme in 2016 designed to stimulate households to use renewable solar energy sources for heating of their homes, as well as introducing a support scheme for purchasing pellet stoves designed to reduce air pollution.

The polluter pays principle is enshrined in legislative acts, but it is not applied effectively. The main instrument to address air and water pollution is regulation (command and control) combined with prescription of best available techniques (BAT). The flat charge rates per type of polluting substance integrated into permit fees do not create incentives for enterprises to adopt cleaner technologies. Effective financial incentives in the form of environmental taxes are lacking.

North Macedonia established excise duties and other charges for motor vehicles and pump prices of motor fuels in an effort to address air pollution from road transport, a major source of air pollution in the country. However, the potential environmental effectiveness of these charges could be strengthened further.

Government environmental expenditure has been constrained by limited fiscal space. The business sector is the major source for mobilizing funds for the transition to green economy. The tax system provides generous incentives for business investments; however, they are not differentiated between green investment and other investments.

Environmental expenditures are financed mainly from the general budget; little use has been made of earmarked revenue from environmental taxes and charges. Available funds for environmental investments, notably in municipal infrastructure, have been supported by significant foreign financial assistance. The potential benefits from public-private partnerships in the provision of municipal utility services and the financing of the associated infrastructure are not explored. Public procurement is focused on the lowest price bid, thereby limiting its use to support environmental protection.

Environmental monitoring and information

The air quality monitoring network has improved with the addition of new monitoring stations, new parameters monitored and the replacement of old instruments. However, these activities depend solely on technical cooperation projects. Proper operation of the network is hindered by the lack of adequate maintenance and servicing capacity and resources.

The monitoring networks for surface water and groundwater, atmospheric precipitation and snow cover have been declining and do not meet the requirements of the national water-related legislation. The quality of groundwater is not monitored and surface water resources are partially monitored, covering mostly rivers.

Even though the noise monitoring methodology was harmonized and standardized, the status of the noise monitoring network remains unchanged since 2011. Noise is monitored in three localities but not systematically and using outdated equipment. Municipalities are also responsible for noise monitoring and for the production of noise maps, but comprehensive city-wide noise maps have not yet been produced. There is no monitoring of vibrations, nor are data available on environmental exposure to vibrations.

Monitoring of biodiversity is on an ad hoc basis depending on funding from international projects. Most data reporting activities have been under multilateral environmental agreement (MEA) obligations and in nationally designated areas. Comprehensive monitoring of forests and the development of a forest inventory are lacking.

The country did not perform soil monitoring systematically. The City of Skopje carried out a series of soil monitoring campaigns in the Skopje Region, focusing on heavy metals pollution, the results of which were made publicly available on the website of the City of Skopje.

The Ministry of Environment and Physical Planning collects waste-related data from various sources by waste typology. The Ministry's Environmental Information Centre collects reports from municipalities on municipal solid waste (MSW) generation and management. However, only around one third of all municipalities provided reports in the last round, despite the legal obligation to do so.

The two laboratories under the Ministry of Environment and Physical Planning and one under the National Hydrometeorological Service (HMS) face operational challenges and are not accredited under the ISO/IEC 17025 standard on "General requirements for the competence of testing and calibration laboratories". The Institute of Public Health operates 14 accredited reference laboratories, including for quality control of food and of water, for sanitary microbiology, for contaminants and eco-toxicology, and for radioecology and ionizing radiation.

North Macedonia made progress in developing databases and thematic information management systems. A national integrated environmental information system to support informed decision-making and satisfy various reporting obligations, including on the Sustainable Development Goals, is lacking.

The country has a robust system for producing environmental statistics and indicators and, in general, promotes the Shared Environmental Information System (SEIS) principles of open access to data and use of data for multiple reporting purposes. Producing all relevant indicators in the ECE list of environmental indicators, initiating the production of the Organization for Economic Cooperation and Development (OECD) green growth indicators and establishing relevant environmental indicators for reporting on the environmental dimension of the Sustainable Development Goals remain challenges for the country.

The three main environmental-data-based publications produced by the Ministry of Environment and Physical Planning have limited use in support of policymaking processes. They lack a multisector integrated environmental assessment approach and projections of negative trends and implications vis-à-vis national goals and policies, and do not address cross-cutting issues, such as the impact of transport on the environment and of air quality on public health.

Environmental democracy and education for sustainable development

Environmental democracy is under development with uneven progress in the implementation of its three pillars. The legislative framework is in place and efforts are concentrated on putting it into practice.

The public has access to environmental information published by the Ministry of Environment and Physical Planning. However, some information is outdated or not easy to find. Access to environmental information on the websites of other public institutions is largely lacking. Consolidated versions of laws and secondary legislation are not available to the public free of charge.

Civil society lacks awareness about the availability of environmental information and procedures to access it. An open, updated and user-friendly environmental portal supported by a single-window integrated information system would facilitate public access to information related to environmental media.

Effective public participation procedures are largely not developed and those in place are not aligned with the provisions of the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention). Such procedures are established mostly for activities covered by EIA, SEA and IEP. Challenges exist with effective public participation in public hearings. However, in all cases, the public concerned has the right to challenge a decision before the State Commission for Decision-Making in Administrative Procedures and Labour Relations Procedures in Second Instance.

Access to justice in environmental matters has been promoted since 2012, mostly as a project-based activity to develop the capacity of the judiciary and CSOs. The governmental authorities, judiciary and independent review bodies lack adequate knowledge, capacity and expertise in promoting and implementing effective access to justice in environmental matters.

The public can submit cases related to environmental matters to the Ombudsman before deciding whether to file a court case. The time periods for challenging court decisions on specific activities relating to the environment – 30 days for the submission of an administrative lawsuit against an administrative act and 15 days for an appeal against the decision of a court of first instance to a court of appeal – might be too short for complex cases requiring extensive coordination among CSOs.

Environmental education is driven by CSOs, mostly within project-based activities. Progress has been made in promoting environmental education, mostly in primary and secondary schools and mostly through the eco-school programme.

In North Macedonia, eco-schools serve as a good example of integrating environmental education and demonstrate the interest and involvement of teachers, students and parents in environmental activities. The expansion of eco-schools represents a good practice for promoting environmental education in the country.

Education for sustainable development (ESD) as an approach is not embraced by the country, although some themes of the environmental and social dimensions of sustainable development are included in civic education and offered as elective courses. The lack of a legal framework or a policy document on ESD is a key barrier towards integrating ESD in a consistent and continuous manner.

Preschool educators have the opportunity to study environmental education as part of elective courses offered during their university years. The study programmes of future biology and geography teachers for secondary education include environment-related courses. In-service training for teachers does not include mandatory courses on environmental education or ESD. Ad hoc in-service training on environmental education and ESD was conducted by CSOs in the period 2010–2015 for teachers in eco-schools.

Implementation of international agreements and commitments

The country is a party to nearly all relevant global and regional environmental agreements. Since 2011, North Macedonia ratified several MEAs, including the Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC) and the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention). The country has yet to join a number of MEAs, such

as the Minamata Convention on Mercury, the Protocol on Water and Health and the Nagoya Protocol, and to ratify several amendments to a few MEAs, such as the Aarhus and Espoo Conventions.

Comprehensive implementation of and compliance with MEAs remain a challenge, especially recently ratified agreements. No efficient coordination structure among relevant state institutions charged with the implementation of obligations deriving from global and regional environmental agreements is established. The quality and timeliness of national reporting to MEAs is affected by the lack of environmental monitoring data. CSOs are neither involved in reporting nor do they participate in the development of the country's position for international meetings.

The list of ratified MEAs is available to the public on the website of the Ministry of Environment and Physical Planning. However, there is a general absence of information on the status of implementation of MEAs, including the national reports submitted, except the national reports to the Aarhus Convention and to the Convention on Biological Diversity (CBD).

The country has made some progress in establishing synergies among the Basel, Rotterdam and Stockholm (BRS) Conventions and in 2017 reported that coordination mechanisms existed at intraministerial level. Although national focal points have been appointed for MEAs and national committees have been established for certain conventions, communication, cooperation and coordination among the institutions dealing with biodiversity conservation, forestry and land use planning remain challenging. In general, experience on synergies at the national, regional and international levels is not shared through joint activities.

North Macedonia had a case filed under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention), because of construction of hydropower plants (HPPs) being planned in protected areas. CSOs have raised their concerns about the lack of transparency on the number and locations of the proposed HPPs. As a result, in 2015, the country received a recommendation to suspend the implementation of all government projects, in particular the HPPs foreseen and related infrastructure, within the territory of the Mavrovo National Park, until an SEA is completed.

The country did not identify hazardous activities falling under the scope of the Convention on the Transboundary Effects of Industrial Accidents and subsequently did not notify potentially affected countries. Since 2012, the country did not submit an updated national self-assessment and action plan under the Convention's strategic approach, nor related project proposals addressing needs and challenges identified through the self-assessment and in the national action plan. No progress has been made on transposing the Seveso III Directive.

North Macedonia is committed to preventing and combating air pollution. The country joined the Protocol on the Reduction of Sulphur Emissions or their Transboundary Fluxes by 30 per cent (Sulphur Protocol) in 2010, and both the Protocol on Further Reduction of Sulphur Emissions (Oslo Protocol) and Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol) to the Convention on Long-Range Transboundary Air Pollution (Air Convention) in 2014. The country is yet to accept amendments to the Protocol on Heavy Metals, POPs Protocol and Gothenburg Protocol to the Air Convention.

Climate change

The country is vulnerable to climate change, especially to extreme weather events. The policy framework and the human and technical capacities devoted to combatting climate change are not sufficient to tackle the challenges posed by climate change.

North Macedonia regularly fulfils its reporting obligations under the UNFCCC, Kyoto Protocol and Paris Agreement. It has been praised as one of only 16 countries that are on track to honour their commitments under the Paris Agreement.

Within the national plans on climate change, vulnerability and adaptation assessments have been prepared for the sectors of agriculture, forestry, water, health, biodiversity, crisis management, tourism and cultural heritage protection. These assessments serve as strategic documents for adaptation to climate change. However, legislation to specifically address climate change or an overall strategic document setting climate change priorities are lacking. Coordination among the different ministries takes place in the National Climate Change Committee.

Mitigation measures have been implemented in the energy sector, ranging from the introduction of energy audits to subsidies for energy efficiency measures in households. Because of the dominant use of domestic lignite for electricity production, the country has a potential for greenhouse gas (GHG) emissions reductions.

The waste sector is the second highest emitting sector in the country, accounting for 19 per cent of the total GHG emissions in 2014, excluding the Forestry and Other Land Use (FOLU) sector. Solid waste disposal is by far the greatest contributor to the GHG emissions of the waste sector, which is also the highest growing category in terms of emissions.

While the country expects access to international funding sources to significantly contribute to the implementation of adaptation and, especially, mitigation measures, the country is also dedicating internal resources to climate-related activities. According to the Second Biennial Update Report on Climate Change (SBUR), in 2017, 1.98 per cent of the planned government budget contributed directly or indirectly to climate change mitigation, while the budget of Skopje for the same year anticipated an almost US\$2 million contribution to climate-related initiatives. Additionally, in the period 2015–2017, the Fund for Innovation and Technology Development financed climate-related projects in the amount of €447,592.

Despite the economic impact that climate change has already had or is expected to have on various economic sectors in the country, no estimation of the costs of inaction for the different sectors is carried out.

At local level, the country acts on climate change. For example, the City of Skopje has implemented some measures included in the 2011 Skopje Sustainable Energy Action Plan, mostly in the building sector and, to a limited extent, in the transport sector. In 2015, eight municipalities developed through a participatory process and adopted climate change strategies with a 10-year time frame within the USAID-financed Municipal Climate Change Strategies Project.

Climate change issues are not integrated into primary, secondary and tertiary education curricula. Awareness-raising measures rely mostly on donor-financed projects. Overall public awareness on climate change issues remains limited.

Air protection

North Macedonia's efforts to decrease air pollution were successful in the period 2006–2016, in particular because of reduced use of fossil fuels in energy production and gasification of the heating sector. Since 2013, there have not been any exceedances of the limit values for concentrations of NO_x, but values close to the limit at stations affected by frequent traffic indicate the need for further action. The whole population of the country is exposed to PM₁₀ concentrations exceeding the annual limit value. Exceedances of air quality standards established for CO still occur occasionally during the heating season.

Data on air quality are often fragmented, due to inconsistent measurement that leads to a failure to meet data quality objectives (75 per cent of measurements valid during the year) and makes them unsuitable for official use. Despite the regular calibration of existing equipment, the lack of an accredited calibration laboratory brings data quality into question.

Reliable data are lacking to assess the impact of air pollution on human health and the environment, establish cause-and-effect relationships and design appropriate actions to mitigate negative impacts. Although some project-based environmental health assessment activities are performed in the country, the mortality rate attributed to indoor and outdoor air pollution is not monitored. Integrated air quality and health assessments are not carried out on a systematic basis.

The lack of monitoring of air quality at rural sites prevents assessments of the impact of air pollution on ecosystems and biodiversity. The only rural background station is at a high altitude and measurements of ozone and its precursors is highly inconsistent. There is no information on parallel assessments of foliar damage or other indicators of the impact of air pollution on vegetation.

The country maintains an air quality portal that provides complete information on the state of ambient air in the country; all data are public. Among other information, the portal contains information on measures for

improvement of air quality, on sustainable transport and cleaner domestic heating practices for citizens, instructions to the public in the event of exceedances of information and alert thresholds set for certain pollutants, health advice from the Institute of Public Health, as well as information on monitoring network activities, legislative and policy documents, projects, emission inventories and results of air quality modelling.

Policy documents and measures for the improvement of air quality are not regularly updated, their implementation is not monitored and the effectiveness of their implementation is not assessed. The strategic framework for air protection has not been updated since its development in 2012. There are no reports on its implementation and the effect of the implemented measures.

The 2018 Programme for Reduction of Air Pollution does not contain precise deadlines and institutions competent for its implementation, measurable indicators, financial estimations and other elements to enable the smooth realization of proposed measures, their monitoring and estimation of their impact on the improvement of air quality.

The Ministry of Environment and Physical Planning does not give enough political backing to ensure implementation of the measures proposed to improve air quality, even those proposed by an intersectoral working group.

Transport is a significant source of air pollution, especially in Skopje, primarily because of old vehicles (average age of 18.6 years), and the high share of passenger cars (77 per cent) and low share of urban and suburban public transport use (11.9 per cent in 2016). Public transport buses are also old, with an average age of 17.8 years.

Energy production (electricity and heat production) contributed 91 per cent of the SO₂ emissions and 41 per cent of the NO_x emissions in 2016. Energy production is also a dominant source of emissions of lead (38 per cent), mercury (45 per cent) and cadmium (49 per cent).

Residential heating represents a major air quality concern in the country. It has a major share in total national emissions of polycyclic aromatic hydrocarbons (PAHs) (79 per cent) and polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/Fs) (77 per cent). It also contributes 67 per cent of the CO emissions, although emissions of this pollutant decreased by 14 per cent in 2016 compared with 2015, due to greater use of natural gas and briquettes and pellets for residential heating instead of fossil fuels and wood.

Public awareness of the sources and impacts of air pollution as well as on the measures to mitigate those impacts has increased during the last decade. The Ministry of Environment and Physical Planning produced public awareness-raising brochures on understanding the effects of air pollution, good wood-burning practices at home and smart means of mobility and better living.

Water management

Water availability is expected to decrease in North Macedonia. Due to the lack of accurate data, unknown and unregulated use of surface water and groundwater, especially by industry, can occur. Water demand from other areas, such as for drinking water, is increasing.

In North Macedonia, the monitoring of quality and quantity of both surface water and groundwater is insufficient to provide a picture of the state of water resources. The network of water monitoring stations has deteriorated.

Major concerns related to water supply are the loss of water in drinking network systems, leakage from degraded irrigation systems, awareness of and technical devices for saving water resources and lack of sanitary protection of the sources. The existing irrigation structures, facilities and equipment are in poor technical condition. The fee for irrigation water is defined by area and the cultivated crop and not by the water consumed.

About 12.5 per cent of rivers assessed are of good ambient water quality. The main source of water pollution is poorly treated wastewater. Although 25 per cent of necessary wastewater treatment plants (WWTPs) have been built, most wastewater – especially industrial wastewater – is still discharged untreated into the rivers. Therefore, rivers are largely polluted, and it can be assumed that those river sections will not comply with the EU Water Framework Directive (WFD) criteria for “good” status.

Bigger cities still have no sewage treatment plants. Certain rural areas have developed combined domestic sewage and storm wastewater collection systems, but no treatment is performed prior to wastewater discharge. Landfills close to rivers or lakes are a further source of pollution by infiltration or run-off into surface water and groundwater.

The WFD has been transposed in the Law on Waters and Directive 2007/60/EC on the assessment and management of flood risks is intended to serve as a guideline for further action on flooding in the future. However, practical implementation is lagging behind significantly. The country is very vulnerable to river floods and flash floods, but an effective system of flood prediction, warning and appropriate measures in the event of a flood is missing.

The country is yet to establish river basin management councils (RBMCs) and to develop detailed criteria for representation of various groups of stakeholders, methodological guidance and funding issues. The National Water Council is not in operation.

River basin management plans (RBMPs) for Lake Prespa and the Bregalnica River have been developed, while RBMPs for the Strumica and Vardar River Basins have been drafted. None of the RBMPs so far developed has been adopted by the Government and none of them has been subject to SEA.

Waste and chemicals management

Since 2008, the country has made little progress in developing waste management infrastructure. The existing non-compliant municipal landfills do not meet even the basic conditions for safe waste disposal. Despite developments in the establishment of regional waste management systems and progress in the preparatory work, none of the regional landfills has been completed.

The existing non-compliant municipal landfills will continue to operate for at least another few years, but most of them do not fulfil the basic legal requirements and are subject to inspections checking only on limited parameters, which is not sufficient to ensure basic sanitary conditions. The lack of proper landfills makes it impossible to control the municipal disposal sites against the standards set by the legislation.

The 2008 Strategy for Waste Management and National Waste Management Plan (2008–2020), and the relevant legislation, define and focus on targets for separate collection of waste and waste recovery and recycling, but currently do not provide for adequate measures for the growth of a domestic recycling industry.

Progress was made in the separate collection and recycling of waste streams that are under the EPR schemes, such as packaging waste, waste electrical and electronic equipment (WEEE) and waste batteries and accumulators (WBA).

Waste collectors are not encouraged to collect waste separately (by type) wherever waste is generated. Industrial enterprises that use waste as raw material are not incentivized to recycle. Also, there is no encouragement of consumers to purchase products made of recycled materials.

Since 2010, the country has worked on applying the principles of the Strategic Approach to International Chemicals Management (SAICM), upgrading policy and improving practical measures for sound chemicals management, and is focused on preparing for the remediation of contaminated sites.

The Waste Management Information System is not operational. Reports by municipalities, health-care facilities, enterprises on the EPR scheme and public communal companies are submitted on paper, which makes their validation, further processing and publication much more burdensome. Data collection is mostly not evidence based and, because of some overlap in institutional responsibilities, there are significant discrepancies in the published data sets for some waste types.

Biodiversity and protected areas

North Macedonia has successfully preserved the abundance of wild native species of fauna, fungi and flora, including numerous species categorized by the International Union for Conservation of Nature (IUCN) as globally threatened by extinction and species included in the European Red List, as well as many endemic species, such as the Balkan lynx and Balkan chamois.

The integrity of almost all natural ecosystems in the country is currently threatened, due partly to ongoing climatic changes but also to anthropogenic pressures, resulting in habitat degradation and the increasing threat of forest fires. The biodiversity loss continues, and populations of several rare species continue to decline in size. The currently applied management approaches and strategies do not provide for effective biodiversity conservation.

The 2011 lists of strictly protected and protected wild species are only based on assumptions and historical data. No national red list of threatened species has been adopted, and no corresponding red book has been published to date.

The National Biodiversity Information System and the national biodiversity monitoring system are not operational. Data on the size of and trends in populations of both the rare and widespread (e.g., game) species are either not available or not reliable. The level of threat to wildlife species occurring in the country cannot be assessed.

The process of revalorization and reproclamation of existing protected areas has not yet been completed, which impeded the preparation and adoption of all required management plans for protected areas. A land cadastre to allow the determination of land use and land ownership, and a national inventory of forest resources are lacking. The operations of national parks largely depend on own revenues deriving from the use of natural resources or external (foreign) financial support, while the majority of protected areas of other categories have neither a budget nor a management body.

Protected areas covered 8.93 per cent of the country's territory in 2017, which is well below the minimum value of at least 17 per cent by 2020 indicated in the CBD Aichi Biodiversity Target 11. The current national protected area network does not ensure ecological continuity and connectivity, as linking ecological corridors are still lacking.

North Macedonia has two Ramsar sites, one UNESCO Man and the Biosphere (MAB) Biosphere Reserve and one site inscribed on the World Heritage List. Two other sites with high potential for nomination under the World Heritage “natural” criterion have remained on the Tentative List since 2004.

The 2018 National Strategy for Nature Protection and Action Plan for the period 2017–2027 and the 2018 National Biodiversity Strategy and Action Plan (NBSAP) for the period 2018–2023 are ambitious. However, they require harmonization regarding timelines set for the same activities, which sometimes differ between the documents. A national wetlands policy or a programme for wetlands conservation remain to be developed. The national spatial plans do not include measures for the protection and sustainable use of wetland areas.

Various institutions and organizations are involved in activities for biodiversity conservation and nature protection. However, concerted efforts to coordinate activities between the responsible ministry for environmental affairs and many different sectors, such as forestry, agriculture, transport, energy and tourism, are lacking.

Main achievements in 2011–2018 and priorities for the future

In 2011–2018, North Macedonia's main actions to improve its environmental performance include:

- Separating the State Environmental Inspectorate from the Ministry of Environment and Physical Planning;
- Enhancing and deepening substantially the use of economic instruments in environmental protection;
- Operating a subsidy programme for the promotion of renewable energy sources and improvements in energy efficiency in households;

- Improving the air quality monitoring network;
- Implementing climate change mitigation measures in the energy sector;
- Decreasing air pollution by reducing the use of fossil fuels in energy production and gasification of the heating sector;
- Operationalizing several renewable energy projects that contribute to an increasing share of energy from renewable sources in the energy mix;
- Advancing the separate collection and recycling of waste streams that are under extended producer responsibility schemes;
- Advancing the sound management of chemicals through enhanced legal and policy frameworks, projects and capacity development, focussing on the remediation of contaminated sites;
- Promoting environmental education in formal and non-formal education.

The priorities for improving the country's environmental performance in the future include:

- Nationalizing the Sustainable Development Goals, raising awareness and ensuring multi-stakeholder participation in achieving the Goals;
- Advancing the use of integrated approaches to environmental sustainability such as Strategic Environmental Assessment, Integrated Water Resources Management and Environmental Impact Assessment, including in a transboundary context;
- Establishing an environmental protection agency;
- Establishing an effective mechanism for regular consultation and assistance to municipalities for implementing their environment-related competences;
- Greening the public procurement process to support environmental protection;
- Improving or establishing monitoring networks for surface water and groundwater, atmospheric precipitation and snow cover, biodiversity, soil and noise and vibration;
- Promoting and supporting eco-schools;
- Improving waste and wastewater management, with the construction of regional landfills and sewage treatment plants;
- Completing the process of revalorization and re-proclamation of existing protected areas and implementing the recent policy documents on biodiversity conservation and nature protection;
- Implementing legally-binding renewable energy targets by tapping the country's potential for solar photovoltaic power, thus reducing reliance on fossil fuels and hydropower and dependence on electricity imports.

INTRODUCTION

1 Physical context

North Macedonia is a landlocked country in the middle of the southern Balkan Peninsula. The country has a land area of 25,713 km² and it is bordered by Serbia to the north (border length 232 km), Bulgaria to the east (165 km), Greece to the south (262 km) and Albania to the west (191 km).

The physical geography is defined by the central Vardar River valley and high mountain massifs along the borders: the Dinaric range in the western and central parts of the country and the Rhodope range in the east. The average altitude of the terrain is 850 m above sea level but more than 30 per cent of the land area is situated above 1,000 m. There are 16 mountain peaks higher than 2,000 m. The highest point is the Golem Korab peak (2,753 m) situated in the north-western part of the country on the Albanian border, while the lowest point is situated on the Vardar River (44 m).

About 2 per cent of the land area is covered by water. The country has 35 large and small rivers, three natural lakes and 50 artificial lakes. The Vardar River, which bisects the entire country, passes through the capital, Skopje, and finally flows into the Aegean Sea, is the longest and the most important river in the country. Of its total length of 388 km, 301 km are within the country's borders.

The country is located at the intersection of the African and Eurasian tectonic plates. The region is seismically active and has suffered various destructive earthquakes in the past.

The country is also at the junction of two main climatic zones between the Mediterranean and continental climates. Along the valleys of the Vardar and Strumica Rivers the climate is temperate Mediterranean, characterized by long and dry summers and mild and rainy winters. The interior of the country has a moderate continental climate, with warm and dry summers followed by cold, wet and snowy winters.

Average annual precipitation varies from 500 mm in the eastern area to 1,700 mm in the western, mountainous area. The temperature range also features wide fluctuations: maximum summer temperatures in the majority of the agricultural areas rise to +40°C, while the lowest winter temperatures can drop to about -30°C. The average annual temperature is above +10°C. The warmest region in the country is Demir

Kapija, while the capital, Skopje, has an average temperature of +14°C and average 438 mm of precipitation annually.

2 Human context

In 2017, the country had 2.075 million inhabitants and the population density was 80.7 inhabitants per km², well below the average of 124 inhabitants per km² in the ECE Region. The territorial distribution of the population is uneven. Some 57.33 per cent of the population lives in urban areas, mainly in the five largest cities: in Skopje (pop. 327,589), Kumanovo (pop. 109,347), Tetovo (pop. 91,988), Bitola (pop. 91,805) and Prilep (pop. 74,963).

Life expectancy has been on a slight but steady rise. In 2010, average life expectancy at birth was 74.63 years – 76.66 for women and 72.65 for men. In 2016, life expectancy was 75.70 years for the total population, 77.75 for women and 73.71 for men. Infant mortality, which had had a decreasing trend since 1995, hit its lowest level of 7.60 per 1,000 live births in 2010 and has since fluctuated somewhat, rising to 9.20 in 2017. From 2010 to 2017, the total fertility rate decreased from 1.6 to 1.4 children per woman, a figure just slightly under the average for the ECE Region.

This trend, combined with the decreasing birth rate from 11.80 per 1,000 in 2010 to 10.50 in 2017, has brought changes in the age structure of the population. As a result of these demographic changes, the country's population is aging; between 2010 and 2015, the share of the 0–14 age bracket in the total population decreased from 18.58 per cent to 16.73 per cent, while the share of the over-65 age bracket increased from 11.67 per cent to 12.83 per cent (table 1)

The Human Development Index (HDI), calculated by the United Nations Development Programme (UNDP), combines indicators of life expectancy, educational attainment and income into a composite human development index. It is expressed as a value between 0 and 1, where the value 1 represents the best attainable human development. With an HDI value of 0.757 in 2017, North Macedonia belonged to the high human development country group, ranking 80th of 189 countries. The 2017 HDI value for neighbouring Greece was 0.870 and its position 31st, and for Bulgaria 0.813 and its position 51st. Serbia was ranked 67th with an HDI value of 0.787 while Albania was 68th with an HDI value of 0.785.

Table 1: Demographic and health indices, 2010–2017

	2010	2011	2012	2013	2014	2015	2016	2017
Population (million)	2.055	2.059	2.061	2.064	2.067	2.070	2.072	2.075
Birth rate (per 1,000)	11.80	11.10	11.40	11.20	11.40	11.10	11.10	10.50
Total fertility rate	1.60	1.50	1.50	1.50	1.50	1.50	1.50	1.40
Life expectancy at birth (years, total)	74.63	74.82	75.02	75.21	75.38	75.55	75.70	..
Life expectancy at birth (years, male)	72.65	72.85	73.05	73.23	73.40	73.56	73.71	..
Life expectancy at birth (years, female)	76.66	76.84	77.03	77.23	77.42	77.59	77.75	..
Percentage of population (0–14 years)	22.28	17.58	17.31	17.10	16.95	16.83	16.73	..
Percentage of population (65+ years)	9.98	11.67	11.75	11.90	12.18	12.52	12.83	..
Mortality rate (per 1,000)	9.30	9.50	9.80	9.30	9.50	9.90	9.90	9.80
Infant mortality rate (per 1,000)	7.60	7.60	9.80	10.20	9.90	8.60	11.90	9.20

Source: State Statistical Office, August 2018.

3 Economic context

Economy

North Macedonia is a small, open economy, well integrated into international trade. Its gross domestic product (GDP) in 2017 was US\$11.33 billion, when the exports-to-GDP ratio reached 55.11 per cent. The agriculture, forestry and fishing sector is still relatively large, accounting for 9.70 per cent of GDP in 2015. The industrial sector (including manufacturing, mining and quarrying), which used to be the most important, produced 16.80 per cent of GDP, while services accounted for 60.70 per cent of GDP, in 2015.

From the beginning of this century until 2008, the annual average growth of the economy was 4.31 per cent. However, this continuous GDP growth and economic stability with low inflation rates came to a sudden end with the international banking crisis of 2008, which caused the country to go into sudden and steep recession, with GDP growth dropping from 5.47 per cent in 2008 to 0.36 per cent in 2009. The growth path resumed in 2010, when annual GDP growth jumped to 3.4 per cent. This upswing was cut short in 2012 when the country had two consecutive quarters of negative growth, largely as a result of the European debt crisis. However, this downturn was again short, and the country had already exited recession at the end of 2012, although the annual 2012 GDP decreased 0.50 per cent.

Growth returned in 2013 and lasted until 2016 but turned negative in the first half of 2017 as political uncertainty affected investment. In spite of the steady consumption level and growing investor confidence after the new government took office in June 2017, GDP remained slightly negative at the end of the year.

The World Economic Forum's Global Competitiveness Report 2016–2017 ranked the country 60th of the 140 countries reviewed.

The country has suffered from a persistently high unemployment rate for many years. After 2010, when the unemployment rate was 32.1 per cent of the labour force, the situation finally started to improve, slowly but continuously. Helped by public investment and employment programmes, the unemployment rate decreased to 22.4 per cent in 2017. However, at the same time, the labour force participation rate fell to its lowest level since 2012.

Related to the improved employment situation, the number of people living below the national poverty line has also diminished. In 2010, a little over one quarter (27 per cent) of the population were living with income below the poverty line; in 2016, this had dropped to 21.90 per cent.

4 Political context

The country has been a member of the World Trade Organization (WTO) since 2003, and an official candidate for European Union (EU) membership since December 2005. However, international negotiations and agreements have been difficult to complete due to the long-running discord surrounding the country's name.

The name "Macedonia" has been disputed between Greece and the then Republic of Macedonia since the breakup of Yugoslavia in 1991. Since 2016, the new Prime Minister of the former Yugoslav Republic of Macedonia pushed to resolve the decades-old dispute following the pro-solution parties' win in the general elections. In anticipation of the eventual solution, in April 2018, the European Commission recommended the opening of official membership talks with the former Yugoslav Republic of Macedonia, stating that the country has made significant progress in implementing the reforms requested by the EU. Pursuant to the entering into force on 8 February 2019 of the Prespa Agreement between Greece and the former Yugoslav Republic of Macedonia, the

country's name was changed to the Republic of North Macedonia (short form: North Macedonia).

5 Social context

North Macedonia ratified the Convention on the Elimination of All Forms of Discrimination against Women and its Optional Protocol in 1994. In 2017, the country ratified the Council of Europe Convention on Preventing and Combating Violence against Women (Istanbul Convention).

The country has adopted several laws and mechanisms to advance gender equality. The 2012 Law on Equal Opportunities for Women and Men obliges public institutions to ensure equal rights and opportunities for women and men and to integrate gender into their policies, strategies and budgets through specific measures to reduce gender inequality.

There are several other instruments in place for attaining gender equality, such as the National Action Plan for the Implementation of the Law on Prevention and Protection Against Discrimination (2015–2020), National Equality and Non-Discrimination Strategy (2016–2020) and Strategy for Introducing Gender Responsive Budgeting (2012–2017).

Female participation in working life is still disproportionate to that of men, despite the significant legal changes that have taken place. In 2017, women made up only 33.2 per cent of the employed population and comprised 64.4 per cent of the country's economically inactive population.

It seems that the electoral quotas have had an effect on the number of women elected to decision-making positions. In the latest elections (2017), 38 women were elected to the parliament, constituting 32.5 per cent of legislators. However, in executive bodies, where quotas do not exist, women's representation has remained low: women hold only 15 per cent of ministerial posts and 4 per cent of mayoral posts.

The UNDP Gender Equality Index for 2017 ranked North Macedonia 35th of 189 countries, with a score of 0.149. The World Economic Forum's Global Gender Gap Report 2017 ranked the country 67th of 144 countries, with a score of 0.702.

6 Political organization and institutions

North Macedonia is a multi-party parliamentary democracy; its political system is based on the division of power among the executive, legislative and judicial branches. Administratively, the country is organized

into 80 municipalities, 10 of which constitute the City of Skopje, a distinct unit of local self-government.

Executive branch

Executive power in North Macedonia is divided between the President and the Government. The presidency is largely a ceremonial post and the Prime Minister is the country's leading political figure and de facto chief executive.

The President is the Head of State and represents the country at home and abroad. The President nominates a negotiator to form the government and he/she is also the commander in chief of the national armed forces. The President is elected through direct and general elections, by majority vote. The length of the President's term is five years, and the term can be renewed once. The current President was elected in 2009 and re-elected in 2015.

The Government is constituted of the Prime Minister, four deputy prime ministers and 21 other ministers, among whom five are currently without portfolio (table 2). The Minister of Finance is also a Deputy Prime Minister. The Prime Minister and the Government's programme are approved by an absolute majority vote of the Assembly. The ministers are proposed by the Prime Minister and then elected by the Assembly. The Government is responsible for proposing legislation to the Assembly and drafting the budget proposal.

Legislative branch

The country has a unicameral parliamentary system. The parliament or Assembly – the "Sobranie" – has 120 representatives, elected from party lists at general and direct elections for four-year terms. The Assembly passes laws and resolutions, ratifies international agreements and amends the Constitution.

The President, the Government, at least 30 members of parliament or 150,000 citizens may also propose changes to the Constitution. The Assembly appoints the judges of the Constitutional Court, members of the Judicial Council, judges of the ordinary courts and the Ombudsman. The last election took place in 2016; the next one will be held in 2020.

Judicial branch

The independent judicial system comprises 27 courts of the first instance, four courts of appeal, a Supreme Court, a Constitutional Court, an Administrative Court and a Judicial Council.

The Supreme Court is the highest court in the country, responsible for overseeing the equal administration of laws by all courts, and its competency covers the entire country. Its nine judges are appointed by the Judicial Council for an unlimited mandate term.

The Administrative Court is responsible for deciding on the legality of the administrative acts enacted by the Government, public authorities, municipalities and other public bodies and organizations. Its 18 judges are appointed by the Judicial Council.

The Constitutional Court is an independent body responsible for the protection of constitutional and legal rights; it decides on the conformity of laws with the Constitution and resolves legal disputes between the executive, legislative and judicial branches. The

Court also decides on the answerability of the President of the Republic. Its nine judges are appointed by the Assembly and serve nine years, without the possibility of re-election.

The State Judicial Council governs the ethical conduct of judges, proposes the election or dismissal of judges to the Assembly and evaluates the work of judges. The Council is composed of 15 members; the Minister of Justice and the President of the Supreme Court are automatically appointed as members. The members serve for a period of six years, with the right to one re-election, except the Minister of Justice and the President of the Supreme Court whose mandates end with the end of their other function.

Table 2: List of ministries

- Ministry of Defence
- Ministry of Internal Affairs
- Ministry of Foreign Affairs
- Ministry of Finance
- Ministry of Health
- Ministry of Justice
- Ministry of Transport and Communications
- Ministry of Economy
- Ministry of Agriculture, Forestry and Water Management
- Ministry of Information Society and Administration
- Ministry of Labour and Social Policy
- Ministry of Education and Science
- Ministry of Local Self-Government
- Ministry of Culture
- Ministry of Environment and Physical Planning

Ministers without portfolio

- Minister without portfolio in charge of communications, accountability and transparency
- Minister without portfolio in charge of diaspora
- Minister without portfolio in charge of foreign investments
- Minister without portfolio in charge of the implementation of the Strategy for improvement of the situation of Roma
- Minister without portfolio in charge of regulation for improving the investment climate for domestic enterprises

Source: North Macedonia Government website (accessed on 5 October 2018).

Table 3: Selected economic indicators, 2010–2017

	2010	2011	2012	2013	2014	2015	2016	2017
GDP (% change over previous year)	3.4	2.3	- 0.5	2.9	3.6	3.8	2.9	0.02
GDP in current prices (million denars)	437 296.0	464 186.0	466 703.0	501 891.0	527 631.0	558 240.0	598 881.0	619 788.0
GDP in current prices (US\$ million)	9 407.2	10 494.6	9 745.3	10 817.7	11 362.3	10 051.7	10 745.8	11 337.8
GDP (constant 2010 US\$ million)	9 407.2	9 627.3	9 583.4	9 863.7	10 221.7	10 614.4	10 924.7	10 926.9
GDP per capita current prices (US\$)	4 542.9	5 064.0	4 698.7	5 211.5	5 469.2	4 834.1	5 163.3	5 442.6
GDP per capita (constant 2010 US\$)	4 542.9	4 645.5	4 620.6	4 751.9	4 920.2	5 104.8	5 249.2	5 245.4
CPI (% change over the preceding year, annual average)	1.5	3.9	3.3	2.8	- 0.3	- 0.3	- 0.2	1.4
CPI (% change over the preceding year, end of period)	3.0	2.8	4.7	1.4	- 0.5	- 0.4	- 0.2	2.4
PPI (% change over the preceding year, annual average)	8.6	12.5	4.6	0.4	- 1.2	- 3.9	- 0.2	0.8
Registered unemployment (% of labour force, end of period)								
national data	32.1	31.4	31.0	29.0	28.0	26.1	23.7	22.4
Current account balance (US\$ million)	- 198.3	- 261.7	- 319.1	- 177.2	- 71.6	- 192.6	- 298.6	- 128.7
Current account balance (% of GDP)	- 2.1	- 2.5	- 3.3	- 1.6	- 0.6	- 1.9	- 2.8	- 1.1
Net FDI inflows (US\$ million)	206.9	473.9	165.5	305.0	261.4	230.3	349.4	254.2
Cumulative FDI (US\$ million)								
Net FDI flows (% of GDP)	2.2	4.5	1.7	2.8	2.3	2.3	3.2	2.2
Foreign exchange reserves (US\$ million)	2 276.8	2 667.4	2 891.5	2 747.6	2 964.2	2 470.7	2 751.9	2 801.9
Gross external debt (US\$ million)	5 452.4	6 271.0	6 817.8	7 194.4	7 286.6	6 873.0	7 607.0	8 878.9
Exports of goods and services (US\$ million)	3 606.4	4 794.2	4 332.2	4 689.2	5 416.9	4 905.5	5 380.5	6 260.0
Imports of goods and services (US\$ million)	5 463.4	6 934.6	6 522.5	6 665.7	7 380.0	6 536.7	7 000.5	7 833.6
Net exports of goods and services (US\$ million)	- 1 857.0	- 2 140.4	- 2 190.3	- 1 976.4	- 1 963.1	- 1 631.2	- 1 620.0	- 1 573.6
Ratio of gross debt to exports (%)	151.2	130.8	157.4	153.4	134.5	140.1	141.4	141.8
Ratio of gross debt to GDP (%)	57.8	64.2	68.2	64.0	70.0	69.3	74.2	73.6
Exchange rates: annual averages (denar/US\$)	46.5	44.2	47.9	46.4	46.4	55.5	55.7	54.7
Exchange rates: annual averages (denar/€)	61.5	61.5	61.5	61.6	61.6	61.6	61.6	61.6
Poverty headcount ratio at national poverty lines (% of population)	27.0	26.8	26.2	24.2	22.1	21.5	21.9	
Personal remittances received (% of GDP)	4.1	4.1	4.0	3.5	3.2	3.1	2.7	2.8

Source: ECE database; World Bank database; National Bank of North Macedonia.

Map 1: Map of North Macedonia



Source: United Nations Cartographic Section, 2010.

Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

***PART I: ENVIRONMENTAL GOVERNANCE AND
FINANCING***

Chapter 1

LEGAL, POLICY AND INSTITUTIONAL FRAMEWORK

1.1 Legal framework and its implementation

Environmental laws

Since 2011, few new laws on environmental issues have been adopted. The development of environmental legislation took place mostly through the adoption of amendments to existing laws and the development of subsidiary legislation. The motives for development of legislation in the environmental area are the approximation and harmonization of national legislation with the EU acquis. The speed of the approximation process has not been fast, but it has been commensurate with the national capacities for implementation.

The environmental legislation is generally coherent. Since 2008–2009, the country uses the regulatory impact assessment (RIA) mechanism for new laws and amendments to laws, which considers, among other aspects, the impact of new laws on the environment. In addition, the mechanism of intersectoral consultations, which are mandatory for laws, amendments to laws and acts of subsidiary legislation, supports the integration of environmental considerations into sectoral legislation. The 2017 SIGMA-OECD Monitoring Report¹ notes room for improvement of both the RIA and intersectoral consultations procedures.

Consolidated versions of laws and secondary legislation are not available to the public for free. This is a general concern that is also relevant for environmental legislation. The governmental Official Gazette provides free online access to legislative acts published in previous years but not the current year and does not include consolidated versions. Access to a privately run online database that includes updated consolidated texts is by paid subscription only. To increase accessibility of environmental legislation, the Ministry of Environment and Physical Planning publishes such legislation on its website, but the scope of legislative acts published is limited to core environmental topics and the texts displayed are not always updated in a timely manner.

The Single Electronic National Register for Regulations provides free access to draft laws and draft amendments to laws, as well as to consolidated versions of laws, most of which are not up to date, however.

Law on Environment

Since 2011, the 2005 Law on Environment has been amended 10 times. The most significant amendments referred to: procedure of strategic environmental assessment (SEA) (2011, 2013); issuing of integrated environmental permits (IEPs) (2011); prevention and control of accidents in the presence of hazardous substances (2012); national system for the inventory of greenhouse gas (GHG) emissions (2013); licensing for the treatment of refrigerants (2014); and organization of the State Environmental Inspectorate (SEI) (2015).

Air

The 2004 Law on Ambient Air Quality was amended several times as part of the efforts to transpose the EU acquis. The most significant amendments were made in 2012 and referred to definitions of stationary and mobile sources, target values and critical levels of pollution, classification of zones and agglomerations, national planning documents on air quality and the conduct of the emissions inventory. Subsidiary legislation in support of implementation of the Law has been enhanced through the adoption of several rulebooks, including the Rulebook on the methodology, manners, procedures, methods and means for measuring emissions from stationary sources (No. 11/2012), 2013 Rulebook on the criteria, methods and procedures for assessment of air quality, Rulebook on the detailed content and manner of preparation of the plan for ambient air quality improvement (No. 148/2014) Rulebook on the detailed content and manner of preparation of short-term action plans for ambient air protection (No. 148/2014). As at late 2018, amendments to the Law referring to criteria for the preparation of planning documents and manner of implementation of short-term measures were drafted.

¹ OECD, Monitoring Report: The Principles of Public Administration. The former Yugoslav Republic of Macedonia, November 2017 (Paris, 2017).

The 2014 Law on Control of Emissions of Volatile Organic Compounds Due to the Use of Petrol aimed at transposing Directive 94/63/EC on the control of volatile organic compound (VOC) emissions resulting from the storage of petrol and its distribution from terminals to service stations, and Directive 2009/126/EC on Stage II petrol vapour recovery during refuelling of motor vehicles at service stations. The Law established the standards for environmental protection and control of the emissions of VOCs during petrol use, as well as deadlines for their achievement by operators of the terminals and petrol stations and mobile containers that transport gasoline.

Several rulebooks were adopted in 2015 to regulate the various aspects of managing ozone-depleting substances (ODSs), such as reporting on ODSs and training in proper handling, servicing, collection, recovery and recycling of ODSs.

Climate change

Legislation in the area of climate change is limited to several articles in the Law on Environment. These articles cover planning documents on climate change, the GHG inventory preparation system and the development of projects for funding through the Clean Development Mechanism (CDM). The 2018 EU progress report points out the need for the country to transpose and start implementation of the EU climate acquis, particularly on emissions monitoring and reporting, the EU Emissions Trading System and effort sharing. Weak capacity for implementation has so far been the main constraint on further development of the legislation on climate change.

Industrial pollution and pollutant release and transfer register

Proper implementation of legislation on permitting is still an issue. There are cases of installations working without a permit and without an environmental management plan. Two large combustion plants have operated for years without an A-type permit (one of the two types of IEP, chapter 2).

As at September 2018, a draft law on industrial emissions has been prepared and is in the process of consultations. Most industry representatives want to be given a longer period for implementing the requirements of the future law.

The 2011 Rulebook on the form, content, methodology and manner of maintaining the pollutant release and transfer register was amended in 2017 to include electronic online reporting. The pollutant release and transfer register (PRTR) requirements

apply to facilities with an A-type permit that had emissions exceeding the thresholds in the year on which they report. Enterprises reported for the first time in 2016 for 2015; reports were submitted by 21 facilities. As at September 2018, not all reports for 2016 have yet been validated. In September 2018, the reports for 2017 (due May 2018) were, largely, not yet submitted.

According to the Ministry of Environment and Physical Planning, guidance documents to enable PRTR reporting are available, and the relevant training sessions were organized. Nevertheless, enterprises do not report on time, largely due to technical problems. The Ministry does not track the use of the PRTR website, so it is not known how many visitors use the PRTR. The Macedonian Environmental Information Centre (MEIC), within the Ministry, lacks sufficient knowledge to perform data validation. There is an understanding that integration of data from integrated pollution prevention and control (IPPC) permits and water permits with PRTR reporting is needed, but such integration is not yet the case.

Water

The 2008 Law on Waters regulates all aspects of water management, water use and prevention of water pollution. The changes to institutional responsibilities on water, introduced by the Law, were implemented in 2011. In 2012, the Law was amended with regard to the rules for awarding concessions in line with the 2012 Law on Concessions and Public–Private Partnership. In 2016, the Law was amended to enable separate regulation of classification of surface water bodies and to clarify the procedure for issuing water permits.

The 2004 Law on Drinking Water Supply and Urban Wastewater Drainage covers supply of drinking water, drainage of urban wastewaters, drainage of storm water and maintenance of water supply and sewerage systems. The 2011 amendments introduced the concept of a contract between the service provider (public communal enterprise) and the service user.

The 2016 Law on Water Services Pricing is a new law. It regulates the manner of establishing prices of water services and prescribes the establishment of the pricing methodology. It describes the competences of the Energy Regulatory Commission (ERC) with regard to determining and approving the tariffs as well as its powers of inspection and enforcement. The idea behind the Law is to ensure financial sustainability of water services, so that public communal enterprises could adequately finance the management of water supply and wastewater treatment services. The 2017

Methodology for determining tariffs for water services and the 2017 Rulebook on the manner and procedure for determining the tariff for water services and the regulatory tariff for water services adopted by ERC provide further details on these aspects. The 2015 Law on Water Economy adopted in place of the 2003 law on the same subject regulates the management of hydrosystems, irrigation and drainage systems.

Soil

A draft law on soil protection was prepared in 2014 but it was not adopted, largely due to financial implications.

There is no legislation to address historic pollution of soils.

Nature protection

The 2004 Law on Nature Protection has been amended several times to increase its approximation with Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora, Directive 2009/147/EC on the conservation of wild birds and other directives. The Law requires reproclamation of all protected areas. This process starts with preparation of a valorization study for a protected area, then

continues with proclamation and preparation of a management plan. The subsidiary legislation governing the preparation of a valorization study and management plan is in place.

As at September 2018, the reproclamation of protected areas is ongoing and there have been numerous issues related to it. Since 2015, the Mavrovo National Park, for which the process of reproclamation was not completed, has been under the attention of the Standing Committee of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) due to the Government's plans to construct hydropower facilities in the park (Recommendation No. 184 (2015)).

For the other national park, Galičica, where reproclamation was completed in 2010, attempts were made, so far without success, to change the zoning in the national park to allow implementation of several development projects. Because valorization studies need resources, including financial ones, they have not yet been completed for all protected areas. Many protected areas, especially smaller ones, do not have a management authority. In fact, the area covered by protected areas decreased slightly, from 232,496 ha² in 2012 to 229,719 ha² in 2017.

Photo 1a: Lake Prespa



One of the deficiencies of the Law is that it includes the notion of potential sites that might be proclaimed in the future, but no mechanism to grant interim protection exists, which does not allow the Ministry of Environment and Physical Planning to prevent economic activities or construction in those areas. A new law on nature is in the process of adoption and will replace the 2004 Law on Nature Protection.

The 2014 Law on Mountain Trails is a new law that regulates the maintenance and use of mountain passes, including those in protected areas. The Law is an attempt to engage the “hosts” of mountain passes, such as mountain or cycling sports clubs, in their proper maintenance and protection.

In the period 2009–2014, the 2008 Law on Genetically Modified Organisms (GMOs) has been supplemented by extensive subsidiary legislation. In 2013, through amendments to the 2010 Law on Food Safety, North Macedonia banned the production, placing on the market and import of genetically modified food and feed until the country’s accession to the EU. Information about enforcement of the ban is limited.

Forests

The 2009 Law on Forests regulates both protection of forests and forest management. The Law requires the national strategy on forests to be adopted for 20 years (the current one is valid for the period 2006–2026). It also includes the requirements for the preparation of the national inventory of forest resources; however, as at September 2018, no forest inventory exists. Despite the requirements of the Law on Forests, illegal logging takes place. According to official data, illegal logging increased from 7,164 m³ in 2008 to 25,230 m³ in 2014, but a decrease has been observed in 2015 (22,054 m³) and 2016 (18,662 m³). Expert estimates of illegal logging activities are higher. Furthermore, owners of private forests report having faced barriers raised by the State to logging and selling their timber legally. Aligning the Law on Forests with the EU Timber Regulation (Regulation (EU) 995/2010) is a task for the future.

Waste

The legal framework on waste management centred around the 2004 Law on Waste Management was enhanced with adoption of the 2009 Law on Management of Packaging and Packaging Waste, 2010 Law on Management of Batteries and Accumulators and Waste Batteries and Accumulators and 2012 Law on Management of Electrical and Electronic Equipment and Waste Electrical and Electronic Equipment. However, the actual

implementation of extended producer responsibility (EPR) has not gone smoothly. There is a lack of proper infrastructure in the country for treatment of waste subject to EPR, so such waste needs to be exported. The producers are not keen to pay the related fees, and some escape from both making contracts with collective handlers and paying the fee (chapter 10).

Chemicals

The most important steps taken for implementation of the 2010 Law on Chemicals included the approval by the Government of the List of high-risk substances (giving rise to concern) (2011 Rulebook) and the List of restrictions and bans on chemical use (2014 Rulebook). There is a governmental portal (www.hemikalii.gov.mk) that provides information to companies and users on the introduction of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) and implementation of the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) regulation. Challenges in implementation are mostly capacity related.

In 2013, the country banned the importation and use of asbestos and asbestos-containing material. Waste that contains asbestos is regulated by the 2004 Law on Waste Management and the 2006 Rulebook on handling asbestos waste and waste of asbestos-containing products. A separate cell at the Drisla landfill site in Skopje is intended for disposal and storage of asbestos waste. However, experts believe that asbestos waste is also disposed of in other landfills along with other types of waste.

Noise

Implementation of the 2007 Law on Protection from Noise in the Environment has been particularly challenging. By 2011, the Government had already identified four agglomerations (City of Skopje, Kumanovo, Bitola and Tetovo municipalities), 13 major roads and one major railway (Tabanovci–Gevgelija) for which strategic noise maps and respective action plans are to be prepared. As at September 2018, no strategic noise maps have been prepared, though some data collection for preparation of noise maps has begun. Skopje Airport does not reach the threshold of 50,000 movements per year, so does not yet require the preparation of a noise map.

Environmental crimes

In 2014, amendments were introduced to the chapter on crimes against the environment and nature in the 1996 Criminal Code. These included changes to

several existing articles and introduction of some new articles, such as: production, trade or use of substances that deplete the ozone layer; unauthorized hunting, keeping and transfer of ownership of wild animals and birds; killing or destroying protected species of wild fauna or flora; unauthorized introduction of wild species into nature; and unauthorized trading, imports or transport of wild flora or fauna.

Environment-related provisions in sectoral legislation

Spatial planning

The 2014 Law on Spatial and Urban Planning and the 2004 Law on Implementation of Spatial Plan include protection of the environment and nature among principles of spatial and urban planning. The former details the requirements for SEA for spatial and urban plans. It also provides for a mechanism of setting “conditions for space planning”. These conditions are set by the Ministry of Environment and Physical Planning; however, the Ministry does not know whether the conditions are followed.

In 2014, amendments were adopted to the Law on Spatial and Urban Planning to simplify the administrative procedures for investments in renewable energy sources (RES). The Law on Spatial and Urban Planning now stipulates that infrastructure projects (urban design documentation) can be used for locations planned for constructing power plants. This is beneficial for renewable energy investors, since this type of urban plan is simpler and can be approved in a shorter timeframe than the traditional urban plans.

Energy

The 2018 Law on Energy, replacing the 2011 Law on Energy, covers the objectives of energy policy, construction of energy facilities, status of ERC, regulation of electricity, natural gas and thermal energy markets and conditions for promotion of RES.

The Law corrects the previous situation, in which small and medium-sized enterprises and households were deprived of their right to purchase electricity and gas directly from the supplier of their choice. With regard to RES, in addition to the existing system of feed-in tariffs, the new Law envisages the introduction of premiums as a measure to support RES development. Premiums will be applicable to most technologies and will be awarded on the basis of a tender procedure involving an auction.

As at September 2018, provisions on energy efficiency of the 2011 Law on Energy are still active but work is

under way to develop a separate law on energy efficiency. In 2017, a draft law on biofuels and a national action plan on biofuels were developed.

Industry and mining

The 2012 Law on Mineral Resources replaced the 2007 law on the same subject. The 2012 Law includes a clause on subsidiary application of several laws, including the Law on Environment. The novelty of the 2012 Law is that it includes the notion of technogenic minerals – minerals created in the process of energy and metallic mineral processing, including the extractive waste created in the course of exploitation. This new type of mineral resources is owned by the State and concessions can be granted for its exploration.

The 2012 Law describes the duties of the concession holder in relation to the rehabilitation and remediation of land degraded as a result of mining activities. In the 2007 Law, the obligation of remediation existed but was less precise. According to the 2012 Law, the plan for remediation and the waste management plan are part of the mining project. The tool of financial guarantee sufficient to cover the costs of elimination of the harmful effects on the environment is envisaged by the Law but no solution has yet been found on the type and amount of financial guarantee and no subsidiary legislation has been developed on this issue. North Macedonia has no experience with remediation because, so far, no mines have been closed. To date, when a concession finished, the Ministry issued a new concession to prolong the mining activities. However, remediation activities in the mine located in Radovic have started.

The 2013 Law for Industrial and Green Zones sets out the conditions of establishment and management of two types of zones. Industrial zones, which can be initiated by the Government or a local self-government unit (LSGU), are a continuation of the concept of free economic zones. They are meant to provide favourable conditions for starting industrial activities (e.g., building industrial infrastructure) in an empty area. So far, two industrial zones have been established in Veles and one in Bitola. The green zones are founded by the Government or an LSGU and envisage favourable conditions for light and non-polluting industry, e.g., processing of organic food or production of electricity from renewable sources. As at September 2018, no green zones were established. The Ministry of Economy recently drafted amendments to the Law to provide subsidies for establishing green zones.

Protection of the environment and nature is among the goals of the 2006 Law on Product Safety, which applies to non-food products. Amendments introduced in 2016 strengthened the conformity assessment procedures under this Law.

Agriculture

The 2010 Law on Agriculture and Rural Development is the major legal act regulating planning and implementation of agricultural and rural development policies and governmental support for agriculture.

The 2009 Law on Organic Production regulates the production, processing, labelling, authorization, certification and control of organic products. It has been supplemented by subsidiary legislation, specifying certain substances in line with Regulation (EC) No. 889/2008 laying down detailed rules for the implementation of Council Regulation (EC) No. 834/2007 on organic production and labelling of organic products with regard to organic production, labelling and control. The Law is well known among farmers but there are problems with improper use of the organic label. In addition, the procedures for the importation of organic protective agents are considered cumbersome.

The 2007 Law on Plant Protection Products regulates product approval procedures for such products. While such a procedure is led by the Ministry of Agriculture, Forestry and Water Economy, the Ministry of Environment and Physical Planning is involved in the process, along with the Ministry of Health. A new law has been drafted to replace the current one.

Transport

The 2008 Law on Public Roads redefined the road tolls that were introduced in the 1996 law on the same subject. The toll is based on distance travelled and vehicle category. The van/truck category rate is 30 to 66 per cent higher than the rate for motorcycles and cars.

The road safety legislation is in place with the 2015 Law on Road Traffic Safety adopted in place of the 2007 law on the same subject. However, enforcement of road safety rules is an issue. According to the 2015 Global Status Report on Road Safety, the World Health Organization (WHO) estimates the road traffic fatality rate at 9.4 per 100,000 population in North Macedonia, which is less than the average of 13.4 per 100,000 population in the European Region. However, in the same report, the country has medium-level scores for enforcement of legislation on speed limits, drink-driving and use of motorcycle helmets. The

legislation prohibits the use of a handheld mobile phone while driving but this prohibition is rarely complied with. The same holds true for the use of seat belts, which is mandatory for both drivers and passengers.

Further directions for improving the transport legislation and introducing the environmental requirements are: the adoption of legislation on intelligent transport systems (ITS) and combined transport; introducing multimodal nodes into the legislation; and further improvement of legislation on dangerous goods transported by road.

Tourism

The 2004 Law on Tourism Activity includes the concept of ecological tourism, which means tourism in areas with special natural features and protected areas but does not go further than that. The 2004 Law on Hospitality Activities regulates the activities of facilities for food and accommodation. The 2006 Rulebook on the minimum technical requirements for performing catering activity prescribes in more detail the conditions that must be fulfilled by such facilities in terms of ensuring water supply, wastewater treatment and solid waste management.

The legislation does not include any environmental requirements and is not based on the principles of sustainable tourism. There are no requirements to collect information on environmental pressures from the tourism sector, promote more efficient use of water and energy resources and minimize waste generation by the tourism sector. Environmental knowledge requirements are not part of the certification of tourism guides.

Health

The 2012 Law on Health Protection adopted in place of the 1991 law on the same subject includes environment-related health disorders in the scope of health-care activities and health services. It recognizes the right of every citizen to information about the harmful factors of the environment which may have a negative impact on health.

The 2007 Law on Medicinal Products and Medical Devices sets the rules for disposal of waste from medicinal products, among other matters.

The prevalence of smoking in North Macedonia is very high. According to WHO, in 2015, 41.5 per cent of adults (15+ years old) used tobacco daily. The 1995 Law on Protection Against Smoking includes a ban on smoking in public places and prohibitions related to

advertising. The ban on smoking in public places has been gradually expanded over the years to include governmental and administration buildings, restaurants and cafes (except for adjacent terraces and summer gardens with adequate air circulation), educational, medical, sports and some other facilities. However, in March 2018, the Law was amended to ease the ban. Restaurants and cafes were allowed to designate their terraces and gardens as smoking areas, while the requirement for adequate air circulation was removed. In practice, smoking in public places, especially restaurants, is largely tolerated, and no funds are allocated to enforce the ban.

Other relevant legal acts

The 2010 Law on Inspection Supervision brought changes to the system of inspectorates, which were previously part of the relevant ministries. A new inspection council was established to supervise the various inspection bodies. In 2013, the amendments to the Law clarified that the inspectorates are bodies with legal personality within the ministries, have their own budgetary account as first-line budget users and independently implement recruitment procedures. These changes were implemented in 2014 for several inspection bodies dealing with environment-related matters.

The 2009 Law on Intermunicipal Cooperation aims to encourage cooperation between two or more municipalities for more efficient performance of their tasks. The Law is criticized for making intermunicipal cooperation rely on goodwill rather than being obligatory. There are numerous agreements between municipalities based on this Law related to provision of services by one municipality to another on finance, internal audit or inspection. Cases of agreements between municipalities in the environmental area are few. For example, in 2013, seven municipalities (Veles, Gradsko, Demir Kapija, Kavadarci, Negotino, Rosoman and Chashka) agreed to establish a joint department for energy efficiency.

In addition to the 2010 Law on Inspection Supervision, which has a general character, North Macedonia has laws regulating thematic inspections, such as the 2009 Law on the State Agriculture Inspectorate or the 2010 Law on the State Inspectorate for Local Self-Government. In 2015, a draft law on environmental inspection was prepared under the twinning project “Strengthening administrative capacities at the central and local level for the implementation of the environmental legislation”.

The 2007 Law on Public Procurement includes “environmental management standards” among the

criteria for determining the qualification of operators. The application of this criterion is optional.

1.2 Policy framework

Development, implementation and reporting

The development of strategic documents on the environment and sustainable development is often financed through donations and international projects. The system of costing the strategic documents (i.e. identifying how much their implementation would cost and where the costs would come from) is insufficiently established. Many strategic documents remain drafts for years and some never make it to adoption despite a considerable effort placed on their development. Implementation of strategic documents is entirely supported by donor and project funding. Periodic reporting on implementation is generally absent. Sometimes, during the development of a new policy document, an evaluation of implementation of the previous one is conducted.

Development policy documents

The policy framework for environment and sustainable development is centred around the 2010 National Strategy for Sustainable Development (NSSD) for the period 2010–2030 and the annually revised National Programme for the Adoption of the Acquis Communautaire (NPAA). There is no strategic document explicitly devoted to green economy.

National Strategy for Sustainable Development for the period 2010–2030

An implementation report for the 2010 NSSD was prepared in 2015. One of the key conclusions is that harmonization of the legislation with the EU acquis has been done in many areas relevant for sustainable development, accelerating the transition towards sustainable development, although the sectoral approach prevailed instead of an integrated approach as is inherent in sustainable development. According to the same implementation report, the work on a National Vision for Sustainable Development in the Context of Rio+20 and EU integration in 2012 greatly helped to raise awareness of and commitment to sustainable development, but systematized awareness-raising activities on sustainable development were lacking.

As at September 2018, most of the seven strategic commitments of the NSSD are still largely relevant. The first strategic commitment (*Ensuring EU accession*) remains the key issue for the country. Good progress was achieved with regard to the second

commitment (*Raising awareness and commitment to sustainable development*) and the third one (*Introducing E-government as the key sustainable development implementation tool*). Less progress was achieved with regard to the fourth commitment (*Streamlining the public sector through organizational development and institutional strengthening based on the concepts and principles of sustainable development, including cross-cutting and integrated strategic and participatory work*). Regarding the seventh commitment (*Implementation of demonstration and pilot projects in the early phase of implementation of the NSSD*), many of the 35 demonstration and pilot projects identified in the second annex to the NSSD have been implemented.

The piloting exercise was useful for the country in trying out new solutions and approaches. The available information is not sufficient to assess progress with implementation of the fifth and sixth NSSD commitments (*Streamlining the banking, funding and financial infrastructure, so that investment and running costs are readily available for sustainable development projects and activities, and Streamlining the private sector so that the private sector is developing based on sustainable development principles*).

As at September 2018, the 2010 NSSD still lacks an action plan to implement it. The drafting of an action plan was completed in 2015 but the plan was not adopted. In late 2015, it was envisaged to integrate the Sustainable Development Goals into the draft action

plan for the NSSD but this work has not been undertaken. Undoubtedly, the NSSD is a framework document that clearly identifies priorities for the country. The NSSD does not “contradict” the 2030 Agenda for Sustainable Development adopted by the United Nations General Assembly in 2015 but does not comprehensively cover all the aspects of the 2030 Agenda. The summary list of 86 indicators of sustainable development included in the first annex to the NSSD was designed for the purposes of the NSSD and is not aligned with the 2030 Agenda’s Global Indicator Framework.

National Programme for the Adoption of the Acquis Communautaire

The NPAA includes short- and medium-term priorities for approximation of the national legislation with the EU acquis, including Chapter 27 – Environment. The NPAA is revised annually and adopted in December for the coming year. The last revision of the NPAA for the period 2019–2021 was prepared in August 2018, but, as at December 2018, has not been adopted.

Environmental policy documents

Second National Environmental Action Plan

A National Environmental Action Plan (NEAP), to be prepared every six years, is supposed to be the centrepiece of the planning system in the environmental field, as required by the Law on Environment.

Photo 1b: Protected Area Jasen



The NEAP should serve as a basis for the preparation of local environmental action plans (LEAPs). As at September 2018, no evaluation of the implementation of the 2006 Second NEAP designed for the period 2006–2012 had been conducted. No third NEAP was developed as no funding was allocated for this purpose by the Ministry of Finance in response to repeated proposals from the Ministry of Environment and Physical Planning. Public officials in the Ministry of Environment and Physical Planning concur that, if a third NEAP ever materializes, its structure should be changed and tailored to the needs of the EU accession process.

Strategy on Environment and Climate Change for the period 2014–2020

The 2018 Strategy on Environment and Climate Change for the period 2014–2020 was developed in 2014 but adopted only in January 2018. It includes an action plan with measures, outcomes and indicators but not the responsible authorities and financial resources. The Strategy is structured upon the thematic issues of Chapter 27; for each issue it describes the existing problems and objectives to be attained. In fact, the Strategy is more or less a substitute for a third NEAP. The drawback is that it is poorly known in sectoral ministries.

Air

The 2012 National Plan for Ambient Air Protection for the period 2013–2018 defines measures for air quality protection and improvement and identifies the institutions responsible for their implementation and financial resources. Measures refer to air quality monitoring, reduction of emissions from industry, transport and agriculture and human health protection. There is no system for monitoring the implementation of each measure and no data are available at the Ministry of Environment and Physical Planning about the level of implementation.

The 2012 National Programme for the Gradual Reduction of the Quantities of Emissions of Certain Pollutants for the period 2012–2020 is a longer-term document that identifies measures for emissions reduction of sulphur dioxide, nitrogen oxides, ammonia, VOCs, total suspended particulate matter (PM) and carbon monoxide. The Programme was revised for the period 2016–2030 due to new reduction commitments but the update was not finalized.

The 2017 National Emission Reduction Plan was prepared during the period 2015–2017 in accordance with the country's commitments under the Energy Community. It covers all large combustion plants.

Key challenges for development of the policy documents on air protection and their implementation are related to there being insufficient staff at both central and local levels and insufficient funding (e.g., of the planned funds in the annual programme for air quality monitoring, only 31–42 per cent are approved).

Climate change

The policy framework on climate change builds on the 2018 Strategy on Environment and Climate Change for the period 2014–2020, three national communications and two biennial reports submitted by the country under the United Nations Framework Convention on Climate Change (UNFCCC) and the 2015 intended nationally determined contribution (INDC). The country had a National Strategy for the Clean Development Mechanism (CDM) for the first commitment period, 2008–2012, under the Kyoto Protocol, which defined the priority areas for CDM and potential CDM projects. In the period 2009–2014, the country registered seven CDM projects. As at September 2018, the Ministry of Environment and Physical Planning intends to develop a long-term strategy on climate action.

A 2013 Climate Change Communication Strategy and Action Plan was developed with an aim of engaging key stakeholders on the national and local levels and raising their awareness on issues pertaining to climate change. It includes three levels of engagement with climate issues – the city, the workplace and the household. The report on implementation of the strategy and its action plan in the period 2013–2016 shows many achievements at all three levels but acknowledges that the system for monitoring implementation is insufficiently developed. A new action plan was prepared for the period 2017–2020 to implement the Climate Change Communication Strategy.

Waste

The 2008 Strategy for Waste Management for the period 2008–2020 is still valid. The 2009 National Waste Management Plan for the period 2009–2015 has already ceased. No evaluation of its implementation was conducted. A new national waste management plan for the period 2018–2024 is prepared and is in the process of public consultation; no SEA procedure has started yet. North Macedonia also has two valid policy documents on specific waste streams: the 2011 Programme for Management of Packaging Waste and the 2013 Plan for the Management of Waste Electrical and Electronic Equipment for the period 2013–2020. No reports on implementation of these documents were ever

prepared. It is expected that the new national waste management plan for the period 2018–2024 will incorporate chapters on packaging waste, waste from electrical and electronic equipment (WEEE) and waste batteries and accumulators (WBA).

In 2011, the Ministry of Environment and Physical Planning prepared a Plan for Closing of Non-Compliant Landfills, which identified 54 priority-action non-compliant landfills. This largely remained a plan since no funding for the closure of non-compliant landfills was available. There is no policy document that explicitly targets historic pollution hotspots. In addition, the country has no policy document on asbestos and its elimination.

The most important achievements in the area of waste management include the preparation of tender documentation for new waste management infrastructure and initiation of the separate collection of electrical equipment, batteries and accumulators and packaging waste. The work ahead involves actual implementation of larger projects to improve waste management infrastructure and services. No progress has yet been achieved on end-of-life vehicles.

Water

The 2012 National Water Strategy is a long-term planning document valid until 2042. It names integrated water resources management as the main goal of water management. It specifies the objectives in the areas of protection against floods and other harmful effects of water, water use by various sectors and protection of water, including aspects of climate change. The document covers objectives to be achieved in terms of protection of natural sites of importance to water, including Natura 2000 sites. The programme of activities and measures that is part of the Strategy is not sufficiently detailed. Quantitative indicators are largely absent. No implementation reports were ever prepared.

The three main river basins are the Vardar, Strumica and Crn Drim. The Juzna Morava basin occupies a very small part (0.17 per cent) of the country's territory (map 9.1). In recent years, basin management plans were developed: the Lake Prespa management plan (Lake Prespa is in the Drin basin); Bregalnica river basin management plan (RBMP) (Bregalnica is a tributary of the Vardar); and Strumica RBMP. Work is under way to prepare management plans for Lake Ohrid and the Vardar River.

The plans for Lakes Ohrid and Prespa may be brought together to form the RBMP for Crn Drim. None of the RBMPs so far developed has been adopted by the

Government and no SEA has been done for any of them.

Nature protection

In 2018, the policy framework for nature protection was strengthened with the adoption of the National Strategy for Nature Protection for the period 2017–2027 and the National Biodiversity Strategy and Action Plan (NBSAP) for the period 2018–2023. The seven objectives of the National Strategy for Nature Protection refer to: the protection and monitoring of biodiversity and landscape diversity; identification and monitoring of geodiversity (geology and geomorphology) and heritage; incorporation of nature protection into sectoral policies; use of traditional knowledge and innovation for nature conservation; improvement of the legislative framework; education; and sustainable and effective models of funding for protection and sustainable use of nature. The action plan that is part of the National Strategy for Nature Protection details the studies to be performed and documents to be prepared, including the red lists and red books that are planned to be adopted by 2024. Several measures aim at preparing the country for Natura 2000 through better description and understanding of potential areas for the Natura 2000 network.

The NBSAP for the period 2018–2023 includes analysis of the implementation of the 2004 Strategy and action plan in the period 2003–2013. It concludes that only 29 per cent of activities were realized, 26 per cent were partially realized and 44 per cent remained unrealized. Major impediments for implementation included: lack of financial resources; low prioritization of biodiversity conservation; lack of capacity in the Ministry of Environment and Physical Planning; insufficient coordination and cooperation between the departments in the Ministry, as well as with other relevant ministries; non-compliance with the legislation (illegal fishing, illegal logging, etc.); and slow procedures for proclamation of new protected areas.

The strategic goals of the new Strategy include: (i) overcoming the root causes of loss of biodiversity through its integration across the whole society; (ii) reducing direct and indirect pressures on biodiversity; (iii) improving the status of biodiversity by conserving ecosystems, species and genetic diversity in order to increase the benefits of biodiversity and ecosystem services; and (iv) improving the knowledge and availability of information on biodiversity.

Several species conservation action plans are in place.

Local level

In 2011, North Macedonia was quite advanced in environmental planning at the local level: 64 of the then 84 municipalities and the City of Skopje had developed LEAPs as per requirements of the Law on Environment, though some LEAPs were outdated and required revision. As at September 2018, the LEAP instrument has largely been set aside, although the Law on Environment still requires the adoption of LEAPs for a six-year period and their regular updating. A study on LEAPs was prepared and some work on updating the methodology for preparation of LEAPs took place in 2015–2016 but this was not followed by the preparation and adoption of new LEAPs. The Ministry of Environment and Physical Planning has no information as to how many LEAPs are currently valid. It seems that no LEAPs have been developed since 2013.

The most common environment-related documents at municipal level are a waste management plan for an LSGU (developed by most LSGUs). At regional level, regional waste management plans have been developed for seven of the eight regions.

Municipalities have competences over the development of short-term action plans for air protection. Furthermore, at the level of zones and agglomerations, municipalities should develop plans for improvement of air quality in zones and agglomerations where air quality is above the limit values. So far, only the municipalities of Bitola, Skopje and Tetovo have prepared short-term action plans for ambient air protection. The municipality of Bitola has developed and adopted an air quality programme, in 2013. Air quality plans for the agglomeration of Skopje and for Tetovo municipality were adopted in 2017. An ambient air quality plan for Veles municipality was adopted in 2017.

The City of Skopje has been particularly active on energy efficiency. In 2011, the Skopje Sustainable Energy Action Plan until 2020 was adopted as the City joined the EU Covenant of Mayors. It has developed three three-year programmes on energy efficiency (for 2012–2014, 2015–2017 and 2018–2020). The City of Skopje also developed a climate change strategy, “Resilient Skopje”, in 2017 (chapter 7).

Sectoral development with a possible impact on the environment

Spatial planning

The system of spatial planning builds on the 2004 Spatial Plan and also includes spatial plans for the

regions, municipalities, other localities, protected areas, water bodies and important water springs.

The 2004 Spatial Plan includes a section on protection and improvement of the environment and of the natural and historical heritage, and development of tourism. Nevertheless, it faces serious criticism as it does not properly take into account the environmental requirements. In particular, it does not include future Natura 2000 and Emerald sites. As at September 2018, the Ministry of Environment and Physical Planning has started the procedure to prepare the new plan.

Energy

The country relies heavily on fossil fuels (low-grade lignite and oil) and hydropower and is dependent on electricity imports. In 2010, it adopted three key documents for the energy sector: the 2010 Energy Development Strategy until 2030, originally drafted for the period 2008–2030; the 2010 Strategy for Improvement of Energy Efficiency by 2020; and the 2010 Strategy for the Use of Renewable Energy Sources until 2020, later detailed through several action plans.

The 2010 Energy Development Strategy until 2030 was followed by the 2013 Programme for Implementation of the Energy Development Strategy in the period 2013–2017. The 2010 Energy Development Strategy until 2030 faced major criticism because of the nuclear power plant scenario described within it as one of the options. Moreover, the Strategy was and still is criticized for its excessive focus on hydropower and insufficient attention to other RES, such as biomass.

The 2018 Central and Eastern Europe (CEE) Bankwatch study on update of financing for hydropower in protected areas in Southeast Europe states that 167 greenfield HPPs have been built since 2005 or are still planned in the country, of which 67 are in protected areas. As at September 2018, a new national energy development strategy is under draft.

With regard to energy efficiency, both the second and third National Energy Efficiency Action Plans were adopted with delays. The third National Energy Efficiency Action Plan for the period 2016–2018, adopted in 2017, had the energy saving target of 9 per cent (148.72 ktoe) by 2018. This target has not been achieved. The Energy Efficiency Fund has not yet been set up. No energy service companies (ESCOs) have been established.

Under the Energy Community commitments to increase the share of RES, the country has a target of

28 per cent in gross final energy consumption in 2020. In April 2017, the Government amended the 2015 Renewable Energy Action Plan until 2025 with vision until 2030 to take into account lower biomass baseline data. In spite of this, the Action Plan is not designed to achieve the target of 28 per cent. It envisages achieving a 23.9 per cent share in 2020; meeting the country's 28 per cent target is foreseen only in 2030 (i.e. under the Strategy for the Use of Renewable Energy Sources until 2020). In November 2018, the Energy Community's Ministerial Council has adopted a decision lowering the country's 2020 target for the share of RES in gross final energy consumption from 28 per cent to 23 per cent. The decision was adopted as a result of a review of the 2020 renewables target requested by the country due to the revision of the country's biomass statistics.

The preliminary data for 2016 indicate an 18.2 per cent share of RES in gross final consumption, after 19.5 per cent and 19.6 per cent in 2015 and 2014 respectively.

Industry and mining

The key strategic document in the industrial and mining sector is the 2009 Industrial Policy for the period 2009–2020. It focuses on five key areas, including the development of eco-friendly products and services. The latter envisages measures to increase awareness among manufacturers and consumers of ecological production, measures on energy efficiency, the greening of tax reform, support to development of certification of organic producers, development and commercialization of new ecological products and services, and green public procurement.

An assessment of the implementation of the Industrial Policy for the period 2009–2020 conducted in 2017 as part of the preparation of the new policy points to: low financial allocations for implementation of the document; weak reporting on implementation and weak monitoring of the use of public funds; overlaps with other strategies and action plans and lack of a focused “industrial” agenda; the need to supplement the resources allocated for the Industrial Policy through donors/international financial institutions; and the importance of establishing good donor coordination and intergovernmental coordination mechanisms.

As at September 2018, an industrial strategy with a focus on the manufacturing sector, accompanied by an action plan, has been drafted to replace the 2009 Industrial Policy. Green industry and green manufacturing are among its strategic objectives.

There is no strategic document on mining, despite the fact that this sector has been actively developing in the past 10 years, with numerous concessions granted for geological exploration and exploitation, and despite the requirement to develop such a national strategy in the 2012 Law on Mineral Resources. No policy document addresses the reduction of environmental impacts from mining, despite high levels of public concern over the environmental impacts of new gold and copper mines. No study on the environmental impacts of the mining sector has been done.

Agriculture

The 2014 National Strategy for Agriculture and Rural Development for the period 2014–2020 covers wine production, horticulture, crops and livestock, fisheries, apiculture and forestry. It recognizes the need for wider application of the agroecological approach in agricultural production through introducing good agricultural practices that protect the environment. The 2012 National Programme for Development of Agriculture and Rural Development for the period 2013–2017 and the 2018 National Programme for Development of Agriculture and Rural Development for the period 2018–2022 are instruments to implement the National Strategy. They include targeted measures, such as subsidies to farmers for drip irrigation and for digging wells in groundwater to manage water efficiently.

The current (second) National Plan for Organic Production covers the period 2013–2020. The evaluation of implementation of the first plan covering the period 2008–2011 was conducted when the second one was prepared. The first plan had a target to increase the arable area under organic crops to 2 per cent of total arable agricultural land. This target was not achieved. In fact, in 2016, the country had 0.63 per cent of the arable area under organic production (3,239.88 ha), and, in 2018, this share is still less than 1 per cent. The second plan includes a target for 2020 to achieve 4 per cent of the total arable agricultural land being under organic production and 4 per cent of the total livestock being organic livestock (including beekeeping and fisheries).

Organic production is not developing rapidly due to a number of factors. State extension services are provided by the Government, including with regard to organic farming, but have so far not been able to effectively promote organic farming. Farmers receive support (subsidies) to introduce organic production but not many apply for such subsidies. Farmers are not aware of plant protection products that are allowed in organic production and such products are not available on the market. The Ministry of Agriculture, Forestry

and Water Economy intends to promote the use of such products for both organic and conventional crops. Although some campaigns were conducted, public awareness of the benefits of organic production remains insufficient. Promotion of organic agriculture also faces a capacity issue: as at September 2018, only three staff in the Ministry deal with organic agriculture. No separate strategy on irrigation and drainage exists. Some issues related to development of irrigation are tackled in the National Strategy for Agriculture and Rural Development for the period 2014–2020.

Forestry

The 2006 Strategy for Sustainable Development of Forestry, valid until 2026, covers forests, forestry, non-timber forest products and game management and addresses planning, information, enforcement, education and training and research. No reports on implementation of the Strategy were prepared; however, experts believe almost nothing was implemented.

One of the key measures of the Strategy that was not implemented is the establishment of an Agency for Forests and Hunting. Another key measure – to increase the forest-covered area through afforestation of bare ground – has been a challenge. The land area covered by forests increased from 36.9 per cent in 2009 to 38.9 per cent in 2017. However, while in the late 1980s artificial afforestation was applied to 5,000–6,000 ha/year, this area dropped to 2,106 ha in 2006 – the first year of implementation of the Strategy – and reduced to as little as 1,044 ha in 2016 (of which only 244 ha were afforested on bare ground).

Barriers for implementation of the Strategy are partially related to the availability of data. No national forest inventory exists. Forest health monitoring does not work properly, since there are issues with continuity of information on the same monitored plots. The country is well known for its non-timber forest products, but data on the quantity and value of removed products are not available. Collectors of such products are not trained to harvest sustainably. Among the successes in implementation of the Strategy has been the introduction and development of forest certification. In 2018, the national forest certification system was granted endorsement for the first time under the Programme for the Endorsement of Forest Certification.

Transport

The National Strategy for Aviation Development for the period 2013–2018 includes chapters on protection

of the environment and environmental sustainability. These chapters describe the necessary adjustments for environmental protection from the expected increase in the volume of air transport. They address noise monitoring and reduction of noise, waste management and wastewater treatment. As at September 2018, there is an ongoing project for the preparation of new national strategy for aviation development for the period 2021–2030.

The National Transport Strategy for the period 2007–2017 had important objectives in the areas of connectivity, transport safety, accessibility and mobility, environmental sustainability and financing and investments. A review of its implementation was conducted during the development of the draft of the new National Transport Strategy for the period 2018–2030. The review includes almost no information on implementation of the objective on environmental sustainability. The environment-related measures under the objective on accessibility and mobility (e.g., promotion of different public transport modes and reducing the need for individual travel by car by ensuring that proper transport service is provided to and from residential areas) have not been implemented.

No city in the country has introduced an intelligent transportation system (ITS); however, as part of the implementation of the Strategy, technical documentation was prepared on the introduction of ITS along Corridor X. In addition, in 2014, a feasibility study was prepared on multimodal connectivity to analyse opportunities for developing multimodal nodes across the country. Five multimodal nodes were identified and one of them (Trubarevo, near Skopje) was strongly recommended for further development.

The draft of the new national transport strategy for the period 2018–2030 is prepared but not yet adopted. The goals of the new strategy include, among others, developing multimodal transport and improving the sustainability of the environment. SEA has been completed for the draft.

Tourism

In 2016, the share of tourism in GDP was 1.5 per cent. Foreign tourists mostly spend their time (42.36 per cent of nights spent in 2016) in the lakes area.

The country has no valid long-term strategy on tourism development. It used to have the 2009 National Tourism Development Strategy for the period 2009–2013, which was extended to 2015. In 2016, a draft tourism strategy for the period 2016–

2021 was prepared; however, it was never adopted. In order to stimulate investments in tourism, the document envisages the establishment of special tourist development zones, of which seven zones are located on the lakes (one on Lake Dojran, four on Lake Ohrid and two on Lake Prespa) and one in the mountain region. Currently, the Ministry of Economy is updating the draft for another round of consultations with other ministries.

There are annual governmental support programmes for tourism development managed by the Ministry of Economy and the Agency for Promotion and Support of Tourism. The funding for the 2018 Tourism Promotion and Support Programme is about €2.64 million, which is to be spent on promotional activities, marketing, international cooperation and tourism support activities such as creating new mountain hiking and running trails, the development of sports climbing, arrangement of paragliding sites, etc.

These activities very much rely on the country's natural characteristics and environment. However, a targeted strategy to guide efforts to promote eco-tourism or tourism in protected areas is absent. No assessment to evaluate the environmental pressures from tourism activities was conducted.

Health

The key document relating to the environment and health is the national Health 2020 Strategy, adopted in 2017. This document is aligned with the Sustainable Development Goals. In the area of environment and health it sets three strategic goals: to include all health-related factors in environmental policies; health and welfare protection from environmental risks arising from climate change, air, water, soil, chemicals, asbestos, etc.; and reduction of all kinds of environment-related health inequalities. A related strategic goal is prevention of non-communicable diseases from modifiable risk factors, including smoking, inadequate nutrition, excess weight and obesity, and physical inactivity.

In 2015, the Ministry of Health, with the support of WHO, developed an action plan for health and the environment (first with the time horizon until 2020, and later with the time horizon until 2030 to align it with the Sustainable Development Goals). The draft was finalized in early 2016 but never adopted. It is considered that adoption was blocked due to financial implications, and there is an understanding that it may be necessary to reduce the plan's ambition by prioritizing some measures to enable it to be adopted and financed. A smaller-scale action plan on environmental health, developed on the basis of the

national Health 2020 Strategy, was finalized in January 2017 but, as at late 2018, is not adopted.

The Strategy for Health Sector Adaptation to Climate Change, accompanied by an Action Plan for 2011–2015 was developed in 2008–2009 as part of the WHO Seven Country Initiative. Its implementation is positively assessed by various stakeholders. The country established a functional early warning system for heatwaves and cold waves. Public awareness of heatwaves and measures to be taken has greatly increased.

Governmental funding for the implementation of policy documents is allocated through annual budgetary programmes, such as the Programme for Systematic Surveillance over Pupils and Students or National Annual Programme for Public Health. The Ministry of Health publishes reports about implementation of these programmes on its website.

The national annual programme for public health for 2017 envisaged the adoption and promotion of the national programme for the elimination of asbestos-related diseases developed with the support of WHO during 2016, and the preparation of a national action plan for the elimination of asbestos-related diseases. However, the national programme was not adopted.

1.3 Strategic environmental assessment

Scope and responsibilities

Since late 2007, the country applies the SEA tool to strategies, programmes and plans (hereafter, planning documents). However, it does not apply to policies and legislation.

The country became a party to the Protocol on Strategic Environmental Assessment in 2013.

The legal framework for SEA is provided by chapter X of the Law on Environment and several acts of subsidiary legislation. Responsibility for conducting the SEA procedure is with the ministry (for national-level planning documents) or municipality (for local-level planning documents) that develops a planning document.

The Ministry of Environment and Physical Planning has the role of a control mechanism. It reviews the decision of the authority proposing the planning document to conduct or not to conduct the SEA procedure and, where there is a decision to conduct SEA, reviews the scope of SEA proposed. It also conducts the evaluation of the SEA report.

The areas in which SEA is required are agriculture, forestry, fisheries, energy, industry, mining, transport, regional development, telecommunications, waste management, water management, tourism, spatial and urban planning and land use.

Planning documents in these areas are subject to SEA if they set a framework for future development of projects that are subject to environmental impact assessment (EIA). SEA is implemented for all planning documents governing the management of protected areas, declared as protected areas by law, or that are likely to have effects on those areas. Formally, the country has a combined approach to screening: it uses both a list of planning documents requiring screening and case-by-case screening. Planning documents requiring the implementation of SEA are listed in the 2007 Decree on the strategies, plans and programmes, including changes to those strategies, plans and programmes, for which the procedure for assessment of their impact on the environment and on the life and health of people is mandatory.

SEA is also to be implemented for planning documents not listed in this regulation if the planning document sets a framework for future development of projects that are subject to EIA and/or is likely to have significant effects on the environment. In such a case, the criteria have been defined in the 2007 Decree on the criteria on the basis of which the decision as to whether a given planning document is likely to have a significant effect on the environment and human health shall be issued.

In 2011, amendments to the Law on Environment made scoping an obligatory step of SEA.

Implementation and capacity

In 2012, the Unit for Strategic Environmental Assessment in the Ministry of Environment and Physical Planning was transferred from the Department for Sustainable Development and

Investments to the Department for Physical Planning. Prior to 2014, one person dealt with SEA issues in the Ministry; since 2014, two staff are in charge of SEA.

These human resources are insufficient, taking into account the number of SEA dossiers reviewed by the Ministry – on average, 384 per year in the period 2011–2017 (table 1.1). The decrease in the total number of SEA dossiers is attributed to a decrease in the number of dossiers received from the local level.

Strategic environmental assessment for national-level planning documents

The number of national planning documents undergoing an SEA has increased since 2013–2014. Nevertheless, a reality check evidences that there are national planning documents prepared by sectoral ministries and adopted without an SEA procedure. Some examples include the National Plan for Organic Production for the period 2013–2020, National Tourism Development Strategy for the period 2009–2013 and National Strategy for Aviation Development for the period 2013–2018.

Another systemic issue is that ministries start the SEA procedure as the last step, after the draft planning document has been cleared through the ministerial consultations. This allows them to tick the box indicating that the SEA procedure was conducted but does not fulfil the very purpose of the procedure to examine all possible options. There are several examples of a draft planning document having been submitted several times for interministerial consultations but the SEA for that document had not been initiated.

The systemic problems with implementation of SEA have been at the root of the cases involving North Macedonia in the Standing Committee of the Bern Convention with regard to the Mavrovo National Park and the World Heritage Committee with regard to the Natural and Cultural Heritage of the Ohrid Region.

Table 1.1: Strategic environmental assessment dossiers received by the Ministry of Environment and Physical Planning, 2011–2017, number

	2011	2012	2013	2014	2015	2016	2017
Total dossiers received from LSGUs and central government bodies	488	483	430	373	430	259	226
of which:							
Suggesting that SEA procedure is needed	266	195	152	98	129	80	70
Suggesting that SEA procedure is not needed	215	235	268	274	294	179	154
of which:							
SEA procedure requested by the Ministry	..	24	46	15	6	6	4
Incomplete dossiers	7	53	10	1	7	..	2

Source: Ministry of Environment and Physical Planning, 2018.

In the latter case, the World Heritage Committee requested North Macedonia to undertake an SEA that would comprehensively assess the cumulative impacts of all infrastructure and development plans and other major projects on the World Heritage property (2017 Decision: 41 COM 7B.34).

No activities to raise awareness of the SEA requirements among sectoral ministries take place. When SEA is prepared for national-level planning documents, this usually takes place as part of a project that envisages preparation of a strategic document.

Strategic environmental assessment for local-level planning documents

The vast majority of SEA dossiers received by the Ministry of Environment and Spatial Planning come from the local level and are in the area of urban planning. At local level the capacity to prepare SEA documentation is low.

Cases in which municipalities try to bypass the SEA procedure and announce their decision not to conduct an SEA, whereas the Ministry requests them to change the decision, are not frequent; this happened, on average, in 6.2 per cent of SEA dossiers received by the Ministry in 2011–2017.

The statistics on planning documents adopted at the local level without an SEA procedure are not available. Another observation is that municipal authorities tend to do “unnecessary” SEAs in order to give contracts for the preparation of SEA reports to certain experts and companies.

Despite the decrease observed since 2011, the Ministry of Environment and Spatial Planning considers the number of SEAs initiated at the local level to be too high. One of the reasons the number remains high is that the screening does not work well.

The criteria for screening are defined in the 2007 Decree on the criteria on the basis of which the decision as to whether a given planning document is likely to have a significant effect on the environment and human health shall be issued, but the Decree is not used in practice, either by the Ministry or at the local level.

Nevertheless, since the number of national planning documents undergoing an SEA procedure increased during recent years, a decreasing trend in the total number of SEA dossiers received by the Ministry in the period 2011–2017 (table 1.1) indicates a decrease in the number of dossiers received from LSGUs and

may be evidence of improved understanding of the SEA requirements and procedure at the local level.

Capacity

A number of workshops and training courses on SEA were organized by the project “Strengthening the administrative capacities at central and local level for SEA” (2010–2011), supported by the Netherlands. Within the project, an Internet portal on SEA was established, in order to enhance public participation and provide assistance in the implementation of SEA. The website operated for several years after the project completion but is no longer available. No other training on SEA at the national or local level was organized.

The quality of SEA reports remains an issue. Preparation of an SEA report is a licensed activity and about 40–50 people possess such a licence. The problem of the quality of SEA reports is partly connected with the insufficient involvement of sectoral departments of the Ministry of Environment and Physical Planning in the evaluation of SEA reports.

Public participation

Public participation in SEA is regulated by the Law on Environment and the 2008 Decree on public participation during the preparation of regulations and other acts, as well as plans and programmes in the field of environment. There is no public participation in screening and scoping as such, but civil society organizations (CSOs) and other parties concerned may file a complaint against a decision not to undertake an SEA procedure adopted by the body proposing a planning document. When an SEA takes place, the body preparing the planning document shall publish on its website information on the draft planning document, the draft SEA report and information on the location where the draft planning document may be reviewed. This is to be followed by consultations on the draft SEA report and public hearings. The body developing the planning document shall prepare a report on the public consultations based on the outcomes of public hearings and opinions received through the public consultation process.

In practice, the country faces systemic issues with proper public participation in SEA. SEA reports and texts of draft planning documents under the SEA procedure are not easy to find on the websites of relevant authorities unless one knows exactly where to look. Another common issue is that the SEA procedure, and public participation as part of it, often starts when the planning document is at an advanced

stage of the decision-making process rather than at an early stage. For example, in August 2011, the Ministry of Environment and Physical Planning published a draft national water strategy. Following pressure from CSOs that no SEA had been conducted, on 30 September 2011, the Ministry adopted a decision on implementation of the SEA. The notification informing the public that the SEA report had been prepared and published on the website of the Ministry was posted a week later, on 7 October 2011. The SEA report was compiled in a rush and closely resembled the already existing SEA report for the 2010 Energy Development Strategy until 2030.

Monitoring and follow-up

The Law on Environment includes a requirement for monitoring the effects of implementation of planning documents. However, monitoring and follow-up are not done in practice. Sectoral ministries and municipal authorities are not aware of such a requirement. The Ministry of Environment and Physical Planning has no capacity to proactively solicit monitoring and follow-up.

Transboundary context

The Law on Environment prescribes the procedure for transboundary SEA, which is further detailed in the 2010 Rulebook on the manner of carrying out transboundary consultations. Practical experience with transboundary consultations is very limited:

- In 2013, North Macedonia acted as the party of origin when it notified Albania of the Urbanistic Plan for Touristic Development Zone Ljubanishta 1, Municipality of Ohrid;
- In 2014, North Macedonia notified Greece and Albania of the proposed amendments to the Management Plan of Galičica National Park; Greece did not respond but Albania came to public hearings;
- In 2016, North Macedonia as an affected party was invited by Albania as a party of origin for consultations on the Gas Master Plan Project of Albania but did not actually participate in the consultations.

1.4 Sustainable Development Goals

Institutional set-up

The Cabinet of the Deputy Prime Minister responsible for Economic Affairs and Coordination with the Economic Sectors is responsible for sustainable development policies and for coordination of implementation and monitoring of the Sustainable Development Goals. This office assigns the role of the

political body mandated to guide implementation of the Sustainable Development Goals to the National Council on Sustainable Development. The Council last convened in 2015.

Sustainable Development Goals in the national policy framework

In December 2015, the Cabinet of the Deputy Prime Minister responsible for Economic Affairs and Coordination with the Economic Sectors requested the assistance of the United Nations Country Team to update the 2010 National Strategy for Sustainable Development for the period 2010–2030 by mainstreaming the Sustainable Development Goals in the Strategy. A Rapid Gap Assessment was prepared during 2016 through a multi-stakeholder consultation process. Reportedly, the document includes a mapping of the national policy documents against the Sustainable Development Goals and is accompanied by recommendations on actions to be taken for each Goal.

The document was not adopted due to political crises in the country. It is not available to the public, ministries and stakeholders. As at September 2018, the Cabinet of the Deputy Prime Minister responsible for Economic Affairs and Coordination with the Economic Sectors intends to update the Rapid Gap Assessment, strengthen the National Council for Sustainable Development and establish a working group for each Sustainable Development Goal. There are also plans to prepare a voluntary national review for the high-level political forum on sustainable development in 2019 or 2020.

As at September 2018, the Sustainable Development Goals are not mentioned in any adopted strategic document at the national level. No specific effort to mainstream the Sustainable Development Goals into sectoral policy documents was applied. The Government has not conducted any assessment of the costs of implementation of the Sustainable Development Goals. The Cabinet of the Deputy Prime Minister responsible for Economic Affairs and Coordination with the Economic Sectors intends to undertake an assessment of costs and prioritization of the Goals and targets.

North Macedonia and the United Nations Country Team, in cooperation with ECE, have signed in 2016 a Partnership for Sustainable Development as the United Nations strategy for the country for 2016–2020. The Partnership summarizes the collective strategic response of the United Nations system to national development challenges over 2016–2020 and is structured around six focus areas: employment,

social inclusion, good governance, environmental sustainability, gender equality and refugees and migrants. The expected outcome, “By 2020, individuals, the private sector and state institutions base their actions on the principles of sustainable development, and communities are more resilient to disasters and environmental risks”, is aligned with nine Sustainable Development Goals, reflecting the importance of environmental protection and resilience in the global agenda. The main stakeholders in the implementation of this expected outcome are the Ministry of Environment and Physical Planning, the Ministry of Agriculture, the Ministry of Health, the Ministry of Culture, the Crisis Management Center, the National Protection and Rescue Directorate and CSOs. The Ministry of Foreign Affairs is in charge of implementation. The Partnership aligns activities under its framework with the Sustainable Development Goals, EU accession, the National Strategy for Sustainable Development and sectoral strategies in the country. Full-scale implementation of the Partnership will require an estimated amount of US\$120.9 million.

Indicators

No assessment of the availability of Sustainable Development Goals global indicators was completed in North Macedonia. The State Statistical Office (SSO) reports that it is working on such an assessment. The availability of some Sustainable Development Goals global indicators was analysed as part of the preparation of a draft action plan on environment and health in early 2016. In 2018, SSO published a book entitled “Sustainable Development” that included a compilation of sustainability-related data; some Sustainable Development Goals global indicators are covered in this book.

Awareness and ownership

In September 2018, awareness of the Sustainable Development Goals in the Ministry of Environment and Physical Planning and the sectoral ministries is insufficient. Government officials have heard about the Sustainable Development Goals but are sure that their institution is not doing any specific work on them and are convinced that specific instructions should come from the Cabinet of the Deputy Prime Minister responsible for Economic Affairs. Ownership of the Sustainable Development Goals is low, as is awareness of them among local government authorities. The level of awareness is much better among CSOs.

1.5 Institutional framework for the environment and sustainable development

Ministry of Environment and Physical Planning

Tasks and functions

The Ministry of Environment and Physical Planning is responsible for monitoring the condition of the environment; protection of water, soil, flora, fauna, air and the ozone layer against pollution; protection against noise and radiation, protection of biodiversity, national parks and protected areas; restoration of polluted areas in the environment; proposing measures for treatment of solid waste; spatial planning; spatial information system; supervision within its competence; and other activities.

The Ministry’s Strategic Plan for the period 2016–2018 specifies the tasks of the Ministry, including the alignment of legislation with the EU acquis, supervision and coordination of the work of LSGUs, international cooperation, management of climate-change-related issues and raising public awareness and involving the public in decision-making on environmental issues.

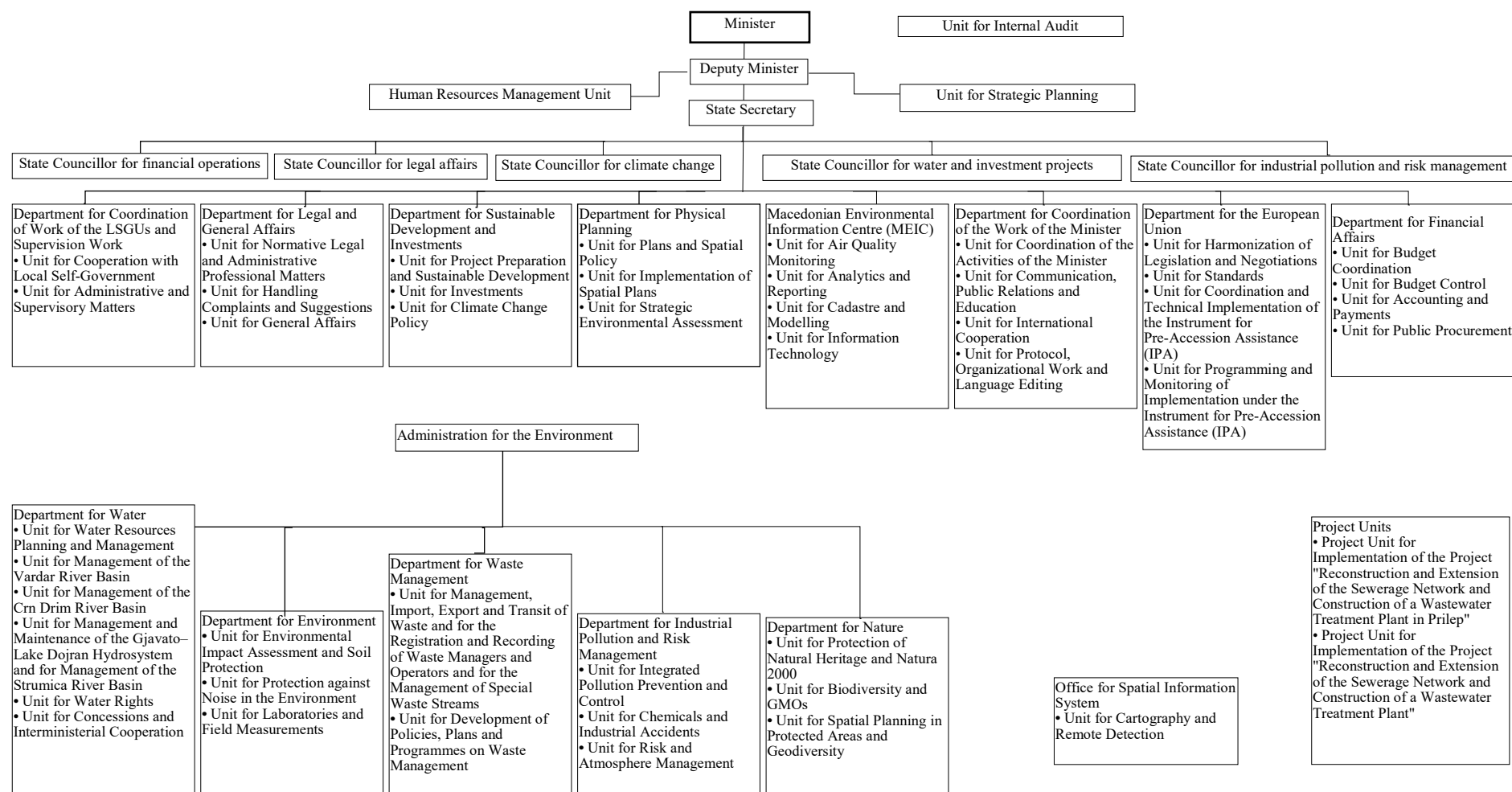
Changes in organizational structure

Since 2011, the institutional structure of the Ministry saw few changes. The only major change has been the separation of SEI from the Ministry in 2014. The establishment of an Environment Agency (or Environmental Protection Agency) by merging the Administration for the Environment, SEI and the Office for Spatial Information System did not materialize.

The Administration for the Environment and the Office for Spatial Information System are still part of the Ministry’s structure (figure 1.1).

Photo 1c: Government House



Figure 1.1: Structure of the Ministry of Environment and Physical Planning

Source: Ministry of Environment and Physical Planning, 2018.

While the Administration for the Environment is an entity under the Ministry, headed by a Director, in reality the departments within the Administration for the Environment do not differ much from the departments that are part of the Ministry and in fact function as structural units of the Ministry.

The other key change took place in 2011 when significant responsibilities in the water area were transferred to the Ministry of Environment and Physical Planning. The Ministry is now in charge of planning and management of waters, including the drafting of legislation and implementation of policy documents, water permitting, managing the water programme and the implementation of river basin management. These new responsibilities resulted in reorganization of the Department for Water of the Administration for the Environment.

The Department for Water also took over the management of the Gjavato–Lake Dojran Hydrosystem, which was previously managed by a separate legal entity.

Staffing issues

In September 2018, 278 civil servants and technical staff work in the Ministry, in comparison with the 310 posts systematized (i.e. described and approved). The approved budget limits the actual number of occupied posts. However, a more serious concern is that people working in the Ministry often deal with other tasks than their posts envisage or accomplish only part of their tasks. For example, in 2017, the Soil Unit of the Department for Environment was transformed into the Unit for Environmental Impact Assessment and Soil Protection in the same Department, and the only person in this Unit deals entirely with EIA, as the workload does not allow for working on soil issues. Formally, the Department for Water has a Unit for Management and Maintenance of the Gjavato–Lake Dojran Hydrosystem and for Management of the Strumica River Basin, but the entire unit of 16 people deals only with the hydrosystem. In the Department for Coordination of Work of the LSGUs and Supervision Work, five of the seven staff deal with waste permitting and not with the core responsibilities of the Department.

Organizational culture

There is no policy at the Ministry of Environment and Physical Planning to lead environmental protection efforts by its own example. No efforts are applied to reduce the use of paper and generation of waste in the Ministry's building, or to be energy and water efficient and carbon neutral. The Ministry coordinates the

implementation of numerous projects, but green procurement is not practised for the purchase of goods and services in the framework of those projects.

Key environment-related structural units of the Ministry

The Department for the European Union is the main vehicle to coordinate the Ministry's efforts in approximation of the environmental acquis. It has a Unit for Harmonization of Legislation and Negotiations, a Unit for Standards and two units on the EU Instrument for Pre-Accession Assistance (IPA). The Unit for Standards ensures communication between the Ministry and the Standardization Institute on the development of standards in the environmental area. The Unit for Standards is also in charge of promoting the Eco-Management and Audit Scheme (EMAS) but attention to this area of work has been insufficient because of the lack of human and financial resources. The IPA Coordinator is part of the Department for the European Union (chapter 6), as is also the RIA Coordinator. The number of staff in the Department for the European Union was enlarged when the IPA Department (previously separate) was brought into this Department, but the number of people who work on EU integration issues and harmonization of legislation has actually decreased. Only two lawyers work in the Department for the European Union. The staffing situation is clearly not sufficient in relation to the tasks, especially considering that the screening process for North Macedonia is tentatively expected to start in mid-2019.

In the Department for Sustainable Development and Investments, most people work on investments. Apart from the preparation of related inputs to policy documents, the Department does not work on sustainable development issues as this mandate has been assigned to the Cabinet of the Deputy Prime Minister responsible for Economic Affairs. The Department works with projects financed through the annual environmental investment programme (formed from the funds collected from tax on vehicle registration), which are selected from the project proposals developed by municipalities and other stakeholders. The Department also coordinates the implementation of projects funded by the Government of Switzerland. In addition, the Department coordinates the implementation of projects funded by the central Government.

In the Department for Coordination of Work of the LSGUs and Supervision Work, only two staff work on supervision and coordination of LSGUs' activities. This work is undertaken on the basis of an annual

supervision plan. Such a plan usually covers 10 municipalities and involves the Ministry checking legal matters related to environmental protection, the staff working on environmental protection, issuance of environmental elaborates, implementation of waste management and work of public enterprises. A separate report for each municipality is prepared with recommendations for improvement. The Department does not organize regular consultations with municipalities. Another five staff in this Department work on waste permitting for three types of permits (treatment and storage of waste; collection and transport of non-hazardous waste; collection and transport of hazardous waste). They receive applications for waste permits, check the documentation, receive the expert opinion of the Department for Waste Management and prepare waste permits for consideration by the Cabinet of Ministers. There is an understanding that waste permitting is consuming too much time and effort and does not allow the Department to focus on its core task – supervision and coordination. In addition, the Department services the Misdemeanour Commission and the Mediation Commission of the Ministry.

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The Department for Physical Planning deals with implementation of policies in the area of spatial planning. In particular, it coordinates the procedure of

development of spatial plans, carries out the procedure for their adoption and monitors their implementation. In 2012, the Unit for Strategic Environmental Assessment was transferred to this Department.

The Macedonian Environmental Information Centre is a structural unit within the Ministry. Its task is to collect, process, regularly update and disseminate information on the state of the environment (air, water, soil, noise, waste, nature, protected areas, etc.). MEIC runs the state automatic monitoring network on air but also collects data and information from other sources and deals with systematization, analysis, processing and presentation of data and information on the environment. MEIC prepares an Annual Report on the Quality of the Environment and every four years produces the State of the Environment Report (SoER) (chapter 4). It is responsible for environmental reporting by the country at the international level (e.g., European Environment Agency (EEA), ECE, EUROSTAT, WHO).

The Department for Water (part of the Administration for the Environment) prepares policies and participates in the preparation of legislation on water and implements the river basin management approach and water permitting. The Department issues permits for water use, discharge of wastewater and abstraction of sand and gravel from riverbeds. The country does not have the traditional river basin authorities. Rather, three units of the Department for Water play the role of river basin authorities. These are the Unit for Management of the Vardar River Basin (based in Skopje), Unit for Management of the Crn Drim River Basin (based in Ohrid) and Unit for Management and Maintenance of the Gjavato–Lake Dojran Hydrosystem and for Management of the Strumica River Basin (technical staff in charge of the hydrosystem and based in the field). These Units are meant to deal with development and implementation of RBMPs but in fact they do water permitting.

The Department for Nature (part of the Administration for the Environment) is responsible for the development of policies and provision of technical expertise in the development of legislation, and is in charge of implementation of policies and legislation in the fields of biodiversity and landscape diversity, protected areas, natural heritage and GMOs. The Department issues four types of permits: Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) permit; permit for scientific research; permit for keeping wild animals in captivity; and permit for extraction of wild plants, fungi and animals from nature outside forests (in forests, this permit is issued by the Public Enterprise “Macedonian Forests” (PEMF)).

The Department for Industrial Pollution and Risk Management (part of the Administration for the Environment) is responsible for the development of policies and provision of technical expertise in the development of legislation, and is in charge of implementation of policies and legislation in the fields of: IPPC, certain groups of chemicals (ODSs, persistent organic pollutants (POPs), mercury), prevention of and preparedness for industrial accidents and the management of historic pollution hotspots. Its Unit for Integrated Pollution Prevention and Control issues A-type permits, B-type permits for installations in protected areas and B-type permits for those municipalities that do not have sufficient expertise and capacity to issue B-type permits. This Unit also receives annual self-monitoring reports and checks their quality. In addition to the Unit for Chemicals and Industrial Accidents in this Department, there is also an Ozone and Persistent Organic Pollutants Unit outside the Ministry that deals with the implementation of international commitments in this area.

The Department for Environment (part of the Administration for the Environment) has three units: the Unit for Environmental Impact Assessment and Soil Protection (Soil Unit was merged with the Unit for Environmental Impact Assessment in 2014); Unit for Protection against Noise in the Environment; and Unit for Laboratories and Field Measurements. There is no dedicated person in the Unit for Environmental Impact Assessment and Soil Protection working only on soil protection, as well as other issues related to soil protection. The Unit for Protection against Noise in the Environment was established in 2014. The head of this Unit is the only staff member dealing with noise issues. Still, beside duties of the head related to noise, mostly collection of data for preparing strategic noise maps, the head is also involved in EIAs procedure.

The Department for Waste Management (part of the Administration for the Environment) develops policy and provides technical expertise in the development of legislation on waste (except agricultural and radioactive waste), pursues international cooperation on waste, prepares projects and coordinates their implementation, and works with municipalities and public communal enterprises. Due to the low capacity of the Department for Waste Management, the major role in waste permitting is played by the Department for Coordination of Work of the LSGUs and Supervision Work (under the Ministry). Still, some of the permits, e.g., for collective schemes and for the export, importation and transit of waste, are issued by the Department for Waste Management independently.

There are two IPA project units established within the Ministry. They deal with reconstruction and extension of the sewerage network and construction of wastewater treatment plants (WWTPs).

State Environmental Inspectorate

In 2014, the State Environmental Inspectorate became a separate legal entity with its own budget. Its Director is appointed by the Government, and this is a political appointment. Compared with 2008, when it had 22 civil servants of whom 19 were inspectors, its staffing situation did not improve. In September 2018, 24 people work in SEI, of whom 17 are inspectors (2 nature inspectors, 1 water inspector and 14 environmental inspectors).

With separation of SEI from the Ministry, North Macedonia formally separated inspection from policymaking and regulatory activities in the environmental field. However, this separation has not been effected as in most other countries, where a state inspection authority is not only separate from the ministries but also brings together all kinds of inspections (environmental, sanitary, tax, fiscal, agriculture, etc.), which provides the opportunity for inspectors to benefit from common infrastructure, equipment and legal support and strengthens their joint response to violations. In North Macedonia, SEI, the State Agriculture Inspectorate, State Inspectorate for Forestry and Hunting and other inspectorates are all separate from each other. The Inspection Council coordinates the work of 14 state inspectorates, including SEI, and several other bodies.

SEI has been strengthened through the twinning project “Strengthening administrative capacities at the central and local level for the implementation of the environmental legislation” (2015–2016), though it is difficult to assess the extent to which the materials drafted by the project are used in practice. The project helped improve planning and reporting on inspectors’ work. SEI has a website (as at September 2018, it has not been updated since 2015) and produces annual reports on its activities (but reports for 2015–2017 are not available on its website).

The negative side of the separation of SEI from the Ministry is the weakened link between the two. The inspectors receive permits issued by the Ministry and are consulted on permit applications but do not send the inspection reports to the Ministry. The Ministry receives annual self-monitoring reports from the operators but does not send them to SEI. SEI is consulted on drafts of laws and regulations developed by the Ministry but its actual influence on decision-making is limited.

*Sectoral ministries*Ministry of Agriculture, Forestry and Water Economy

The Ministry of Agriculture, Forestry and Water Economy is responsible for the development and implementation of policies on agricultural development (including organic production), protection of cattle and crops from diseases, plant protection, agricultural land management, rural development, forestry (including use and management of forests, afforestation, reforestation and forest protection), hunting, and irrigation and drainage.

Since 2011, the only water-related responsibilities remaining with the Ministry of Agriculture, Forestry and Water Economy relate to irrigation and drainage. No permits on water are issued by the Ministry. The Ministry and the State Agriculture Inspectorate have no inspection-related responsibilities on water.

The State Agriculture Inspectorate (a separate legal entity within the Ministry) controls implementation of laws and regulations on agriculture, organic production, plant protection, phyto-sanitary protection, fishing and rural development.

The State Inspectorate for Forestry and Hunting (a separate legal entity within the Ministry) controls the implementation of laws regarding forests, reproductive material from forests and hunting. It has one hunting inspector and 13–14 forestry inspectors.

The National Hydrometeorological Service (HMS), a body under the Ministry with the status of a separate legal entity, works on weather forecasting, meteorology and climatology, and hydrological monitoring.

Ministry of Health

The Ministry of Health is responsible for public health policy. Its relevant areas of responsibility include the quality of water used for drinking, chemicals management and medical waste management.

The Institute of Public Health has a Department of Environmental Health. It gathers data from the 10 regional centres of public health (CPHs), monitors and evaluates the environmental health risks, identifies the priority issues and potential risk to health conditions at the national level and informs the Ministry of Health. It works on food safety, water safety and sanitation, nutrition monitoring, occupational medicine and other issues.

Other ministries

The relevant responsibilities of the Ministry of Economy include the development and implementation of policies and legislation in the areas of energy, fuel quality, vehicle fleet, groundwater and minerals, industry and tourism. Although the Ministry of Economy has overall responsibilities for the industrial sector, the historic pollution hotspots are the domain of the Ministry of Environment and Physical Planning.

The Ministry of Transport and Communications is in charge of the development of policies and legislation on all types of transport (road, railways and aviation) and related infrastructure. It also supports the municipal authorities to develop cycling and improve transport management and public transportation. The Ministry also has large responsibilities in the field of communal affairs and infrastructure: it supports municipalities in the development of water supply, sewerage systems and the collection and treatment of wastewater.

The Ministry of Local Self-Government is responsible for decentralization policy and building a functional local self-government system, while at the same time promoting balanced regional development. The Bureau for Regional Development, a body within the Ministry with the status of a separate legal entity, works on planning documents for regional development. In addition, it coordinates the allocation of funds for the promotion of equitable regional development to LSGUs for building infrastructure (roads, water supply, schools, health institutions and tourism development).

The Ministry of Education and Science is in charge of policies for developing education and the educational system, science and innovation. It covers primary, secondary and higher education.

Others

The Cabinet of the Deputy Prime Minister responsible for Economic Affairs and Coordination with the Economic Sectors is responsible for sustainable development policies. It facilitates the work of the National Council on Sustainable Development. It is in charge of coordination of implementation and monitoring of the Sustainable Development Goals. It is also the National Designated Authority for the Green Climate Fund (GCF) and the National Focal Point for the Bern Convention.

The Secretariat for European Affairs, led by the Deputy Prime Minister in charge of European Affairs,

has horizontal coordination functions related to the issues associated with the preparation process for EU membership. It is responsible for coordinating the preparation of the NPAA.

The State Statistical Office is under the Government and not subordinated to any Ministry. In its Department of Environmental and Agricultural Statistics two staff work on environmental issues.

The Inspection Council is a separate state body, established in 2014. The Inspection Council consists of a President and six members drawn from various thematic fields. One member comes from each of the following fields: environmental protection, human health, agriculture, forestry, veterinary medicine and food safety. The Council's mission is to coordinate the work of the inspectorates and monitor the efficiency of their work. It also deals with the training of inspectors.

The Energy Agency has operated since 2007 to support implementation of the energy policy through the preparation of studies, plans and programmes with a focus on energy efficiency and RES. It coordinates financial support for projects in the domain of energy efficiency and RES and conducts awareness-raising and training in these two areas.

The Energy Regulatory Commission works on setting prices and regulated tariffs for electricity and gas supply, district heating and water services.

The Standardization Institute deals with implementation of the standardization process in the country, the preparation, adoption and publication of the national standards and acceptance of international standards.

The national parks function as self-financed public institutions: Public Institution Mavrovo National Park, Public Institution Pelister National Park and Public Institution Galičica National Park. They are responsible for administering and managing the national parks. This includes monitoring and direct protection of the national park, implementation of management practices stipulated in the management plan, scientific research and other activities.

The national park administrations do not receive governmental funding and currently depend on revenues generated by such economic activity as timber harvesting. However, some are moving to other funding mechanisms.

The Public Enterprise "Macedonian Forests" manages public forests, operates some hunting grounds,

produces planting material and maintains tree nurseries. Most of the pasture land is managed by the Public Enterprise "Macedonian Pastures". Both coordinate their activities with the Ministry of Agriculture, Forestry and Water Economy.

The Association of Local Self-Government Units (ZELS) is a non-profit organization whose members are all 80 municipalities and the City of Skopje. ZELS engages in lobbying and advocacy to improve the operation and defend the interests of LSGUs. It provides training and capacity-building to municipal authorities and offers electronic systems (servers, software, and maintenance) to municipalities.

Local-level and vertical coordination

At subnational level, there are 81 LSGUs: 80 municipalities and the City of Skopje. The country is divided into eight regions for planning purposes, but the regional level of governance does not exist.

Institutions

The municipal councils (representative bodies) usually have commissions responsible for the environment along with some other areas, e.g., urban planning or communal affairs.

Municipal administrations (executive bodies) have sectors responsible for environmental issues along with other issues. For example, in the administration of Tetovo municipality, the Department for Communal Affairs, Environment and Nature Protection (30 staff) has a unit for environmental protection with four staff positions. However, in small municipalities no staff work on environmental issues.

Municipal administrations also have inspection authorities. For example, the Department for Inspections (Municipal Inspectorate) in the administration of Tetovo municipality has three units, one of which is the Unit for Municipal Inspection, Traffic, Road and Living Environment. In this Unit there are three local authorized environmental inspectors. The situation in smaller municipalities is different; only about 50 per cent of all municipalities have appointed local authorized environmental inspectors.

Local authorized environmental inspectors check installations with a B-type permit and operators whose work is based on environmental elaborates. These inspectors cover waste, water, air, noise and soil issues. Unlike SEI inspectors, who are licensed for six years, the local authorized environmental inspectors are not licensed. One of the key issues is that the local

authorized environmental inspectors have to be “universal”, in other words be experts in air, waste, soil, etc. and lawyers at the same time. Such a combination of professional expertise is rare.

The mayor appoints local authorized environmental inspectors. SEI has no say in such appointments and exercises neither expert nor administrative supervision over them. One of the changes envisaged by the draft law on environmental inspection is to make local inspectors subject to expert supervision by SEI.

The local authorized environmental inspectors have been involved in some training by SEI but there is no evidence to suggest that they use the manuals and checklists that were developed by SEI as part of the twinning project “Strengthening administrative capacities at the central and local level for the implementation of the environmental legislation” (2015–2016).

Another issue pertaining to local authorized environmental inspectors is that only two laws (2007 Law on Protection from Noise in the Environment and 2004 Law on Waste Management) envisage that the payments initiated by local authorized environmental inspectors go to the municipalities; in all other cases they go to the central budget. In these circumstances, local authorized environmental inspectors are less motivated to detect violations of other laws.

Competences

The 2002 Law on Local Self-Government outlines the following environment-related competences of LSGUs:

- Protection of the environment and nature, including measures for protection and prevention of pollution of water, air and land, nature protection, and protection against noise and non-ionizing radiation;
- Health care, including surveillance over the risks of environmental factors on human health;
- Communal activities, including:
 - Drinking water supply;
 - Delivery of industrial water;
 - Drainage and treatment of wastewater and storm water;
 - Maintenance of public hygiene;
 - Collection, transport and treatment of municipal solid waste (MSW) and industrial waste;
 - Maintenance and use of parks, green spaces and recreational areas;
 - Regulation, maintenance and use of riverbeds in urban areas.

In addition, environment-related competences of LSGUs are defined in other laws. Under the Law on Environment, the competences of municipalities include:

- Issuing environmental elaborates and B-type permits and providing opinion on applications for A-type permits;
- Introducing compulsory measures to address exceeded emission levels and/or pollution where pollution is restricted to the territory of the LSGU;
- Promoting the development of education and public awareness on environmental issues;
- Preparing and adopting LEAPs every six years, and implementing LEAPs;
- Implementing SEA procedure for planning documents for which SEA is compulsory and screening where SEA is not compulsory;
- Applying for funds from the annual Programme for Environmental Investments;
- Carrying out authorized environmental inspections using local inspectors.

There are a number of responsibilities of municipalities under the Law on Waste Management, including the adoption of waste management planning documents, implementation of a regional approach to waste management, establishing public utility companies for collection and treatment of municipal and non-hazardous waste, monitoring and reporting on waste, etc.

Under the Law on Ambient Air Quality, the LSGUs are to prepare five-year plans for ambient air quality improvement and short-term action plans for ambient air protection when critical thresholds are exceeded. Under the Law on Waters, municipalities have responsibilities to provide water supply, ensure protection of sources of drinking water and provide for collection, disposal and treatment of wastewater. They are also responsible for protection against floods and other harmful effects of water in urban areas. Other environment-related laws also include responsibilities of LSGUs.

The legislation includes many optional (non-mandatory) competences of LSGUs: for example, under the Law on Environment, municipalities may establish local monitoring networks and may prepare an SoER for their territory. However, there are no examples of such activities. The City of Skopje used to perform local measurements of air quality at one location in the centre of the city but the equipment was removed from that location due to construction activities (chapter 8).

Capacity

Although the decentralization process started in 2002, municipalities face significant difficulties with implementation of their environment-related competences. For example, the issuing of B-type permits is a major responsibility of LSGUs but many municipalities, even the large ones, have for years not been able to do so. The process of decentralization has not been accompanied by proper training and capacity enhancement at the local level. Municipalities interact with the Ministry of Environment and Physical Planning but the provision of guidance and assistance is insufficient.

The Government recognizes the existing difficulties and had adopted two documents aimed at increasing capacity for implementation of environment-related responsibilities at the local level. The 2009 Plan for Institutional Development of the National and Local Environmental Management Capacity for the period 2009–2014 was poorly implemented due to the lack of financial resources and no implementation report was prepared. The 2017 Programme for Reform and Strengthening of the Administrative Capacities for the Implementation of the Environmental Legislation at the Local Level was adopted more recently as another attempt to address the challenges encountered. As at September 2018, the Programme is largely not known, both within the Ministry of Environment and Physical Planning and at the local level.

Participation of LSGUs in decision-making

Mechanisms for the participation of LSGUs in policy- and decision-making on the environment are available but the main obstacles are resources and capacity. For these reasons, such participation largely takes place through ZELS and through direct lobbying by large municipalities. The Ministry of Environment and Physical Planning is in contact with municipalities applying for/participating in specific projects. It is also in direct contact with ZELS. However, regular consultations and meetings with LSGUs on environmental policy issues are not practised.

Horizontal coordination

National level

An important instrument for horizontal coordination, including on the environment and sustainable development issues, is intersectoral consultation. Intersectoral consultation with concerned institutions, bodies and organizations is obligatory prior to submitting the various documents for adoption to the Government. Such consultation is required for all

documents (laws and subsidiary legislation); for laws and amendments to laws, it comes after the RIA procedure. While clear rules for intersectoral consultation procedure are in place, the 2017 SIGMA-OECD Monitoring Report notes that the regulations do not set minimum durations for consultation. In addition, ministries are not required to present an overview of the comments received during interministerial consultations or to explain how the comments were acted upon. The Report concludes that the rules for interministerial consultation are only partially followed.

Another instrument for horizontal coordination is the interministerial working groups that are often established for drafting a specific document, i.e. prior to intersectoral consultations. For example, in 2018, a working group functions under the Ministry of Economy to draft the law on energy efficiency. It includes representatives of ministries and donors, and Energy Community representatives also participate. The Government established a number of intergovernmental bodies to enhance horizontal coordination on the environment and sustainable development. Some interministerial councils and committees incorporate other stakeholders (CSOs, business, academia) along with governmental officials; however, the membership of those stakeholders is usually less numerous and not equal to that of governmental officials. There are also issues with the regularity of meetings and efficiency of work of such bodies. Some interministerial bodies, prescribed by the legislation, have never been established (e.g., the National Council on Forests envisaged by the Law on Forests).

Daily coordination among various authorities relies on relations between individual staff and in many cases functions well. For example, there is no coordination body on environmental health but cooperation takes place through formal and informal contacts. Mechanisms for coordination among the various actors involved in developing water supply, sewerage networks and wastewater treatment infrastructure (the Ministry of Environment and Physical Planning, Ministry of Transport and Communications and Ministry of Local Self-Government) are in place: these ministries are part of each other's project steering committees. However, there is no evidence that the parallel efforts of each Ministry are part of an overall single strategic vision of how the sewerage and wastewater treatment infrastructure should be developed. Coordination between the Ministry of Environment and Physical Planning and the Ministry of Local Self-Government in assisting the LSGUs to implement their environment-related competences is insufficient.

The current status of the country vis-à-vis target 17.14 of the 2030 Agenda for Sustainable Development is described in box 1.1.

Local level

Eight Intermunicipal Waste Management Boards have been established in accordance with 2012 amendments

to the Law on Waste Management to facilitate intermunicipal cooperation and approval and implementation of regional waste management plans. It is rare for two to three municipalities to cooperate on waste issues. Effective incentives for intermunicipal cooperation are absent.



Box 1.1: Target 17.14 of the 2030 Agenda for Sustainable Development

Goal 17: Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development **Target 17.14: Enhance policy coherence for sustainable development**

This target covers one of the systemic issues for the achievement of the Sustainable Development Goals. It addresses how the country works across policy sectors and coordinates the sectors to achieve joint objectives of sustainable development. It also addresses the extent to which policies in various sectors are coherent and aligned with sustainable development.

The coherency among policy documents in North Macedonia is at a medium level. The issues with the country's policy framework on the environment and sustainable development are not about coherency. Policy documents are adopted with significant delays, or never adopted, despite significant efforts having been undertaken to develop them. There is little evidence that the policy documents are used and followed since regular reporting about their implementation is not practised. The SEA instrument, which is a tool to ensure stronger and coherent integration of environmental and green economy aspects into sectoral policies, does not yet function smoothly, as there are cases when sectoral documents escape SEA.

In respect of indicator 17.14.1 (Number of countries with mechanisms in place to enhance policy coherence of sustainable development), North Macedonia has established several mechanisms for horizontal coordination on environmental and sustainable development issues at the national level, including intersectoral consultations on draft documents and the work of various intergovernmental coordination bodies.

The National Council for Sustainable Development was established in 2010 as an advisory body of the Government. It is chaired by the Deputy Prime Minister responsible for Economic Affairs and Coordination with the Economic Sectors and includes representatives from various ministries, the parliament, academia, the Economic Chamber and an CSO. In 2012, a technical working group was established to support the activities of the Council. The Council has a wide mandate that allows it to discuss all issues and problems related to sustainable development. The first meeting of the Council took place in 2012 and the fifth in November 2015. Since then the Council has not convened.

The Working Group for Chapter 27 (one of the NPAA working groups) is serviced by the Ministry of Environment and Physical Planning. Apart from various ministries, only ZELS is part of this Working Group. Subgroups are established, and heads of subgroups meet on a monthly basis. In addition, in 2014, a Sector Working Group for Environment and Climate Action was established with the Deputy Prime Minister in charge of European Affairs as its Chairperson. It discusses programme documents for the IPA and policy documents. The group includes ministries, two CSOs and some donors.

The National Climate Change Committee includes representatives of various ministries and other state bodies, academic institutions and CSOs; however, there are issues with proper representation of the ministries involved as most ministries lack designated people in charge of climate change.

There are two coordination bodies on chemical issues. The Interministerial Body on Chemicals, established around 2012 under the Law on Chemicals, is serviced by the Ministry of Health. It includes representatives of several ministries and the Chemical Industry Association. The Committee for SAICM Implementation is serviced by the Ministry of Environment and Physical Planning. It was established in 2006 for the Strategic Approach to International Chemicals Management (SAICM) project that prepared an Action Plan for SAICM Implementation for the period 2010–2015. The same body prepared a Stockholm Convention National Implementation Plan (NIP) update in the period 2012–2014 and the Minamata Initial Assessment in the period 2011–2016.

Strengthening policy coherence for sustainable development in the country requires strengthening the planning system in terms of improving the efficiency of efforts placed on the development and adoption of strategic documents and improving the use of the SEA instrument. It also requires enhancing the horizontal coordination mechanisms by ensuring regular meetings of existing interministerial committees and councils, making their meeting reports publicly available and increasing stakeholder participation in such interministerial committees and councils.

Training of staff

An annual training programme approved by the Ministry of Information Society and Administration is prepared with input from the Ministry of Environment and Physical Planning. The programme outlines the needs for general training courses, as well as specialized ones (those on environmental issues). However, the programme is poorly financed and no resources for specialized training are provided.

General training sessions are not frequent, e.g., staff of the Ministry of Environment and Physical Planning participated in only two in 2018. The Ministry's staff are encouraged to use distance learning and training by electronic means but no information is available on the numbers of staff to have undertaken such training. Specialized training on environmental issues is project based. There are no resources at the Ministry of Environment and Physical Planning for specialized training. In practice, the Ministry's staff who are involved in international cooperation develop their capacity and knowledge in their respective areas when working on projects and participating in meetings.

There is no system for training and professional development of government officials of other ministries on environmental issues. Such training takes place only as part of project activities. For example, an ongoing Regional Implementation of the Paris Agreement Project focuses on training staff in the Ministry of Environment and Physical Planning and other ministries on climate change issues. Previously, training on climate change issues was organized through the Environment and Climate Regional Accession Network (ECRAN)/Regional Environmental Network for Accession (RENA).

1.6 Assessment, conclusions and recommendations

Assessment

North Macedonia continued efforts to approximate the national legislation with the EU environmental acquis. Since 2011, few new laws were adopted on environmental issues but extensive subsidiary legislation was developed to detail the requirements of the previously adopted laws. The country struggled with implementation of the existing legislation, in particular on permitting, EPR and waste management, protected areas and noise. No serious efforts have yet been applied to transpose the climate change acquis. Overall, the speed of the approximation process in the environmental area has not been fast, but it has been commensurate with the national capacities for implementation.

The integration of environmental requirements into sectoral legislation has seen some progress but remains insufficient in the energy, industry, agriculture, transport and health sectors. It is limited in the spatial planning, mining and tourism sectors. The mechanism for intersectoral consultations preceding the adoption of laws, amendments to laws and subsidiary legislation is in place. However, it is not clear to what extent the Ministry of Environment and Physical Planning uses this mechanism to advance the environmental agenda of the economic sectors.

Strategic planning in North Macedonia suffers from the delayed adoption of strategic documents and a persistent lack of reporting on implementation. Some policy documents are never adopted despite significant efforts having been made to develop them. The central pillars of the national policy framework are the 2010 National Strategy for Sustainable Development for the period 2010–2030 and the annually revised National Programme for the Adoption of the Acquis Communautaire. As at September 2018, the Sustainable Development Goals of the 2030 Agenda for Sustainable Development are not mentioned in any strategic document adopted at the national level.

Planning in the environmental field is supposed to rely on a national environmental action plan. However, the 2006 Second NEAP designed for the period 2006–2012 was not followed by the development of a third NEAP. The Strategy on Environment and Climate Change for the period 2014–2020, developed in 2014 and adopted in January 2018, is poorly known in sectoral ministries.

Integration of environmental requirements into sectoral policies has started but has not yet reached an adequate level. The 2004 Spatial Plan and the 2010 Energy Development Strategy until 2030 face criticism for poorly reflecting environmental considerations. While existing documents in the forestry, transport, agriculture and health sectors do include environmental considerations, the level of implementation of their environment-related objectives has been insufficient. Furthermore, the country continued to struggle with proper implementation of SEA.

In terms of institutional changes, the major change since 2011 has been the separation of SEI from the Ministry of Environment and Physical Planning in 2014. An environmental protection agency has not been established.

*Conclusions and recommendations*Sustainable Development Goals implementation and follow-up

The country formally has an institutional framework for coordination of the implementation and monitoring of the Sustainable Development Goals, centred on the National Council on Sustainable Development supported by the Cabinet of the Deputy Prime Minister responsible for Economic Affairs. However, this institutional framework is not active. The National Council last convened in 2015. A Rapid Gap Assessment was prepared in 2016 through a multi-stakeholder consultation process but the document was not adopted and is not publicly available. As at September 2018, the Cabinet of the Deputy Prime Minister responsible for Economic Affairs and Coordination with the Economic Sectors intends to update the Rapid Gap Assessment, strengthen the National Council and establish a working group for each Sustainable Development Goal. As at September 2018, the Sustainable Development Goals are not mentioned in any adopted strategic document at national level. No assessment of the availability of Sustainable Development Goals global indicators was completed. Awareness of the Sustainable Development Goals among governmental officials is insufficient.

Recommendation 1.1:

The Government should:

- (a) *Revitalize the National Council for Sustainable Development and ensure its active role to guide efforts to achieve the Sustainable Development Goals and in the monitoring of progress towards them;*
- (b) *Proceed with setting up aspirational and measurable national targets through a participatory and transparent process;*
- (c) *Ensure the production of indicators to measure progress towards achievement of the Sustainable Development Goals;*
- (d) *Ensure the preparation of reports presenting the results of monitoring of progress towards achievement of the Sustainable Development Goals;*
- (e) *Ensure that the Sustainable Development Goals are integrated into future planning documents;*
- (f) *Raise awareness of the Sustainable Development Goals among central and local government authorities.*

Strategic environmental assessment

The number of national planning documents undergoing SEA has increased since 2013–2014. However, some national planning documents are prepared by sectoral ministries and adopted without an SEA procedure, despite the legal requirement to conduct one. No activities to raise awareness of the SEA requirements among sectoral ministries are conducted. There are no statistics on planning documents adopted at the local level without an SEA. Though the number of SEA dossiers received by the Ministry of Environment and Physical Planning from LSGUs has decreased over the period 2011–2017, it remains high, which suggests that screening does not work well. The criteria for screening are defined in subsidiary legislation but are not used in practice. The quality of SEA reports also remains an issue. Their poor quality is partially explained by insufficient involvement of sectoral departments of the Ministry of Environment and Physical Planning in the evaluation by the Ministry of SEA reports. There are problems with the implementation of the public participation requirements in the SEA procedure. Although the Law on Environment includes a requirement to monitor the effects of the implementation of planning documents, no monitoring and follow-up have ever been done in practice.

No regular training and capacity-building on SEA at the national and local levels takes place. Nevertheless, proper implementation of SEA is crucial for achievement by the country of target 17.14 (Enhance policy coherence for sustainable development) of the 2030 Agenda for Sustainable Development.

Recommendation 1.2:

The Government should ensure:

- (a) *That all documents subject to strategic environmental assessment (SEA) undergo an SEA;*
- (b) *That authorities proposing planning documents observe all stages and requirements of the SEA process, including monitoring, follow-up and public participation;*
- (c) *The improvement of screening procedures by raising awareness and encouraging the use of the criteria to determine which planning documents are subject to SEA;*
- (d) *The improvement of the quality of SEA reports, in particular through securing sufficient expertise for the evaluation of environmental effects;*
- (e) *Training and capacity-building on SEA.*

Transboundary strategic environmental assessment

By ratifying the Protocol on Strategic Environmental Assessment in 2013, North Macedonia demonstrated its commitment to the fully fledged and efficient use of the SEA instrument, in line with the best international practice. This implies proper conduct of transboundary consultations as part of the SEA procedure. However, the country's practical experience with transboundary consultations is very limited.

Recommendation 1.3:

The Ministry of Environment and Physical Planning should:

- (a) *Solicit the support of international organizations and donors in organizing a pilot transboundary SEA;*
- (b) *Establish bilateral practical cooperation with neighbouring counties on SEA issues, such as establishing working groups.*

Approximation process

The institutional capacities for the approximation of environmental legislation are rather low. Although, formally, the Department for the European Union of the Ministry of Environment and Physical Planning was enlarged in 2011 with an increase in the number of staff, when the two IPA-focused Units were brought to this Department, the number of people who work on EU integration issues and harmonization of legislation actually decreased. The staffing situation is clearly not adequate vis-à-vis the tasks to be accomplished. As at September 2018, the Ministry had not started preparation for the screening process, tentatively expected to commence in mid-2019.

Recommendation 1.4:

The Ministry of Environment and Physical Planning should:

- (a) *Reorganize, as necessary, and strengthen the relevant main departments, including the Department for the European Union, in the Ministry of Environment and Physical Planning, with required capacity for the European Union approximation process;*
- (b) *Ensure careful planning and allocation of tasks in the process of approximation to the European Union acquis;*
- (c) *Start preparation for the screening process to optimize tasks for policy planning and for implementation of relevant primary and secondary legislation.*

Mining and protection of soil

The mining sector has been actively developed over the past 10 years but no study on the environmental impacts of the mining sector has been done. No policy document addresses environmental impacts from mining, despite high levels of public concern about the environmental impacts of new mines.

The country has no practical experience in remediation of land that is degraded by mining. The 2012 Law on Mineral Resources envisages the tool of a financial guarantee sufficient to cover the cost of the elimination of the harmful effects on the environment. However, no solution has yet been found on the type and amount of financial guarantee and no subsidiary legislation has been developed on this issue.

There is no policy document that explicitly targets the historic pollution hotspots from mining and industry.

A draft law on soil protection was prepared in 2014 but it was not adopted, largely due to its financial implications.

Recommendation 1.5:

The Ministry of Economy and the Ministry of Environment and Physical Planning should:

- (a) *Undertake a study on the environmental impacts of the mining sector;*
- (b) *Develop a policy document to address environmental impacts from mining;*
- (c) *Seek support from other countries and international organizations to identify good practices on rehabilitation and remediation of land degraded by mining activities;*
- (d) *Develop subsidiary legislation on financial guarantees to cover the costs of rehabilitation and remediation;*
- (e) *Develop a policy document to address historic pollution from mining and industry;*
- (f) *Prepare the law on soil protection and promote its adoption.*

Greening the Ministry of Environment and Physical Planning

In many countries, national environmental authorities take the lead and show opportunities for functioning in an environmentally friendly way to other governmental bodies and non-governmental stakeholders. In North Macedonia, the Ministry of Environment and Physical Planning does not have a policy to lead environmental protection efforts by its own example. No efforts are applied to reduce the use of paper and the generation of waste in the Ministry's

building or be energy and water efficient and carbon neutral. Green procurement is not practised for the purchase of goods and services in the framework of projects whose implementation is coordinated by the Ministry.

Recommendation 1.6:

The Ministry of Environment and Physical Planning should:

- (a) *Develop and implement policies for greening the activities of the Ministry, in particular with regard to water and energy efficiency, waste management and carbon neutrality;*
- (b) *Introduce green criteria for public procurement for projects under the umbrella of the Ministry;*
- (c) *Promote the greening of activities of other governmental institutions.*

Environment-related responsibilities at local level

Municipalities face significant difficulties with the implementation of their environment-related competences. They interact with the Ministry of Environment and Physical Planning, but the provision of guidance and assistance is at an insufficient level. The Ministry does not conduct regular consultations and meetings with LSGUs on environmental policy issues. Although some training is provided by the Ministry of Local Self-Government and ZELS, no regular programmes exist for training LSGUs on environmental issues. Coordination between the Ministry of Environment and Physical Planning and the Ministry of Local Self-Government in assisting the LSGUs to implement their environment-related competences is insufficient.

The Department for Coordination of Work of the LSGUs and Supervision Work in the Ministry of Environment and Physical Planning has significant responsibilities on waste permitting. Only two staff (of seven) in this Department work on the supervision and coordination of LSGUs' activities. Waste permitting is consuming too much time and effort and does not allow the Department to focus on its core task – supervision and coordination.

Recommendation 1.7:

The Ministry of Environment and Physical Planning should intensify efforts to assist municipalities in the implementation of their environment-related competences, including by:

- (a) *Enabling all seven staff in the Department for Coordination of Work of the Local Self-Government Units and Supervision Work to provide support and guidance to Local Self-Government Units and transferring the waste permitting responsibilities to the Department for Waste Management in the Administration for the Environment, while strengthening the capacity of the Department for Waste Management;*
- (b) *Providing training to municipalities on environmental issues;*
- (c) *Establishing, together with the Ministry of Local Self-Government, Ministry of Economy, Ministry of Transport and Communications and Association of Local Self-Government Units (ZELS), a working group on land and the environment for matters related to budget planning for several issues in waste, water and air protection.*

Training of staff

A system for regular training of staff of the Ministry of Environment and Physical Planning is in place but it does not function properly. An annual training programme outlines the needs for general and specialized training. However, the programme is poorly financed and no resources for specialized training are provided. Specialized training courses on environmental issues are entirely project based. There is no system of training and professional development on environmental issues for staff in sectoral ministries.

Recommendation 1.8:

The Government should:

- (a) *Ensure the training of staff in the Ministry of Environment and Physical Planning, in particular by allocation of adequate resources to enable specialized training in line with needs;*
- (b) *Establish training schemes on environmental issues for civil servants in sectoral ministries.*

Chapter 2

REGULATORY AND COMPLIANCE ASSURANCE MECHANISMS

2.1 Permitting and licensing, including public participation

Single-medium (water, waste) permitting and integrated environmental permitting (air, water and waste) are developed and implemented in the country. There is no legal requirement for single air emission permits. Thus, air permitting has started as part of integrated environmental permitting in 2006. Wastewater discharge and waste permits for installations that are included in legally binding lists are covered by integrated environmental permitting. A permit for water abstraction (water use) has to be issued separately, prior to the issuance of a single-medium permit or an IEP. An elaborate for environmental protection (environmental elaborate) has to be prepared for all activities for which no EIA is requested, covering practically all industrial sectors, bakeries, garages and carwashes.

Integrated environmental permitting

Companies are required to have an IEP describing obligations such as emission limit values (ELVs) for emissions to air and water, as well as solid waste management procedures, and a deadline for adjustments to an operational plan to comply with legislation and reporting obligations.

There are two types of IEP: A-type and B-type. The lists of the installations for which an A-type permit and B-type permit are required to be issued are provided in Annex I and Annex II of the 2005 Decree on the determination of the activities of the installations for which an environmental permit with adjustment plan and timetable for submission of application for permit with adjustment plan is issued.

According to the legally binding lists, the A-type permit installations and processes are not only those included in Annex I of EU Directive 96/61/EC concerning integrated pollution prevention and control (IPPC Directive) but include, for example, stationary asphalt-producing facilities, concrete plants and mining facilities. B-type permit installations and processes are of lower capacity but the procedure to be followed is the same as for A-type installations. A list of the existing installations subject to an IEP was

prepared in 2005 but has not been updated since. Thus, at December 2018, it is not known exactly how many working installations in the country are required to obtain an A-type permit or B-type permit. The competent authority for the issuance of A-type permits is the Ministry of Environment and Physical Planning. The Department for Industrial Pollution and Risk Management of the Ministry of Environment and Physical Planning is responsible for the preparation of A-type permits. The competent authorities for the issuance of B-type permits are the municipalities and the City of Skopje administration.

Public access to an application for an A-type permit and the right of members of the public to present a written opinion is provided in the Law on Environment. This Law determines the possibility of organizing a public hearing by request of the public concerned when a permit for adjustment with an operational plan is going to be issued. According to environmental CSOs, the announcement in the media about an IEP procedure is usually in a place that is not always obvious and the public debate is very technical because often a non-technical summary is missing.

The calendar for existing installations to submit applications for obtaining A-type and B-type permits was defined in the Law on Environment in the period 2006–2009, according to the type of activity. The legally binding deadline for issuing A-type and B-type permits was 1 April 2014. The Law provides the possibility that, for existing installations, a permit for adjustment with an operational plan is issued as a condition for the continued operation of the installation until the conditions to obtain an IEP are fulfilled. This is valid for both types.

The adjustment to the operational plan consists of a description for each process likely to cause pollution, and a set of objectives, actions, expected results and investment required to make the process and the whole installation compliant with the ELVs. The operators may also apply for a prolongation of the deadline (2014) if they justify that they are not ready to obtain an IEP. Therefore, the final deadline for issuance of an IEP for existing installations is 1 April 2019. In fact, this approach has delayed and even postponed the implementation of the legal requirements towards IEP.

According to the Law on Environment, the A-type permit is based on the application of best available techniques (BAT). A Scientific and Technical Commission on BAT has been established to prepare guidelines with regard to the application of BAT in each industrial sector. In 2012, four national reference documents on BAT were submitted to the Ministry of Environment and Physical Planning. The BAT requirements are not included in an A-type permit, although requested by law.

The total number of issued IEPs was 380 (at November 2018), of which 156 (145 A-type permits and 11 B-type permits) were issued by the Ministry of Environment and Physical Planning and 224 B-type permits by the municipalities and the City of Skopje administration (table 2.1). Formally, the Ministry of Environment and Physical Planning does not issue B-type permits except for protected areas. The Ministry has issued 11 B-type permits (table 2.1) to support municipalities that were not able to do so.

Table 2.1: Integrated environmental permits issued, 2008–2018, number

Year of Issue	A-type permit issued by the Ministry	B-type permit issued by	
		Ministry	Municipalities and City of Skopje
2008	2	0	7
2009	7	1	11
2010	6	0	21
2011	11	1	38
2012	8	0	20
2013	19	2	29
2014	42	4	40
2015	12	0	9
2016	7	0	15
2017	21	3	20
2018	10	0	14
Total	145	11	224

Source: Ministry of Environment and Physical Planning, 2018.

As at November 2018, the Ministry of Environment and Physical Planning is processing applications for permits for adjustment with an operational plan submitted by 165 operators. There is a further list of 68 installations that have submitted applications for a permit for adjustment with an operational plan but where neither an A-type nor B-type permit has been issued, for various reasons, e.g., incomplete documentation. The applications for larger emitters, such as those engaged in energy production and the metal industry, are not yet processed, and ELVs to air and water for stationary sources are outdated. A draft permit for Thermal Power Plant (TPP) Bitola has been

prepared. A draft law on industrial emissions transposing the requirements of Directive 2010/75/EU on industrial emissions is expected to be adopted and enter into force in 2019.

Single-medium permitting

Water

The water use (water abstraction) permit is based on the provisions of the 2008 Law on Waters. The Law defines the request for a water use permit, lists activities and works requiring a permit and describes the procedure to be carried out for the issuance of a water use permit.

In the period 2011–2016, 240 water use permits for surface waters were issued for a range of economic activities, such as HPPs, fish breeding units, water supply, irrigation, food processing and gravel separation (table 2.2). The number of permits issued varied from 11 to 73 per year; the peak year was 2015, when 73 permits were issued.

There has been a clear upward tendency in the number of permits for groundwater issued annually; with seven permits in 2011 and 2012, rising to a peak of 75 in 2014 before dropping to 68 in 2016. These permits were issued mainly for the following facilities: water bottling, spa treatment, irrigation, animal farming, manufacturing, food processing, water supply, sand separation and heating.

The validity of the water use permit varies from two to 10 years, depending on the type of the water resources management facility (on an exceptional basis, prescribed by law, from 12 to 20 years).

Table 2.2: Water permits issued, 2011–2016, number

	Water Use		Water Discharge
	Surface Water	Groundwater	
2011	11	7	21
2012	38	7	37
2013	51	37	49
2014	52	75	69
2015	73	59	117
2016	15	68	21
Total	240	253	314

Source: Ministry of Environment and Physical Planning, 2018.

A wastewater discharge permit is issued for activities and works listed in the Law on Waters for which neither an A-type permit nor a B-type permit for an

installation in a protected area is required. The conditions and the manner for the issuance of a wastewater discharge permit are similar to those for a B-type permit (except for a B-type permit for an installation in a protected area).

The number of wastewater discharge permits issued annually increased steadily, from 21 in 2011 to 117 in 2015 (table 2.2). In 2016, the number was reduced again to 21. The validity of the permit varies from two to 10 years depending on the type of facility (on an exceptional basis it could be 20–23 years).

Public participation in water permitting is prescribed in the Law on Waters, including announcement of an application for a water permit in the media and ensuring public access to the information. Members of the public have the right to submit an opinion on the application within a set deadline after the announcement.

The municipalities and the City of Skopje have the right and the obligation to present a written opinion within 15 days after they receive an application for a permit.

The water permits (water use and wastewater discharge permits) should be issued in accordance with RBMPs but, at this stage, these plans are still under preparation.

The use of water, including groundwater, is also regulated by the award of a concession for water. The Ministry of Environment and Physical Planning is the administrative body authorized to receive any request for an award of a concession for water use. After review and evaluation of a request, the Ministry of Environment and Physical Planning submits a proposal for an award of a concession to be approved by the Government.

The relationship between a concession and a water use permit is provided in the Law on Waters. The conditions listed in the water use permit should also follow provisions of the Law on Concessions and Public–Private Partnership. The number of

concessionaires with signed agreements for water use for energy production in small HPPs for the period 2015–2016 was 24–25 per year. The duration of the concession for an HPP depends on its electricity generating capacity and varies from 30 years to 70 years (for HPPs generating over 20 MW).

Waste

The permitting of waste management activities is based on the provisions of the 2004 Law on Waste Management. Permitting started in 2005. The application for a permit must be accompanied by, among other documents, a decision on EIA or approval of an environmental elaborate and must include the measures defined in the EIA study or in the approved environmental elaborate. Single waste permitting is requested for collection and transport of MSW, non-hazardous and hazardous waste. For waste treatment installations included in the legally binding IEP lists, either an A-type or B-type permit is issued. Table 2.3 shows the number of waste permits issued for the period 2011–2017.

About 300 permits are issued per year for export, importation and transit of hazardous waste.

The validity of all types of waste permit is five years; those for export, importation and transit of waste are annual permits.

Legal entities in charge of hazardous waste management, treatment and/or disposal are required to undergo an EIA procedure and obtain an A-type permit or undergo a procedure for approval of an environmental elaborate and obtain a permit prior to commencing activity. According to the 2005 IPPC Ordinance (Decree on determination of the activities of installations for which an environmental permit with adjustment plan and timetable for submission of application for permit with adjustment plan is issued (No. 89/2005), every installation for landfilling, recycling or incineration of hazardous waste, incineration of MSW and landfilling of non-hazardous waste not listed in Annex I of the IPPC Ordinance is required to obtain a B-type permit.

Table 2.3: Waste permits issued, number

Permit type	2011–2017
Collection and transport of municipal solid and non-hazardous waste	206
Collection and transport of hazardous waste (incl. medical waste)	22
Waste treatment	242
Disposal of waste electrical and electronic equipment, waste batteries and accumulators, and waste oil	32

Source: Ministry of Environment and Physical Planning, 2018.

Fauna and flora

The 2004 Law on Nature Protection regulates the permitting of natural resources. There are two types of permits for the use of natural resources: (i) a permit for collection of endangered and protected wild species of plants, fungi and animals and their parts; and (ii) a CITES permit for international trade in wild flora and fauna species; and a CITES Certificate (re-export).

In the period 2011–2017, the number of permits issued for collection of endangered and protected wild species of plants, fungi and animals and their parts was, on average, 80 per year. The peak was 2017 when 114 were issued. The number of CITES permits varied over the same period, from 28 to a peak of 106 in 2016.

The 2009 Law on Hunting provides for the award of concessions for game in designated hunting areas. The procedure follows the requirements of this Law but also the requirements of the Law on Concessions and Public–Private Partnership. The proposal for award of a concession is prepared by the Ministry of Agriculture, Forestry and Water Economy and submitted to the Government for approval. The concession validity is at least 10 years.

The 2008 Law on Fishery and Aquaculture regulates fisheries in the country by awarding concessions for fishing following the requirements of the Law on Concessions and Public–Private Partnership. The proposal for award of a concession is prepared by the Ministry of Agriculture, Forestry and Water Economy and submitted to the Government for approval. The concession validity is six years.

The Law on Fishery and Aquaculture provides for the issuance of a permit for recreational fishing, based on an awarded concession. The permit is issued only after a water use permit is issued and when there is a decision for approval of an environmental elaborate by the Ministry of Environment and Physical Planning. Since 2008, when the Law on Fishery and Aquaculture was enforced, the number of permits issued per year has varied from 60 to 100.

Use of underground resources, including groundwater and mineral resources

The use of mineral resources is regulated by the 2012 Law on Mineral Resources. The first step in the process to obtain a permit for exploitation of minerals and carrying out mining activities is the award of a concession for exploitation of minerals. The Ministry of Economy is the relevant authority to receive any request by an interested entity for a concession for exploitation of minerals. The procedure for awarding

a concession is provided in this Law, but the provisions of the Law on Concessions and Public–Private Partnership are also required to be followed. After review and evaluation of any request, the Ministry of Economy submits a proposal for an award of concession to be approved by the Government. The concession validity is up to 30 years.

The request for a permit for exploitation of minerals is presented by the concessionaire. The Law on Mineral Resources provides that a decision on approval of the EIA study or the approval of an environmental elaborate must be attached to the request. According to data provided by the Ministry of Economy, the total number of concessionaires with signed agreements for exploitation of minerals and use of groundwater and mineral water is 356 (up until 17 October 2018).

Ozone-depleting substances

The Law on Environment requires the obtaining of a permit to import or export ODSs. There is no ODS production in the country. The total consumption of ODSs in 2016 was 94.7 per cent lower than the quantity registered in 2005.

Radioactive sources

Permits to undertake activities (practice) with ionizing radiation sources are required by the Law on Protection Against Ionizing Radiation and Radiation Safety. The permits are for three types of activities (practice) with ionizing radiation sources: import, export and transit. The validity of a permit is one to five years, depending on the type of the ionizing source and the conditions for its use. The permitting regime started in 2014. The total number of permits issued in the period from 2014 to September 2018 is 355. On average, the number issued annually is 57, except for the first year, 2014, when 14 were issued.

Licensing

Fauna and flora

According to the provisions of the Law on Nature Protection, the Ministry of Environment and Physical Planning issues licences for scientific research on natural heritage.

Forests

The provisions in the 2009 Law on Forests refer to the issuance of a licence for carrying out scientific research in the forests. A consent for cutting trees in forest areas is given based on the results of research done by licensed persons.

Photo 2a: Protected Area Jasen

Use of underground resources

The Law on Mineral Resources requires that legal entities registered in the Central Register for preparation of geological documentation, conducting and supervision of geological explorations should hold a licence for the registered activities. The conditions and the procedure for issuance of a licence are determined in the Law. The process of issuing licences was started by the end of 2014. The number of licences issued to legal entities in 2015 was 28.

2.2 Environmental impact assessment

Domestic context

Gaps in the regulation and challenges for implementation

The EIA process is regulated by the Law on Environment and by eight secondary legislative acts. The steps of the EIA procedure (notification, screening, scoping, preparation of the EIA study, quality assessment, public access to documentation and information, public hearing, issuing and appeal of the decision) and the licensing of the experts preparing the EIA documentation are defined in such a detailed manner in the Law and in the secondary legislation (ordinances, decrees and rulebooks) that duplications and complexity of the legal texts are unavoidable.

The best examples of overregulated process are the requirements to be fulfilled by the administration when evaluating the EIA study and the requirements to be met by the experts who are applying to obtain a

licence. The burden on the state administration carrying out the EIA procedure, as well as on the investors, the municipalities and the public concerned, is heavy.

The Law on Environment provides also for the legal effect of the EIA decision, namely the issuance of the EIA decision prior to the issuance of a permit or decision for implementation of the planned activity subject to EIA. Practice shows that implementation of this legal requirement is weak, e.g., the EIA procedure starts when the planned activity is at an advanced stage of planning or the construction stage has started.

The Law on Environment provides for public access to the EIA documentation and the requirement to hold a public debate/public hearing. However, effective public participation in the EIA procedure is facing some issues, due to:

- Delayed public announcement of the planned activity subject to EIA;
- Imprecise recording of the public consultation and public debate;
- No mechanism being in place to prove how public opinions have been considered or the reasons for their rejection in the final decision.

Linkages with other procedures to facilitate the investment process in the country are lacking in the EIA legislation, e.g., interactions with SEA, with Appropriate Assessment, which is required for evaluating the impact on biodiversity (habitats), or a possible combined procedure with the issuance of an IEP.

The competent authority for performing the EIA procedure is the Ministry of Environment and Physical Planning. Within the Ministry, the administrative body solely involved in EIA implementation is the Unit for Environmental Impact Assessment and Soil Protection within the Department for Environment, part of the Administration for the Environment. The Unit comprises a head and two experts, one of whom also works as a soil expert (chapter 1). The Unit is also tasked with the processing of environmental elaborates. The Unit covers the EIA procedure for the whole country, but the municipalities and the City of Skopje are obliged to provide all necessary data and enable public access to information and public consultation within the EIA procedure. Implementation of the EIA procedure began in 2007–2008 (table 2.4). In the period 2012–2018, the EIA procedure has been implemented at a good level, considering that the Unit in the Ministry of Environment and Physical Planning is understaffed and its workload (on average, 8 EIAs and about 207 elaborates per year).

The number of notifications of intention varied during the period from 2012 to September 2018. The need for an EIA is identified on a case-by-case basis, based on analysing the investment's specifications, size and location in line with the criteria included in the 2005 Ordinance on determining projects and criteria on the basis of which screening for environmental impact assessment shall be carried out. If the Ministry decides that no EIA is needed, it does not issue a decision that no EIA is required but informs the applicant that an environmental elaborate is needed. If the Ministry decides that an EIA is needed, it informs the applicant of this and starts the required procedures.

The Unit for Environmental Impact Assessment and Soil Protection organizes the decision-making. A special commission (EIA Commission) composed of representatives of the different units within the Administration for the Environment examines the EIA documentation and prepares a draft decision for the approval of the EIA study. The decision-making is limited: except for the Order establishing the EIA Commission, this step is not sufficiently documented, e.g., usually the members of the Commission do not present their opinion in writing; the proposed decision does not reflect the public comments. The validity of such a decision is two years.

The mechanism for control and monitoring of the implementation of the decision does not work. SEI environmental inspectors verify whether the conditions and mitigation measures proposed in the study have been implemented, but the Unit for

Environmental Impact Assessment and Soil Protection does not receive any feedback from the inspections.

Elaborate for environmental protection

According to the Law on Environment, an environmental elaborate has to be submitted by the investor to the competent authorities. There are two 2009 decrees defining lists of activities for which an elaborate has to be prepared: one of the competences of the Ministry, the other of the competence of the municipalities and the City of Skopje. There are no clear thresholds determining the competences, except capacity for some installations, such as intensive breeding of animals. The scope of the activities for which an environmental elaborate must be developed covers practically all industrial sectors, such as energy, metallurgy, chemistry, light industry (food, furniture, textiles, shoes, etc.); bakeries, garages and carwashes are also included.

The decision issued by the competent authorities is for acceptance or non-acceptance. The decision of approval of an elaborate is a precondition for launching the relevant planned activity. The total number of decisions on elaborates issued by the Ministry of Environment and Physical Planning for the period from 2012 to September 2018 is high, at 1,451 (table 2.4). The Ministry does not keep records of the decisions issued by the municipalities or the City of Skopje.

Table 2.4: Environmental impact assessment and environmental elaborates, 2012–Sept. 2018, number

	Notification of investment intention	EIA studies submitted	Decisions on elaborates
2012	12	11	0
2013	10	9	0
2014	5	8	354
2015	11	5	414
2016	6	10	326
2017	18	6	357
2018	6	9	0
Total	68	58	1 451

Source: Ministry of Environment and Physical Planning, 2018.

The environmental inspectors from SEI, or local authorized environmental inspectors, supervise the implementation of the conditions set out in the environmental elaborate and the decision.

The EIA and the environmental elaborate are separate processes: an elaborate has to be prepared for all

activities for which no EIA is requested. At the same time, there is an overlap between the lists of activities for which an EIA must be prepared and the lists of activities requiring the presentation of an environmental elaborate, e.g., both types of lists include activities in the energy and mining sectors, heavy industry (metallurgy, chemistry), and waste treatment. The requirements for the content of the EIA study and the environmental elaborate are similar – the content of the latter presents a simplified EIA study. However, the procedures are different: the EIA procedure includes public involvement and considers public opinion in the decision-making, while the environmental elaborate is approved by the competent authorities without public participation.

Transboundary context

The provisions for carrying out EIA in a transboundary context are clearly defined in the Law on Environment. Since 2011, the Ministry of Environment and Physical Planning has started three EIA procedures in a transboundary context as a party of origin sending a notification letter to the affected party (Albania, Bulgaria, Greece). None of these procedures has been completed, for various reasons. For example, as the party of origin, the Ministry of Environment and Physical Planning has sent a notification letter for the planned construction of the HPP Lukovo Pole to Albania and Greece as affected parties. Both countries have expressed their interest in taking part in the EIA procedure, but the investor has given up the intention to implement the project.

2.3 Environmental standards

Emission standards

The 2010 Rulebook on the limit values of permissible levels of emissions and types of pollutants in waste gases and vapours emitted from stationary sources into the air sets standards for emissions into air, which are in accordance with Directive 2001/80/EC on the limitation of emissions of certain pollutants into the air from large combustion plants, Directive 1999/13/EC on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain activities and installations, and Directive 2000/76/EC on the incineration of waste. There are no legally binding standards for releases into water. The European practice is to ground the application of emission standards for air and water on the conclusions of the referent documents on BAT (as defined by EU Directive 2010/75/EU on industrial emissions).

Ambient quality standards

The 2005 Decree on limit and target values for levels and types of pollutants in ambient air, alert and information thresholds, deadlines for achieving limit and target values, margins of tolerance for limit and target values and long-term objectives prescribes the air quality limit values and the upper and lower assessment thresholds for specific pollutant substances: SO₂, NO, NO_x, PM₁₀, PM_{2.5}, CO, benzene and heavy metals, as well as the alert and information threshold for ozone. All methods for measuring the concentrations of the air pollutants are based on European standards adopted as national standards. The 2006 Rulebook on the criteria, methods and procedures for assessment of ambient air quality introduces upper and lower assessment thresholds.

The Rulebook has been amended in 2013 in order to be harmonized with Directive 2008/50/EC on ambient air quality and cleaner air for Europe and Directive 2004/107/EC relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air.

The water quality standards are defined by the 1999 Ordinance on water classification. It includes the detailed description of five classes of all waters, the indicators for their characteristics, as well as the limit values or maximum allowable concentration (MAC) of the indicators. The national categorization of surface and underground waters is based on these standards.

The noise standards are defined by the 2008 Ordinance on the pollution limits of noise levels in the environment. Subject to the Ordinance is the implementation of the noise indicators (allowable levels of noise during the day, the evening and the night), as well as the methods for measuring and evaluating noise levels in the environment.

2.4 Compliance assurance mechanisms

Self-monitoring and reporting

The Law on Environment places an obligation on operators holding an IEP or permit for adjustment with an operational plan to install and use self-monitoring equipment and to report periodically to the state environmental authorities.

Some installations with significant air emissions (e.g., thermal power plants (TPPs) in the energy sector) have installed self-monitoring equipment, but they do not submit the self-monitoring results to the authorities because the IEP for these installations has not yet been

issued. Otherwise, facilities with an A-type permit submit to the Ministry of Environment and Physical Planning an annual report on emissions from the installation for the previous year by 31 March of the following year. These reports are submitted to the Industrial Pollution and Risk Management Department and data are used mainly for calculating the annual fee for pollution.

The reports sent by the operators holding an IEP are not used for the national reporting under the PRTR, nor are they used by SEI as a basis for inspection and control of the implementation of the IEP. In fact, the operators are requested to provide relevant data for the PRTR reporting separately.

Citizen monitoring

The country has no experience with citizen monitoring so far, although there are cases of pressure being exerted by the public to monitor impacts of certain environmental pollution or damage to nature, e.g., construction of HPPs in protected areas or construction of a gas pipeline on the bed of Lake Ohrid.

Environmental audit

The Eco-Management and Audit Scheme can be applied. There have been no activities to date. The Unit for Standards within the Department for the European Union of the Ministry of Environment and Physical Planning is responsible for such matters and must cooperate with other relevant bodies to encourage companies to implement EMAS.

Inspections, including joint inspections

Environmental

The competent authority for environmental inspection at the central level is SEI, with supervision being performed by state environmental inspectors, state inspectors for nature protection and water management inspectors. As at November 2018, there are 14 environmental inspectors and two inspectors for nature protection.

SEI is in charge of conducting inspections and adopting enforcement measures for the purpose of protection from: (i) air pollution; (ii) water pollution; (iii) soil degradation and pollution; (iv) harmful noise and ionizing radiation; and (v) of biodiversity, geo-diversity and natural resources within and outside the protected areas (national parks, monuments of nature, forest parks and ornithological reserves).

The Law on Environment introduced for the first time the terms “authorized inspectors for environment of the municipality”, “authorized inspectors for environment of the City of Skopje” and “authorized inspectors for environment of the municipalities of the City of Skopje” and provided the basic provisions for their work. Supervision of the work performance of LSGUs in the environmental area is regulated by the Law.

Municipalities, including the City of Skopje, should have appointed at least one authorized inspector. Not all municipalities have done so. In the municipalities without authorized inspectors, inspections are carried out by municipal or other inspectors. In some municipalities, the same staff carry out inspections, issue B-type permits and approve environmental elaborates.

There are three types of inspections: planned, follow-up and unplanned. There is no uniform system of environmental inspection at the central and local levels in the planning of inspection or in monitoring its implementation. Differences exist in terms of the obligations and in terms of inspection at the central and local levels. SEI prepares an annual work programme and four quarterly plans. Their implementation is monitored in accordance with the obligations arising from the inspection.

For LSGUs, there is an obligation to prepare a programme for inspection, supervision of which is not subject to the Law on Inspection Supervision, and this matter is not precisely regulated in the Law on Environment.

Subject to a follow-up inspection is the implementation of the conditions set in environmental permits, decisions on EIA and environmental elaborates. SEI supervises installations holding an A-type permit, and those holding a B-type permit if they are located within a protected area. SEI is responsible for compliance checking of single-medium permits on water, waste and nature protection, as well as of decisions on environmental elaborates and EIA studies.

The authorized inspectors for environment in the municipalities and the City of Skopje are responsible for inspection at the local (municipal) level of B-type permits and the approved environmental elaborates. They have a number of delegated responsibilities in the supervision of waste management activities, e.g., control of issued waste permits and closure of old landfills.

An unplanned inspection is usually carried out following an alert or complaint by a concerned member or members of the public, but it might be requested by the Government (Council of Ministers) or the Inspection Council. According to SEI, the degree of interference by the Inspection Council in the daily work of SEI inspectors (by requesting all kinds of unplanned inspections almost on a daily basis) is such that it prevents the implementation of the inspections listed in their planning documents, and thus effective control of the most environmentally relevant facilities. In the last two years, there has been a tendency towards a decrease in the number of unplanned inspections prescribed by the Inspection Council.

In the period 2014–2017, SEI performed thousands of inspections (table 2.5); in recent years, there have been an average 2,500–3,000 inspections annually (planned, follow-up and unplanned). All inspections are documented by prepared minutes with conclusions. The peak year was 2015, with 3,617 inspections, probably because all existing installations in the country were required to have an A-type or B-type permit or permit for adjustment with an operational plan by 2014.

In the period 2014–2017, the average annual number of decisions of SEI inspectors was quite stable (270–350), with the exception of 2015, when there were 584. The number of misdemeanour charges follows a similar trend, with an annual average of about 25 and a peak in 2014 of 72.

One result of inspections – conclusions for procedure termination – varies greatly in number. The reason for the peak in 2015 is that, in that year, all previously finalized inspections with conclusions for procedure termination had to be recorded, following the requirements of the Law on Inspection Supervision.

SEI prepares an annual report and quarterly reports on inspection. Not all these documents are publicly accessible – the latest reports on SEI website are for 2015.

Forests

The scope of inspections in the area of forestry includes supervision of the implementation of forestry management plans, e.g., the status of planting, protection and cutting of trees, as well as the implementation of licences for research activities in forests. Inspections in the area of hunting are aimed at supervision of the implementation of concessions awarded for game and of the status of hunting areas. The activities of the State Inspectorate for Forestry and Hunting are defined in annual and monthly work programmes and the inspectors submit annual and monthly reports on their implementation. In some cases, the work of the state inspectors on forestry and on hunting may have to be supported by the police.

Fisheries

Inspections related to fisheries are aimed at the implementation of the concessions awarded for fishing and fish health. Reports of these inspections are presented every three months.

Photo 2b: Cleaning the riverbed



Table 2.5: Results of State Environmental Inspectorate inspection, 2014–2017, number

Type	2014	2015	2016	2017	Total
Minutes with conclusions	3 091	3 617	2 387	2 451	11 546
Decisions	394	584	274	278	1 530
Misdemeanour charges	72	29	23	24	148
Criminal charges	0	1	0	1	2
Conclusions for procedure termination	614	1 884	1 261	82	3 841

Source: State Environmental Inspectorate, 2018.

Sanitary-epidemiological

Environment-related sanitary and health inspections are aimed at supervision of the quality of drinking and bathing waters, the levels of urban noise and its impact on human health, the impact of polluted ambient air on human health, the organization and collection of medical waste (only within hospital buildings) and the safety of toys.

The inspections are planned, follow-up and unplanned. The state sanitary and health inspectors work according to annual programmes. The inspection reports are usually sent to the Director of the Inspectorate and sometimes, depending on the case, to the Minister of Health.

Industrial safety

Environment-related technical inspections apply to the supervision of work and products produced in buildings with an explosive atmosphere, the functioning of electrical products and equipment and the exploitation of mineral resources and mining activities. Following general practice, the work of the state technical inspectors is determined by an annual programme. Annual inspection reports are submitted to the Government through the Minister of Economy.

Joint inspections

There is a common practice of organizing joint inspection, involving SEI inspectors and authorized inspectors for environment at the local level, in the case of supervision of an installation with an A-type permit.

In 2017, joint inspections have been carried out with the police, Customs Administration, State Inspectorate on Transport and SEI to control the international transport of hazardous waste and report to Europol on the results.

Non-compliance response

Non-compliance is documented as a result of inspection when the conditions of environmental

permits have not been implemented or other legal requirements have not been fulfilled. Enforcement mechanisms to ensure compliance with environmental and nature legislation used by SEI are: preparation of minutes with certain conclusions which the inspected operators should follow; prescription of submission of environmental elaborates or notification of intention to the competent authority; prescription of remediation measures; defining a new deadline for achieving compliance that does not contradict the legally binding deadline; and imposition of penalties and fines.

Administrative measures

Administrative measures have to be undertaken when it is documented as a result of an inspection that the conclusions or the prescriptions of the state inspectors have not been followed or when violation of environmental legislation is registered after an alert or complaint by a concerned member or members of the public.

The public concerned should be informed about the findings and notes from the inspection. Most alerts/complaints are addressed at the local level and are within the competence of the local environmental inspectors, e.g., those relating to noise, communal waste, green areas or odour. The administrative measures consist of the imposition of penalties and fines, issuing of decisions ordering/prohibiting specific activity(ies), and submission of a request for initiation of misdemeanour proceedings.

In the period 2014–2017, SEI produced 148 misdemeanour charges (table 2.5). The existing conditions under which the charges are calculated renders this measure ineffective in preventing non-compliance and remediating pollution. Charges are not based on the amount (per ton) of polluting emissions but on the number of pollution events, and the type, scale and area (in ha) occupied by the installation; penalties are low (1,000–9,000 denars, depending on the number of events) and the charge may be reduced by half if it is paid within the prescribed deadline of eight days.

In the same period (2014–2017), 100 per cent of the inspections carried out by SEI produced minutes with conclusions and the total number of written decisions directed to the operators to undertake certain actions was 1,530. These numbers prove that the state environmental inspectors have put in a lot of effort to discipline operators and to change their behaviour towards the implementation of environmental legislation.

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Criminal measures

According to SEI, in the period 2014–2017, only two cases in the water and waste sectors were registered as criminal (table 2.5). The 2018 publication of SSO, “Perpetrators of Criminal Offences in 2017”, presents the total number of crimes against the environment and nature: usurpation of real property – 72; -devastation of forests – 7; unlawful hunting – 13; unlawful fishing – 28; torturing animals – 25; and other – 6. The majority of the criminal cases were in the forestry sector. They were processed by the State Inspectorate for Forestry and Hunting.

The measures undertaken by the state inspectors are decisions. For most of the crimes related to unlawful fishing and torturing animals, the decision was for the complaint to be dismissed; for the remainder of the crimes, when the perpetrators were known, the decision was indictment.

In the period 2010–2017, a total of 1,514 environmental crimes were reported, including 461 by unknown perpetrators (table 2.6). In 2017, of 151 reported crimes, 43 were reported by the victim (individual suffering damage), 4 by other individuals, 4 by the victim (business entity suffering damage), 9 by inspection, 88 by the Ministry of Internal Affairs, 1 by the Public Prosecutor’s Office and 1 other. In 2017, the duration of the procedure in environmental cases, from receiving a complaint to indictment, varied: the majority (30 cases) lasted 2–4 months, 29 cases lasted for up to 1 month, 21 cases lasted 1–2 months, 19 cases lasted 6–12 months, 16 cases lasted more than 12 months and 13 cases lasted 4–6 months.

As at September 2018, there is no register of public complaints received and petitions on environmental matters submitted to SEI. Reportedly, there are about 10 complaints received from the public each year. Complaints are often made by telephone and mostly relate to waste management and air pollution. SEI responds to the complaints received within eight days, including by providing the minutes from the inspection.

2.5 Environmental liability, insurance and compensation

No practical cases have been identified where the requirements of liability for environmental damage as a result of an existing activity or for immediate threat of environmental damage as a result of a planned activity are established. There is no publicly available list of operators that fall within the scope of these requirements. There are no legal obligations about environmental insurance and no evidence of such a practice.

Table 2.6: Criminal offences against the environment and nature for the period 2010–2017, number

	Total	Indictment	Unknown perpetrators
Total	1 514	576	461
Pollution of the environment and nature	26	4	9
Illegal exploitation of mineral resources	24	8	0
Usurpation of real property	200	105	0
Destruction of forests	109	19	66
Unauthorized hunting, keeping and sale of wild animals and birds	7	7	0
Illegal hunting	209	106	45
Illegal fishing	77	35	28
Torturing animals	113	47	32
Bringing dangerous materials into the country	2	1	1
Unauthorized procurement and possession of nuclear materials	4	0	3
Other	743	244	277

Source: State Statistical Office, 2018.

2.6 Voluntary compliance promotion instruments

Environmental Management System

Companies show a steady interest in the ISO 14001 certification. The average number of certifications per year is about 130, with a peak of 232 in 2017 (figure 2.1). The Economic Chamber states that all its members have been certified by ISO 14001. The Ministry of Environment and Physical Planning still encourages companies to be certified to ISO 14001 as well as to similar standards.

Labelling

The Law on Environment sets the requirements for the award of an eco-label. The competent authority is the Ministry of Environment and Physical Planning, where the Unit for Standards within the Department for the European Union is responsible for the preparation of tools for implementing activities related to eco-labelling. In the period 2011–2018, no new national criteria for the award of an eco-label were prepared or adopted. The plan according to which three national criteria are to be adopted per year was stopped due to the lack of financing of the work of the Commission on Eco-labelling. The eight standards were adopted during the period 2008–2010. They are outdated and not in compliance with the changes made in the relevant EU requirements. No eco-label has been awarded yet.

Corporate social responsibility

The Ministry of Economy coordinates corporate social responsibility (CSR) policy. The Ministry of Economy is proposing to prepare a mid-term strategy for CSR for the period 2019–2023. For the last 11 years, the Ministry of Economy has organized an annual national award for the best CSR practices to encourage companies to report regarding CSR (box 2.1). The Economic Chamber states that its members are participating in the CSR initiative. There is no official record and data on CSR practices.

Voluntary environmental reporting by companies

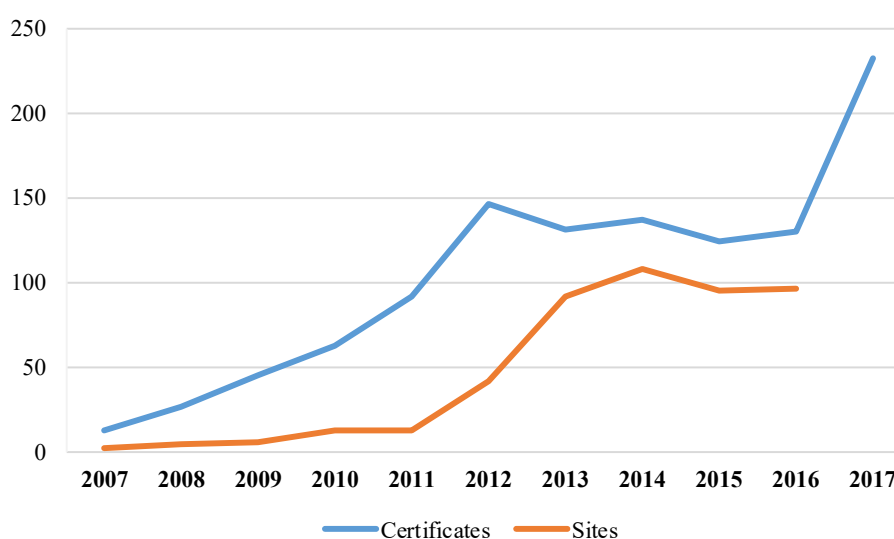
The Law on Environment provides for voluntary agreements to be concluded between companies/operators and environmental authorities. This type of agreement could include voluntary reporting on environmental issues. No voluntary environmental reporting is happening, signalling the lack of voluntary agreement.

EMAS implementation also makes voluntary environmental reporting possible. However, there are no companies in the country implementing EMAS (section 2.4, Environmental audit).

Sustainable Development Goals and targets relevant to this chapter

The current status of the country vis-à-vis target 12.6 of the 2030 Agenda for Sustainable Development is described in box 2.1.

Figure 2.1: ISO 14001 certificates and sites, 2007–2017, number



Source: ISO Survey 2017, International Organization for Standardization, 2018.

Note: 2017 data for sites are not available.



Box 2.1: Target 12.6 of the 2030 Agenda for Sustainable Development

Goal 12: Ensure sustainable consumption and production patterns

Target 12.6: Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle

Several voluntary compliance instruments can encourage companies to put sustainable practices in place. The Law on Environment provides for a range of these, including the Environmental Management System under ISO 14001 and its alternative, EMAS, the eco-label award and voluntary environmental reporting. The Ministry of Environment and Physical Planning encourages companies to be certified by ISO 14000 series, including through incentives.

The Ministry of Environment and Physical Planning is the responsible body for promoting EMAS. The Ministry has been preparing national requirements for companies' applications for eco-labelling, but the activities were put on hold and no eco-label has yet been awarded. There is no evidence of voluntary environmental reporting by companies in the country.

The Ministry of Economy is coordinating policy and practice in support of CSR uptake. A mid-term strategy on stimulating CSR for the period 2019–2023 is under preparation. For the last 11 years, the Ministry has organized an annual national award event on companies' best CSR practices in five categories, one of them dedicated to environmental protection. In the period 2007–2014, small and medium-sized enterprises and large companies reported on their CSR practices, presenting about 460 applications for an award.* The American Chamber of Commerce in the country maintains a database of companies "giving back". This online database contains information on CSR programmes and projects carried out by companies in the country, starting from 2015. Within government institutions, there are no records on CSR practices that would enable the exchange of experience and dissemination of good case studies.

According to the Economic Chamber, in the period 2011–2018, most of its members have been certified to ISO 14001 and all its members are involved in CSR practice.

There is no information about companies publishing sustainability reports. No work has been done on defining minimum requirements for companies' sustainability reports.

The Government should introduce a standard or the collection of statistics in consultation with the business sector in order to be able to fulfil monitoring and reporting requirements with regard to indicator 12.6.1 (Number of companies publishing sustainability reports).

* <http://www.southsouthworld.org/blog/46-solution/305/introducing-the-corporate-social-responsibility-in-the-former-yugoslav-republic-of-macedonia>

2.7 Legal, policy and institutional framework

Legal framework

In April 2011, the Law on Inspection Supervision entered into force. Since 2011, changes have been made to the legislation concerning environmental permitting, licensing, concessions, inspections, compliance assurance and reporting.

Under the Law on Environment, the B-type permit procedure was streamlined and the responsibilities of the local authorities issuing B-type permits were clarified. Public participation is regulated in the procedure of issuing the permit for adjustment with an operational plan. Deadlines are defined for inspections and reporting back in cases triggered by an alert or complaint by a citizen or citizens, as are the content of the elaborate for environmental protection and the keeping of records of the decisions on approved elaborates. The Law determines requirements for the

licensing of the EIA experts, the publicly accessible list of experts, the preparation of quarterly plans and reports and an annual plan and report on the inspections.

Under the Law on Waters, the procedure for obtaining a water permit was set up. The content of the permit for excavation of sand, gravel and stone from a watershed/river bank was defined and the award of a concession for water abstraction for hydropower generation was regulated. The Law on Waste Management determines the requirement for export and importation of hazardous waste and provides the definitions of the permit for collection and transport of MSW and non-hazardous waste and for the permit for waste treatment.

The Law on Nature Protection streamlines the issuance of CITES permits and certificates by determining deadlines and setting up the procedure for appeal. The Law on Mineral Resources defines the

requirements for application for award of a concession for exploitation of mineral resources, which, among other documents, is supported by an EIA study or environmental elaborate.

In the period 2016–2017, a draft law on industrial emissions was prepared under a twinning project with the purpose of transposing Directive 2010/75/EU on industrial emissions. The draft is in the process of consultations before adoption. If adopted, among other positive results, the law will oblige the permitting authorities to define ELVs (in air and water) in an A-type permit based on the BAT conclusions.

In 2016, a draft law on environmental inspection was prepared under a twinning project. The draft is in the process of consultations before adoption.

The draft is aimed at better coordination of the inspections at the central and local levels on the environment and nature protection, including better quality of planning and reporting on inspections. At the same time, existing provisions in the Law on Environment, Law on Inspection Supervision and Law on Local Self-Government that regulate environmental inspections and the responsibilities of SEI and the authorized inspectors for environment are prescribed in a detailed manner.

In general, the laws are supported by ordinances, decrees and rulebooks. The country has a complete set of legislation regarding regulatory and enforcement mechanisms, but some aspects of the legislation are partially or not implemented.

Policy framework

The regulatory and compliance assurance mechanisms are tools for implementation of the legislation and, because of this, they are not usually subject to strategic-level documents, such as policies, programmes and strategies. These mechanisms can be included in the action plans as a measure for achievement of a certain goal. As at November 2018, there are no such action plans.

Institutional framework

The Administration for the Environment is the body within the Ministry of Environment and Physical Planning involved in the implementation of environmental legislation. The Administration consists of five departments –for Environment, Nature, Water, Waste Management, and Industrial Pollution and Risk Management – which are responsible for EIA and environmental elaborates proceedings and issuing single-medium permits and

IEPs, as well as for concessions for water and licensing.

Other ministries or central administrative bodies with responsibilities in environmental permitting, concessions and licensing related to the environment are: the Ministry of Agriculture, Forestry and Water Economy (issuing permits for fishing and logging, preparing proposals for concessions for game in hunting areas, and issuing licences for scientific research in forests); the Ministry of Economy (preparing proposals for concessions for use of mineral resources, issuing licences for preparation of geological documentation, conducting and supervision of geological explorations); and the Radiation Safety Directorate (issuing permits for ionizing radiation protection).

SEI is responsible for the enforcement of environmental legislation at the central level. Since 2014, it is a separate body with its own budget, responsible for environmental inspection supervision. Its Director is the only person with a political function appointed by the Government. There are two heads (Head of Department for Water Supply Supervision and Head for Regional Unit – Polog), 14 environmental inspectors, 2 inspectors for nature protection and 1 water inspector within SEI (chapter 1). The inspectors are located in five regional departments: Skopje, Polog, Southwest and Pelagonia, Southeast, and Vardar-Southeast.

Other enforcement authorities in areas related to the environment are the State Sanitary and Health Inspectorate, the State Inspectorate for Forestry and Hunting, the State Inspectorate for Agriculture, the Agency for Food and Veterinary Medicine and the State Technical Inspectorate.

In 2014, the Inspection Council was established. Its members are elected from the following areas: supervision of the market, employment conditions and security and health conditions in workplaces; environment and protection of public health; construction, urbanism and transportation; agriculture, forestry, veterinary medicine and food safety; education, science and culture; and administration.

LSGUs perform all environmental activities at the local level. Local authorities issue local regulations on wastewater and waste and B-type permits. They control the implementation of the permits, propose the establishment of stricter ELVs in a given zone, decide the locations of non-compliant municipal landfills, supervise collection and transport of waste and finance and supervise dumpsite closures. Only a few municipalities have established or designated

divisions for the environment. In many cases, the same person plans, manages and inspects all environmental issues in the municipality.

ZELS promotes and encourages cooperation and information-sharing among its members. As at November 2018, it maintains 15 networks in different areas. The priority field of work for ZELS is training of the staff of the municipalities and the City of Skopje, e.g., training on environmental elaborates, support for the issuance of IEPs, and implementation of e-building permits, including through the information system for electronic public bidding to implement the sale and lease procedure for immovable and movable property.

The Standardization Institute is responsible for the preparation and adoption of national standards, including environmental standards. The Ministry of Environment and Physical Planning is participating in the work of most technical committees at the Institute.

The Economic Chamber contributes to better exchange of information between business/companies and the governmental institutions. The Chamber encourages its members to develop voluntary arrangements with environmental authorities, such as EMAS, eco-labelling and an Environmental Management System.

Coordination with institutions responsible for environmental protection at the national, regional and local levels

The Ministry of Environment and Physical Planning has good coordination with the Ministry of Health (on sanitary and health aspects), the Ministry of Economy (exploitation of mineral resources) and the Ministry of Agriculture, Forestry and Water Economy (use of natural resources) within the EIA procedure.

The Department for Coordination of Work of the LSGUs and Supervision Work of the Ministry of Environment and Physical Planning is responsible for supervision of the environmental work of the municipalities and the City of Skopje. According to the annual plan, 10 municipalities per year are considered for supervision. The work is carried out by a Supervisory Commission, which is established at the beginning of each year. The report contains the conclusions of the work performance in five directions: organization of work (human resources); approval of environmental elaborates; B-type permit issuing; control of waste collection; and cooperation with state inspectors. There is daily communication with LSGUs, which appear to be for consultations. The Department organizes meetings with

representatives from the Ministry's departments upon the request of LSGUs.

The coordination of the SEI staff with the authorized environmental inspectors at the local level is performed by phone or on-site meetings. Joint inspections of SEI and local authorized environmental inspectors are carried out when there is an alert or complaint about pollution caused by an A-type installation or B-type installation in a protected area.

Public registers

Public registers contribute significantly to promoting transparency and accessibility of the regulatory mechanisms (permits, licences, concessions). The Ministry of Environment and Physical Planning maintains public registers of waste permits, permits for use of natural resources and CITES permits, but they are not updated regularly (the most recent records are of 2017). There are no publicly available data about water permitting and IEPs; data about concessions for water use for energy production are available for the period 2015–2016. Data about current EIA procedures and recently approved environmental elaborates presented on the website of the Ministry are at a satisfactory level, but public registers do not exist. There is a publicly available detailed list of the licensed EIA experts.

The Ministry of Economy maintains public registers of the concessionaires with signed agreements for exploitation of minerals and use of groundwater and mineral water and of licences issued for the preparation of geological documentation.

The Ministry of Agriculture, Forestry and Water Economy does not provide public access to data about concessions on game in hunting areas or on fishing. A public register of permits for logging does not exist.

International cooperation on compliance and enforcement

The Project “Strengthening capacities for implementation of environmental legislation at local level” (January 2015–July 2016) presented detailed analysis of the competences of the LSGUs in the implementation of environmental legislation in the country. Training sessions and working meetings have been organized between staff of the Ministry of Environment and Physical Planning and the municipalities concerned and the City of Skopje. The project provided conclusions and recommendations to the Ministry of Environment and Physical Planning, ZELS and the municipalities involved in the project.

The twinning project “Strengthening the administrative capacities on central and local level for transposition and implementing new Industrial Emission Directive 2010/75/EU (IED)” (end of 2015–April 2017), delivered drafts of primary and secondary legislation in accordance with IED, central and local-level capacity-building and assessment of the economic impact of implementation of IED.

Since 2011, SEI staff have been part of EU-funded projects (on single-medium permits and IEPs). SEI was the main beneficiary of the twinning project MK 10/IPA/EN/01/14 “Strengthening the administrative capacities at central and local level for implementation and enforcement of the environmental acquis” (January 2015–July 2016). There were concrete achievements from this project: guides for environmental inspectors and operators, and checklists specific to some industrial activities, have been prepared; a draft law on environmental inspection has been produced; and a series of site inspections, including joint inspections, has been implemented with a focus on issues related to integrated environmental permitting and air and water quality.

Since May 2006, SEI has been a member of the EU Network for the Implementation and Enforcement of Environmental Law. It also is taking part in the Themis network, International Network for Environmental Compliance and Enforcement, Balkan Environmental Regulatory Compliance and Enforcement Network, Regional Environmental Network for Accession, Environmental Compliance and Enforcement Network for Accession, European Network of Prosecutors for the Environment, Interpol and Europol.

2.8 Assessment, conclusions and recommendations

Assessment

The legislation for and implementation of single-medium environmental permitting are generally well in place.

The Minister of Environment and Physical Planning signs single-medium permits as well as IEPs (A-type permits and B-type permits in protected areas). The Minister also signs the decisions for approval of EIA studies and environmental elaborates. Such practice is in contradiction with good practice in environmental governance and limits access to justice in environmental decision-making, as there is no possibility for a preliminary appeal before turning to the courts.

Since 2011, visible progress has been made in IEP issuance. Before 2011, the total number of IEPs issued by the Ministry of Environment and Physical Planning was only 16 A-type and 39 B-type permits across all LSGUs. In the period 2011–2018, there were 140 and 180 respectively. These numbers reflect the efforts made by the Unit for Integrated Pollution Prevention and Control in the Ministry of Environment and Physical Planning to compensate for delays at the municipal level and to help municipalities with the issuance of B-type permits. Even though the Ministry of Environment and Physical Planning oversees the issuing of all B-type permits, there is a lack of systematic communication and support from the central to the local level.

Since 2011, significant changes in the institutional framework for inspections occurred: in May 2014, SEI became an independent legal body with a separate budget; in the same year, an Inspection Council was established with the main task to coordinate the work of the different inspectorates in the country. In the period 2015–2016, a twinning project aimed at strengthening the administrative capacities for enforcement at the central and local levels was implemented. Despite these actions, no visible progress has been made in the organization of the inspections, e.g., there is no evidence of the application of relevant best practices for control of the A-type and B-type permits issued. The reports of the inspections are not publicly available or are outdated. Also, enforcement capacity does not keep up with the pace at which legislation and rulebooks are being enacted. The draft law on environmental inspection, which was developed under a twinning project, has not been adopted.

LSGUs have a number of legal responsibilities to protect the environment. They often suffer from a lack of capacity and resources to comply with their many responsibilities in implementing environmental legislation. This is due partly to staff shortages and partly to the lack of capacity-building. The administrative capacity to process applications for B-type permits and monitor their implementation is still limited. A good start was made in good practice in intermunicipal cooperation in the environmental area during the implementation of the project “Strengthening capacities for implementation of environmental legislation at local level”.

Since 2011, no voluntary environmental arrangements were concluded.

Conclusions and recommendations

Institutional strengthening regarding implementation of environmental legislation

The Ministry of Environment and Physical Planning hosts services linked to the implementation of legislation, such as environmental permitting (single and integrated), EIA and environmental elaborates proceedings, environmental monitoring and reporting. Keeping these functions within the Ministry does not allow separation of policy formulation from implementation. This practice is in contradiction with good practice in environmental governance and it is limiting access to justice in environmental decision-making.

Recommendation 2.1:

The Ministry of Environment and Physical Planning should propose to the Government the reorganization of the Administration for the Environment and the Macedonian Environmental Information Centre into an executive environmental agency, which should focus on the implementation of environmental legislation, ensure environmental data collection, monitoring, assessment and reporting, address nature conservation and provide expert support to the Government.

Environmental impact assessment

The legislation on EIA and environmental elaborates do not provide for a clear EIA screening process, a key step in the overall EIA process. Also, the EIA legislation does not distinguish between the role of EIA, which is required under EU legislation, and the role of environmental elaborates, which are not so required. The decision-making process is not clearly set out in the legislation and so access to justice is not provided for in a clear and transparent manner. The list of activities does not follow the annexes of the relevant EU EIA directives and, at the same time, the listed activities do not refer to national classification of activities.

Recommendation 2.2:

The Ministry of Environment and Physical Planning should undertake the necessary steps to streamline the environmental impact assessment (EIA) process and increase its efficiency for the public administration, investors and the public by:

- (a) *Bringing the list of activities included in national legislation into compliance with the list of activities laid down in annexes of the Convention on Environmental Impact Assessment in a Transboundary Context and*

relevant European Union EIA directives, and aligning the screening process with these directives, notably in terms of clarity and transparency;

- (b) *Ensuring a reasonable timeframe and opportunities for public participation, with a minimum of 30 days for public comments on EIA studies, which may, where appropriate, be extended as necessary, taking into account, among other matters, the nature, complexity and size of the proposed activity;*
- (c) *Revising the legislation on elaborates for environmental protection by limiting them to small activities outside the scope of the activities subject to EIA and giving responsibility for issuing approval of decisions for elaborates to Local Self-Government Units;*
- (d) *Providing training and methodological support under institutional strengthening projects to the staff of the Unit for Environmental Impact Assessment and Soil Protection, and to the local authorities.*

Integrated environmental permitting

Since 2011, the Ministry of Environment and Physical Planning has put significant efforts into the issuance of the A- and B-type permits in the country. Still, the current IEP process is not implemented according to the relevant EU directives. A draft law on industrial emissions aimed at the transposition and implementation of Directive 2010/75/EU on industrial emissions has not been adopted. A public register of the permits issued does not exist. There is no procedure in place that can be used to make the EU BAT conclusions binding and applicable.

The self-monitoring reports submitted each year by the operators of the permitted installations are not validated by SEI and are not used for the national PRTR.

Recommendation 2.3:

To develop further integrated environmental permitting, the Ministry of Environment and Physical Planning should:

- (a) *Promote the adoption of the draft law on industrial emissions;*
- (b) *Revise the list of installations requiring an A-type permit and bring it into compliance with the list of installations laid down in Annex I of Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions (Industrial Emissions Directive);*

- (c) *Prepare proposals for simplifying and clarifying the legislation between B-type permit and sectoral permit requirements, especially in water and waste management;*
- (d) *Abolish the practice of issuing “permit for adjustment with an operational plan” and provide industrial activities that cannot immediately comply with the integrated environmental permitting requirements a transition period defined in the integrated permit;*
- (e) *Change the rules on reporting by operators with permitted installations to make reporting a useful tool;*
- (f) *Ensure that data and information in the reports are validated by the controlling authorities and made publicly available according to the requirements of Pollutant Release and Transfer Register reporting.*

State Environmental Inspectorate and authorized inspectors for environment

Since 2011, SEI staff have worked independently of the Ministry of Environment and Physical Planning, as do all inspectorates in the country. SEI has also taken part in many institutional strengthening projects. The draft law on environmental inspection, which was developed under the twinning project “Strengthening the administrative capacities at central and local level for implementation and enforcement of the environmental acquis”, has not been adopted.

Recommendation 2.4:

The State Environmental Inspectorate should:

- (a) *Start the implementation of the outcomes of the European Union-funded projects, especially of the twinning project for which it was the main beneficiary, and organize*

training and methodological support for the authorized inspectors for environment at local level;

- (b) *Promote the adoption of the draft law on environmental inspection.*

Voluntary arrangements for the environment

No significant progress has been made since 2011 on the establishment of voluntary compliance promotion instruments on the environment.

Recommendation 2.5:

The Ministry of Environment and Physical Planning should:

- (a) *Prioritize work on the European Union Ecolabel and Eco-Management and Audit Scheme (EMAS);*
- (b) *Continue to promote the EMAS and ISO 14001 in collaboration with the Economic Chamber.*

Corporate social responsibility

CSR, including reporting regarding this practice, is the key indicator to assess progress in the implementation of target 12.6 of the Sustainable Development Goals. At present, the only initiative to encourage CSR practice is undertaken by the Ministry of Economy in organizing an annual national award for the best CSR practices.

Recommendation 2.6:

The Ministry of Economy, in cooperation with the Ministry of Environment and Physical Planning, should promote corporate social responsibility practices and encourage companies to integrate sustainability information into their reporting.

Chapter 3

GREENING THE ECONOMY

3.1 Greening the system of charges and taxes

Charges and fees related to pollutants

Air pollution

North Macedonia does not apply air pollution charges that have the measured or estimated emissions of polluting substances as the tax base.

Rather, emissions of industrial facilities are regulated by the issuance of IEPs that specify ELVs in terms of concentrations of polluting substances (chapter 2). The annual fee for the holding of an A- or B-type permit includes as one of the components a flat charge per type of pollutant, which ranges from 4,000 denars (€64) for dust to 9,000 denars (€144), e.g., for asbestos and heavy metals. This basic charge rate is subject to a penalty in the case that the company has exceeded the ELV during the past year. For each percentage point of exceeding the ELV for a given pollutant there is a corresponding percentage point increase in the charge rate. Given that the base charge rates are already low, this implies that there are no effective financial incentives for improving environmental performance; the main effect of this permit fee is to generate government revenue as a compensation for services provided.

Water pollution

The discharge of wastewater into surface and ground water is subject to a discharge permit and payment of a pollution charge. Payers are legal entities and natural persons that either do not have a facility for wastewater treatment and/or discharge untreated wastewaters and polluting substances into a receiving water. The latter is the case for most water supply companies in the country.

According to the legislation, the pollution charge comprises:

- A fixed charge, which is set at 1 per cent of the tariff of the public water service company for sewerage and wastewater treatment; and
- A variable charge, the level of which depends on the pollution load of discharged wastewater, as regulated in the permit, and which is to be used as the basis for determining the units of noxiousness

that have to be paid. The annual rate per unit of noxiousness is set at 0.4 per cent of the average salary in the country.

The variable charge is more in line with the polluter pays principle, but only the fixed charge rate has been implemented. This reflects inter alia the pervasive lack of adequate WWTPs in the country and adequate monitoring capacities. The fixed charge, moreover, is very low given the low level of sewerage tariffs. In Skopje, the fixed component of the pollution charge amounts to only some 2 euro cents (€ct) per m³.

Revenues collected from the fixed component of the water pollution charge are collected by the public water companies; they appear as a separate item on the water bill. Revenues have to be transferred into a separate treasury account; the charges are earmarked for financing water sector development. Given that the fixed component is not designed as a charge per m³, the direct consequence is that the higher the sewerage (and wastewater treatment) tariff the more the final water consumer has to pay, independently of the quality of water discharged. However, the main rationale for a water pollution charge is to recover the costs of adequate wastewater treatment for discharge of polluted wastewater and create incentives for pollution abatement.

Payments for discharge of polluting substances into water by industrial facilities subject to A- and B-type IEPs are charged in the same way as for air pollutants, i.e. only by type of polluting substances. Charge rates range from 3,000 denars (€48) for suspended solids to 9,000 denars (€144) for cyanides and other substances. These permits and related payments do not apply to the water utilities, most of which do not operate a WWTP but do discharge polluted wastewater. The pollution charges are separate from the tariff for wastewater treatment by water utilities. The pollution charges under the Law on Waters are controlled by SEI and are included in the water bill, presented separately, and are not part of any water services tariff.

Excise duties and transport-related charges

Excise duties

Energy products (engine fuels and heating fuels) are subject to a specific excise duty (table 3.1). Among the

motor fuels, there is a significant differentiation of excise rates in favour of diesel compared with unleaded petrol, although the rate on diesel was raised by 24.8 per cent effective 1 January 2018. At the same time, the excise rate for gasoil used as heating fuel nearly doubled. Other excise rates remained unchanged. The excise duty rate on unleaded petrol is close to the EU minimum rate, but rates on other motor fuels are well below this benchmark. In contrast, excise duty rates for heating fuels are above EU minimum rates, notably gasoil.

The excise duty on passenger cars is determined as a percentage of the market or customs value of the vehicle. The excise duty rate increases with the monetary value of the car. Rates range from 0 per cent for cars with a value up to €3,000 to 18 per cent for cars with a value exceeding €30,000. Most imported second-hand cars fall into the zero-tax price range. The tax base does not establish a link with environmentally relevant indicators such as CO₂ emissions per km, the engine capacity of a passenger car, the age of the vehicle or the fuel type. The past decade has, in fact, seen some quite significant changes regarding the emission standards to be observed by imported cars (box 3.1).

Vehicle registration fee

Owners of motor vehicles have to pay an annual vehicle registration fee. The fee depends on technical characteristics of the vehicle, but leaves out environmentally relevant indicators, such as CO₂ emissions and fuel type. In the case of passenger motor vehicles, the fee varies with the maximum motor power (in kW) and ranges from 70 denars (€1.15) to 210 denars (€3.25). Electric passenger cars are exempted from the fee. The revenues collected from this fee are earmarked for the Ministry of Environment and Physical Planning and are to be used for financing environmental projects.

Road user tax

At the time of the annual vehicle registration, owners of motor vehicles have also to pay a “road tax” charge for use of public roads. The amount of the fee depends on the type of vehicle (passenger car, motorcycle, bus, truck) and technical characteristics. Fees were raised most recently in July 2014.

Table 3.1: Excise duty rates on energy products

Product	Unit	Excise duty rates		EU MR
		Denar	€	€
Motor fuels				
Unleaded petrol	1 000 litres	21 692.00	352.77	359
Leaded petrol	1 000 litres	24 396.00	396.75	421
Gasoil (diesel)	1 000 litres	15 121.00	245.90	330
Kerosene	1 000 kg	9 000.00	146.37	330
Liquefied petroleum gas	1 000 kg	4 900.00	79.69	125
Heating fuels				
Gasoil	1 000 litres	6 136.00	99.70	21
Kerosene	1 000 kg	1 800.00	29.27	21
Liquefied petroleum gas	1 000 kg	4 900.00	79.69	41
Petroleum coke	GJ	84.60	1.38	0.15 / 0.3

Source: Ministry of Finance; Customs Administration (www.customs.gov.mk/index.php/en/biznis-zaednica-mk-2/akcizi/mineralni-masla).

Note: Exchange rate: 1 denar = €61.49 (April 2018). EU MR = EU minimum rate.

Box 3.1: Passenger car emission standards

The 2008 Law on Vehicles limited the importation of new motor vehicles to those that complied with the Euro-4 emission standard. At the same, the importation of second-hand cars that complied with the Euro-3 standard was also permitted. Used vehicles that did not comply with the Euro-3 standard had to undergo a type approval (homologation) process before they could be registered.

During 2010, the Government allowed the temporary importation of used vehicles that met the Euro-1 and Euro-2 standards. This was largely motivated by the need to replace heavily polluting old cars dating from socialist times and for social policy reasons. In December 2014, against the backdrop of deteriorating urban air pollution, the importation of used vehicles was restricted to those that complied with at least the Euro-3 standard. From July 2015, the minimum emission standard for used vehicles was raised to Euro-4 and, for new vehicles, to Euro-5.

The fee for passenger cars depends on the engine capacity (cc); it varies from 1,040 denars (€16.90) for vehicles up to 900 cc to 5,780 denars (€94.00) for vehicles of more than 3,150 cc. This constitutes a significant increase compared with the previous levels, when the fee for passenger cars ranged from 730 denars (€11.90) for vehicles up to 900 cc to 4,050 denars (€65.80) for vehicles of more than 3,150 cc.

Road tolls

Toll rates depend on the specific section (there are nine) of the highways used as well as on the vehicle category. Toll fees collected corresponded to some 0.5 per cent of GDP in recent years. These revenues are earmarked together with the “road tax” for financing the construction and maintenance of public roads. Set at an adequate level, road tolls, together with vehicle registration fees, the road tax and fuel taxes, can create price signals that encourage the use of public transport.

Property tax

Legal entities and natural persons that own real estate, namely, land (agricultural, construction, forests and pastures) and buildings (residential and non-residential) are liable to pay an annual property tax. Also, users of real estate owned by the State and the municipality have to pay this tax. The tax base is the market value of the real estate, which is determined based on a methodology for determining the market value of real estate established by the Government. This is a local tax and the corresponding municipal councils set the basic tax rates, which have to be within a range of 0.1 to 0.2 per cent, depending on the type of property.

Tax rates for property tax on agricultural land not used for agricultural production can be increased by 3–5 times in relation to the basic rates. The revenues collected are allocated to the municipal budgets.

Fees for use of natural resources

Water abstraction charges

Water abstraction charges are differentiated by types of use; they are not differentiated by source (ground or surface water). Charges are not volumetric but linked to the price of products and services produced. This implies that the distribution of the financial burden among the various types of water use depends on the size of the charge base. Thus, the charge on water abstracted for public water supply is set at 2 per cent of the end-user water supply tariff of the corresponding water supply company.

This is in line with the user pays principle, which passes the costs of water abstraction on to the final consumer. The levy is, however, too small to have a significant effect on water consumption, but the main intent of water abstraction is not to affect water demand but, rather, to mobilize funds for water resources management. For HPPs, the charge rate is 1 per cent of the electricity generation tariff per kWh. For mineral water bottling, fish and water-bird breeding and the washing of sand and gravel, the water abstraction charge rate is a small percentage of the final sales price of these products (table 3.2).

Revenues from water abstraction charges are collected by the corresponding service providers and/or entities that sell the related final products and have to be paid into a separate treasury account. Revenue from the charges is earmarked for financing various water-resources-related purposes. Funds that have not been used during the current budgetary year, however, are transferred in full to the Treasury.

There is no published information on the total amount of financial resources collected and the extent to which they allow the recovery of costs of water resources management.

Table 3.2: Charges for water abstraction, percentage

Water use	Charge rate
Public water supply	2.0 per cent of water supply tariff per m ³
Irrigation	2.0 per cent of water supply tariff per m ³
Hydropower	1.0 per cent of the electricity generation tariff per kWh
Thermal power	0.5 per cent of the electricity generation tariff per kWh
Thermal power from geothermal waters	7.0 denars (€ 0.11) per m ³
Water bottling for commercial purposes	0.5 per cent of the sales price
Fish and waterbird breeding	3.0 per cent of the sales price per kg
Washing of sand, gravel and stones	2.0 per cent of the sales price per m ³
Production of food and beverages	2.0 per cent of the end-user water supply tariff per m ³

Source: Law on Waters.

Note: Public water supply and irrigation are charged by the public water companies.

Fees for use of forest products

Of the total state-owned forest area, 90 per cent is for economic use; the remaining 10 per cent is classified as protected areas.

The volume of annual timber harvesting is based on felling quotas fixed in forest management plans that are subject to approval by the Ministry of Agriculture, Forestry and Water Economy. Most of the wood products sold are fuel wood (some 75 per cent in recent years) used for energy production (heating), mainly by households. According to a survey by SSO in 2015, 62 per cent of all households consume fuel wood as the primary source of heat. Fuel wood also accounts for the lion's share of total revenues from wood production by PEMF.

Sales are mainly based on annual contracts with clients, but public tenders have also been used. Part of the timber harvesting is outsourced to private companies, which is an important cost factor for PEMF. There is, moreover, an annual quota for the felling of fuel wood for the local population in low-grade forest.

The collection of non-wood forest products (NWFPs) for commercial purposes is mainly outsourced to third parties (companies and the local population) based on contractual arrangements. The main products are fungi (such as boletus, chanterelles), lichens (evernia, centrania), berries (blackberries, blueberries, cranberries) and medicinal and aromatic plants (adonis, gentiana, hypericum, juniper). Raw and processed NWFPs are traded on the local and national markets and exported, primarily to the regional (Balkan) and broader European markets.

Hunting in state-owned forests is taking place in some 200 hunting grounds. They are mainly managed by private hunting associations based on concessions allocated via public tenders. These concessions are granted for a period of 10 years and can be renewed. PEMF itself operates four hunting grounds but total revenues are relatively small, estimated at 3 million denars (€50,000) for 2018, which is even below the operating expenditures involved.

PEMF operates on a self-financing basis, i.e. any profits made can be used for investments in the forest sector infrastructure. In principle, it has to transfer 3 per cent of profits, if any, to the Ministry of Agriculture, Forestry and Water Economy, but these funds are then "recycled" to PEMF for forest reproduction activities.

However, the financial position of PEMF has not been strong in recent years, partly reflecting inefficiencies such as overstaffing. It could not pay private companies engaged in timber harvesting but had to arrange for payment in kind, i.e. by handing over a large volume of wood harvested instead.

Fees for use of forest resources are also one of the financing sources for protected areas (national parks) besides entry fees. These use fees are like those applied by PEMF and revenues are earmarked for the financing of nature management works in the area where they were collected.

Charges for exploitation of mineral resources

Concessions for exploration and exploitation of mineral resources are awarded based on a public tender. The concessionaire has to pay fees, which are set by the Government. The fee for an exploration concession ranges from 60,000–120,000 denars (€960–€1,920) depending on the type of mineral ore. The fee for an exploitation concession has two parts: (i) a fixed annual fee, depending on the type of mineral, which ranges from 100,000–240,000 denars (€1,600–€5,440) per km² of land under concession; and (ii) a fee (royalty) for the quantities of minerals exploited.

For metallic minerals, the charge rate is 2 per cent of the market value per ton as set at the London Metals Exchange.

For precious and semi-precious stones, the charge rate is 5 per cent of the market value. For decorative stones, the charge rate depends on the type of stone (e.g., marble, €15 per m³; granite, €9 per m³). The royalties for non-metallic minerals are mainly in the range of €0.15–€14.60 per ton. For minerals (sand and gravel) for the construction industry, the fee is 9 denars (€0.15) per ton. Most of the coal (lignite) reserves are being managed by state-owned electricity generation companies with no clear separation of accounts.

The funds collected from these concession fees are shared between the central Government (22 per cent) and the local government(s) (78 per cent) on whose territory these activities are carried out. A proportion (4 per cent) of the revenues allocated to the central government budget must be used for the recultivation and return in useful condition of the degraded areas where the geological exploration and exploitations of minerals have been conducted.

*Tariffs for utility services*Tariffs for municipal waste management

Municipalities are responsible for organizing the collection, transportation and disposal of municipal waste. The operation of waste services has been delegated to public enterprises, which are owned by the municipalities. Tariffs for collection, transportation and disposal of waste are set at the level of municipal councils based on proposals by the management of the waste company. The tariff structure distinguishes, in general, two customer categories, i.e. natural persons (private households) and legal entities (enterprises, public institutions).

The charge base for waste tariffs varies among municipalities. In urban municipalities, the dominant charge rate for households is defined as 1 denar/per m² of the living space of an apartment/house; but some municipalities apply a fee rate based on the number of persons living in a household. In rural areas, a flat monthly fee per household has to be paid. Legal entities mainly pay a charge per m² of their premises; some pay a charge depending on volumes of waste collected. The general feature is for household tariffs to be relatively low, reflecting the fact that, in general, municipalities seem to treat household waste collection as a social service that has to be subsidized. Consequently, these tariffs are not cost reflective. This is partly offset by the relatively high charge rates for legal entities, which are a kind of cross-subsidy designed to help offset the revenue losses associated with the low charges paid by households. Waste companies, in general, also operate municipal landfills but there is no separate tariff for disposal of waste at these sites. This implies that the costs of managing landfills, including necessary investments, should be covered by the charges for waste collection and transport. However, this is not the case. Consequently, nearly all these landfills are substandard as regards the need to prevent or reduce as far as possible negative effects on the environment and on human health.

Bill collection rates at the household level are, in general, quite low (on average, some 50 per cent). Perhaps for sociopolitical reasons and lack of political will, payment of bills is not enforced. This is another reason, besides the low charge rates, for the low level of cost recovery in the municipal waste sector. Households' low willingness to pay may partly reflect the low quality of waste services provided. Another factor is that the use of road containers for waste

collection does not allow the exclusion of households that do not pay from access to waste services. Efforts by the Government to provide guidance to municipalities on how to set cost-reflective tariffs, based on a tariff methodology that entered into force in 2014, have not been successful. It is not known which, if any, municipality has followed the guidance. Waste tariffs that are, on average, not cost reflective mean that resources for investments to upgrade the waste sector infrastructure are lacking, which, in turn, leads to deterioration in the quality of waste services and cumulative increases in investment gaps. In the absence of cost-reflective tariffs, foreign donors will also not be willing to provide loans to help finance investments because such projects would not be viable. Progress in the regionalization of waste management facilities designed to generate economies of scale has been sluggish (chapter 10).

The current status of the country vis-à-vis target 8.4 of the 2030 Agenda for Sustainable Development is described in box 3.2.

Tariffs for water supply and sewerage services

Drinking water supply, wastewater collection and wastewater treatment are the responsibility of municipalities.

The public utilities managing these services are owned by the municipalities, which decide the annual budget and are responsible for investments. Until 2017, tariffs for these services were decided by municipal councils based on proposals by the public utility companies. Although the utility companies based their tariff proposals on the principle of full cost recovery, the approved tariffs mostly fell short of this objective, for political and social reasons. There were also significant cross-subsidies to households, which benefited from much lower tariffs than those levied on legal entities. In the event, average tariffs just covered operating and maintenance costs. The financing of investments for the much-needed upgrading and modernization of the water distribution networks and the building of WWTPs relied fully on funding from the central and municipality budgets as well as loans and grants from foreign donors, all of which were in limited supply. Upgrading and modernizing the water and wastewater treatment infrastructure has become a major priority, given that most of the infrastructure was installed more than 50 years ago.



Box 3.2: Target 8.4 of the 2030 Agenda for Sustainable Development

Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Target 8.4: Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10 Year Framework of Programmes on Sustainable Consumption and Production, with developed countries taking the lead

As at November 2018, North Macedonia does not produce data needed to compile Sustainable Development Goals indicators 8.4.1 (Material footprint, material footprint per capita, and material footprint per GDP) and 8.4.2 (Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP), although raw material extraction, such as mineral resources, plays an important role in the domestic economy. However, in the waste management sector, targets related to material resource productivity have been established within the framework of the extended producer responsibility policy. The rationale is to create incentives for producers to prevent waste at the production stage, take environmental considerations into account at the product design stage and support public recycling and materials management goals. To illustrate this, the country has set targets for the recovery and recycling for packaging waste, and for recovery or reuse of end-of-life vehicles. Other products for which manufacturers shall become responsible for managing the waste streams are tyres, oils and textiles.

North Macedonia should ensure the availability of data necessary to compile indicators 8.4.1 and 8.4.2 to measure progress towards the achievement of target 8.4.

Photo 3a: Skopje by night



The provision of water supply and sewerage services has been characterized by significant inefficiencies reflected in very high non-revenue water (about 60 per cent), which is in approximately equal parts due to technical losses (such as leakages) and commercial losses (such as inefficient bill collection and metering inaccuracies). Against the background of high unemployment, urban municipalities have also used their utility companies to provide jobs, with the consequence of overstaffing.

For average-income households, tariffs for expenditures on water services (water supply and sewerage) have been affordable. Urban households with an average income spent 1.7 per cent of their income on water supply and sewerage services in 2008, which is below the common threshold of 3 per cent used in Europe. However, the situation is different for households in the lowest-income quintile, where this share amounted to 6 per cent. There is a shortage of information on social policy measures to

assist these low-income households. Against this background, the Government (with financial support from the EU), initiated a reform of the economic regulation of the water sector designed to strengthen the application of full cost recovery tariffs in order to ensure the financial sustainability of the sector, and, related to that, facilitate the substantial investments needed for upgrading and modernization of the water sector infrastructure. Cost-reflective tariffs are generally seen as a *conditio sine qua non* for financing higher investments and associated higher operational expenditures, while taking into account the need for water prices to remain affordable for the population.

A first step towards tariff reform was to move the responsibility for setting water prices away from the municipal councils to ERC in 2017. In the same year, ERC established tariffs in accordance with the full cost recovery methodology for a first group of 30 public utilities, which each provide services to more than 10,000 population equivalent (pop. eq.). These tariffs entered into force at the beginning of 2018. For the remaining water utilities, which provide services to less than 10,000 pop. eq., new tariffs should be determined before the end of 2018 and shall enter into

force at the beginning of 2019. If the water supply company and the municipalities are unable to reach an agreement on the tariffs, ERC has the final say.

ERC has not set tariffs that are specific for customer groups (households, and the group of other customers) but, rather, average volumetric tariffs per m³ for water supply, wastewater collection and wastewater treatment. At the same time, ERC has determined minimum and maximum amounts for these average tariffs. This provides some scope for water utilities and municipal councils to differentiate between tariffs for individual households and those for other customers subject to the constraint of meeting the regulated revenue target. The regulatory period is three years, i.e. ERC has also set the tariff for 2019 and 2020. The general feature is a progressive increase in tariffs over this period. The average of the water supply tariffs for the 30 water utilities amounts to 27.53 denars (€0.44) in 2018, up from 26.32 denars (€0.42), an increase of 4.6 per cent compared with 2017. Table 3.3 allows a comparison of actual average tariffs for 2017 for eight municipalities with the regulated tariffs for 2018 set by ERC.

Table 3.3: Average tariffs for water supply, sewerage and wastewater treatment of selected municipalities, denars/m³

Municipality		2017	2018	2018 Allowed tariff range	
		Actual	Regulated	Minimum	Maximum
Berovo	Water supply	30.87	32.57	31.77	33.36
	Sewerage	9.36	6.45	5.91	8.98
	Wastewater treatment	0.00	12.59	12.55	12.62
Gevgelija	Water supply	17.53	17.57	17.97	18.08
	Sewerage	7.12	3.84	3.64	4.03
	Wastewater treatment	0.00	12.24	7.14	17.33
Strunica	Water supply	32.37	39.96	36.58	43.34
	Sewerage	10.43	10.40	9.68	11.12
	Wastewater treatment	0.00	12.83	6.33	19.34
Radovis	Water supply	26.74	28.22	27.96	28.49
	Sewerage	3.30	5.68	4.38	6.99
	Wastewater treatment	0.00	14.90	13.34	16.46
Bitola	Water supply	31.02	34.41	32.78	36.05
	Sewerage	11.70	15.11	13.28	16.94
	Wastewater treatment	10.96	6.61	6.54	6.68
Resen	Water supply	24.85	30.82	30.46	31.18
	Sewerage	4.89	5.20	5.17	5.24
	Wastewater treatment	11.70	11.63	11.56	11.70
Skopje	Water supply	20.00	21.50	20.11	22.88
	Sewerage	11.39	11.18	10.44	11.92
	Wastewater treatment	0.00	2.27	2.04	2.50
Illinden	Water supply	30.95	30.41	29.46	31.35
	Sewerage	12.51	10.30	8.70	11.90
	Wastewater treatment	0.00	8.90	7.58	10.22

Source: Energy Regulatory Commission, 2018.

Note: Average tariffs for households and legal entities.

Electricity tariffs

Energy policy has been very closely related to EU energy policy via the Energy Community, to which North Macedonia and other South-Eastern European countries are contracting parties. The main thrust of the associated obligations has been in breaking up vertically integrated structures and improving competitiveness via market liberalization. This also involves the distinction between two main final customer categories for the purchase of electricity: (i) tariff consumers, for whom the price is strictly regulated; and (ii) eligible consumers, for whom prices are set by the market.

Market liberalization started in 2008 for eight high-voltage consumers, which have to purchase their electricity on the open market. For all other customers (mainly households and small and medium-sized companies), tariffs continued to be regulated by ERC. Government plans to achieve a full liberalization of the electricity market, which would notably give customers the *possibility* to freely choose their supplier as of 1 April 2014, were initially postponed until 1 July 2020.

This reflected concerns about the risk of price shocks, notably for households. Further market liberalization was instead phased in gradually, starting in 2014, by providing each year a certain group of smaller non-household consumers (mainly industry) with the option to become eligible to choose their electricity supplier. Under this plan, private households and any remaining small non-household consumers were to be eligible as of 1 July 2020. However, the 2018 Law on Energy brings forward to the beginning of 2019 the date from which these customers can switch their supplier – and move away from regulated tariffs. At the beginning of 2018, the percentage of total electricity consumption covered by the open electricity market, i.e. the share of the liberalized market, was around 47 per cent.

In the past, the regulated electricity market was characterized by significant subsidization and market distortions at all stages of the electricity production process, which kept tariffs below market clearing levels. The only customers not paying subsidized tariffs were the large industrial consumers. At the end-user stage, there was, moreover, significant cross-subsidization of household tariffs by tariffs for non-household consumers. As a social policy, electricity subsidies are inefficient, since the richer households, which use most of the electricity, benefit most from the subsidies. In addition, keeping electricity tariffs below market clearing levels discourages domestic and foreign investment in the sector.

The gradual phasing in of market liberalization has, however, lead to decreases in electricity costs for newly eligible non-household consumers, due also to the fact that market prices were lower than regulated tariffs, which also reflects the benefit of no longer having to cross-subsidize other tariff consumers. Tariff reform in recent years has entailed regulated industrial tariffs becoming more cost reflective, but there are still cross-subsidies, albeit declining, from the reduced group of non-household customers to private households. In 2017, ERC adopted a decision by which a cheap household electricity tariff was introduced for two hours a day, which led to reduced revenue and profits of EVN Macedonia AD Skopje (EVN), a private distribution system operator and supplier of 98 per cent of all tariff customers. The low-price policy raises demand for electricity rather than creating incentives for energy savings. This likely constitutes also an important barrier for switching to gas for heating. The commitment to fully liberalize the market by 2019 implies, however, the phasing out of subsidies and rising end-user prices for non-household customers and private households that continue to prefer regulated tariffs.

EVN has been quite successful in reducing non-technical distribution losses related to theft from the grid. As a result of measures to educate customers on payment options, and to streamline invoice deliveries, EVN has managed to improve bill collection from a rate of 75 per cent in 2006 (when it took over the network) to more than 95 per cent. Technical distribution losses have been reduced to 14 per cent of electricity generated.

The prospect of rising household tariffs calls for accompanying measures, i.e. increases in targeted social assistance to poorer households to ensure that a limited supply of electricity for essential needs is affordable. As at November 2018, the Government offers monthly financial subsidies amounting to 1,500 denars (€24) to households belonging to a social protection scheme. So far, the notion of vulnerable consumers is not defined in the Law on Energy. Some principles of customer protection are defined in the Rules for the Supply of Electricity adopted by ERC.

Feed-in tariffs for renewable energy sources

Investments in renewable energy projects have been supported since 2012 with feed-in tariffs for small HPPs, photovoltaic (PV) installations, wind farms, and power plants using biogas and biomass. The country has also set a limit on total installed capacity of each of these technologies that is eligible for feed-in-tariffs, except for small HPPs. Feed-in tariffs are determined by ERC and are valid for 20 years for

small HPPs and wind farms and 15 years for other technologies. The tariffs offered for each kWh have been differentiated by technology type, project size in terms of installed capacity and other factors.

The feed-in tariff for wind power has been set at 8.9 €/kWh. For PV installations, the tariff is 16 €/kWh for installations up to 50 kW and 12 €/kWh for installed capacity above 50 kW. The tariff for small HPPs depends on the quantity of delivered electricity and ranges from 4.5 €/kWh to 12 €/kWh. In the case of biogas and biomass, preferential tariffs are granted only to TPPs. For TPPs using biomass, the tariff depends on the share of fossil fuels in total energy value. If this share does not exceed 15 per cent, the tariff is 15 €/kWh; for higher shares, a special formula applies. In a similar vein, the tariff for TPPs using biogas amounts to 18 €/kWh if the share of fossil fuels in total energy values of the used fuels does not exceed 10 per cent. If the share of fossil fuels in total energy value of the fuel is between 10 and 20 per cent, the feed-in tariffs are calculated according to a special formula. Overall, investments in renewables projects have been relatively modest so far; the effectively installed capacity amounted to 37 MW for wind and 17 MW for solar energy in 2016.

The main rationale for a long-term fixed feed-in tariff is that it creates greater investment security and greater predictability of future cash flows once projects operate. Feed-in tariffs also encourage technologies at different stages of maturity, including emerging technologies. They can lead to near-term upward pressure on electricity prices, particularly if they lead to rapid growth in emerging (i.e. higher cost) renewable energy technologies. On the other hand, feed-in tariffs are not “market oriented” because the payment levels offered for the electricity generated do not depend on market price signals. Also, feed-in tariffs do not encourage direct price competition between project developers.

Against this background, the Government has developed plans for the introduction of market-oriented mechanisms for the promotion of RES, namely, feed-in premiums and auctions for bidding on the amount of the feed-in premium, as stipulated in the 2018 Law on Energy. These would be operated in parallel with the already existing feed-in tariffs. However, the necessary secondary legislation is lacking. Feed-in premiums offer a premium on top of the electricity price in wholesale (spot) markets, where generating companies are trading electricity. If the market prices were above an established reference level, no premium would be paid.

This approach would require establishing a competitive trading platform for daily trading of electricity generated. It would encourage competition among renewable energy producers and between them and conventional generators. In that way, producers would be encouraged to invest in the efficiency of their RES plants and lower their costs. This may ensure cost-effective achievement of the 2020 renewable energy target based on the decline in costs of renewable energy technologies witnessed in recent years. Such an approach may not be very attractive to wind and solar PV farms, because of the lingering uncertainty (wind speeds, solar irradiation) of the time when they can supply electricity into the grid.

3.2 Greening the subsidies system

Fossil fuel subsidies

The country relies heavily on fossil fuels (low-grade lignite and oil) for electricity generation. In 2015, coal-based power generation accounted for 62 per cent of total annual electricity generation. International Monetary Fund (IMF) estimates suggest that prices paid by consumers (households and enterprises) for fossil fuels are broadly in line with low domestic supply costs, i.e. direct subsidies to end users are negligible. But the low-priced supply of fossil fuels does not reflect the costs of environmental damage, i.e. mainly adverse impacts on health from local air pollution and contributions to global warming, which are tantamount to sizeable fossil fuel subsidies. In a recent study, the IMF estimates that these implicit subsidies corresponded to 18.5 per cent of GDP in 2015. Such estimates are inevitably surrounded by a large margin of uncertainty and should therefore be regarded with caution; but they suggest, nevertheless, that this type of fossil fuel subsidy is quite large in the country.

Investment incentives

Amendments to the Law on Profit Tax introduced a flat tax rate of 10 per cent on company profits. Although the Law entered into force at the beginning of 2015, it applies to profits generated during 2014 as well. However, the Law provides that the tax base for calculating profits in a current year can be reduced by the amount of investments in tangible assets (such as machinery and equipment, including green technologies) financed out of the profits generated in the previous year. This provision is designed to expand business activities. Before this amendment, starting in 2009, legal business entities were obliged to pay profit taxes only on distributed profits and non-deductible expenses. Before 2009, the Law stipulated that business profits invested for the protection of the

environment were exempted from payment of profit tax. However, there is no information on the extent to which this provision was used.

Since 2014, the Government has operated a subsidy programme for the promotion of RES and improvements in energy efficiency in households. The total budget amounts to 50 million denars (€0.8 million) in 2018. The programme reimburses part of the expenses for: (i) the purchase and installation of solar thermal collector systems; (ii) replacement of old windows with PVC and aluminium frames; and (iii) switching to furnaces that use pellets as the energy source.

In 2016, Skopje operated a similar programme designed to stimulate households to use renewable solar energy sources for heating of their homes, as well as introducing a support scheme for purchasing pellet stoves designed to reduce air pollution. The funds for implementation of this activity were secured by the city budget, amounting to 5.89 million denars (€94,000). In 2017, a similar programme, which also covered administrative buildings, had a budget of 13.5 million denars (€0.22 million). In addition, Skopje launched a small programme designed to support the purchase of private bicycles, which had a budget of 20 million denars (€0.32 million), with the general objective to offer citizens alternative means of transportation.

Value-added tax

The standard value-added tax (VAT) rate applied to most goods and services is 18 per cent. A reduced rate of 5 per cent applies *inter alia* to the supply of: solar heating systems and their components; agricultural equipment, seeds and planting materials for production of agricultural crops, fertilizers and materials for plant protection; drinking water supply from public systems; and communal and waste disposal services. Effective from the beginning of 2017, the purchase of pellets and pellet stoves are also subject to a reduced VAT rate of 5 per cent.

3.3 Evaluation of the impact of the efforts in greening the tax, tariff and subsidies systems

Economic instruments, such as taxes, user charges and subsidies, aim to change the behaviour of economic agents, including private households, towards the environment and the use of natural resources via their impact on price structures. Instruments such as pollution charges are often contrasted to “command-and-control” measures that set pollution limits and define allowable technologies, but both tools can also operate effectively in tandem.

The polluter pays principle is enshrined in many environmental laws, but in practice it is not implemented. There are no pollution charges imposed on emissions of air pollutants from stationary sources. The discharge of polluting substances in wastewater discharged by industry is only subject to a minimal fee that is not based on the effective discharge of polluting substances. In a similar vein, excise duties on passenger cars and registration fees do not take into account emissions of CO₂ and other pollutants, such as NO_x.

In general, natural resource charges are rather low. There are also no taxes imposed on coal mining activities. User charges for water supply and sewerage and municipal waste collection have been too low to cover more than operating and maintenance costs, or even those. Electricity tariffs, under the impact of progressive market liberalization, have become more cost reflective, but there are still elements of subsidies at the level of private households. In summary, economic instruments have been a blunt policy tool with hardly any impact on the behaviour of businesses and households to encourage sustainable consumption.

Against this background, the tax burden and associated revenues related to environmental taxes has remained relatively low. Environmental taxes accounted for 6.61 per cent of total general government revenues in 2016 (table 3.4). Energy taxes, which include taxes on transport fuel, represented by far the highest share (64.5 per cent) of overall tax revenue, followed by transport taxes (34.56 per cent) in 2016. Revenues from pollution taxes declined sharply after 2010 to attain a share of 0.94 per cent of total general government revenues in 2016. There were no revenues collected (or reported by the recipients) from resource taxes, which include charges for water abstraction, fees for use of biological resources (timber) and extraction of minerals.

3.4 Investing in environmental protection and green economy

Expenditures on environmental protection are financed by a number of different funding sources, depending also on the particular environmental domain. The main general funding sources are the state budget and loans and grants from other countries and international financial institutions. There is no national environmental fund with a variety of earmarked revenues. To some extent, payments of water-use-related fees are earmarked for financing water sector management.

Table 3.4: Environmental tax revenues, 2014–2016, million denars

	2014	2015	2016
Energy	5 987.50	6 521.30	7 208.60
Transport	2 941.95	3 631.80	3 862.70
Pollution	116.35	99.10	104.80
Resource	0.00	0.00	0.00
Total	9 045.80	10 252.20	11 175.70
Total in € million	144.73	164.04	178.81
Total as percentage of GDP	1.71	1.83	1.87
Total as percentage of GG revenue	6.23	6.38	6.61

Source: State Statistical Office; Eurostat.

Note: GG = general government. The amount of resource taxes is too small to appear on the table.

Photo 3b: Composting factory in Resen

The Ministry of Environment and Physical Planning receives a share of earmarked revenues from vehicle registration fees. The forestry sector is mostly self-financed, through the sale of timber and primary wood processing. Protected areas (national parks) depend to a large extent on their own generated revenues, such as entrance fees and payments for collection of wood and non-wood forest products. Investments in municipal utilities (waste and water) are dependent on government budget resources and foreign funds. Private sector investments are financed from own resources and loans, but there is no information on the total resources spent on environmental protection.

Implementation costs for environment-related strategies, programmes and plans

Environmental investments are carried out by several entities in North Macedonia, such as the Ministry of Environment and Physical Planning, Ministry of Transport and Communications, Ministry of Local Self-Government, Ministry of Agriculture, Forestry

and Water Economy, and Ministry of Economy in the domain of energy efficiency. Investments are also carried out on the local level by municipalities and public enterprises, public institutions and national parks, as well as by the business sector. The country has developed a range of strategic documents for various environmental domains (chapter 1) but many of them do not deal with the issue of financing of investments.

The National Strategy for Environmental Investment for the period 2009–2013 was developed to gauge broadly the financial resources required to achieve compliance with EU environmental legislation in the major environmental domains. It concluded that by far the largest investments were needed in the areas of IPPC, wastewater treatment and waste management. The Strategy also suggested establishing an interministerial taskforce to address the lack of coordination and streamline investment activities, but such a taskforce has not been established. Wastewater treatment and waste management are still ranked high

on the Government's priority list, to which low energy efficiency has been added. The financial resources for investment in environmental infrastructure and technology to achieve compliance with the EU environmental and climate change acquis were estimated in the 2008 National Strategy for Environmental Approximation 2007–2014 to amount to €2.3 billion (at 2006 prices). About half of these costs are associated with the industrial pollution sector, which includes all the major measures taken by industry to reduce its environmental impact, i.e. emissions to air, releases into water and to abate noise. The other major sectors in terms of "adjustment costs" are the water quality and waste management sectors. These are the three sectors that require substantial programmes of capital investment, either by industry or in municipal infrastructure. Implementation of these projects in water and waste management also require substantial support from donors and efficient use of resources.

The 2009 National Waste Management Plan for the period 2009–2015 estimated the investment needs for the upgrading and modernization of the public waste management infrastructure at some €82 million, of which €51 million would be required for creating two new regional landfills, the upgrading of the Drisla landfill in Skopje and closure and remediation of existing non-compliant landfills and dumpsites. Financing sources identified included central and local government funds and international sources, as well as a gradual shift to full cost recovery waste tariffs. The Plan has expired and a draft national waste management plan for the period 2018–2024 was at the stage of public consultation in December 2018 and consultations with other sectors on the draft were ongoing; its SEA was expected in spring 2019. The 2008 Strategy for Waste Management for the period 2008–2020 does not contain estimates concerning investment plans. As regards the water sector, the 2012 National Water Strategy estimated investment needs for post-2011 at 15.2 billion denars (€0.24 billion), of which 12.9 billion denars (€0.21 billion) were required for wastewater treatment. Financing sources for the latter were not identified. Other estimates of investment needed to ensure compliance with the wastewater collection and treatment standards of the EU are considerably higher, in the range of 31–40 billion denars (€500 million to €600 million), of which €177 million is for WWTPs and the remaining €326 million for wastewater sewerage systems. The second Energy Efficiency Action Plan until 2015 identified investments for energy efficiency measures across major sectors of the economy for the period 2013–2015 amounting to 11.2 billion denars (€178.5 million), to be financed by public and private sources.

The third National Energy Efficiency Action Plan for the period 2016–2018 identifies investments amounting to €125.6 million over these three years, of which €71.6 million is in the residential buildings sector. Both the second and third Action Plans indicate that (a small) part of the required funds will be contributed from an energy efficiency fund, but it has not yet been established.

Green public procurement

Public procurement is a major economic factor in the country (box 3.3). The value of concluded public contracts amounted to 30 per cent of the state budget and corresponded to 10 per cent of GDP in 2016. The rules for preparation of tender documentation, such as technical specifications, make explicit reference to the need to include the impact on the environment as well as specifications and performance requirements that are part of European and multinational eco-labelling. And also among the criteria for determining the qualification of economic operators is the observation of environmental management standards, such as EMAS. The role that these factors have played in the procurement process is difficult to gauge. The central contract award criterion is the lowest price rather than the economically most advantageous bid, which would consider factors such as the overall life costs of equipment being purchased. Annual reports for 2015 and 2016 published by the Public Procurement Board make no reference to green procurement.

Expenditures on environmental protection

Government sector

Information on environmental protection expenditures for the aggregate government sector is published in the annual budgets based on the international Classification of Functions of Government (COFOG). Up to 2017, these data covered central government only. Environmental protection expenditures had an average share of 0.7 per cent in total central government expenditures during the period 2013–2017.

Budget plans for general government (i.e. including local government) point to a decline of this share to 0.4 per cent for 2018. There is no separate information on aggregate environmental expenditures at the local self-government level. On average, government environmental expenditures corresponded to only some 0.2 per cent of GDP during the period 2013–2018 (table 3.5).



Box 3.3: Target 12.7 of the 2030 Agenda for Sustainable Development

Goal 12: Ensure sustainable consumption and production patterns

Target 12.7 Promote public procurement practices that are sustainable, in accordance with national policies and priorities

In order to achieve target 12.7, North Macedonia committed to promote sustainable public procurement practices, in accordance with national policies and priorities, including by implementing sustainable public procurement policies and action plans.

The Government may reap additional financial benefits by not automatically choosing the lowest price bid but, rather, considering the full life-cycle costs of products to be purchased. Green procurement policies can effectively support the country's transition towards circular economy.

There seems to be scope for using public procurement for the promotion of environmentally friendly goods and services such as clean and energy-efficient road transport vehicles. The Innovation Strategy for 2012–2020 refers to public procurement as a demand-side measure to support domestic technological innovations, by introducing functional requirements rather than detailed specifications in procurement practices. However, there is no information on any related projects.

The Government should incorporate sustainability criteria in the public procurement policy and stimulate domestic innovation through functional specifications of products.

Table 3.5: Government environmental protection expenditure, 2013–2018

	2013	2014	2015	2016	2017	2018
Percentage of total government expenditures	0.68	0.77	0.63	0.53	0.69	0.40
Percentage of GDP	0.19	0.20	0.18	0.15	0.19	0.14

Source: Ministry of Finance, annual budgets 2013–2018. Expenditures based on Classification of Functions of Government.

Note: 2013–2017, central government budget expenditures; 2018, general government expenditures.

The budget of the Ministry of Environment and Physical Planning includes, besides the basic government budget allocation for financing of current expenditures, a special fund of earmarked revenues from vehicle registration fees for the financing of projects in addition to donor funds. The budget of the Ministry (including donor funds) had a share ranging from a maximum of 0.38 per cent to a minimum of 0.32 per cent in total central government expenditures during the period 2014–2018 (table 3.6).

Total economy

Statistics on environmental expenditures in the total economy by type of expenditure, major environmental domain and major economic sector are available for the years since 2013.

After a sharp decline between 2013 and 2015, expenditures, both current and investment outlays, recovered in 2016 and 2017, when they corresponded to 1.6 per cent of GDP (table 3.7). For comparison, the EU-28 average is estimated at 2.1 per cent for 2017. During the period 2013–2017, the average share of

investments (52 per cent) was only slightly higher than the share of current expenditures (48 per cent).

Investment expenditures by environmental domain are dominated by four sectors: waste management (average share of 40.6 per cent during the period 2013–2017); wastewater management (23.1 per cent); water supply (15.8 per cent); and air protection (12.7 per cent). Together, these four sectors accounted for 92.2 per cent of all environmental investment expenditures during the period 2013–2017 (table 3.8).

Public–private partnerships in support of green economy

The role of public–private partnerships (PPPs) in the municipal utility sector in North Macedonia is still relatively small. This reflects, at least partly, the lack of cost-reflective tariffs for the operation of these services, but, also, the required administrative capacity for the planning and evaluation of PPP projects is lacking. A public register of PPP contracts awarded, which has been maintained by the Ministry of Economy since 2013, provides only some basic information on 28 contracts awarded (box 3.4).

The majority of these mainly small-scale projects have been arranged at the municipal government level, including local public enterprises. They cover the sectors of transport, municipal utilities (waste only), energy and governmental (administrative) buildings. Among them are a single concession for collection and transport of waste (municipality of Gjorce-Petrov – Skopje) and three projects (Cair, Ohrid and Nikole municipalities) for the reconstruction, modernization and maintenance of public lighting, one aim being to

reduce energy consumption. Moreover, the list includes eight contracts for construction of small HPPs for production of renewable energy. However, not all PPP arrangements have been included in the register maintained by the Ministry of Economy. In 2011, Skopje signed a contract with a foreign private investor for the reconstruction and management of the Drisla landfill, which holds 80 per cent of the capital of the landfill company; the City of Skopje holds the remaining 20 per cent.

Table 3.6: Budget of the Ministry of Environment and Physical Planning, 2014–2018, million denars

Revenue sources	2014	2015	2016	2017	2018
General government budget	460.68	474.93	473.00	438.96	522.75
Special fund*	122.80	122.80	122.80	122.80	98.00
Own revenues	10.00	10.00	10.00	10.00	6.00
Donor funds	50.00	50.00	64.97	54.37	44.55
Total budget	643.48	657.73	670.77	626.13	671.30
Total (€ million)	10.30	10.52	10.73	10.02	10.74
Total as per cent of total central government expenditures	0.38	0.36	0.36	0.32	0.35

Source: Ministry of Environment and Physical Planning and Ministry of Finance (<https://finance.gov.mk/en/node/6915>).

Notes: Special fund: Allocation of revenues from fees for registration of motor vehicles.

Own revenues: Fees for examinations conducted by laboratories of the Ministry of Environment and Physical Planning

Exchange rate: 1 denar = €0.016

Table 3.7: Total economy environmental protection expenditures, 2013–2017, million denars

	2013	2014	2015	2016	2017
Current expenditures	3 527.16	3 677.67	2 764.93	4 425.86	3 059.07
Investments	4 028.89	2 944.37	1 689.90	5 353.09	6 979.13
Total	7 556.05	6 622.04	4 454.83	9 778.95	10 038.20
Total (€ million)	120.90	105.95	71.28	156.46	160.61
Total (% of GDP)	1.51	1.26	0.80	1.63	1.62

Source: State Statistical Office, 2018.

Table 3.8: Environmental protection investments, by environmental domain, 2013–2017, million denars

	2013	2014	2015	2016	2017
Waste management	1 424.20	239.56	234.04	873.59	5 745.36
Wastewater management	286.16	510.05	316.03	3 122.63	618.74
Circulating water supply	1 365.61	1 170.90	256.46	324.31	202.25
Air protection	737.51	740.95	553.55	530.40	112.78
Protection of soil, and groundwater and surface water	83.62	21.13	17.67	77.66	11.23
Protection of forests	0.16	1.48	0.05	0.12	0.68
Protection of biodiversity and landscape	34.06	67.48	219.26	206.80	118.18
Hunting and fishery	0.05	0.00	0.00	0.00	0.42
Noise abatement	55.26	121.18	28.79	9.48	14.75
Research and development activities	24.34	33.60	53.81	196.40	145.76
Monitoring and control equipment	17.92	38.04	10.24	11.69	8.99
Total	4 028.89	2 944.37	1 689.90	5 353.09	6 979.13
Total (€ million)	64.46	47.11	27.04	85.65	111.67
Total (% of GDP)	0.80	0.56	0.30	0.89	1.13

Source: State Statistical Office, 2018.



Box 3.4: Targets 9.1 and 17.17 of the 2030 Agenda for Sustainable Development

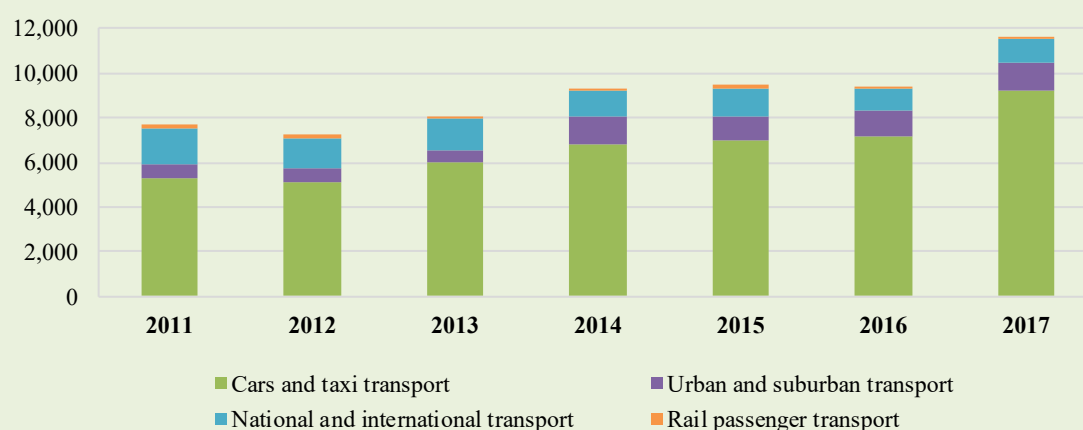
Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation

Target 9.1: Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all

The country does not measure indicator 9.1.1 (Proportion of the rural population who live within 2 km of an all-season road). However, the total length of local roads increased by 4.65 per cent in the period 2011–2017, bringing the rural population closer to main roads.

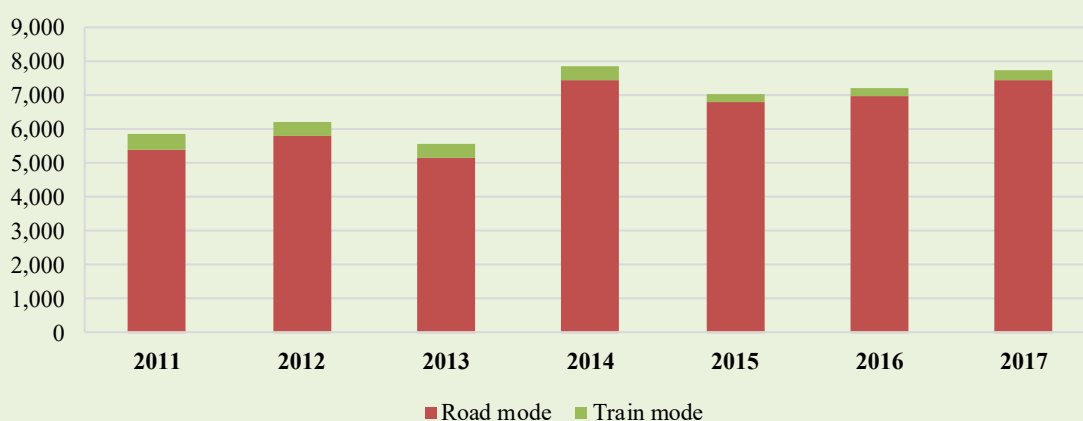
The country provides data for indicator 9.1.2 (Passenger and freight volumes, by mode of transport). It committed to achieve target 9.1 by developing its infrastructure to support economic development and human well-being, making it affordable and equitably accessible for all. Passenger transport increased by 50.6 per cent in the period 2011–2017 (figure 3.1). This increase is reflected in an increase of road passenger transport of 52.7 per cent, while rail passenger transport decreased by 59.3 per cent. However, in absolute value, the share of rail decreased from 1.9 per cent in 2011 to 0.5 per cent in 2017. Urban and suburban passenger transport doubled in the same period and passenger transport by car and taxi increased by 1.5 times. The volume of freight transport increased by 31 per cent in the period 2011–2017; however, the quantity of goods transported by road increased by 37.99 per cent whereas rail freight transport decreased by 42.17 per cent (figure 3.2). Regarding the contribution of transport to CO₂-equivalent, the share of transport is expected to increase slightly, but to stay under 10 per cent of contributions to total GHG emissions.

Figure 3.1: Passenger transport, 2011–2017, passenger-km



Source: State Statistical Office.

Figure 3.2: Freight transport, 2011–2017, tonne-km



Source: State Statistical Office.

When developing spatial plans, the country should ensure that all-season road infrastructure is located no more than 2 km from the rural population, while taking into account environmental considerations..

Goal 17: Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development
Target 17.17: Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships

PPPs are a tool that governments have at their disposal to facilitate the financing, design, construction and operation of infrastructure projects. At the local government level, this pertains notably to the involvement of private investors in the provision of municipal infrastructure services such as solid waste management, water supply and sewerage, electricity and urban passenger transport. Target 17.17 calls for efforts to encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships. This is complemented by target 9.1.

PPPs can have several benefits, such as overcoming existing public-sector financing and resource constraints for the building, operation and maintenance of infrastructure, transfer of skills and improvements in efficiency of operations.

However, PPPs are not a magic wand; projects have to be well designed and implemented in a balanced regulatory environment. It is also important to clearly specify in contracts the incentives and performance requirements expected from the private sector. It also needs to be considered that financial participation of the private sector will only be available if the projects are expected to generate an adequate return on investment, which must be reflected in the prices of services for customers or financed by the government through subsidies.

The Government should develop the necessary institutional capacity for the creation, management and evaluation of PPPs with the general aim of ensuring that people have access to quality, affordable public services.

The majority of these mainly small-scale projects have been arranged at the municipal government level, including local public enterprises. They cover the sectors of transport, municipal utilities (waste only), energy and governmental (administrative) buildings. Among them are a single concession for collection and transport of waste (municipality of Gjorce-Petrov – Skopje) and three projects (Cair, Ohrid and Nikole municipalities) for the reconstruction, modernization and maintenance of public lighting, one aim being to reduce energy consumption. Moreover, the list includes eight contracts for construction of small HPPs for production of renewable energy. However, not all PPP arrangements have been included in the register maintained by the Ministry of Economy. In 2011, Skopje signed a contract with a foreign private investor for the reconstruction and management of the Drisla landfill, which holds 80 per cent of the capital of the landfill company; the City of Skopje holds the remaining 20 per cent.

Foreign direct investment

North Macedonia has been offering a number of generous tax and financial incentives in order to attract foreign investors, many of which are located in one of the 15 technological industrial development zones. Regulatory and other reforms have made it easier for companies to do business. This is reflected in the World Bank report “Doing Business 2018”, which ranks the country 11th of 190 economies.

Foreign direct investment (FDI) inflows have, however, remained relatively moderate; they corresponded to an annual average of 2.7 per cent of GDP during the period 2009–2017.

This could reflect factors such as the need to improve infrastructure and the lack of availability of skilled labour. Also, the lack of government capacity appears to play a role. In addition, the country does not score well as regards corruption. The 2017 Transparency International Corruption Perception Index ranks the country 107th of 180 economies, one of the lowest rankings in Europe.

Mergers and acquisitions, which often involve only a transfer of ownership or corporate reorganization without major changes in operations and productive capacities and technologies, accounted for the bulk (61.4 per cent) of the FDI stock at the end of 2017. Greenfield investments, in which the parent company builds its operations in a foreign country from the ground up, including the construction of new production facilities, accounted for 38.6 per cent of total FDI stock. The large bulk of FDI went to the services sector (45 per cent) and the manufacturing sector (36 per cent). The energy sector accounted for another 8 per cent; the shares of mining and quarrying (2.5 per cent) and agriculture (1 per cent) are rather small.

FDI is generally seen to be associated with positive effects on the economic performance of the host country via factors such as the transfer of new technology and know-how, development of human resources and integration in international markets. From an environmental policy perspective, it would be important to know whether and to what extent FDI is contributing to green(er) growth. There are manifold factors, such as the activity of the enterprise, choice of production methods and type of energy and other inputs required, through which FDI has an impact on environmental outcomes. Environmental impacts

include inter alia changes in emissions of pollutants, including GHG emissions, as well as effects on the physical environment, i.e. water resources, land, forests, biodiversity, and air and water quality (box 3.5).

A specific example of “green FDI” in the country is the installation and expansion of a manufacturing facility (Johnson Matthey) in the chemical sector for the production of emission control catalysts, designed inter alia to reduce emissions of NO_x from diesel engines. The demand for these catalysts has increased considerably, associated with the tighter emissions control legislation that came into effect in the EU from

January 2014. The facility has created a total of 650 (green) jobs.

Foreign assistance

North Macedonia, as a candidate country for EU membership, has been receiving funds under the IPA. The funding allocation under IPA I (2007–2013) did not have an explicit environmental component but supported a number of projects designed to develop the municipal environmental infrastructure (sewage and wastewater treatment; and waste management) as part of the Regional Development Component.

Photo 3c: Sustainable mobility in Skopje



Box 3.5: Defining and measuring green FDI

Gauging the magnitude of green FDI requires an internationally agreed definition of green FDI, which does not exist. In 2011, the Organization for Economic Co-operation and Development (OECD) proposed a definition of green FDI that distinguishes between: (i) FDI in the environmental goods and services sectors; and (ii) FDI that is associated with the use of cleaner and more energy-efficient technologies in industrial sectors than apply in the host country (“compliance plus”), with associated improvements in environmental performance. Such environmentally favourable FDI flows will tend to be mainly associated with greenfield investments as compared with mergers and acquisitions, which can simply be a transfer of ownership or corporate reorganization with little or no positive effect on operations and productive capacities.

Measuring FDI based on this definition faces the challenge that internationally harmonized and reliable statistics on production processes and environmental performance associated with FDI at the enterprise level are lacking. Based on a number of assumptions, rough estimates suggest that the first component of green FDI corresponded to 2.8 per cent of world FDI flows in the period 2005–2007, while the second component, which is approximated by using the concept of environmentally relevant FDI, corresponded to 41 per cent of world FDI flows in the period 2005–2007. The estimates of green FDI, should, however, be taken *cum grano salis* as they are based on exploratory work and imperfect statistics that illustrate the manifold challenges that exist in measuring green FDI.

Sources: S. S. Golub, C. Kauffmann and P. Yeres, “Defining and Measuring Green FDI: An Exploratory Review of Existing Work and Evidence”, OECD Working Papers on International Investment No. 2011/02 (Paris, OECD Publishing, 2011). <http://dx.doi.org/10.1787/5kg58j1cvcvk-en>

The funding allocation under IPA II (2014–2018) identified “environment and climate action” as one of five priority areas. Funds are being deployed within the framework of a Multi-Annual Sectoral Operational Programme for Environment and Climate Action. The main areas for financing projects include the development of the municipal sewerage and wastewater treatment sector and the waste management sector. Funds for national co-financing are mainly planned within the budget of the Ministry of Finance, except for environment-related projects under the Instrument for Pre-Accession Assistance in Rural Development (IPARD), where co-financing is planned within the Agency for Financial Support in Agriculture and Rural Development.

The funding allocation under IPA II (2014–2018) identified “environment and climate action” as one of five priority areas. Funds are being deployed within the framework of a Multi-Annual Sectoral Operational Programme for Environment and Climate Action. The main areas for financing projects include the development of the municipal sewerage and wastewater treatment sector and the waste management sector. Funds for national co-financing are mainly planned within the budget of the Ministry of Finance, except for environment-related projects under the Instrument for Pre-Accession Assistance in Rural Development (IPARD), where co-financing is planned within the Agency for Financial Support in Agriculture and Rural Development.

The EU has provided the lion’s share of donor assistance during the past decade. Multilateral donors include the Organisation for Security and Cooperation in Europe (OSCE) and the United Nations. The main lenders of funds for various environment-related projects include the European Bank for Reconstruction and Development (EBRD), the European Investment Bank and the World Bank.

In addition, significant bilateral support is provided by a number of EU member States (Austria, France, Germany, Italy, the Netherlands, Sweden, the United Kingdom and others). Other large bilateral donors include Switzerland and the United States of America. The national IPA Coordinator and the Department for the European Union of the Ministry of Environment and Physical Planning are supporting donor coordination. Regular meetings of relevant stakeholders take place in the context of the annual/multi-annual IPA programming exercise.

Other green economy initiatives

The country does not participate in the Batumi Initiative on Green Economy (BIG-E) launched in

2016 by ministers in the ECE Region to operationalize until 2030 the Pan-European Strategic Framework for Greening the Economy. Joining BIG-E would entail identifying and voluntarily committing actions under one or several focus areas of the Strategic Framework, for instance to incentivize green investments and trade or green consumption habits to advance the transition to an inclusive green economy.

The country would benefit from promoting its green economy actions on the Green Growth Knowledge Platform and sharing its experience with other BIG-E stakeholders. The country could encourage its business community to join BIG-E, which could be done independently or by means of PPPs. The main benefit from participating in the BIG-E initiative is that each committed action is linked to specific Sustainable Development Goals targets to which it also contributes. Hence, the country would speed up its transition to green economy and simultaneously support with practical action the achievement of several Sustainable Development Goals.

3.5 Green markets

Little use has been made of certification of green products (goods and services), which would support pro-environmental marketing strategies. The main exception since 2006 has been the certification of national agricultural producers that provide products under organic management. In 2018, the national forest certification system was endorsed by the international Programme for the Endorsement of Forest Certification, which is dedicated to promoting sustainable forest management. Information on domestic products that are compliant with European and other international standards for green products is lacking.

3.6 Green jobs

Green economy strategies see environmental sustainability as a major potential economic opportunity, a driver of investment, economic growth and green job creation. A generic definition of green jobs distinguishes two main groups of jobs: (i) jobs in companies that produce goods or provide services that benefit the environment or conserve natural resources; and (ii) jobs in activities that involve making production processes of a company more environmentally friendly or lead to a reduced use of natural resources.

This definition, which is employed by, for example, the United States Bureau of Labor Statistics, corresponds also to the International Labour Organization (ILO) definition of green jobs, though

the ILO adds an additional criterion, namely, that these jobs have at the same time to be “decent jobs”.

A comprehensive or even partial statistical survey of the current number of green jobs in North Macedonia does not exist (box 3.6). There is significant participation of the informal (green) sector (individuals and families mainly from the Roma community) in the waste collection sector in the country. This is basically a form of waste valorization, notably by picking and selecting recyclable materials from waste containers for commercial sale at both formal and informal markets. It is estimated that about 80 per cent of the recycled packaging waste in the country is collected and selected by the informal waste collection sector.

On average, some 3,000 persons are engaged in informal waste picking daily. It has been estimated, moreover, that there is potential for creation of some 6,200 jobs by 2035 by implementing energy efficiency measures in the building sector and increasing low-carbon energy supply (RES and gas). The largest contribution (around 4,000 jobs) is related to the upgrading of energy efficiency standards for buildings. Another study has been broaching the

significant barriers related to the creation of green jobs in the country, which are part and parcel of structural rigidities in the overall labour market.

3.7 Legal, policy and institutional framework

Legal and policy framework

Air pollution charges

The legal base for the payment of charges for emissions of air pollutants from stationary and other sources is the 2005 Law on Environment. The amounts of payments are set in various secondary legislation such as the two 2010 decrees on the level of charges payable by operators of installations with an A-type (or B-type) permit (IEPs).

Water pollution charges

The Law on Waters regulates payments for discharge of pollutants into wastewater. Payments related to discharge of water-polluting substances based on A-type and B-type permits are regulated in the relevant 2010 Decrees.



Box 3.6: Target 8.3 of the 2030 Agenda for Sustainable Development

Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Target 8.3: Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services

One of the challenges facing the labour market in the country is the persistence of a large informal sector, which had an 18.1 per cent share in total employment in 2017. Among employed young persons (aged 15–24), some 30 per cent are working in the informal sector, with broadly similar proportions of men and women. The large size of the informal sector has adverse consequence for overall economic performance due to the inefficiency of the informal sector, loss of tax revenues, limited access of workers to social protection and high vulnerability of persons when they lose their jobs. To the extent that workers in the informal sector also receive social benefits, they also add to the fiscal burden on the State.

Combating this grey economy requires a holistic policy approach that combines strict enforcement of labour market and tax and social security regulations with incentives in the tax and social benefit system and the pursuit of active labour market measures for upgrading the skills of workers. One of the major causes of the large informal sector may be the relatively high tax burden that is put on labour income, including social security contributions, which makes it costly for firms to hire workers, notably low-income and skilled workers. At the same time, existing social benefits and entitlement thresholds may make it less advantageous for workers to leave the informal sector. The Government launched an action plan for the reduction of the informal economy in 2014, but it is focusing mainly on repressive measures.

The Government should:

- (a) Review the tax and social benefits system with a view to reducing and eliminating existing disincentives that prevent firms from hiring more workers and for workers to find it more beneficial to move from the informal into the formal sector;
- (b) Improve the targeting of the existing active labour market policies.

Excise duties

The excise duties imposed on energy products and import of motor vehicles are regulated by the 2001 Law on Excise Duties.

Charges related to motor vehicles

The fees for importation of used cars and the annual registration fees for motor vehicles are regulated in the Law on Environment and the Law on Vehicles.

Charges for use of roads

The fee for use of public roads is regulated by the 2008 Law on Public Roads. Charge rates are set in the 2009 Decision on the amount and method of payment of the fee for use of public roads by motor vehicles and their trailers and the 2014 Amendment to the Decision on the amount and method of payment of the fee for use of public roads by motor vehicles and their trailers: amendment of the rules on the visa and the manner of payment for use of public roads for motor vehicles and trailers. Special fees for road use (tolls) are established in the Law on Public Roads. Details concerning toll rates are set by the Government in the 2009 Decision on the amount and method of charging the special fee for use of public roads (toll).

Property tax

The legal base of the property tax is the 2004 Law on Property Taxes. This is a municipal tax.

Fees for use of forest products

The 2009 Law on Forests regulates forest management activities (cultivation, use and protection).

Mineral resources exploitation

The 2012 Law on Mineral Resources, as *lex specialis*, governs the awarding of concessions for exploration and exploitation of different types of minerals. Fees for concessions are set in the 2014 Tariff list for determining the level of fees for issuing permits and concessions for performing detailed geological explorations and concessions for exploitation of mineral resources.

Water abstraction charges

The Law on Waters regulates payments for water abstraction for different water user categories.

Municipal utility services

The legal framework for the provision of municipal utility services includes, notably, the 2002 Law on Local Self-Government and the 2004 Law on the City of Skopje, as well as the 1997 Law on Communal Activities.

The 2004 Law on Waste Management constitutes a cover regulation act and provides general rules applying to the main issues related to non-hazardous and hazardous waste and special waste streams. Tariffs for waste collection and disposal are set by the municipal councils based on proposals by their public enterprises.

Guidance for tariff-setting has been provided in the 2013 Methodology for calculating the price for collection, transportation and disposal of waste issued by the Ministry of Environment and Physical Planning.

Until 2017, tariffs for water supply and sewerage services were set by the municipal councils. The regulatory framework was set by the Law on Waters and the 2004 Law on Drinking Water Supply and Urban Wastewater Drainage.

Effective from the beginning of 2018, tariffs for water supply, sewerage and wastewater treatment are set by ERC.

The main regulatory tool for setting prices for water tariffs is the 2016 Law on Water Services Pricing. Tariff-setting is based on:

- 2017 Methodology for determining tariffs for water services;
- 2017 Rulebook on the manner and procedure for determining the tariff for water services and the regulatory tariff for water services adopted by the Energy Regulatory Commission.

Electricity tariffs and feed-in tariffs for renewable energy sources

Tariffs at all stages of electricity production and distribution are regulated by ERC based on corresponding tariff methodologies. ERC also sets feed-in tariffs and capacity caps for the various types of renewables technologies:

- Decree on Electricity Feed-in Tariffs;
- Rulebooks on the method and procedure for establishing and approving the use of feed-in tariffs for purchase of electricity produced from various renewable energy sources;

- Decision on the total installed capacity of preferential generators for renewable energy sources.

Government budget

The preparation, adoption, execution and reporting of the budget of the central government and of the budgets of the municipalities is regulated by the (organic) 2005 Law on Budgets, which was last amended in 2016. The 2004 Law on Financing of Local Self-Government Units also regulates the public finances of the municipalities. Municipal sources of revenue are established by the 2004 Law on Financing of Local Self-Government Units. These include own revenues, shared tax revenues and intergovernmental transfers (grants). Loans can be taken up subject to approval by the central government.

Public procurement

Public procurement is regulated by the 2007 Law on Public Procurement.²

Public-private partnerships

The conditions and procedures for granting, implementing and terminating concessions and the conclusion of agreements for the establishment of PPPs are regulated by the 2012 Law on Concessions and Public-Private Partnership and the 2007 Law on Public Procurement.

Institutional framework

The Ministry of Environment and Physical Planning is responsible for the definition of environmental policy, including the setting of fees for permits that regulate activities associated with emissions of air pollutants and the discharge of polluting substances into wastewater.

The Ministry of Agriculture, Forestry and Water Management is responsible for the design and implementation of sustainable management of forest resources. The economic exploitation of forests is managed by PEMF. The Government regulates the sales prices for all the related products. In a way, PEMF has a kind of monopoly as a producer and wholesale-cum-retail seller of forest products.

The Ministry of Economy is the competent body for energy policy, including measures for improving energy efficiency. Also, the mining industry is primarily administered by the Ministry of Economy, but the Ministry of Environment and Physical Planning is also significantly involved, in terms of issuing permits for mining activities. The Ministry of Economy is also in charge of PPPs, the general objective being to promote the development of an efficient system of PPPs. But the administrative capacity for dealing with PPPs at both the central and local government levels is largely lacking. Neither the PPP Council nor the Registry of Concessions foreseen by the legislation have been established.

ERC sets energy tariffs and, since 2018, also the tariffs for water supply, sewerage and wastewater treatment services.

The Ministry of Internal Affairs is responsible for vehicle registration and inspections.

The Public Enterprise for Road Services, which is not part of the government budget, is an independent public institution for the management of state roads, including planning, construction, rehabilitation, maintenance and protection of public roads. It is also mandated to organize the toll collection system for use of highways.

All taxes and fees are set by the Government. The annual government budget, including allocations to the Ministry of Environment and Physical Planning, is prepared by the Government and approved by the National Assembly. The general government budget consists of the central government budget and the budgets of 81 LSGUs. On average, more than 60 per cent of LSGU expenditure is financed from central government grants. The Ministry of Finance manages the Treasury Single Account, which receives all revenues and from which all payments are made on behalf of budget users at the central and local government levels. The Public Procurement Bureau within the Ministry of Finance administers public procurement.

The organization of municipal utility services (such as waste collection and disposal, water supply and sewerage) is the responsibility of LSGUs. These also determine the charges for waste services and, until 2017, determined tariffs for water supply and sewerage services.

² A new Law on Public Procurement was adopted in 2019 and will be enforced as of 1 April 2019.

3.8 Assessment, conclusions and recommendations

Assessment

The use of economic instruments in environmental protection has been substantially enhanced and deepened during the past decade. In energy taxes, excise duties are applied to all energy products used for transport and heating, with the major exception of electricity and coal. Excise duty rates were increased with the general aim to approach the benchmark of EU minimum rates.

The country levies user charges for water abstraction and extraction of minerals. In the area of municipal utility services, the absence of cost-reflective tariffs for water and waste services has led to operational difficulties for water and waste companies due to the lack of sufficient funds for maintenance, repair and new investments. But as of 2018, the regulation of water tariffs has been delegated to ERC with the mandate to establish the principle of full cost recovery of production of water services.

There are pressures on LSGUs to adopt similar policies for waste collection and disposal tariffs. The potential benefits from PPPs in the provision of municipal utility services and the financing of the associated infrastructure have still to be explored. In the energy sector, electricity tariffs have approached cost-reflective levels and cross-subsidies from business entities to households have been reduced.

Most of the electricity market is now liberalized. The role of RES in total electricity supply has been promoted with an effective system of feed-in tariffs. Efforts are ongoing to improve energy efficiency with a system of government subsidies.

Environmental expenditures are financed mainly from the general budget; only a little use has been made of earmarked revenue from environmental taxes (water abstraction) and charges (vehicle registration fees). Available funds for environmental investments, notably in municipal infrastructure, have been supported by significant foreign financial assistance from diverse multilateral and bilateral sources, with the EU having a leading role during recent years.

Conclusions and recommendations

Pollution abatement incentives

The polluter pays principle is enshrined in legislative acts, but it is not effectively applied. The main instrument to address air and water pollution is

regulation (command and control) combined with prescription of BAT. The flat charge rates per type of polluting substance integrated into permit fees do not create any incentives for enterprises to adopt cleaner technologies. Effective financial incentives in the form of environmental taxes are lacking.

Recommendation 3.1:

The Government should complement the existing regulatory framework for integrated pollution prevention and control permitting procedures for air and water pollution with effective financial incentives to stimulate pollution abatement.

User pays principle

The user pays principle has been strengthened with the recent tariff reform in the water supply, sewerage and wastewater treatment sector and the transfer of tariff-setting authority away from the municipal governments to ERC. However, cost-reflective user fees are still lacking in the municipal waste sector, although they are required for the upgrading and modernization of the waste management sector. Potential economies of scale from regionalization of waste management have not yet been exploited. Bill collection rates at the household level are in general quite low. Measures to ensure high rates of waste service fee bill collection, such as integrating the waste service fee into the local property tax, adopting adequate types of “pay-as-you-throw” schemes and raising awareness of solid waste issues among the population are lacking.

Recommendation 3.2:

The Government, in consultation with local authorities and other stakeholders, should:

- (a) *Review available policies and measures for overcoming the current obstacles to implementation of cost-reflective waste tariffs for collection of waste and its disposal on landfills, while taking into account the need to protect poor and vulnerable groups in the population, and advancing the regionalization of waste services;*
- (b) *Implement measures that are effectively raising bill collection rates for waste service fees.*

Road transport

Road transport is a major source of air pollution in the country. Motor vehicles are subject to excise duties and other charges; pump prices of motor fuels also include excise duties. There is scope to strengthen the

potential environmental effectiveness of these charges.

Recommendation 3.3:

The Government should:

- (a) *Adjust excise duties on motor fuels to move towards European Union minimum rates and eliminate the differentiation between rates on diesel and petrol, following a broad, participatory, multi-stakeholder discussion;*
- (b) *Reform the vehicle registration tax and the excise duty on imports of passenger motor cars by taking into account environmentally relevant factors such as emission standards, including CO₂, the age of the vehicle and type of motor fuel.*

Green procurement

Public procurement is a major economic force in the country. However, the use of public procurement to support environmental protection has been quite limited, given the focus on the lowest price bid.

Recommendation 3.4:

The Government should make more use of green procurement, building on international experience of how to integrate environmental considerations into

public tenders, including by setting credible standards for what constitutes green products and services, such as eco-labels.

Greening investments

Government environmental expenditure has been constrained by limited fiscal space. The business sector will, in any case, be the major source for mobilizing funds for the transition to green economy. The tax system provides generous incentives for business investments. However, these incentives are not discriminating between green investment and other investments. The country does not participate in the Batumi Initiative on Green Economy (BIG-E), which operationalizes the 2016 Pan-European Strategic Framework for Greening the Economy based on voluntary commitments in areas such as the greening of investments, which are part and parcel of sustainable development.

Recommendation 3.5:

The Government should:

- (a) *Create a favourable policy framework for attracting green investment and innovation, including for nature-based solutions;*
- (b) *Join the 2016 Batumi Initiative on Green Economy (BIG-E).*

Chapter 4

ENVIRONMENTAL MONITORING AND INFORMATION

4.1 Environmental monitoring

Monitoring networks

Air

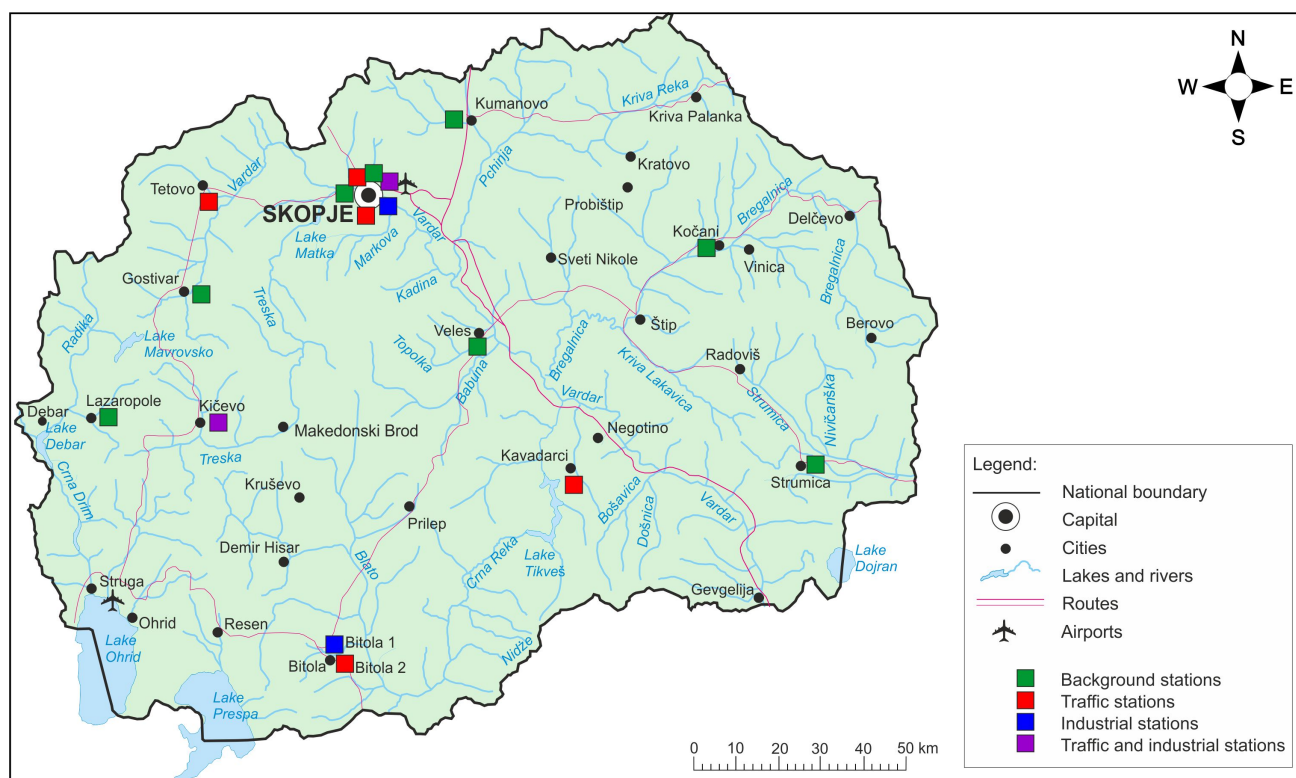
Since 2011, the number of automatic air quality monitoring stations has increased from 15 to 17 fixed stations (map 4.1). Two new stations – Centar and Karpos – were installed and made operational by the end of 2011. These two stations, located in Skopje, are the first stations installed with instrumentation to monitor fine particles (PM_{2.5}). Together with one additional mobile station, these stations form the state automatic monitoring system for ambient air quality, which is operated by MEIC.

The air quality monitoring stations provide continuous monitoring of the following parameters: SO₂, NO-NOx-NO₂, O₃, CO, PM₁₀, PM_{2.5} and BTEX (benzene, toluene, ethylbenzene, o-xylene, p-xylene). Not all

stations monitor all these parameters (table 8.1), though. For example, only four stations (Karpos, Centar and Rektorat in Skopje, and Miladinovci next to the oil refinery) have instruments to monitor BTEX.

At November 2018, the BTEX instruments are not operational, due to insufficient maintenance capacity, but these should be operational again as soon as possible. Polycyclic aromatic hydrocarbons (PAHs) are only measured occasionally, when there is sufficient budget. The same happens for heavy metals, also measured occasionally, usually through subcontracts under the scope of specific projects, since the Ministry of Environment and Physical Planning does not have the laboratorial capacity for these parameters. As an example, a new project under development foresees a BTEX and PAHs campaign, among other activities such as the installation of one new monitoring station and the upgrading of the Bitola 1 station.

Map 4.1: State automatic monitoring system for ambient air quality



Source: Ministry of Environment and Physical Planning, 2018.

Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

Volatile organic compounds (VOCs) are only measured under the scope of specific projects, such as in the case of a twinning project that ran between 2010 and 2012, under which VOCs were measured. Otherwise, VOCs are not regularly measured at any station.

The following meteorological parameters are also measured at all stations: temperature, humidity, pressure, wind direction, wind speed and global radiation. Nonetheless, the meteorological sensors in the air quality monitoring stations are in some cases 15 years old or more, are not calibrated, and there is no capacity in the Ministry of Environment and Physical Planning to calibrate them. Therefore, the Ministry of Environment and Physical Planning does not rely on the meteorological data collected by the state automatic monitoring system for ambient air quality. When meteorological data are needed, the Ministry of Environment and Physical Planning relies on data collected by HMS.

Some of the air quality monitoring instruments in place are older than 12 or 15 years. In 2017, a complete replacement was done of all the instruments in Tetovo station, and the existing instruments for NO_x, PM₁₀ and ozone in Kumanovo and Bitola 2 were also replaced with new instruments. Furthermore, instruments for monitoring PM_{2.5} concentrations were installed in all three of these monitoring stations. These replacements were carried out under the scope of an IPA-funded project.

During January 2018, the air quality monitoring station that used to be located in Mrshevcı was relocated to Gostivar, and the former Veles 1 station was relocated to Strumica. The mobile monitoring station was set up in the municipality of Butel in Skopje, and this station will monitor the air quality for a period of one year.

A new technical cooperation project, “Development and implementation of a Health Index for Air Pollution”, financed by the IPA Cross-Border Cooperation Programme between North Macedonia and Greece for the period 2014–2020, was started in August 2018. A series of monitoring activities is planned under the scope of this project, including a local inventory of air emissions for Gevgelija and Bitola, indicative measurements of the composition of PM (heavy metals and PAHs) in Bitola, procurement

of one monitoring station for ambient air quality to be set up in the border area of Gevgelija and procurement of measuring instruments for the existing station in Bitola.

The development and implementation of a monitoring plan for heavy metals, VOCs and PAHs is also foreseen under the scope of another technical cooperation project financed by the IPA II programme of EU.

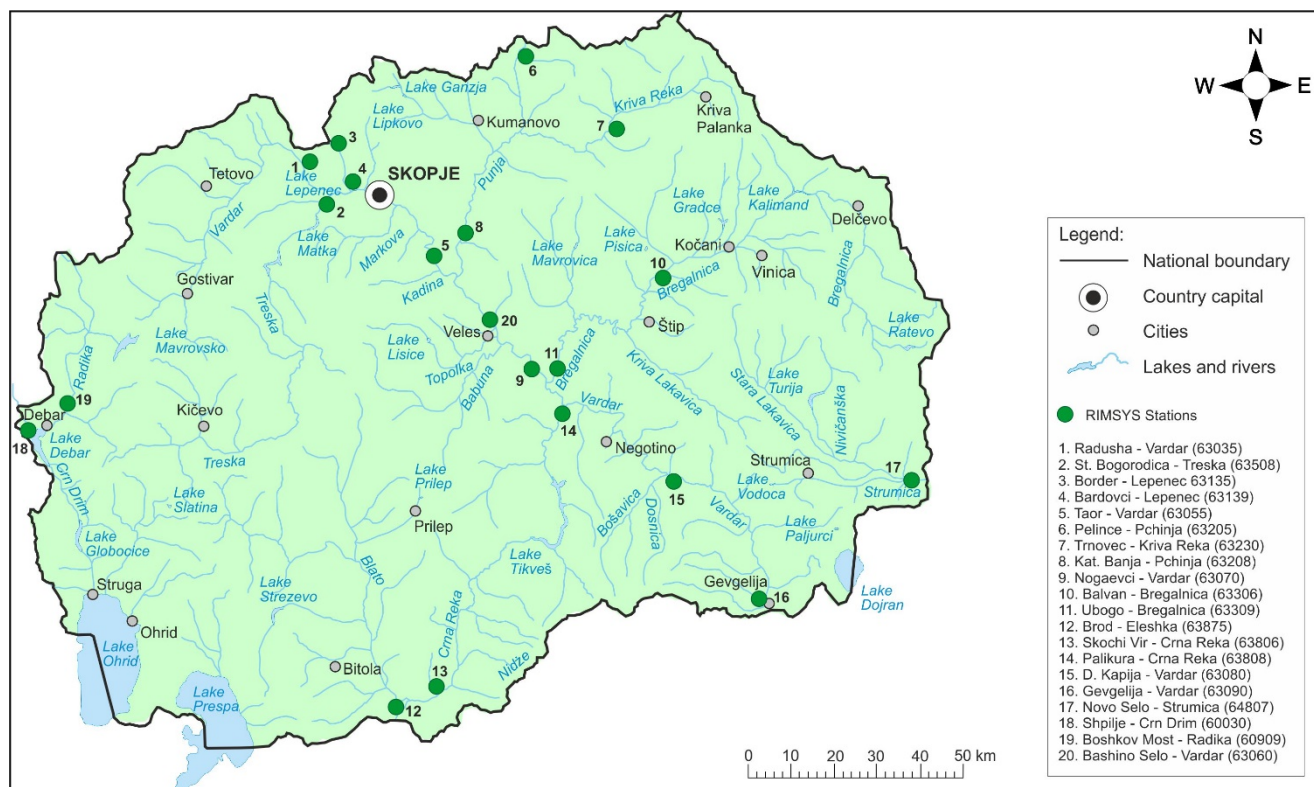
Another air quality monitoring network is operated in 10 cities by the regional CPHs under the Ministry of Health. The CPH in Skopje measures SO₂, black smoke, suspended particles, CO and lead, and the Institute of Public Health also monitors lead, cadmium, iron, manganese, copper, zinc, cobalt, nickel, chromium and strontium in suspended particles. The CPH in Veles measures SO₂, black smoke, suspended particles, cadmium, lead and zinc. The CPHs in Kumanovo, Kocani, Tetovo, Bitola, Ohrid, Prilep and Štip all monitor suspended particles. The CPH in Kumanovo also monitors lead, cadmium and zinc.

In 2011, the City of Skopje installed an automatic air quality monitoring station in the city centre, measuring SO₂, NO₂, CO and PM₁₀ (chapter 8) under the framework of the project “Skopje breath”, along with an outdoor information panel to provide the public with timely and accurate information about the current state of the ambient air quality in the central city area. Due to construction activities initiated in 2012 in the vicinity of the station, the Skopje municipal authority decided to remove the station and since then it has not been active. Skopje municipal authority plans to relocate the station to the immediate vicinity of Gradskot Park and reactivate it in 2018.

Surface water

The surface water quality monitoring network comprises 20 sampling points, 17 of which are located in the Vardar River Basin, one point in the Strumica River Basin, and two other sampling points in the Crn Drim River Basin (map 4.2). Monitoring of physico-chemical parameters and heavy metals is carried out on a monthly basis at all 20 points, while biological parameters according to the EU Water Framework Directive (WFD), to be monitored every six months, were monitored for the first time in 2018.

Map 4.2: River monitoring stations



Source: Hydrometeorological Service, 2018.

Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

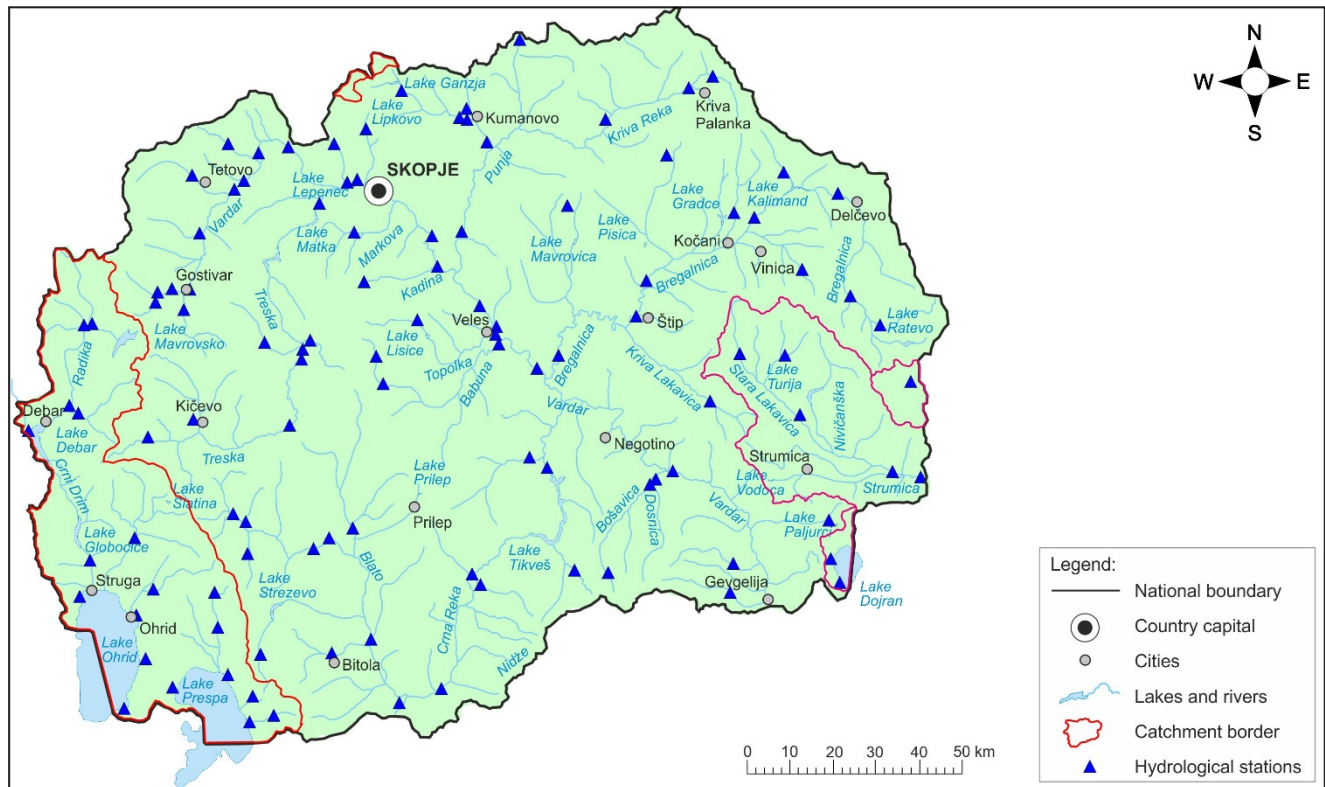
The parameters monitored at these 20 sampling points are: odour, colour, air temperature, water temperature, dissolved oxygen (DO), saturation, the five-day biochemical oxygen demand (BOD₅), chemical oxygen demand (COD), NO₃, NO₂, NH₄, PO₄, alkalinity, turbidity, conductivity, redox potential, CO₂, suspended matter, hardness (total, carbonate, non-carbonate), chloride, SO₄, Ca, Mg, K, Na, and heavy metals (Fe, Mn, Pb, Zn, Cr, Co, Cd, Ni, and Cu).

From the list of “priority substances and certain other pollutants”, HMS analyses only the heavy metals cadmium, lead and nickel. This is due to the lack of appropriate and modern laboratory equipment. With regard to biological quality elements, since 2018, benthic invertebrate fauna, phytobenthos and phytoplankton are monitored twice a year, in accordance with the national legislation. Sampling of these quality elements is fully in accordance with the WFD requirements for two times per year, as at 2018. The other two biological quality elements (macrophytes and fish) are not yet subject to routine monitoring. Metrics for classification of the biological elements have been established but reference conditions are still not yet established. Also, the HMS laboratory is not capacitated to monitor surface water quality according to the full requirements of the national water-related legislation and WFD.

The network of monitoring surface water also comprises 110 hydrological stations (map 4.3). Almost half of these stations are not operational due to inadequate maintenance and lack of financial resources. At November 2018, only 65 stations are still in operation.

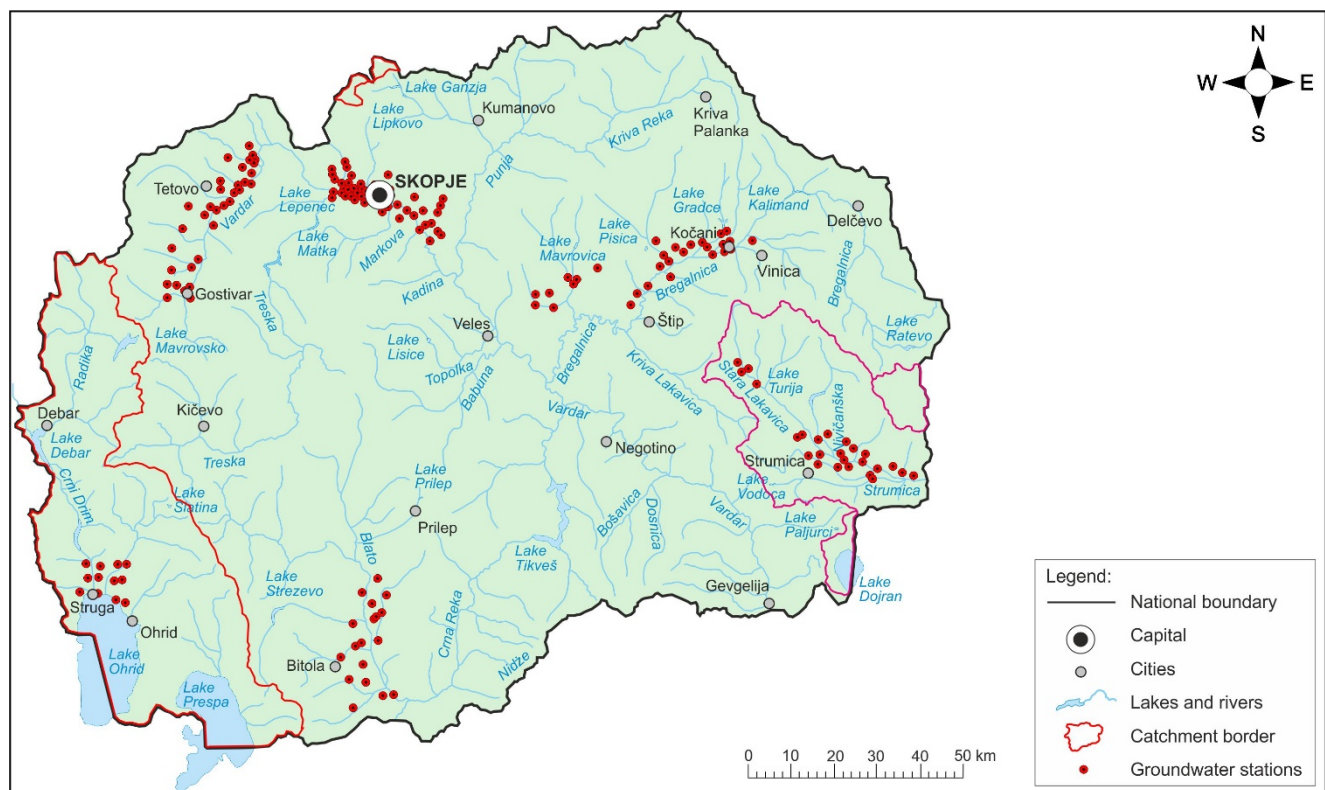
These stations are supposed to enable hydrological observations and basic measurements, including surface water level, water temperature, suspended sediments (although this section has not been operational since 2010). They are also expected to enable direct measurements of hydrological parameters such as water discharge and water velocity, and riverbed cross-sections. Nonetheless, the budget for regular operation and maintenance of hydrological stations is limited and does not allow for the appropriate replacement of broken instruments, nor the cleaning of wells and cross-sections.

At November 2018, the Hydrobiological Institute in Ohrid has no active monitoring projects and therefore is not carrying out any surface water monitoring activities. But monitoring activities are expected to be initiated in Lake Ohrid under the scope of a Global Environment Facility (GEF)-funded project covering the Drin River Basin.

Map 4.3: Hydrological network stations for surface water and river monitoring stations

Source: European Commission Joint Research Centre and Hydrometeorological Service, 2018.

Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

Map 4.4: Hydrological network stations for groundwater monitoring

Source: European Commission Joint Research Centre and Hydrometeorological Service, 2018.

Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

Groundwater

The groundwater monitoring network comprises 115 groundwater stations located across the country. However, only 38 of these stations are operational, while remaining stations are not operational due to insufficient maintenance (map 4.4). These stations are supposed to enable hydrological observations and basic measurements, including groundwater level and water temperature, but, as at November 2018, no groundwater monitoring activities are being carried out due to the lack of funds. In Skopje and Tetovo, the Public Enterprise on Water Supply and Sewerage – Skopje has monitored groundwater quality since 2010 at both Skopje and Tetovo groundwater fields and delivers data annually to the Ministry of Environment and Physical Planning.

The City of Skopje also works together with the Public Enterprise on Water Supply and Sewerage – Skopje, HMS and the Institute of Public Health to regularly monitor the City's groundwater sources through a network of piezometers. The City of Skopje makes the results of these regular monitoring activities publicly available on its website, together with the results of past one-off monitoring campaigns.

Drinking and bathing water quality

The 10 regional CPHs carry out basic bacteriological and physico-chemical analyses according to the frequency and parameters stipulated in the 2008 Rulebook on the safety of water for human consumption, while the Institute of Public Health performs periodic physico-chemical, bacteriological, parasitological and radiological analyses according to WFD requirements. Every three months, the Institute of Public Health assesses the performance of the regional CPHs in monitoring drinking water quality.

Since 2008, the Institute of Public Health has been using specific sanitary inspection forms that were developed taking into account WHO requirements. The Institute of Public Health checks 10 water treatment plants, visiting each station once a year to assess its status according to the respective sanitary inspection form. Inspection reports are transmitted to the Ministry of Health, Agency for Food and Veterinary Medicine and public water supply companies. These water treatment plants have internal laboratories, with the exception of Ohrid water treatment plant, which uses the laboratory of the respective regional CPH. Periodicity of drinking water quality monitoring depends on the number of people served by each drinking water station. Monitoring of individual or community wells in rural villages is carried out by the regional CPHs in accordance with

the annual public health programme. Overall, the drinking and bathing water quality monitoring network ensures the proper monitoring of the quality of these water resources, but opportunities remain for improving information-sharing among CPHs and for making the information on drinking and bathing water quality available to the public in a more effective way. New software on water safety has been under development by the Institute of Public Health to address these issues but has not yet been completed, due to the lack of funding.

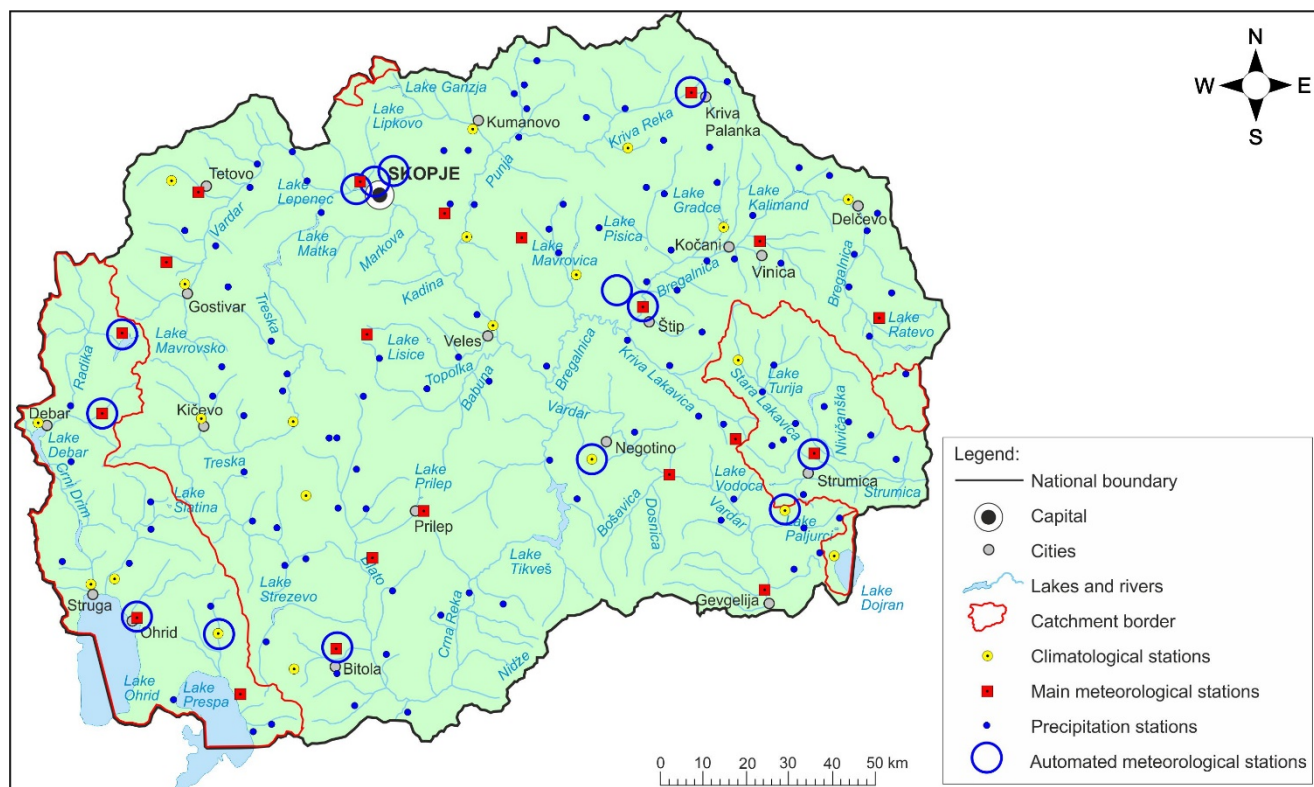
Atmospheric precipitation and snow cover

The atmospheric precipitation and snow cover monitoring network is operated by HMS (map 4.5). The number of operational precipitation stations has been continuously decreasing due to the lack of funds. The current number and spatial distribution of meteorological observation stations is not sufficient, and there is a particular lack of meteorological stations at the higher altitudes. The two existing radar stations are old and have maintenance problems, and the lack of spare parts and of new radar engineers limits hydrology applications.

The state network of meteorological stations with professional observers comprises 18 stations where the following parameters are monitored 24 hours a day: atmospheric precipitation/rainfall (type, quantity and intensity), snow cover (height and density of snow), air temperature (minimum, maximum), soil temperature, relative humidity of the air, wind (direction and speed), atmospheric pressure, evaporation from water surface, sunshine duration, observed clouds, visibility, condition of soil and meteorological phenomena.

The network of climatological stations with part-time/freelance observers comprises seven operational stations. The following parameters are monitored three times a day (at 7:00, 14:00 and 21:00): atmospheric precipitation/rainfall, height of snow, air temperature (minimum and maximum), wet thermometer, wind (direction and speed), observed cloudiness, condition of soil and meteorological phenomena. In addition, a network of 42 automatic meteorological stations is in place to monitor the amount of precipitation, temperature, relative humidity at a height of 2 m, air pressure and wind (direction and speed), but only a number of these are operational due to the lack of maintenance. There is also a network of freelance observers to monitor the amount of rainfall and height of snow at 94 locations. Measurements are taken once a day at 7:00, and recorded data forms are conveyed to HMS once a month.

Map 4.5: Meteorological network



Source: European Commission Joint Research Centre and Hydrometeorological Service, 2018.

Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

Soil

As at November 2018, no systematic soil monitoring was being carried out in the country. The City of Skopje carried out a series of soil monitoring campaigns in the Skopje region focusing on heavy metals pollution. These activities were concluded in 2012 and the results made publicly available on the website of the City of Skopje.

Noise and vibration

The status of the noise monitoring network remains unchanged since 2011. Of 10 regional CPHs, three operate a noise monitoring network in the following four cities: Bitola (8 measurement points), Kicevo (8 points), Kumanovo (10 points) and Skopje (14 points). Bitola CPH monitors noise in both Bitola and Kicevo, and the Kumanovo and Skopje CPHs undertake noise monitoring activities in their respective cities. All these noise monitoring activities are funded under the National Public Health Programme of the Ministry of Health. Noise monitoring activities take place twice a year, in spring and in autumn. Noise measurement points in each city are evenly distributed in four-degrees of precision. The noise monitoring methodology is harmonized and standardized, determining the following noise indicators: Lday, Lnight, Lden.

Municipalities are also responsible for noise monitoring and for the production of noise maps, but comprehensive city-wide noise maps have not yet been produced. Although the City of Skopje has the necessary noise monitoring equipment and the noise mapping software, it does not have enough trained resources to systematically monitor noise or develop noise maps. It periodically conducts indicative measurements of traffic noise, mostly under the scope of specific projects, and is planning to start noise mapping activities in 2019. Results of noise monitoring activities are made publicly available on the website of the City of Skopje. There is no monitoring of vibrations, nor are data available on environmental exposure to vibrations.

Radioactivity

The status of the radiation monitoring network remains unchanged since 2011. Continuous measurements of the gamma background are conducted at 12 automatic meteorological stations. Every three months, precipitation samples are collected manually at three other stations to calculate aggregate beta activity. Two other stations collect drinking water samples every month. Surface water samples (from rivers, lakes and draw wells) are also collected monthly at three other stations so as to monitor ionizing radiation in water resources.

Photo 4a: National Park Galicica

The main challenges for the radiation monitoring network are related to servicing and maintenance capacity, notably the maintenance of the network of automatic stations monitoring gamma radiation. Four sample collection stations collect samples of aerosols monthly. Randomly selected soil samples are collected every six months. Radiation contamination is monitored in food through randomly selected samples every six months, except for milk, which is monitored monthly. Livestock feed/fodder is monitored annually at five locations, and passive indoor radon monitoring is carried out annually at schools within the country. All collected samples are sent to the Institute of Public Health for laboratory analysis.

Biodiversity

Until recently, there has not been a systematic approach to monitoring biodiversity. Most data reporting activities have been under multilateral environmental agreements (MEAs) obligations and in nationally designated areas, carried out on a project basis and/or dependent on international projects. In practice, specific biodiversity monitoring activities are carried out only under the scope of different projects. Protected area administrations carry out only partial biodiversity monitoring activities, depending on resources available.

Also, there are some gaps in reporting protected area monitoring results to the Ministry of Environment and Physical Planning, which mostly receives monitoring

data from the three national parks: Pelister, Mavrovo and Galicica.

Since 2010, the administration of Galicica National Park has been carrying out activities aimed at monitoring forest plant and herbaceous plant communities and habitats, as well as plant and animal species. But most monitoring activities take place under the scope of specific projects or situations. For example, in Pelister National Park, the revitalization of the old Molika forest is monitored by monitoring the course of the molybdenum renewal process. A winter census of the waterfowl in the three natural lakes, as well as in some artificial lakes and fishponds, is not carried out on a continuous basis, being dependent on projects and financing. Nonetheless, waterfowl monitoring activities have been increasing in the past few years. Hunting associations and hunting concessionaires undertake game monitoring activities.

As for CSOs such as the Macedonian Ecological Society, these usually carry out voluntary monitoring activities in specific areas of interest, usually in the framework of specific projects. MES promotes a variety of biodiversity monitoring activities, fully funded by projects. Notably, MES has been assuring long-term monitoring of important species such as vultures, which have been continuously monitored since 2003 under the scope of the Vineyards Protection Project, and the Balkan lynx, continuously monitored since 2006 within the framework of the Programme for Recovery of the Balkan Lynx, an

international programme funded by the MAVA Foundation that has been running since 2016 in several Balkan countries, involving a variety of national organizations. MES has also developed its own biodiversity monitoring database and publishes annual reports of its activities on its website. These are available in both the Macedonian and English languages, the latest edition available online being from 2016.

A National Biodiversity Information System was established in 2011 at the Ministry of Environment and Physical Planning under the scope of a UNDP project. It includes a national biodiversity database and is supposed to be made publicly accessible on the Ministry of Environment and Physical Planning website, but it is currently not operational nor assuring appropriate management of biodiversity data. A draft national biodiversity monitoring programme is expected to be prepared, together with monitoring protocols for 20 habitats, 20 species and 20 birds of EU interest, including an assessment of the conservation status, harmonized with the requirements of the Habitats and Birds directives (chapter 11).

Forests

No forest inventory has been carried out to date in the country. As at November 2018, only a ground inventory for forestry planning is available.

Under an annual contract with the Ministry of Agriculture, Forestry and Water Management, the Faculty of Forestry of the University “Ss. Cyril and Methodius” in Skopje carries out forest health monitoring activities. It provides an annual report on the state of health of forest resources in the country to the Ministry’s Department of Protection of Forest and Wood, but there are issues with continuity and the quality of reports for some forest plots. These annual reports have been produced every year during the period 2011–2018.

At November 2018, none of the forest monitoring information or forest data collected is publicly available. There is, overall, insufficient human, technical and financial capacity to ensure comprehensive monitoring of forest resources. Any plans or activities aimed at addressing existing gaps and improving the current system, such as the development of a forest information management system and a forest inventory, depend on the availability of funds from international cooperation projects. As in other monitoring networks dependent on international projects, this situation results in there being little capacity to maintaining project outputs in post-project phases.

Waste

The Ministry of Environment and Physical Planning collects waste-related data from various sources (operators, municipalities, waste management companies, handlers of waste streams) by waste typology (hazardous and non-hazardous waste, packaging waste, WBA, end-of-life vehicles). MEIC collects reports from municipalities on MSW generation and management. However, only around one third of all municipalities provided reports in the last round, despite the legal obligation to do so.

Analytical laboratories

The Ministry of Environment and Physical Planning operates two laboratories: the Central Environmental Laboratory and the Air Quality Calibration Laboratory. Neither of these laboratories is accredited under the ISO/IEC 17025 standard on “General requirements for the competence of testing and calibration laboratories”. The Central Environmental Laboratory reportedly carries out analyses of wastewater, soil, emissions from stationary sources, ambient noise and microclimatic conditions. These are carried out according to the respective rulebooks. The Laboratory is certified according to ISO 9001 and is preparing the necessary documentation for accreditation according to ISO/IEC 17025.

The Air Quality Calibration Laboratory is responsible for calibrating the measuring instruments in the state automatic monitoring system for ambient air quality. The Laboratory checks its calibration standards through interlaboratory comparisons, in collaboration with an accredited laboratory in Germany. Insufficient funds have been preventing the necessary actions for accreditation of the calibration laboratory, and its current capacity to maintain and service the air quality monitoring network is insufficient. The Institute of Public Health operates 14 accredited reference laboratories, including the Laboratory for Sanitary Microbiology, the Laboratory for Food Quality Control, the Laboratory for Water Quality Control, the Laboratory for Contaminants and Eco-toxicology, the Laboratory for Radioecology and the Laboratory for Ionizing Radiation.

4.2 Availability of information on the environment and sustainable development

Data reporting by enterprises

The Department for Industrial Pollution and Risk Management under the Ministry of Environment and Physical Planning is responsible for prescribing self-monitoring and reporting procedures, including

reporting frequency, of enterprises covered by IEPs. As at November 2018, the number of enterprises covered by IEPs is 396. Depending on their permit classification (A- or B-type), 160 of these 396 installations have permits issued by the Ministry of Environment and Physical Planning, while the remaining 236 have permits issued by the respective municipalities. Of 160 installations, 120 are regularly reporting to the Ministry of Environment and Physical Planning.

In the case of air emissions, all companies with installed power greater than 50 MW have to report monthly to the Ministry of Environment and Physical Planning, while all others are reporting in accordance with conditions prescribed in their environmental permits. Also, companies with more than 50 MW of installed power should have their own automatic air quality monitoring system, but only the cement manufacturing company carries out automatic monitoring and reporting. The steel company also has automatic monitoring systems in some locations. The refinery has been closed since 2015; however, while in operation, it also had an automatic self-monitoring system for air emissions.

Two electricity power plants, including one that only operates a few months per year, are also supposed to have automatic self-monitoring of air emissions, but these are not in place. The one that operates for a few months per year during the winter period has internal automatic self-monitoring of air emissions. The companies that own electricity power plants and heat plants that do not have automated monitoring are contracting accredited laboratories to measure emissions once a month and are sending monthly reports to MEIC.

As at November 2018, there is no database being kept by the Ministry of Environment and Physical Planning on data reported by enterprises under IPCC requirements. Nonetheless, relevant air emissions and PRTR data are available at the Ministry of Environment and Physical Planning, collected under different reporting schemes. This has been resulting in some double and triple reporting (on permits, air admissions from fixed sources and PRTR). The current status of the country vis-à-vis target 12.6 of the 2030 Agenda for Sustainable Development is described in box 2.1.

Statistical data

SSO collects statistical environmental data through regular surveys with different periodicities (annual, biennial and ad hoc) and through administrative data.

According to the five-year Statistical Programme for 2018–2022, the statistical environmental data collected cover the following three topics: environment (waste and hazardous substances, water), physical environmental accounts (material flows) and monetary environmental accounts (costs/expenditures and taxes) (table 4.1). Material flow accounts are produced by SSO covering the production of metals and non-metals, coal production, fish catches, crop production, number of livestock, number of wild animals, energy consumption, and imports and exports in physical units.

Finally, administrative data are used to calculate environmental taxes per economic activity, including excise taxes on fuels and transport, pollution and resource taxes. As for environmental goods and services accounts, these have been produced (but not published) under the scope of a twinning project. Under a new IPA project, there are plans for the development of air emission accounts.

Environmental statistics are published by SSO under the following annual publications:

- Sustainable Development;
- Statistical Yearbook;
- Macedonia in Figures;
- Regions of the Republic of Macedonia.

In addition, since 2007, a publication dedicated solely to environmental statistics is published every two years, jointly with the Ministry of Environment and Physical Planning. All environmental statistics produced by SSO are made publicly available online on the SSO website.

Databases

Air pollutant emissions inventory

An air pollutant emissions inventory was created in 2005 and is maintained by MEIC, as part of the European Monitoring and Evaluation Programme (EMEP) under the scope of the implementation of the Convention on Long-Range Transboundary Air Pollution (Air Convention). For the 2005, 2006, 2007 and 2009 inventory years, the Ministry of Environment and Physical Planning updated the air pollutant emissions data only for the three main sectors according to the Selected Nomenclature for Sources of Air Pollution, without submitting an informative inventory report (IIR). In 2010 and 2012, the Ministry engaged a consultancy company to prepare a complete air pollutant emissions inventory and IIRs for the 2008 and 2010 reporting years.

Table 4.1: Statistical environmental data

Statistical surveys	Periodicity	Data collected
Municipal waste	Annual	Municipal waste generated by types and amounts, waste treatment, and waste disposal (active landfills)
Waste from economic activities	Every two years	Waste generated and stored, waste received, waste recovered and disposed, and waste delivered
Exploitation and protection of water against pollution in industry	Annual	Water supply, water use, and water treatment and discharge
Public water supply and sewerage	Annual	Water abstracted and supplied, water supply network and equipment, wastewater discharge and sewerage network, and wastewater treatment
Land irrigation and drainage, flood protection and river regulation	Annual	Areas and facilities flooded by surface water and groundwater, protection against floods and river regulation, land drainage, sources, facilities and devices for irrigation, irrigated area, water used for irrigation and yield from irrigated areas
Surface water quality	Annual	Physical-chemical analysis of surface waters reported by HMS
Surface water	Annual	Watercourses and lakes reported by HMS
Meteorological measurements and observations	Annual	Measurement data and observations of air temperature, precipitation reported by HMS
Environmental protection expenditures	Annual	Expenditures for purchasing and maintenance of material fixed assets, sources of financing of expenditures for purchasing and maintenance of material fixed assets with ecological use, and payments and fees for performed services for environmental protection

Source: State Statistical Office.

Photo 4b: Countryside landscape

The air pollutant emissions inventory for 2011 was extended in 2013 when, for the first time, the inventory covered PM_{2.5}, PM₁₀, dioxins and furans. In 2015, an emissions inventory was developed for the whole period between 1990 and 2013 for all pollutants and, in 2016, an IIR was prepared and reported to the Air Convention. Since 2016, complete national inventories and IIRs are prepared by the Ministry of Environment and Physical Planning and reported on a regular basis. The emissions inventory and IIRs are publicly available online.

Cadastre of Air Polluters and Pollutants

A Cadastre of Air Polluters and Pollutants identifies polluters along with information on their location, the technological processes involved, the amount and type of pollution, and electricity consumption. The Cadastre is not publicly available but relevant data and information therein can be provided by the Ministry of Environment and Physical Planning to members of the public upon request, under the scope of the 2006 Law on Free Access to Public Information. Instructions and templates for submitting information requests are provided on the website of the Ministry of Environment and Physical Planning.

Cadastre of Wastewater

The Cadastre of Wastewater contains data on activities and facilities that pose or may pose risks to the environment, covering industries and public enterprises. The Cadastre is not publicly available but relevant data and information therein can be provided by the Ministry of Environment and Physical Planning to members of the public upon request, under the scope of the Law on Free Access to Public Information. Instructions and templates for submitting information requests are provided on the website of the Ministry of Environment and Physical Planning.

National Air Quality Information System

The National Air Quality Information System is a database and portal dedicated to the collection, management, analysis and dissemination of data and information on air quality. It was developed under an IPA twinning project. As a part of that project, an air quality portal was developed by MEIC for disseminating near-real-time data collected through the state automatic monitoring system for ambient air quality.

Pollutant Release and Transfer Register

The country ratified the Protocol on Pollutant Release and Transfer Registers (Protocol on PRTRs) in 2010

and, in 2013, adopted the Rulebook on the development of the pollutant release and transfer register. MEIC runs the PRTR database, which includes data covering PRTR installations. As at November 2018, only 2015–2016 data are available; data for 2017 are still being collected and are undergoing a validation process, after which they will also be made publicly available. As at November 2018, no statistics on the national PRTR are being made publicly available.

To facilitate reporting and to make PRTR information publicly available, the Ministry of Environment and Physical Planning has created a national PRTR web portal and guidance for installations to use an online PRTR reporting tool that is accessible through the portal. Of about 80 PRTR installations, in 2016, only 21 reported for the year 2015 using the online PRTR reporting tool. There are also additional gaps in submitting PRTR information, and some installations require the Ministry of Environment and Physical Planning to follow up on compliance.

The Ministry of Environment and Physical Planning has been promoting awareness-raising and capacity-building activities to address the low PRTR reporting rate. In 2015 and 2016, several workshops were organized – in 2015, in Gostivar, Skopje and Štip and, in 2016, in Skopje – to promote the engagement of civil society in the PRTR process. In 2017, the Ministry of Environment and Physical Planning also developed a short PRTR brochure targeting the public and CSOs.

The brochure describes the PRTR process, the obligations of public authorities regarding the establishment and operation of the PRTR and the obligations of operators, as well as the rights and roles of the public and CSOs, in accordance with the reporting requirements under the ECE Protocol on PRTRs and European Pollutant Release and Transfer Register (E-PRTR) reporting.

Several capacity-building projects were or are being implemented by the Regional Environmental Centre (REC) in cooperation with ECE, supporting the establishment and advancement of PRTRs (2015–2017). The EEA has, since 2010, implemented a project on the E-PRTR as a priority data flow. In 2017–2018, the country participates in a subregional project funded by the Quick Step Programme of the SAICM, aimed at strengthening capacities for the development of the national PRTR and supporting SAICM implementation. Within the project, a regional workshop was held in Skopje on 17–19 December 2018 to stress the importance of reporting and further promote the Protocol on PRTRs, and guidelines for

emission estimations are developed by the Ministry of Environmental and Physical Planning to further support industry to prepare and report online according to the national PRTR requirements.

Water databases

MEIC has established a database containing data on both water quality and quantity collected from institutions monitoring water resources. The water monitoring data are publicly available through the websites of the Ministry of Environment and Physical Planning and HMS. In addition, the Ministry's Department for Water developed the Water Information System in support of its work on future decisions on the water permitting system and to facilitate informing other relevant institutions.

Environmental indicators and their use

The country has adopted 74 national environmental indicators within the following 13 themes: air quality, biodiversity, climate change, soil, waste, water, agriculture, energy, fisheries, transport, health, tourism and environmental protection expenditures, in line with the EEA's core set of indicators. It has also adopted 75 environmental statistical indicators focused on 10 themes, some of which are in line with EUROSTAT indicators.

These indicators apply the Driver-Pressure-State-Impact-Response (DPSIR) framework approach and are classified into the following five categories: A (descriptive indicators), B (progress indicators), C (environmental performance indicators), G (policy effectiveness indicators) and D (overall environmental, economic and social well-being indicators).

The 74 environmental indicators are made publicly available online on the website of the Ministry of Environment and Physical Planning and are disseminated using the format of the EEA fact sheet for each indicator, in Macedonian and English. Annual data are presented in the form of charts, tables and maps, supported by a short assessment of the status and time series, including trend estimates, thus enabling an overview of status by each indicator vis-à-vis relevant targets. The fact sheets also contain information about the potential response, though the policy context and relevance are limited in the current presentation.

The statistical environmental indicators are made publicly available online on the SSO website in a user-friendly way, in Macedonian and English.

Environmental indicators corresponding to 33 of the 42 ECE environmental indicators contributing to the establishment of a Shared Environmental Information System (SEIS) in the Pan-European region are regularly calculated and published as per criteria for SEIS implementation agreed under the scope of the ECE Joint Task Force on Environmental Statistics and Indicators.

The 33 indicators have been developed with complete metadata information and are made publicly available online. They are also regularly used in national reporting processes and publications, including the Annual Report on the Quality of the Environment, the SoER, the Environmental Indicators Report, emissions inventory reports and air quality assessment reports.

As for the remaining indicators in the ECE list of environmental indicators, indicators C12: Nutrients in coastal seawaters and C13: Concentrations of pollutants in coastal seawater and sediments (except nutrients) are not calculated as these are not relevant for the country. ECE environmental indicators I2: Transboundary movements of hazardous waste, I3: Waste reuse and recycling, C1: Renewable freshwater resources, C6: Connection of population to public water supply, C8: Reuse and recycling of freshwater, and C15: Wastewater treatment facilities are not calculated because data are not available.

OECD Green Growth indicators are not being produced in the country, although several of the indicators already being regularly produced can be a starting point towards the production of green growth indicators.

Indicators and information for the Sustainable Development Goals

SSO produces annually a sustainable development report in both Macedonian and English and makes it publicly available online. While the report does not currently monitor progress towards the global Sustainable Development Goals or their environmental dimension, it assesses national trends in the socio-economic, environmental and institutional dimensions of sustainable development as per an approved set of Sustainable Development Indicators (SDIs) structured in accordance with Eurostat's EU SDI set.

There is not yet a national indicator framework for the Sustainable Development Goals, but the national SDI set provides a starting point for SSO to calculate the national data for Sustainable Development Goals in future editions of the report to monitor the country's

progress towards achieving the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals. While there has not yet been an assessment of data gaps for future reporting of the Global Indicator Framework for the Sustainable Development Goals, SSO has initiated a process involving all institutions within the official statistical system to assess the availability of data and capacities to produce required indicators for the Sustainable Development Goals in accordance with the new European Sustainable Development Goals dataset.

Implementation of Shared Environmental Information System principles

The country implements the SEIS principles of open access to environmental data,³ producing and sharing online a set of ECE environmental indicators associated with the implementation of an SEIS. MEIC makes environmental data and indicators publicly available online in observance of the following SEIS implementation categories defined under the scope of the ECE Working Group on Environmental Monitoring and Assessment: relevance, accuracy, timeliness and punctuality, accessibility, clarity and comparability.

Environmental reporting, publication of environmental data, indicator-based assessment reports

National Book of Environmental Parameters

The National Book of Environmental Parameters provides an overview of environmental parameters that prescribe responsibilities and timelines for data collection, format and source of data, methodologies, processes for environmental data exchange and reporting, and the management of environmental monitoring data and information flows. It was developed through an interagency process and intends to reflect, and guide, the collection and management of environmental data at the national level. It was developed in 2015 but has not been updated since and thus does not accurately reflect current responsibilities on environmental monitoring and on management of monitoring data/information flows.

Annual Report on the Quality of the Environment

The Annual Report on the Quality of the Environment is an indicator-based report covering the following main environmental themes: air, water, waste,

biodiversity, noise and climate change. The report is produced in the Macedonian language only, in a user-friendly way designed to be understandable by non-technical audiences, clearly aimed at the general public. It makes extensive use of data visualizations such as maps, graphics and tables, and provides readers with a summary assessment of the situation for each theme and with a brief description of measures implemented and planned to be taken.

The Annual Report on the Quality of Environment has been regularly produced since 2003, and all editions are made publicly available online. The latest edition available is the 2017 report.

State of the Environment Report

The SoER is produced every four years and published in Macedonian and English following an indicator-based assessment approach structured along the lines of the DPSIR framework. Its production is regulated by the 2006 Rulebook on the content of the State of the Environment Report.

To date, it has only been produced twice, in 2000 and 2013. The Ministry of Environment and Physical Planning plans to produce a report in 2019. The 2000 and 2013 SoERs are made publicly available online.

Environmental Indicators Report

The biennial Environmental Indicators Report is published in both Macedonian and English and follows an indicator-based assessment on 74 environmental indicators, structured in line with the DPSIR framework.

The Environmental Indicators Report has been regularly produced since 2008, but the first three editions (2008, 2010, 2012) were published only in hard copy. The reports for 2014, 2016 and 2018 were published only as electronic versions and are available on the Ministry's website. These reports are more extensive and are intended for use by both experts and the wider public. Moreover, the 2018 report is also planned to be delivered to the Government for adoption in January 2019.

Environmental Statistics Report

Every two years, the Ministry of Environment and Physical Planning and SSO jointly publish the Environmental Statistics Report. The report is

³ Data are managed as close as possible to source, and data are collected once and shared for many purposes.

published in both Macedonian and English and follows an indicator approach based on 75 indicators and 10 main environmental themes, structured in line with the DPSIR framework. The Environmental Statistics Report has been regularly produced since 2007; all editions are made publicly available online on the websites of both the Ministry of Environment and Physical Planning and SSO and are intended for use by the wider public. The latest edition available is the 2017 report.

Publication of air quality data in near-real time

Through its air quality information system AIRVIRO, MEIC collects and processes air quality monitoring data from the state automatic monitoring system for ambient air quality and makes it publicly available in near-real time through its web portal for air quality. The web portal for air quality contains information on the current state of the ambient air in the country, as well as information on air pollutants and their health effects, relevant legislation, and daily, monthly and annual reports.

Due to construction activities initiated in 2012 in the vicinity of the automatic air quality monitoring station and outdoor information panel in the City of Skopje, providing air quality data to citizens in near-real time, the station and outdoor information panel were removed and have not been reactivated since (chapter 8).

Further to this, a citizen-science-type initiative led to the launching in January 2015 of the webpage and mobile phone application “MyAir” (photo 4). The app aggregates and stores data provided by the automatic air quality monitoring stations run by MEIC and makes them publicly available in a way that is easy to understand by the public. The app operates in Macedonian, Albanian and English.

Drinking and bathing water quality reporting

The Institute of Public Health publishes its annual report every year, including a dedicated chapter on drinking and bathing water quality.

Noise reporting

Each year, Bitola, Kumanovo, Kichevo and Skopje CPHs prepare reports on noise measurements and noise exposure and deliver these to their respective local authority, the Institute of Public Health and the Ministry of Environment and Physical Planning.

The Institute of Public Health also prepares an annual report on noise measurements and noise exposure with recommendations and delivers it to the Ministry of Health. This report is made publicly available online.

Radiation monitoring reporting

The Institute of Public Health publishes radiation monitoring results on its website and in its annual report.

Linkages of environmental monitoring systems with other monitoring systems

The 2005 Law on Environment and the 2005 Strategy for Environmental Data Management set the framework for the establishment of a national environmental information system aimed at optimizing environmental data flows between relevant institutions and integrating these into a single interconnected system of interoperable databases for improved access and accurate use of environmental information by all concerned stakeholders, including government agencies and the broader public. To date, such a system has not been established in the country.

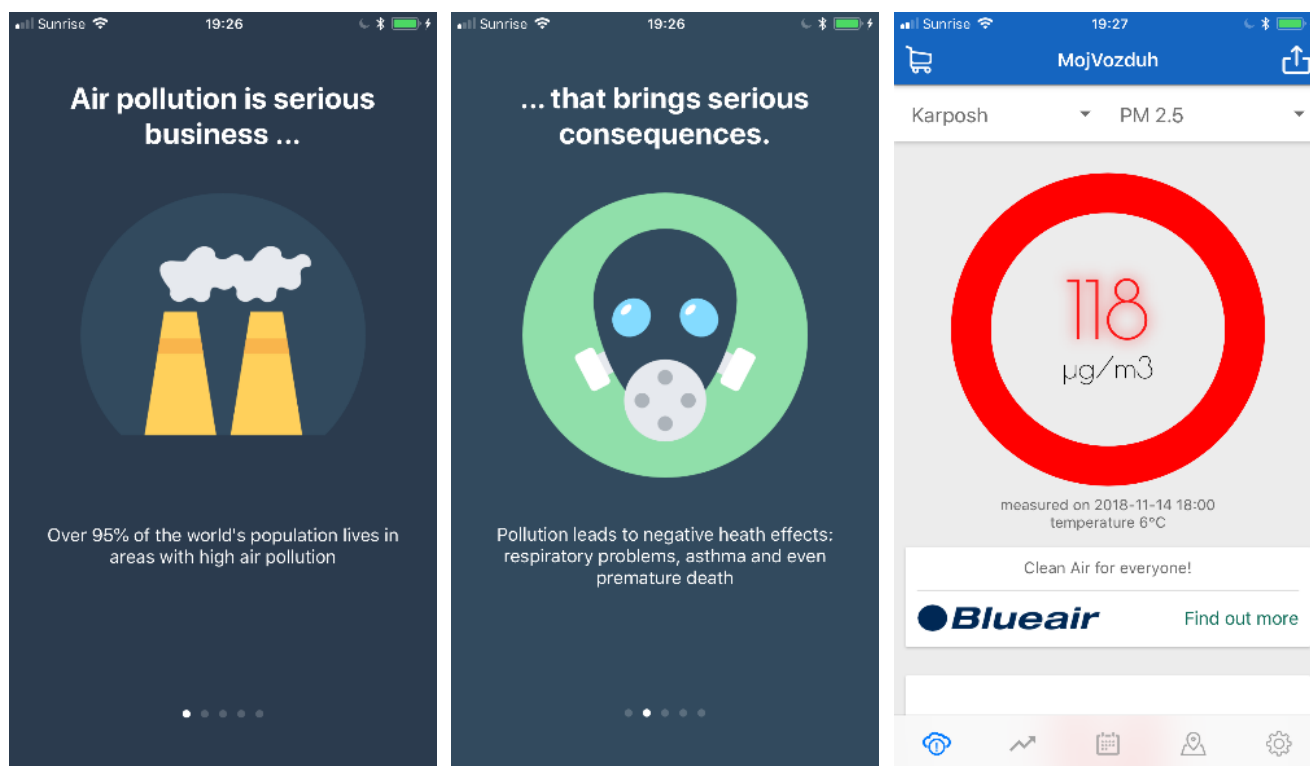
Nonetheless, the development and establishment of a national environmental information system is expected to be initiated at the beginning of 2019 under the scope of a new IPA II project.

Use of environmental data and information for policymaking

Upon publication, the three main environmental data-based publications produced by the Ministry of Environment and Physical Planning – the Annual Report on the Quality of the Environment, the biennial Environmental Indicators Report and the quadrennial SoER – are delivered to the central government bodies for consideration within the policymaking cycle. The Government submits the SoER to the parliament (Assembly) so that the public representatives are also informed.

Nonetheless, in their present form, these reports are stand-alone products that offer only limited potential in terms of their use in support of policymaking processes. While elements of the DPSIR framework are considered, at present, none of these environmental data-based reports fully integrate a multisector integrated environmental assessment approach.

Photo 4c: “MyAir” application on air quality data



Foresight and projections of possible future negative trends, and their implications vis-à-vis national goals and policies, are lacking. The reports also do not address cross-cutting issues such as air quality and health, or transport and the environment. Another relevant use of environmental data in policymaking is the use of air quality monitoring data in the formulation of the current “Clean Air Plan” being promoted by the Deputy Minister of Environment and Physical Planning.

4.3 Legal, policy and institutional framework

Legal framework

According to the Law on Ambient Air Quality, MEIC is required to provide daily air quality information to SEI and to the centres for information and warning, and to develop monthly air quality reports. The 2008 Law on Hydrometeorological Activity stipulates the responsibilities of HMS regarding surface water and groundwater monitoring.

The Law on Nature Protection stipulates the biodiversity monitoring responsibilities of the Ministry of Environment and Physical Planning and of the administrations of protected areas. The Law on Protection from Noise in the Environment stipulates the responsibilities of the Ministry of Environment and Physical Planning and of municipal authorities with regard to noise monitoring.

According to the Law on Waters, the Institute of Public Health is responsible for monitoring bathing and drinking waters, including through microbiological, parasitological, hygienic, toxicological and biochemical analysis. The 2008 Rulebook on the safety of water for human consumption further stipulates the water monitoring responsibilities of the Institute of Public Health. A draft rulebook on drinking water safety has been in development, given the need for harmonization with EU regulations, and is expected to be adopted before the end of 2018. It would bring significant changes in terms of monitoring frequency and parameters.

The management of PRTR information is regulated through the 2011 Rulebook on the form, content, methodology and manner of maintaining the pollutant release and transfer register. The Rulebook has been in force since January 2013.

Policy framework

A national environmental monitoring strategy was set in place in 2004, further supported by the 2005 Strategy for Environmental Data Management. In 2011, the Government passed the Decision on establishing the State Monitoring Network, a national monitoring network for air, water and noise, including specified measurement points, parameters and monitoring frequencies. A draft national environmental monitoring strategy and programme is

planned to be developed under the scope of the project “Environmental Monitoring and Information System” which is funded by the IPA II programme and is expected to start at the beginning of 2019.

Institutional framework

The Ministry of Environment and Physical Planning is responsible for monitoring: air emissions and air quality; soil contamination, erosion, degradation, salinization and organic matter decline; land use, land use change and land cover (together with the Ministry of Transport and Communications); noise (together with the Institute of Public Health and municipalities); biodiversity; and waste.

Through MEIC, the Ministry of Environment and Physical Planning is responsible for managing the process of collection, processing, delivery and dissemination of environmental information, including for the development of environmental indicators and environmental reports. It is also responsible for producing daily information and monthly reports on air quality, as well as thematic brochures and topical reports. MEIC maintains the Cadastre of Air Polluters and Pollutants, the Cadastre of Wastewater and the Cadastre of Waste. MEIC is also responsible for the development of the Annual Report on the Quality of Environment, the SoER and the Environmental Indicators Report. MEIC also has the responsibility of acting as the focal point for environmental reporting obligations at the international level.

The Institute of Public Health under the Ministry of Health is responsible for monitoring drinking and bathing water quality, with support from its 10 regional CPHs. These regional centres also have smaller branches (hygiene epidemiological surveillance stations) that carry out sanitary surveys in the field to assess possible contamination of drinking water sources.

The regional CPHs also monitor bathing water quality. The overall drinking and bathing water quality monitoring programme under the responsibility of the Institute of Public Health is published every year through the Official Gazette, with the latest programme published in Official Gazette 16/2018 – “sanitary and hygienic survey and expert assessment of the status of surface water intended for human consumption”. The Institute is also responsible for monitoring ionizing radiation, noise and air pollution.

The Ministry of Agriculture, Forestry and Water Management is responsible for forest monitoring. HMS under the Ministry of Agriculture, Forestry and

Water Economy is the main institution responsible for monitoring surface water and groundwater quality. It is also responsible for monitoring hydrological parameters in rivers and natural lakes. HMS operates the national river monitoring system and implements the surface water quality monitoring programme. HMS is responsible for monitoring atmospheric precipitation. It operates the state network of meteorological stations with professional observers, a network of climatological stations with part-time/freelance observers and a network of freelance observers. The Hydrobiological Institute in Ohrid is a public higher education and scientific research organization of national interest established under the Ministry of Education and Science, which has been regularly involved in carrying out long-term surface water monitoring activities in Lakes Ohrid, Prespa and Dojran. The Institute also undertakes monitoring of surface water in the three lakes. It focuses mostly on physico-chemical and biological parameters monitored under the scope of specific projects.

Participation in international agreements and processes

The Ministry of Environment and Physical Planning is in regular collaboration with EEA on all topics relevant to the environment and to the management of environmental information, including the promotion of SEIS principles in the country. Since 2005, the country has been part of the Environment Information and Observation Network (EIONET) managed by EEA. Also, at regional level, the Ministry of Environment and Physical Planning is an active participant in the ECE Working Group on Environment Monitoring and Assessment, the ECE Joint Task Force on Environmental Statistics and Indicators and various activities carried out under the ECE Protocol on PRTRs. The country has a leading role in Working Group on Environment Monitoring and Assessment, having been chair of the working group for several years in a row. SSO collaborates regularly with EUROSTAT.

The country also participates in several international reporting processes, and reports annually on core data flows in the following areas: air quality (PM₁₀, PM_{2.5}, O₃, NO₂), air emissions (Air Convention), biodiversity (nationally designated areas), climate change mitigation (GHG inventory, UNFCCC GHG inventory, projections of GHG emissions and removals), environmental noise, industrial pollution, bathing water monitoring and classification; and how data on emissions of pollutants and their transfer are managed and disseminated (ECE Protocol on PRTRs). The country has improved its reporting performance since 2011.

4.4 Assessment, conclusions and recommendations

Assessment

The air quality monitoring network operated by MEIC has been improved since 2011, with an increase in the number of stations and parameters monitored, as well as the replacement of instruments in some of the stations under the scope of technical cooperation projects. Nonetheless, some of the monitoring instruments in place are more than 12 to 15 years old and, in some cases, manufacturers can no longer secure spare parts. Older instruments in all remaining stations are not replaced by new ones except in the framework of technical cooperation projects.

Also, the operation of the network is undermined by insufficient capacity and resources to ensure adequate maintenance and servicing of the various air quality monitoring stations. Two service engineers in the Ministry of Environment and Physical Planning are alone responsible for the maintenance of the entire network and for calibration of the measuring instruments. In addition, the air quality calibration laboratory of the Ministry is not accredited, posing additional constraints.

The monitoring capacity and monitoring networks operated by HMS – surface water and groundwater, atmospheric precipitation and snow cover – have been in decline for some time due to insufficient maintenance, a lack of funding for the repair or modernization of outdated instruments and reductions in human resources. Overdependence on funding from international projects has resulted in overall fluctuating and declining monitoring capacity and infrastructure. HMS also faces several difficulties and constraints in monitoring surface water quality and is not yet able to meet all requirements of the national water-related legislation, in particular, the determination of chemical status or potential.

Also, as routine monitoring focuses mostly on rivers (water reservoirs and lakes are not included), the available monitoring data allow only a partial overview of the quality of surface water resources in the country. As at November 2018, no monitoring of groundwater quality is being carried out by HMS due to insufficient resources. Few municipalities have the capacity to monitor noise or develop noise maps and the three regional CPHs that are carrying out noise monitoring activities as at November 2018 – Bitola, Kumanovo and Skopje – use outdated equipment. The Institute of Public Health also use outdated equipment for carrying out noise monitoring activities.

Due to the lack of funding, biodiversity monitoring activities are mostly carried out under the scope of specific projects and/or are dependent on funding from international projects, resulting in numerous gaps. Some of these gaps are filled by monitoring activities carried out by CSOs, which are also dependent on projects for carrying out their activities.

While progress has been made in the development of databases and thematic information management systems (on air, water, waste), there is little progress to date on the development of a national integrated environmental information system to support informed decision-making and satisfy various reporting obligations, notably on progress in achieving the Sustainable Development Goals.

The country has a robust system for producing environmental statistics and indicators and, in general, promotes the SEIS principles of open access to data and use of data for multiple reporting purposes. These are reflected in the effective use of environmental data to produce national indicators, addressing international reporting obligations, and in the production of environmental reports.

However, opportunities remain for further improving the production of environmental indicators by completing the production of all relevant indicators in the ECE list of environmental indicators, initiating the production of OECD green growth indicators and establishing relevant environmental indicators for reporting on the environmental dimension of the Sustainable Development Goals.

In their present form, the three main environmental data-based publications produced by the Ministry of Environment and Physical Planning offer only limited potential in terms of their use in support of policymaking processes. They are neither developed within a multisector integrated environmental assessment approach nor do they include foresight and projections of possible future negative trends and their implications vis-à-vis national goals and policies. Furthermore, they do not address cross-cutting issues such as air quality and health, or transport and the environment. The latest editions of the quadrennial SoER and biennial Environmental Indicators Report were published in 2013 and 2018, respectively.

Conclusion and recommendations

Equipment and capacity

There is limited capacity to maintain and service the air quality monitoring network operated by the Ministry of Environment and Physical Planning and

the surface water, groundwater, atmospheric precipitation and snow cover monitoring networks operated by HMS, including related databases. There is also insufficient human, technical and financial capacity in the Ministry of Agriculture and Water Resources to ensure comprehensive monitoring of forest resources and the development of a forest inventory.

The City of Skopje does not have sufficient trained resources to systematically monitor noise or develop noise maps. Its automatic monitoring station and outdoor information panel to provide air quality data to citizens in near-real time in the city centre has been inactive since 2012.

Recommendation 4.1:

The Government should ensure adequate capacity of the environmental monitoring networks operated and coordinated by the Ministry of Environment and Physical Planning, Hydrometeorological Service and Ministry of Agriculture, Forestry and Water Economy by:

- (a) *Providing adequate and modern monitoring equipment, replacing outdated instruments and ensuring appropriate resources for regular maintenance and servicing of each monitoring network and related integrated databases, independently of funding provided by technical cooperation projects;*
- (b) *Ensuring stable and adequate funding of forest and biodiversity monitoring activities, supporting the development of a forest inventory and promoting improved coordination of different biodiversity monitoring activities within the scope of a national biodiversity monitoring system;*
- (c) *Conducting training on the basis of international best practices to strengthen the expertise of officials and operators dealing with environmental monitoring and information.*

Recommendation 4.2:

The Government should advise the City of Skopje and other municipalities to:

- (a) *Ensure adequate capacity to monitor noise systematically;*
- (b) *Provide adequate and modern noise monitoring equipment;*
- (c) *Ensure appropriate resources and training for regular noise monitoring and for the timely development of city noise maps;*
- (d) *Develop city noise maps.*

Policy and institutional framework

Responsibilities for environmental monitoring and data sharing and for the management of monitoring information flows are neither well defined nor updated in the National Book of Environmental Parameters dated 2015.

Recommendation 4.3:

The Government should prepare a national strategy and action plan on environmental monitoring and integrated information management supported by an updated National Book of Environmental Parameters and protocols for data sharing, clarifying responsibilities related to environmental monitoring and management of monitoring data and information flows, including through amending the related legislation as appropriate.

Laboratories

The Ministry of Environment and Physical Planning's Central Environmental Laboratory and Air Quality Calibration Laboratory both face challenges related to insufficient funding and staff and are not properly accredited. Neither laboratory is provided with sufficient and stable financial and human resources for servicing, updating and calibrating monitoring and calibration equipment, and for pursuing accreditation under the ISO/IEC 17025 standard on "General requirements for the competence of testing and calibration laboratories". The HMS laboratory also lacks capacity and resources to monitor surface water quality according to the national water-related legislation.

Recommendation 4.4:

The Government should ensure financial and human resources and capacity for:

- (a) *The Central Environmental Laboratory and the Air Quality Calibration Laboratory of the Ministry of Environment and Physical Planning, to adequately service, update and calibrate monitoring and laboratory equipment and meet the necessary requirements for their full accreditation under the ISO/IEC 17025 standard on "General requirements for the competence of testing and calibration laboratories";*
- (b) *The laboratory of the Hydrometeorological Service, to increase its capacity to monitor surface water quality and meet the requirements of the national water-related legislation through appropriate and modern laboratory equipment.*

National Environmental Information System

No national environmental information system was developed and established in accordance with the provisions of the Law on Environment and the 2005 governmental Strategy for Environmental Data Management. There are currently no provisions to allow a new system, once established, to be effectively operated, appropriately maintained and used for different reporting obligations and decision-making processes.

Recommendation 4.5:

The Ministry of Environment and Physical Planning, in cooperation with relevant ministries and environmental data holders, should:

- (a) *Establish a fully functional national integrated environmental information system able to support the monitoring, processing, reporting and dissemination of information on all environmental topics, including for informed decision-making and e-reporting to international organizations;*
- (b) *Ensure sufficient and stable resources so that the new national integrated environmental information system, once developed, can be effectively operated and appropriately maintained;*
- (c) *Use the new system to combine environmental information with data sources from other sectors, in order to support integrated, cross-sectoral policymaking and decision-making, including for achievement of the Sustainable Development Goals;*
- (d) *Continue to support the implementation of Shared Environmental Information System principles of open access to data, to provide timely, relevant and reliable information on the state of the environment to policymakers and the public.*

Environmental indicators

The production and online sharing of environmental indicators does not yet include all relevant indicators on the ECE list of environmental indicators, due to a lack of data. OECD green growth indicators are not being produced in the country and there is no monitoring of progress towards the global Sustainable Development Goals or their environmental dimension.

Recommendation 4.6:

The Ministry of Environment and Physical Planning should:

- (a) *Continue with regular production of national environmental indicators and produce all remaining indicators in the ECE list of environmental indicators, as well as the Organisation for Economic Co-operation and Development green growth indicators, that are relevant to the country;*
- (b) *Establish relevant environmental indicators for reporting on the environmental dimension of the Sustainable Development Goals;*
- (c) *Establish data collection and processing mechanisms for environmental indicators where such data are not yet available.*

Environmental reporting

In their current form, the Annual Report on the Quality of the Environment, the biennial Environmental Indicators Report and the quadrennial SoER offer only limited potential in terms of their use in support of policymaking processes. The production of the quadrennial SoER has been interrupted since 2013.

Recommendation 4.7:

The Ministry of Environment and Physical Planning should:

- (a) *Produce regularly reports on the state of the environment, including the biennial Environmental Indicators Report and the quadrennial State of the Environment Report, supported by better quality data and timely information in full alignment with Shared Environmental Information System principles of open access to environmental data, and include in these reports a summary for policymakers;*
- (b) *Strengthen the policy relevance of these reports by moving towards multisector integrated environmental assessment approaches, including: (i) cross-cutting issues; (ii) assessment of progress towards environmental goals and targets and the potential effects and effectiveness of the implementation of environmental protection measures under legal obligations and strategic action plans; and (iii) outlooks and projections of possible future negative trends and their implications vis-à-vis national goals and policies.*

Chapter 5

ACCESS TO INFORMATION, PUBLIC PARTICIPATION, ACCESS TO JUSTICE AND EDUCATION FOR SUSTAINABLE DEVELOPMENT

5.1 Access to environmental information

The public has access to most of the environmental information readily available in the Ministry of Environment and Physical Planning. The list of free environmental information comprises legislation and policy documents, reports, and information on projects, IEPs, EIA studies, concessions, climate change, environmental indicators, environmental media, waste, noise and PRTR.

The level of public awareness on environmental issues is assessed by surveys, e.g., two surveys conducted by the Ministry of Environment and Physical Planning on climate change in 2014 and in 2016–2017, which show increased public awareness of climate change. A list of environmental information holders, including state institutions and bodies, is made available by the Ministry of Environment and Physical Planning. The list has not been updated since its establishment in 2007.

Active access

Website and social media of the Ministry of Environment and Physical Planning

The website of the Ministry of Environment and Physical Planning serves as a primary source of environmental information.

The website gives access to several documents, including guidelines for free access to public information, a list of public information and the contact details of the staff in charge of the free access to environmental information. It provides forms for submitting requests for information and complaints. However, some of the information (e.g., on concessions) dates to 2015–2016, and there is no information for 2017–2018 posted.

Information under certain MEAs is available (e.g., Aarhus Convention, Protocol on PRTRs and Convention on Biological Diversity). News on activities and projects undertaken by the Ministry are posted daily on the website. Some web links are not

active, partly because they were developed as part of project-based efforts and are not maintained for various reasons, while some other links contain outdated information or are temporarily disabled for maintenance work.

In addition to the website, environmental information is also distributed through social media (Twitter, Facebook and Instagram). For instance, the Ministry's Facebook page has 3,831 followers.

Websites of other institutions

The websites of all state institutions and bodies have a webpage on free access to public information on which are included either the links to the public documents available online or the list of documents and a form to request information. In both cases, the contact details of the staff in charge of addressing the requests are indicated.

Passive access

Each institution is required to constantly update the environmental information in its possession and provide it upon request to the public. The procedure for requesting environmental information is well established. In order to obtain environmental information, a written request by post or email is required. In the Ministry of Environment and Physical Planning, requests are dealt with by the Unit for Communication, Public Relations and Education, which either responds to them or transmits them to the relevant department or unit in the Ministry. The number of requests submitted to the Ministry rose steeply in 2017 (table 5.1); nonetheless, the Ministry continued to respond to all requests (within 30 days for simple requests and with an extension of another 30 days for complex requests).

In 2011, 20 appeals on the basis of late provision of responses to requests for environmental information by the Ministry of Environment and Physical Planning were made to the Commission for the Protection of the Right to Free Access to Public Information and, in

2017, there were 14 appeals due to delays in response by the Ministry.

Charges

Environmental information is provided free of charge by the Ministry of Environment and Physical Planning.

Reportedly, reasonable costs are charged by some institutions for the provision of materials in hard copy format or when the information is not readily available and requires additional research.

Limitations to access to information

Information not intended for public use because its disclosure would reduce the efficiency of the activities of the state bodies is classified “for limited use only”. The Minister of Environment and Physical Planning is entitled to assign the information as “state secret” according to the 2004 Law on Classified Information, within the scope of operation of the Ministry. The public can be denied access to environmental information based on the 2005 Law on Environment, which is generally in line with the relevant provisions of the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention). There have been no cases in the period 2011–2018 when requests for environmental information addressed to the Ministry were denied based on classification of the information as “for limited use only” or “state secret”.

In its 2015 annual report to the Commission for Protection of the Right to Free Access to Public Information, the Ministry of Environment and Physical Planning cited the request received in 2015

from CSOs to be provided with a hard copy of the EIA report for the National Park Mavrovo and, justifying the negative response by its large volume (1,000 pages), offering the CSOs instead the opportunity to consult the hard copy of the report on the premises of the Ministry. Following the CSOs’ appeal to the Commission, the Ministry started to provide electronic versions of large reports upon request and to post summaries of the EIA studies on its website.

Challenges with implementation

The lack of awareness in civil society about the availability of environmental information and procedures to access such information is a bottleneck hindering efficient access to information. Although there have been efforts by governmental institutions to improve communication with the public on environmental matters, still, in many cases, information regarding the environment is given in a format that is too technical or “expert” for public consumption and linkages to human health and safety are not explicitly shown, thus limiting the public’s comprehension of information with a view to acting in a timely manner. Moreover, public access to environmental information that is crucial for public action against business entities is often difficult to obtain.

The environmental information that is made available is not always easily accessible. It is often kept in archives and, unless the user knows the exact title of the document, it is very time consuming and difficult to find it. Often, websites contain information that is either too general or too technical. Official written correspondence with the public institutions by post is usually slow, as reported during the consultation with CSOs.

Table 5.1: Requests for environmental information, 2011–2017, number

	2011	2012	2013	2014	2015	2016	2017
Requests received by the Ministry of Environment and Physical Planning,	40	5	20	12	12	21	113
of which:							
answered, percentage	100	100	100	100	100	100	100
Appeals to the Commission for Protection of the Right to Free Access to Public Information	20	1	0	1	2	3	14

Source: Ministry of Environment and Physical Planning annual reports to the Commission for the Protection of the Right to Free Access to Public Information.

Active access to environmental information on public institutions’ websites, other than that of the Ministry of Environment and Physical Planning, is largely lacking. That is to say, a minimal approach to

compliance with the Law on Free Access to Public Information is implemented by providing just the list of information without online access to actual documents.

For passive access to information, the allowed extension of an additional 30 days for complex information often renders the information finally provided useless, because it was needed for events organized within the first 30 days. The required procedures for getting access to various forms of information are in place, but the quality of the information provided and the efficiency of these procedures are often questionable.

Public access to environmental data is hindered by the lack of an integrated national system that contains all available data or a portal to environmental data. No national environmental information system was established in accordance with the provisions of the 2005 Law on Environment and the 2005 Strategy for Environmental Data Management (chapter 4). Currently, on the Ministry's website, there are links to dedicated information systems on air, biodiversity, waste and PRTR; however, the link to the information system on biodiversity was not working (last accessed on 31 May 2019) while the Waste Management Information System required credentials for accessing the information.

Making information on environmental media available only to subscribed users seriously limits public access to information. Having several links not working could discourage the public from returning or continuing to look for other information on the website.

A challenge in implementing effective public access to environmental information is the lack of adequate expertise and financial resources in the Ministry of Environment and Physical Planning, as in other institutions and LSGUs. Another related constraint is the lack of human and financial resources for opening state-supported units or centres across the country equipped to facilitate access to environmental information by the public.

5.2 Public participation in decision-making on environmental matters

Overall, the public at large becomes interested and active in environment-related issues when pollution becomes evident, which means that it is active based on “seasonal” and “topical” participation. For example, the public becomes active when air pollution increases in cities in winter, water becomes obviously polluted by changing colour and smelling odd, waste is disposed of near households or noise becomes a nuisance. The population is not active on water pollution issues, most probably because of the lack of awareness of its impact on human health and on animals, crops and vegetation. The rural population is particularly difficult to engage as rural people lack awareness on environmental issues, such as recognition that their villages are located on the territory of protected areas, or that they need to become active in mitigating or adapting to climate change and in water and waste management.

Photo 5a: Skopje public information centre



Civil society organizations

Although the total number of CSOs in the country is close to 9,000, CSOs are not classified by area of activity in the Central Registry, making difficult to estimate the number of environmental CSOs.

Since 2007, the Ministry of Environment and Physical Planning has been supporting activities of CSOs through the Annual Environment Investment Programme of approximately €1 million, which is divided into grants to municipalities (60–70 per cent) and to CSOs, businesses and academia (30–40 per cent). About 40–50 grants are given to CSOs annually. Grants under the Programme are for projects with a duration of up to one year. In addition, awards are given by the Ministry to individuals and legal entities in recognition of their environmental protection achievements.

Public participation in decision-making on specific activities (projects)

Public participation is limited by the established procedures for most of the projects not covered by EIA, SEA or IEPs. Nevertheless, in all cases, the public concerned has the right to challenge (within 15 days) a decision before the State Commission for Decision-Making in Administrative Procedures and Labour Relations Procedures in Second Instance. While members of the public cannot participate in decision-making on issuing an environmental elaborate (chapter 2), they have the right to challenge an approved environmental elaborate before the State Commission.

A similar concern is with projects covered by B-type IEPs, a decision on which can be appealed before the State Commission by the public only after the issuance of the permit. The public can participate in the process of issuing A-type IEPs, by submitting comments within a period of 30 days from the day of posting the related documents on the website of the Ministry of Environment and Physical Planning. The public can also request the applicant for the permit to organize a public hearing. The Ministry has an obligation to indicate, in the explanation attached to the A-type permit, which of the public comments were considered and which were rejected. In addition, the municipality concerned has an obligation to send to the Ministry its opinion on the application for the permit within 30 days of receiving the documents from the Ministry and the mayor concerned can organize a public hearing during this process.

The public can participate in decision-making on construction-related projects during the EIA

procedure by making comments within 30 days after the EIA study has been published and by participating in a public hearing organized during the procedure. Since 2014, more than 40 EIA public hearings have been organized by the Ministry. The Ministry makes the summary of EIA studies available on its website.

Public participation in decision-making on issuing permits for mining activities is possible, during the process of issuing a permit for exploration of underground resources, including groundwater and mineral resources, by the Ministry of Economy, by participating in the EIA process. An EIA study is included in the application for such a permit.

Challenges exist with effective public participation in public hearings. Often information related to the organization of public hearings is published at short notice or during holiday periods. For example, the public hearing on Galičica National Park was organized on 3 January. It is not easy for the public to understand EIA reports, because there is no non-technical summary.

Challenges encountered by the Ministry on Environment and Physical Planning in ensuring public participation in decision-making on specific activities are: (i) the lack of adequate financial resources, and (ii) the lack of appropriate expertise and insufficient human capacity (chapter 2).

Public participation in decision-making on strategic planning and legislation

The posting of draft documents on the websites of state authorities and organizing public hearings to discuss them enables the public to fulfil its right to participate in the decision-making process for preparing policy and legal documents. The provision of at least 30 days for the public consultations is in line with international practice. Within these 30 days, at least one public hearing shall be organized after at least 15 days from the beginning of the public consultations but not later than at least five days from the end of the consultations. The final five days may be sufficient for simple legal and policy documents; however, that period is too short for complex documents and for those for which the public consultations run for more than 30 days. In 2011, in the public notification, information was included on the decision on whether the consulted document should undergo an SEA.

The public has the right to participate in the process of SEA of strategies, plans and programmes, including their amendments. The authority preparing the policy documents has the obligation within five days of the

completion of the SEA report to make available to the public the draft policy document, the SEA report and the details and procedure for public participation in the hearing organized. The public has up to 30 days to submit comments, which are required to be considered during the finalization of the policy document.

A mechanism to monitor the extent to which the Ministry of Environment and Physical Planning considers the opinions, comments and suggestions made at the public hearings, despite being obligatory in the process of finalization of the document for final approval, does not exist.

In urban planning procedures, the public can participate during the process of deciding whether an SEA is needed for a given plan (screening) as well as on the scope of the SEA determined by the Ministry on Environment and Physical Planning (the public has the right to appeal such decisions within 15 days of their posting on the website), and during the SEA procedure by submitting comments within 30 days on the draft document and participating in at least one mandatory public hearing.

The authority preparing a proposal for an urban plan is obliged to publish on its website a statement on how the draft plan was revised according to SEA and how the public comments were considered, along with the proposed urban plan. In addition, the public can participate in the expert hearing, which is organized with relevant institutions, experts and CSO representatives, prior to the decision by the parliament (Assembly) on the draft plan, and before commencing the procedure for preparing the proposal for the urban plan.

Since 2011, five public consultations have been organized regarding spatial plans, including for Skopje Region (2012), Ljubanista village in Ohrid Region (2013–2014) and Eastern Region (2017), and management plans for national parks, such as Galičica National Park (2013) and Pelister National Park (2018). Due to public participation, the proposed management plans were suspended for Galičica National Park and Ljubanista village.

Public participation in GMO-related decision-making

The public has the right to participate in decision-making related to GMOs at the stage of consultations organized by the Ministry of Environment and Physical Planning during the process of issuing licences for the contained use of GMOs, their deliberate release into the environment or placement of GMO products on the market.

The Ministry has an obligation to notify the public within five days of receiving the request for licence by publishing short, summary information in two national newspapers. The public has 30 days to submit comments on the documents, which are made available and include information on GMO product assessment, the opinion of the Scientific Committee on GMOs and other competent bodies, and the plan for emergency cases. However, while the applicant for the licence can contest the decision to reject the issuance of a licence, the public cannot contest an approved licence. The basic data, such as general characteristics of GMOs and their classification, name and address of the applicant, location where the GMOs will be released, limitations and safety measures, data regarding the possible harmful and other effects on the environment and human health, and other data necessary for the risk assessment, are not allowed to be classified as confidential.

GMO products' labels and packaging have to clearly state the GMO content and name, name and address of the legal entity or physical person, whether producer, importer or distributor, who placed the GMO on the market and guidance on where and how to access more information on the GMO product. Products that have up to 0.9 per cent of accidental and technical GMO traces in their contents are excluded from the labelling requirements.

According to the Third National Report on the implementation of the Cartagena Protocol on Biosafety (2011–2018), the country did not establish mechanisms to ensure public access to information on imported GMOs, to consult the public in the decision-making process regarding GMOs and to make available to the public the results of decisions taken on GMOs. Since 2011, the public has not been consulted in the decision-making process regarding GMOs because there have not been any requests for licensing of GMOs.

At November 2018, by-laws on the form and procedures for public participation in decision-making on issuing licences for contained use of GMOs, their deliberate release and placement on the market of GMO products, as required by the 2008 Law on Genetically Modified Organisms, was not adopted.

Specific procedures for public participation in decision-making on food and food products containing GMOs or consisting of GMOs are not established. Since the 2013 amendment of the 2010 Law on Food Safety, the production, release and import of food and food products containing or consisting of GMOs is prohibited in the country until its accession to the EU.

Public participation in product labelling and packaging

Labelling products and their packaging with information about their potential impact on the environment and on the life and health of people is mandatory. The Ministry of Environment and Physical Planning is the main institution in charge of eco-labelling. Public participation in decision-making, by including a representative of an environmental CSO or a consumer organization in the composition of the Commission on Eco-labelling, is provided for in the 2005 Rulebook on the form and content of the eco-label, the manner, the conditions, as well as the composition and the manner of establishment and operation of the Commission on Eco-labelling. The Commission does not appear to be active at November 2018. No eco-label has yet been awarded (chapter 2).

Public participation in chemicals- and product-related decision-making

Public participation in chemicals- and product-related decision-making at the regulatory level is possible by engaging in the consultation process on draft laws and regulations.

Explicit provisions for public participation in decision-making are contained in the Law on Environment and the two laws – 2009 Law on Management of Packaging and Packaging Waste and 2010 Law on Management of Batteries and Accumulators and Waste Batteries and Accumulators – that stipulate that the Law on Environment is applicable for these issues. The other laws regulating environment-related product information, such as the 2012 Law on Management of Electrical and Electronic Equipment and Waste Electrical and Electronic Equipment, 2010 Law on Chemicals, 2018 Law on Energy, 2006 Law on Product Safety, 2004 Law on Consumer Protection and 2007 Law on Safety of Cosmetic Products, do not include any specific provisions on public participation procedures.

Public participation in international forums

The public, including CSOs, is not involved in the decision-making processes regarding the country's substantive contributions to and participation in MEA-related and other international processes (chapter 6). While some experts are involved in activities or are aware of developments under some of the MEAs, the public at large is not at all familiar with, or has scattered information on, topics addressed by the country under MEAs.

Protection of environmental defenders

There are no officially recorded cases of persecution of environmental defenders. Cases of intimidation and harassment of representatives of CSOs actively contesting or opposing corporate projects reportedly occur. Cases of intimidation of environmental defenders include oral threats made by government officials and representatives of business. The obstruction of representatives of CSOs consists of, but is not limited to, the organization of public hearings at the last moment and only for a limited audience, ignoring public opinion during the consultation at the hearing, and blocking access to information, claiming that documents, e.g., environmental studies related to HPPs, are subject to copyright. No specific activities are undertaken by the Government to ensure that persons exercising their rights to access to information, public participation and access to justice in environmental matters are protected from being penalized, persecuted or harassed in any way.

An example of a strategic lawsuit against public participation (SLAPP) is the case of Mr. Igor Smilev from the city of Veles (also the president of CSO Green Power). He publicly opposed the reopening of a smelter located 2 km from the city centre, which had polluted the city since its opening in 1972 until its closure in 2003. He actively participated in protests and other events, mobilizing the community, and, in 2012, was sued by the owner of the company Metrudhem for defamation, seeking compensation of €20,000. After a long hearing, the court case was closed without being resolved for either party. Instead, the hearing served mostly to burden an active participant member of the public with lengthy and complex judicial procedures, thereby intimidating him and impeding further active involvement.

5.3 Access to justice

Enhancing capacity for access to justice

Access to justice in environmental matters has been promoted since 2012, mostly as a project-based activity, including with assistance from REC and the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety and the German Federal Environment Agency, which provided funds through the Advisory Assistance Programme. The project "Better Access to Justice in Western Balkan Countries", implemented from 2016 to 2018 by REC in cooperation with the Ministry of Environment and Physical Planning, CSOs and the Academy for Judges and Public Prosecutors, has helped raise awareness, develop capacity and promote

the procedural and practical implementation of access to justice in environmental matters.

Progress was achieved in producing guidance materials for the public on how to exercise their right to access to justice in environmental matters in the country. A user guide, “Access to Justice under the Aarhus Convention”, was published in 2017 and a workshop was organized in 2017 with the participation of more than 20 CSOs. Furthermore, two comparative studies on access to justice in South-Eastern European countries, prepared in 2014 and 2017 by REC in cooperation with the Secretariat of the Aarhus Convention, include an assessment of the scope of legal review in North Macedonia and its applicability for ensuring effective access to justice in environmental matters.

To develop the capacity of judges and to introduce issues related to environmental legislation and the Aarhus Convention into the formal curricula of judicial training centres and magistrates’ schools, two workshops involving public interest lawyers and CSOs have been organized in cooperation with judicial training centres and magistrates’ schools. A total of 24 judges and prosecutors from courts of first instance across the country and representatives of institutions, such as the State Commission for Decision Making in Administrative Procedures and Labour Relations Procedures in the Second Instance and the Commission for the Protection of the Right to Free Access to Public Information, participated in the first workshop in 2017. More than 10 judges from the Administrative Court and the Higher Administrative Court participated in the second workshop in 2018.

In addition, in 2017, the Embassy of the United States of America, in cooperation with REC and the Academy for Judges and Public Prosecutors, provided training on court cases on environmental matters held in the United States, which was attended by more than 25 of the country’s judges and public prosecutors.

Procedural aspects

There is no specialized environmental court in the country as at 2018. There are no judges specializing in environmental cases. Courts do not have their own environmental experts; in case of need, specialized experts are involved to provide their expert opinion. There is no specific law, by-law or guidance material dedicated to procedures for processing environmental cases in the courts. Members of the public can submit cases to the Ombudsman before deciding whether to file a case in court. Annual reports of the Ombudsman contain an overview related to environmental matters. Statistical data show that the Ombudsman acted on 20

complaints related to the environment received in 2010 (0.49 per cent of all complaints received), 26 in 2011 (0.61 per cent), 35 in 2012 (0.8 per cent), 20 in 2013 (0.53 per cent), 26 in 2014 (0.61 per cent), 16 in 2015 (0.36 per cent) and 15 in 2016 (0.4 per cent). Complaints on environmental matters most frequently refer to problems that immediately endanger the personal rights or interests of citizens, such as pollution of air or water, pollution by littering and disposal of waste near homes, increased noise levels in catering facilities located near housing, and delay in certain administrative procedures, such as untimely measures undertaken by inspection bodies.

There is no difference between individuals and CSOs in accessing the judicial system. Court expenses are no different for environmental cases. All court cases require payment of a court fee and other fees that depend on the type of case (expert costs, investigation costs, costs for bringing in witnesses). The costs appear to be reasonable but can still be an impediment to members of the public using the courts on environmental matters. Free legal aid for members of the public and CSOs to exercise their rights in the courts does not exist.

Nevertheless, court costs may be waived, and free legal aid may be provided for disadvantaged individuals in accordance with the provisions of the 2009 Law on Free Legal Aid. In environmental cases, the affected members of the public can either access the court directly or be represented by an environmental CSO. The Commission for Protection of the Right to Free Access to Public Information is the first institution to be addressed by the public in the case of an unsatisfactory response from the information holder. Access to justice regarding public participation is subject to providing evidence that the given individual(s) or CSO(s) are “concerned”, i.e. can be affected by the decision.

The public can challenge court decisions on specific activities relating to the environment and submit an administrative lawsuit against an administrative action within a period of 30 days. Moreover, related public requests to remedy damages can be brought to the civil court within a three-year period. The public can appeal the decision of a court of first instance to a court of appeal within 15 days of receiving the decision, which might be too short a time in complex cases.

In 2017, of 151 reported environmental crimes, 43 were reported by the victims (individuals suffering damage), four by other individuals and most of the remainder by the Ministry of Internal Affairs (chapter 2). Very few environmental cases are initiated by environmental CSOs (box 5.1).

Box 5.1: Selected case of a CSO challenging a decision before the Administrative Court

The CSO Front 21/42 brought before the Administrative Court a case against the State Commission for Decision-Making in Administrative Procedure and Labour Relations Procedure in Second Instance.

Initially, Front 21/42 filed a complaint to the State Commission, appealing the decision made in October 2012 by the Ministry of Environment and Physical Planning approving the EIA study made for the HPP “Boshkov Most” project.

The CSO challenged the content and quality of the EIA study and claimed that the right to public participation was not fully respected. Following the rejection of the complaint in May 2013 by the Commission as being without grounds, Front 21/42 filed a lawsuit against the decision of the Commission in the Administrative Court, which decided in favour of the CSO.

The Court’s decision was based on the reasoning that the Commission did not explain the reasons for rejecting the appeal, especially why it considered that the Ministry’s decision to approve the EIA study was in accordance with the Law on Environment and related by-laws, when the CSO contested precisely the substance of the study. The Court also stated that there was no evidence that the public’s comments made during the EIA consultation process had been considered by the Ministry in its decision approving the EIA, because the Court did not receive the requested relevant documents from the Commission to enable the Court to examine the case. As a result, the Court annulled the decision of the Commission and returned the case to the Commission for implementing the Court judgment. The case from the initial complaint before the Commission until the decision of the Court lasted from 2012 to 2013.

The issue of HPP “Boshkov Most” is not yet fully resolved, with CSOs continuing to pursue it, including under the Bern Convention (chapter 6).

5.4 Legal, policy and institutional framework for environmental democracy

Legal framework

The 2005 Law on Environment defines environmental information and stipulates the process to access it, contains provisions on raising public awareness on environmental protection and requires state authorities to inform the public about cases of environmental pollution. The Law has provisions on product labelling information and eco-labelling. It stipulates the principles for public participation in decision-making and the procedures for public participation in the development of legal and policy documents and in SEA, with the right to appeal a decision regarding project-based activity. The Law requires the availability of information on EIA, organization of public hearings, access to information on applications for IEPs, receiving comments from the public and appeals against a decision.

The 2006 Law on Free Access to Public Information requires all state and other bodies to provide free access in any form to information that is produced by or in possession of those bodies. The Law includes provisions on: restrictions to the free access to public information; the content of information and obligations on the side of the holders of information, including on designating an official in charge of communicating public information; requirements for exercising the right of free access to information; costs for receiving information; the Commission for Protection of the Right of Free Access to Public Information; and fines for non-compliance.

The 2004 Law on Classified Information defines the information classified as “state secret”, “highly confidential”, “confidential” and “internal” and the periodicity of its assessment for potential reclassification, which is up to 10, 5, 3 and 2 years, respectively. The Law defines the information “for limited use only”, which is not intended for public use because its disclosure would reduce the efficiency of the activities of the state bodies.

The 2010 Law on Associations and Foundations regulates the establishment of associations by individuals and legal entities. A minimum of five founding members is required for establishing a CSO.

The 2008 Law on Genetically Modified Organisms enables the public to have access to information on GMOs, products containing GMOs and limited application of GMOs by making mandatory for the relevant state bodies in possession of such information to provide information and to inform the public of their negative influence on human health and the environment. The Law includes provisions on public participation in decision-making in the process of issuing licences for the limited application of GMOs, their deliberate release into the environment or placement of GMO products on the market.

The 2010 Law on Food Safety provides for open and transparent consultation with the public directly or indirectly through a representative, during the preparation, assessment or amendment of by-laws, unless the urgency of the procedure does not allow it. Also, where there is a reasonable chance that food may pose a risk to human or animal health, the public must

be informed of such a risk. Nevertheless, public participation in decision-making on food and food products containing GMOs or consisting of GMOs, and the approval procedure of their placement on the market, is not addressed by this Law.

The 2008 Decree on public participation during the preparation of regulations and other acts, as well as plans and programmes in the field of environment details the conditions, the form and the procedure for public participation during the preparation of legal and policy documents in the environmental area. The

Decree also specifies the types of policy documents, and the form and procedure for public participation in their drafting, adoption, amendment or revision.

Policy framework

There is no policy document specifically focusing on access to information, public participation and access to justice in environmental matters. The current status of the country vis-à-vis selected targets of Sustainable Development Goal 16 of the 2030 Agenda for Sustainable Development is described in box 5.2.



Box 5.2: Selected targets under Goal 16 of the 2030 Agenda for Sustainable Development

Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

The enabling framework for the implementation of Goal 16 is not yet established and specific institutions to lead the implementation of and reporting on this Goal have not been assigned.

Target 16.3: Promote the rule of law at the national and international levels and ensure equal access to justice for all

Concerning environmental matters, access to justice is in its initial stages of development with basic access established, including allowing, in many instances, appeal against the decisions made by the public authorities. Individuals and CSOs can access the judicial system. Costs can be waived for disadvantaged individuals. The public can submit cases related to environmental matters to the Ombudsman before deciding whether to go to court. The minimum legal and institutional frameworks for access to justice in environmental matters are in place.

There is no specific law, by-law or guidance document on procedures for processing environmental cases in the courts. Judges specializing in environmental cases or environmental specialists in courts do not exist. Awareness-raising and capacity-development for the judiciary and CSOs on access to justice in environmental matters are carried out mostly as project-based activities. Environmental cases initiated by environmental CSOs are very few in number.

Knowledge and expert capacity, and financial resources, are lacking for effective implementation of the environmental dimension of this target.

The Public Prosecutor's Office, Ministry of Internal Affairs, Office of the Ombudsman, criminal courts, Ministry of Justice and Ministry of Environment and Physical Planning should coordinate their efforts to ensure access to justice in environmental matters.

The Ministry of Justice, in collaboration with the Academy for Judges and Public Prosecutors and the Ministry of Environment and Physical Planning, should conduct regular training on environmental legislation for judicial personnel.

Target 16.6: Develop effective, accountable and transparent institutions at all levels

As the main governmental authority on environmental matters, the Ministry of Environment and Physical Planning has, since 2017, made its budget available on its website. Its Annual Public Procurement Plan for 2018 is also publicly available. Reports on the implementation of the annual budget are not available. The link to audit reports leads to the main webpage of the State Audit Office, which includes reports on budget and performance audits.

Environmental protection expenditures had an average share of 0.7 per cent in total central government expenditures during the period 2013–2017; there is no separate information on aggregate environmental expenditures at the local self-government level.

The Ministry indicates the lack of adequate human and financial resources as a major challenge for effective delivery of access to information, public participation and access to justice in environmental matters. An estimation of the required resources has not been made.

Concerning the proportion of the population satisfied with their last experience of public services (indicator 16.6.2), in the area of environment-related public services, the Ministry is making efforts to improve the delivery of public services, in particular with regard to provision of environmental information. In 2011, of 40 requests for environmental information sent to the

Ministry, 20 appeals were made to the Commission for the Protection of the Right to Free Access to Public Information and, in 2017, of 113 requests for environmental information, 14 appeals were made, which could be an indicator of the level of public satisfaction with public services in relation to environmental matters, showing an improvement in provision of services.

SSO could conduct surveys to assess public satisfaction with the public services provided by the Ministry, as well as other institutions in possession of environmental information or overseeing activities that have an environmental and human health impact, and provide annual assessments of the feedback received with a view to adapting the services.

Target 16.7: Ensure responsive, inclusive, participatory and representative decision-making at all levels

In decision-making on environmental matters, public participation is only by the established procedures for activities covered by EIA, SEA and IEPs. However, in all cases, the public concerned has the right to challenge a decision before the State Commission for Decision-Making in Administrative Procedures and Labour Relations Procedures in Second Instance.

Public participation in developing legal and policy documents is enabled by allowing the public to make comments on the draft documents posted on the website and during public hearings organized to discuss the draft documents. Challenges exist with effective public participation in public hearings.

A mechanism to monitor the extent to which the Ministry of Environment and Physical Planning considers the opinions, comments and suggestions made at the public hearings, despite being mandatory in the process of finalization of the document for final approval, does not exist.

There is no public participation envisaged in the decision-making procedures for chemicals. The Law on Genetically Modified Organisms provides for public participation in decision-making, but by-laws setting detailed procedures for engaging the public in that area are lacking.

The Constitution and several laws, including the 2005 Law on Environment, 2012 Law on Equal Opportunities for Women and Men and 2010 Law on Prevention and Protection Against Discrimination, provide a good basis for implementing this target.

SSO could conduct opinion surveys on whether decision-making in environmental matters is inclusive and responsive.

The Ministry of Environment and Physical Planning and other governmental institutions that conduct activities that can have a potential impact on the environment, should continuously engage the public in decision-making to ensure that the decision-making in environmental matters is inclusive and responsive, including by developing the necessary detailed procedures for effective engagement of the public.

Target 16.10: Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements

The country works on enabling public access to environmental information based on the provisions of the Law on Free Access to Public Information and the Aarhus Convention, to which the country acceded in 1999. A list of environmental information holders is available on the website of the Ministry of Environment and Physical Planning; however, the list has not been updated since 2007. In the case of unsatisfactory response from the information holder, a member of the public can file a complaint to the Commission for the Protection of the Right to Free Access to Public Information. The website of the Ministry contains most of the environmental information accessible to the public; however, some information is outdated or not easy to find.

Regarding the persecution of environmental defenders, which would fall under indicator 16.10.1, there are no officially recorded cases of persecution of environmental defenders in the country, but such cases do exist. Specific measures to protect environmental defenders are lacking.

The country should:

- (a) Continue to ensure open access to quality information within digital governance and open data frameworks, adapted to the needs of various users;
- (b) Develop special measures to collect data and monitor the efficiency and effectiveness of legal proceedings in environmental matters;
- (c) Establish mechanisms to prevent persecution, penalization and harassment, especially given the few cases of oral intimidation and harassment, as well as SLAPP cases.

The Ministry of Justice, in collaboration with the Ministry of Internal Affairs and Ministry of Environment and Physical Planning, should take measures fostering trust and confidence to enable victims of violence related to environmental matters to report to competent authorities.

SSO, in collaboration with the Ministry of Justice, Ministry of Internal Affairs and Ministry of Environment and Physical Planning, could develop and conduct "victimization surveys" related to environmental matters and collect related data.

The Ministry of Environment and Physical Planning should make specific efforts to further develop a user-friendly website as a main mode of providing access to environmental information.

Photo 5b: Engaging children in Sustainable Mobility Week



Institutional framework

Ministry of Environment and Physical

Planning

The Ministry of Environment and Physical Planning, through its Unit for Communication, Public Relations and Education, ensures the transparency and availability of environmental information to the public; raises public awareness and works to enhance understanding of environmental problems and options for possible solutions to improve the environment; and informs and involves the public in environmental decision-making processes.

The Unit collaborates with the mass media, monitors daily media coverage, disseminates environmental information, including by posting information on the Ministry's website and social media platforms, and prepares events for promoting environmental protection. The Unit is organizing meetings with CSOs within relevant policymaking and decision-making processes. The Unit promotes environmental education and organizes annually events such as Water Day, Earth Hour, Environment Day and Car-Free Day. The Unit is physically located outside the Ministry to allow easier access by the public to its premises, and its mobile office "ECO-caravan" – a transformed truck – ensures broader outreach.

MEIC collects information on the state of the environment from different institutions and sources, also conducts its own environmental monitoring activities and makes this information available through an electronic information system on the Ministry's website. It produces information materials (reports and brochures).

The Ministry indicates that the lack of human and financial resources hinders effective implementation of access to information, public participation and access to justice in environmental matters. To date, measuring the budget for promoting the three pillars of environmental democracy in the country is not possible, given that the related desegregated data are not available. A comprehensive analysis to estimate the necessary expenditures (human and financial resources) for the satisfactory implementation of access to information, public participation and access to justice in relation to environmental matters has not been undertaken.

Other institutions

The Ministry of Justice is the main governmental authority in relation to the access-to-justice pillar of environmental democracy. The Ministry oversees the enforcement and implementation of laws and administers the judicial system.

The Supreme Court promotes and protects the fundamental freedoms and rights of individuals set out in international law and in the Constitution, including the right to a healthy environment, the obligation to promote and protect the environment and providing conditions for the exercise of the right of citizens to a healthy environment. The work of the Public Prosecutor's Office includes prosecution of perpetrators of criminal offences and misdemeanours against the environment and nature.

The Academy for Judges and Public Prosecutors organizes in-service training for judges and public prosecutors, including on environmental protection, and specialized thematic training on environmental violations.

The Faculty of Law "Iustinianus Primus" of the University "Ss. Cyril and Methodius" in Skopje (UKIM) prepares jurists by offering bachelor's, master's and doctoral studies. As at 2018, the Faculty did not offer mandatory or elective courses on environmental law. However, environmental law courses are offered as elective courses, for instance, by the faculties of law of the Management and Information Technologies (MIT) University and the University "St. Kliment Ohridski".

The Ombudsman receives complaints from citizens, including with regard to environmental issues. The work of the Ombudsman, including on environmental cases, is presented in annual reports available on its website.

The Commission for the Protection of the Right to Free Access to Public Information oversees the implementation of the 2006 Law on Free Access to Public Information. The Commission decides on appeals against decisions by which the information holder rejected the request for access to information. It publishes a list of information holders annually. It collects annual implementation reports from all information holders and prepares by 31 March each year a joint report to the parliament (Assembly) for consideration and endorsement.

The State Commission for Decision-Making in Administrative Procedures and Labour Relations Procedures in Second Instance considers appeals against administrative decisions on agriculture, forestry, water management, veterinary medicine and environmental protection.

Civil society organizations

Many environmental CSOs are active in the areas of disseminating environmental information and raising

public awareness, environmental education and training, and in waste management activities. The Ministry of Environment and Physical Planning cooperates with CSOs. Some of the most active environmental CSOs include the Macedonian Ecological Society (nature protection and biodiversity), the Association for the Protection and Improvement of the Environment, Eco-Logic (environmental protection and conservation), Go Green (environmental education, waste collection), Zero Waste (collection of e-waste and batteries), Journalists for Human Rights (environmental awareness-raising, access to justice), Front 21/42 (environmental awareness-raising, access to justice), Eko-svest (civic awareness and active participation), Association for Education, Communication and Consulting (OXO) (environmental education) and Macedonia Without Waste (waste recycling).

5.5 Participation in international agreements and processes for environmental democracy

North Macedonia has been party to the Aarhus Convention since 1999 and to the Protocol on PRTRs since 2010 but has not ratified the 2005 Almaty Amendment on Genetically Modified Organisms to the Convention. The country did not appoint a national focal point for the Convention, but country representatives participate occasionally in Convention meetings. The country submitted the national implementation reports for the three reporting cycles, albeit after the formal deadline. Moreover, it appointed a National Focal Point for the Protocol on PRTRs, regularly submits national implementation reports and participates in activities under the Protocol.

The country contributed to two analytical studies (2014 and 2017) considered by the Task Force on Access to Justice. Several capacity-building projects were or are being implemented in the country by REC, in cooperation with ECE, with a focus on better access to justice (2016–2018).

5.6 Environmental education and education for sustainable development

Integration of environmental education and education for sustainable development (ESD) into curricula

Preschool education

Preschool education includes children up to 6 years old and is not compulsory. There are 97 public and 33 private kindergartens and early childhood development centres, as well as six kindergartens that

are part of higher education institutions and private schools. Not all children of preschool age go to kindergarten; for instance, in Tetovo, generally, about 30–40 per cent of preschool-age children are enrolled in preschool institutions, benefiting from environmental education.

Environmental education is integrated into the subject of Science, in which children acquire information about the environment and the characteristics of plants and animals and of inanimate nature (water, air, soil, light, sound), as well as developing ecological habits of cleaning, recycling, taking care of plants, using safe recycled materials to produce decorative objects, protecting nature and being respectful towards the planet (box 5.3).

Cognitive development is focused on getting to know and understand the environment. Environmental education is organized from the simple to the complex, ensuring continuity between the age groups. Environmental education methodology includes games and role playing, walking in nature, observing and discussing. Various traditional games for different

age groups are also included in the educational process.

While environmental education is integrated into preschool education, ESD is not.

Photo 5c: Children handmade teaching material – local seeds



Box 5.3: Environmental education in the kindergarten OJSC “Mladost”–Tetovo

The kindergarten OJSC “Mladost”–Tetovo, established in 1960 for children from 9 months to 6 years old, includes environmental education in its annual programme and has a coordinator for environmental activities. Environmental education started as a project financed by the Ministry of Labour and Social Policy. Outdoor activities include greening the premises by engaging 3- to 6-year-old children in planting trees and maintaining an eco-garden. The kindergarten has renovated its premises and installed equipment for indoor air cleaning and modern sanitation facilities adapted for children.

Photo 5d: Recycling batteries at the Pestaloci primary school (eco-school) in Skopje and “Trash” fashion – made by students



Photo 5e: Recreational space at the primary school “Kiril and Metodij” (eco-school) in Tetovo

Primary education

Primary education, also called elementary education, is compulsory and free of charge, lasts nine years and is organized in three educational stages: grades 1–3, grades 4–6 and grades 7–9. Primary education includes educational programmes that correspond to levels 1 and 2 of the International Standard Classification of Education (ISCED), i.e. primary and lower secondary education. A total of 192,448 pupils were enrolled in 989 primary education schools in study year 2017/2018.

One of the goals of primary education is to educate about environmental protection. Environmental protection is included in the subject Natural Science in the first six grades (two hours per week or 72 hours per study year). From grade 7 to grade 9, environmental protection is integrated mainly into Biology and Geography, as well as into Chemistry from grade 8 to grade 9 (two hours per week for each subject). Elective courses for grades 7 to 9 include a course on environmental education (two hours per week).

Student assessment includes environmental protection criteria. For example, having studied geography, the eighth grader is expected to be able to explain the problems and consequences of the impact of anthropogenic activities, to explain pollution of soil, water and air, to express in their own words the meaning of water supply, to reflect on measures for protection of water resources and air quality, and to explain urbanization and the pollution problems in big cities and rural areas.

Issues of democracy, justice, equality, human rights, discrimination, cultural diversity, active participation in decision-making and community engagement are taught during civic education, which is compulsory in grades 8 and 9 (one hour per week) and for which a new curriculum was approved in 2018. Students develop skills for critical thinking about living in a healthy environment, sustainable development and human rights, including environmental rights, as part of civic education (10 hours per year).

Environmental protection is integrated into an annual programme developed by each school based

on the curricula and syllabus prepared by the Bureau for the Development of Education and approved by the Minister of Education and Science. Annual programmes, including extracurricular eco-activities, are approved first by the school boards before being submitted to the Bureau and to the State Education Inspectorate. Schools are incentivized by activities carried out under the framework of the Programme on integration of environmental education into the education system (box 5.4) and the possibility of applying for small grants for implementing environmental projects, as well as by the eco-school award (box 5.5).

Teaching materials to support civic education are prepared by the Bureau for the Development of Education, such as the brochures containing concrete activities on three themes concerning what it means to be a citizen, living in society and

cooperation and relationships in civil society. The 2008 education programme for the elective course on environmental education in the last three grades of primary education contains eight themes related to environmental protection.

To raise awareness about sustainable development in primary schools, from 2009 to 2012, the Green Pack Junior educational kit was produced and disseminated by the REC country office in North Macedonia, in cooperation with the Ministry of Education, Bureau for the Development of Education and Ministry of Information Society and Administration, with support from the Austrian Development Agency with funding from Austrian Development Cooperation. Throughout the country, 1,800 toolkits were distributed to primary schools for teachers and pupils in grades 1 to 5.

Box 5.4: Pestaloci public primary school committed to environmental education

The Pestaloci public primary school, established in Skopje in 1969, is embracing environmental education within the framework of the Programme on integration of environmental education into the education system. The school is an eco-school participating in the International Network of Eco-Schools, having been awarded the green flag and following diligently the seven steps required for an eco-school with the involvement of teachers, students and parents. The school has an eco-codex and an ecological anthem, and runs several projects on energy saving, separate collection of PET and of e-waste, and maintains an eco-garden. International days related to environmental protection are observed by organizing special events in the school, such as the International Day for the Protection of the Ozone Layer, World Water Day and Global Day of Action. The eco-team is composed of a group of students from grade 6 to grade 9 and is coordinated by the Biology teacher.

All teachers endeavour to integrate environmental issues into their teaching. For instance, during Physics, energy efficiency and RES are explained and promoted. The school has been integrating environmental education for the past 15 years, but the environmental activities have intensified with the school becoming an eco-school. The separate collection of PET, paper and other packaging waste is undertaken through cooperation with the waste management company Pakomak. The school's eco-patrol is keeping an eye on the ecological behaviour of students. The degree of integration of environmental education into the school's annual programme is estimated at approximately 20 per cent. The school Principal and teachers observe a gradual shift in students' behaviour towards ecological choices.

Box. 5.5: Tetovo primary school "Kiril and Metodij" promoting environmental education

The school was founded in 1988, began environmental activities in 2013 and became an eco-school in 2015, having acquired the green flag. Environmental education is embraced by the school staff in close cooperation with the Municipality Department of Public Affairs, with the active involvement of students and parents. The school has an eco-codex and its eco-team engages all teachers in developing various activities for promoting environmental education in the school, its outside premises and the community. Pupils participate in waste recycling in cooperation with a local waste collection company. Various competitions (drawings and essay writing) are organized on environmental themes and teaching or demonstration material from natural components is produced by children. The Principal leads the process and the Biology teacher coordinates the environmental activities. The school's annual programme includes an estimated 15 per cent of environmental education integrated into subjects and civic education. Workshops and training courses on environmental education for teachers are organized by the school.

The school runs various eco-projects based on small grants of some €500. For example, the sustainability of materials and the concentration of radon in the building was assessed. Special attention was paid to spatial conditions for pupils, ensuring 6 m² per child. Air pollution in the schoolyard was monitored to assess whether air quality improved since the temporary closure of the nearby Yugohrom factory (due to the lack of adequate air filters). In 2017, more than 100 trees were planted by students to green the school premises, with guidance from a parent who was a specialist in agronomy. Another project was to monitor the growth of plants by installing sensors and receiving information on watering needs through a smartphone app. The next eco-project planned is on energy efficiency, changing the school lighting system to smart lighting in the premises of its branch located in Falish village.

Secondary education and vocational education and training

Secondary education, which includes educational programmes at ISCED level 3, i.e. upper secondary education, is compulsory, and consists of four years' high school education (gymnasium) or from two to four years of vocational education and training (VET). In study year 2017/2018, a total of 71,458 students were enrolled in 131 secondary education schools, including 14 private schools. As per data of 2016, when 99 public secondary schools operated in the country, these included 16 high schools, 40 VET schools, 34 combined high and VET schools, four schools for students with special needs and five art schools.

Environmental protection is included to varying degrees in annual programmes prepared by the schools and validated by the school boards based on the curricula and syllabus prepared by the Bureau for the Development of Education (for high schools) and in cooperation with the Vocational Education and Training Centre (for VET schools). Issues related to the environment are included in the mandatory subjects of Biology, Geography, Chemistry and Physics. For students choosing a natural-mathematical orientation of study, additional hours of these subjects are offered as part of elective courses.

In addition, the life skills education programme includes issues of environmental protection and RES. High school project activities required to be carried out every year (for a total of 70 hours per year) include the themes of natural science and peace, tolerance and security. Activities carried out under the Programme on integration of environmental education into the education system also provide incentives for secondary schools to enhance environmental education in their teaching and premises.

Secondary schools that are part of the eco-school network are incentivized to include more environmental education in their annual activities to meet the seven steps criteria required for eco-schools, which are assessed every two years (box 5.6). In eco-schools and other schools, besides the engagement of teachers and students, the inclusion of environmental activities in extracurricular work is also made possible by small grants for environmental projects (box 5.7).

Curricula for VET vary depending on the area of specialization and, for some areas (e.g., agricultural-veterinary, chemical-technological, textiles and leather), include different volumes of studies in Biology, Chemistry, Geography and Physics, in which environmental issues are typically included, as part of the general education curricula.

Box 5.6: Secondary school "Josip Broz Tito" in Skopje engaging in environmental education

The eco-school Gymnasium "Josip Broz Tito" in Skopje has an eco-codex and an eco-board, consisting of 12 teachers and eight students, which meets twice a month. The school's eco-patrol includes both students and teachers, inspects the premises once or twice per week and maintains an eco-journal. An estimated 20 per cent of environmental education is included across subjects and extracurricular activities. Since 2012, sustainable development issues have been integrated into the curriculum, mostly in Geography for third and fourth graders. Environmental education for teachers is based mostly on self-development through online courses and by participating in workshops on environmental and sustainable development issues.

In carrying out activities for recycling cardboard, plastic and batteries, the school cooperates with environmental CSOs Go Green and Eco-Logic and with Pakomak and Skopje paper-recycling company Komuna. In exchange for used paper, the school receives A4 printing paper, and in exchange for batteries and other e-waste, which students bring from their homes to recycle at the school, the school upgrades its projector and printer.

The school celebrates Earth Day and World Environment Day. About 70 students participated in the Mobility Week organized in September 2018. The school organizes excursions to develop students' positive attitudes towards nature and practise eco-habits. The school also took part in World Cleanup Day organized by environmental CSOs. In addition, the school implemented several environmental projects based on grants (€2,000) and with sponsorship from businesses and support from parents, such as greening the school area, reusing technical water and making the school façade and lighting energy efficient. Money from entrance tickets to school social events is used to finance works to green the school area. Students learn to be empathetic by organizing charity parties and donating the collected funds to support SOS Children's Villages International and other humanitarian organizations. The International Baccalaureate students engage in a minimum of 150 hours of community service and a 10-day environmental research project with the Geography teachers, studying measures and policies in place to protect a certain area and discussing their effectiveness on the ground. Students participate in field trips such as studying lake ecosystems. In organizing environmental activities, the school cooperates with both the education and environmental authorities of the City of Skopje.

The challenges facing the country include the need to update the curriculum formally to integrate environmental and sustainable development issues across all subjects, not only those related to the natural sciences, to ensure continuity of eco-activities beyond the projects and pilot programmes, and to give more independence to high schools in organizing extracurricular environmental activities outside the school.

Box 5.7: “7 Marsi” Secondary School in Tetovo engaging in environmental activities

The “7 Marsi” Secondary School (gymnasium), established in Tetovo in 2015, endeavours to keep its premises clean and environmentally friendly. Students, teachers and other school personnel engage in recycling paper, plastic and e-waste in cooperation with the municipal waste collection companies. During World Environment Day, students participate in cleaning activities around the school and greening the area with support from technical personnel. Twenty students from the second grade visited an HPP to learn about its operation and impact on the environment. A Trash Fashion event was organized, for which students designed and modelled clothes made of waste materials. The school includes environmental education activities in its annual programme and reports to the State Education Inspectorate on four eco-indicators. However, this exercise is viewed more as a formality, rather than providing an incentive for enhancing its environmental activities. The major challenge in advancing environmental education and ESD was considered to be the provision of adequate in-service training for teachers and school personnel.

The school plans to implement a project to produce its own energy, by installing solar panels with financial support from the Ministry of Education and Science, Ministry of Finance and UNDP, scheduled to start in December 2018. The school receives most of its grants from the Ministry through the Municipality of Tetovo.

Photo 5f: Separate waste collection at “7 Marsi” Gymnasium in Tetovo



Also, subjects such as plant protection, hygiene and ecology, work and environmental protection are included in professional education in the areas of agricultural-veterinary, catering and tourism and geological-mining and metallurgical respectively. Other specializations do not have studies dedicated to environmental protection and environmentally friendly and green products, despite the specializations having an impact on the environment.

The 2018 pilot programme for civic education in the first year of the four-year VET in construction and geodesy, electrical engineering and catering and tourism, includes environmental education and ESD. Within the same experimental teaching, a programme for Geography was developed for the first grade of catering and tourism specialization, containing issues of environmental protection and sustainable development. The programme for Physics for first grade students in modular design also contains environmental and sustainable development elements.

Developing capacity and raising awareness about the Sustainable Development Goals, including through an online educational tool for secondary schools, was done by REC within the project “Introducing the United Nations Sustainable Development Goals in Schools in South Eastern Europe (SEEDLING)”, carried out in 2016–2018 with support from Austrian Development Cooperation. In North Macedonia, the project was implemented with support from several CSOs, including OXO preparing young reporters for environmental protection, CeProSARD working on strengthening education in VET through the introduction of educational programmes on the Sustainable Development Goals, Go Green working with young people to engage in sustainable development, Ajde Makedonija working with catering VET on “food for all, poverty for nobody”, and the Scout Association of Macedonia promoting implementation of the Sustainable Development Goals through scouting. An assessment of the existing education programmes for high schools and VET (for each profession) in 2016 concluded that, in most of the programmes in secondary education, there are goals and content that directly or indirectly relate to sustainable development, mostly in the general education subjects. At the same time, programmes are inconsistent conceptually, structurally and in terms of content and there is no coherence and systematic inclusion of elements of ESD, either between different subjects or within individual subjects.

Higher education

Higher education includes three study cycles (ISCED levels 6, 7 and 8) – undergraduate (bachelor’s degree) of three to four years, postgraduate (master’s degree) of one to two years and doctoral (PhD and ArtD). In addition, higher education institutions offer vocational studies (ISCED levels 4 and 5). In 2017, 8,545 students (nearly 300 more than in 2016) graduated from 18 higher education institutions in the country.

The Master of Science degree obtained in fields of study related to: (i) environmental, natural sciences and mathematics and technical sciences; and (ii) pedagogical fields of study, constituted around 9 per cent and 7 per cent, respectively, of all degrees obtained for all fields of study in 2016 and 2017. The Doctor of Science degree obtained in fields of study related to: (i) environmental, natural and technical sciences; and (ii) pedagogical fields of study, constituted around 20 per cent and 16 per cent, respectively, of all doctoral degrees obtained for all fields of study in 2016 and 2017.

The study programmes are prepared by the faculty teaching council, approved by the senate of the higher education institution and accredited by the accreditation board for a period of five academic years. As at 2018, study programmes related to environmental protection and the environmental dimension of sustainable development were provided by several institutions, such as the University “Ss. Cyril and Methodius” in Skopje (UKIM) and MIT University in Skopje.

In other specialities that are not directly related to environmental studies, environmental considerations

are included only to a limited extent, mostly as elective courses. For instance, some of the 767 graduates in law in 2017 (288 more than in 2016) benefit from studying environmental law. For instance, elective courses on environmental law at the programme level, and courses on ecology and sources of pollution of the environment at the university level, are offered by MIT University to law students at bachelor level. The Faculty of Law of University “St. Kliment Ohridski” also offers environmental law as elective courses. However, there are no statistics available to determine whether and how many law students chose to study these courses.

Adult education, non-formal and informal education

Adult education is included in the education system and consists of formal, non-formal and informal education. Formal adult education is carried out in primary, secondary, VET and higher education institutions. In 2017/2018, 483 adults were enrolled in 12 primary schools for adults. The funds for adult education are provided from the state budget and, for some courses, from the learner’s own resources.

Photo 5g: Learning about nature on the shores of Lake Ohrid



Non-formal adult education is organized for the training of adults for employment, social activities and personal development, based on special programmes that are developed and accredited. As part of non-formal adult education, a training programme preparing sustainable development analysts is provided by Eco-Logic through the Centre for Adult Education. The programme includes 12 modules taught for 245 hours, including theory, practice and evaluation.

Informal environmental education and ESD are promoted through activities and events organized by the Ministry of Environment and Physical Planning, including in cooperation with municipal authorities, such as promoting reducing and recycling waste, observing Earth Hour, organizing several campaigns related to climate change, and sustainable mobility week. In addition, informal environmental education and ESD is provided by CSOs directly engaging with schools and municipal authorities. For instance, OXO produces environmental education materials for mass media and a TV show for children.

Informal adult education is conducted through community activities to foster attitudes and positive values, skills and knowledge in everyday life and experience. Also, recycling and other eco-services are often promoted through visual art and posters in the street and on waste collection vehicles.

Training of teachers

Preschool educators and lower primary school teachers (up to fifth grade) are trained at the UKIM Faculty of Pedagogy. Preschool educators study for three years and lower primary school teachers study for four years. Environmental education is offered among elective courses, for a duration of 45 hours. In addition, environmental education can be chosen as a theme of self-study and project-based work for another 45 hours. Dedicated textbooks for environmental education are not used in the study process. As at September 2018, ESD is not offered as a main or elective course.

Teachers for lower secondary (from sixth to ninth grades) and upper secondary (high school and VET) education are trained at various faculties, such as those for natural sciences and mathematics, social sciences and humanities. Besides the ecology specialization, environment-related courses are included in the elective courses for future teachers of Biology. The study programmes of future teachers of Geography include courses on climatology, hydrology, environmental protection, spatial planning and biogeography.

As at 2018, no mandatory study programme on environmental education or ESD for future teachers existed in the country. The integration of environmental education and ESD into other subjects is not done. Environmental education is offered as an elective course in some institutions only.

In-service training of teachers

In 2017–2018 there were 18,291 teachers in primary schools, 7,445 teachers in upper secondary education and 43 teachers in primary schools for adult education.

The in-service training of teachers is mandatory by law (50 hours state provided and 10 hours of self-study during every three school years). Currently, it is done through self-study, taking online courses and participating in thematic workshops and conferences.

Several guiding materials on professional and career development of teachers were developed within a project supported by the United States Agency for International Development (USAID); however, they did not include ESD competences for teachers.

In-service training on environmental education and ESD was organized during the period 2010–2015 by OXO, in cooperation with the municipalities and schools, under the Programme on integration of environmental education into the education system. Eco-schools are particularly incentivized to organize workshops on environmental education for teachers as part of their activities to maintain the standards of an eco-school.

5.7 Legal, policy and institutional framework for education for sustainable development

Legal framework

There is no dedicated law on environmental education or ESD.

The 2005 Law on Environment provides for educational and other institutions, within their activities, to promote and ensure awareness-raising on the environment and active participation in its protection. The Law also requires the Ministry of Education and Science to include environmental protection in the primary or secondary school curricula as a compulsory or optional subject. The Law requests the Ministry of Environment and Physical Planning to cooperate with the Ministry of Education and Science in providing support to educational and scientific institutions, professional organizations and CSOs in promoting environmental protection and sustainable development through

educational activities. It obliges the Government and the two ministries to support the publication of educational materials on environmental protection and sustainable development in support of environmental education. Municipalities are obliged by the Law to encourage the development of environmental education and to raise public awareness. There is no secondary legislation or an institutional mechanism to ensure the implementation of the Law's provisions.

The 2013 Law on Child Protection regulates preschool education and makes obligatory the inclusion of environmental education activities in the curricula.

The 2008 Law on Primary Education includes the protection of the environment among the primary education goals.

The 1995 Law on Secondary Education, the 2006 Law on Vocational Education and Training and the 2018 Law on Higher Education do not include provisions regarding the integration of environmental education or ESD.

The 2015 Law on Teachers in Primary and Secondary Schools does not contain environmental education or ESD.

The 2015 Law on the Academy for Teachers establishes and regulates the work of the Academy for Teachers as a public institution for professional development, in-service training and issuing or renewing teachers' licences to work in public and private schools. As at November 2018, the Academy was not established.

The 2008 Law on Adult Education requires special education programmes developed for adult education to integrate environmental protection. As at 2018, there was no evidence of such programmes, except a specialized accredited programme for sustainable development analysts provided by Eco-Logic.

Policy framework

As at November 2018, no national strategic document on environmental education or ESD was adopted.

The National Strategy for Sustainable Development for the period 2010–2030 includes a proposal for an institutional set-up based on PPPs to support the implementation of sustainable development in the country, based on a university campus for sustainable development responsible for research and testing sustainable development and serving as a “place for new ways of thinking, innovation and living”. The

Strategy's Annex II, with pilot and demonstration projects planned for the period 2010–2015, includes proposed activities on ESD based on a pilot education programme for 10 enterprises. As at November 2018, there were no actions to implement these measures.

The two technical strategies developed by the Ministry on Environment and Physical Planning – the 2003 Environmental Awareness Strategy and the 2004 Environmental Communication Strategy – are the guiding documents for Ministry activities in these areas.

The 2006 National Programme for Development of Education for the period 2005–2015 has a section on ecology, covering only some aspects of environmental protection in secondary and post-secondary education.

Neither the Strategic Plan for the period 2018–2020 nor the Programme of Work for 2018 of the Ministry of Education and Science include environmental education or ESD.

The 2007 Concept for Primary Education does not explicitly include ESD.

The 2013 Programme for Early Learning and Development does not include environmental education or ESD.

The Programme on integration of environmental education into the education system is being implemented by the Ministry of Education and Science in cooperation with OXO, as it has been since December 2009 (box 5.8).

The strategy for development of adult education in the context of lifelong learning, which is required to be developed by the 2008 Law on Adult Education, does not exist as at 2018. The Concept for non-formal adult education and informal education and the Implementation Guidelines (2015–2020) do not include environmental education or ESD.

The draft strategy for education 2018–2025 and action plan mention the Sustainable Development Goals among challenges that need to be met in the education system as a commitment by the country. However, the draft does not include any provision or activity on environmental education or ESD.

The current status of the country vis-à-vis targets 4.7 and 12.8 of the 2030 Agenda for Sustainable Development is described in box 5.9.

Box 5.8: Programme on integration of environmental education into the education system

The Programme was implemented within the framework of a signed Memorandum of Cooperation with the Swiss Agency for Development and Cooperation (SDC), as a measure outside the Government's programme, and operationalized through the project "We do not have a spare planet", implemented by OXO in kindergartens, primary and secondary schools, student dormitories and private secondary schools. Key measures include raising the level of environmental activities in educational institutions, the inclusion of environmental issues in the curricula and development of media products to facilitate the participation of children and students in the process of environmental education. The Programme began in earnest between 2010 and 2015 and is ongoing.

Since 2010, the Programme's practical implementation in kindergartens and schools resulted in capacity-building of principals (on eco-management), educators and teachers (on integrated planning of teaching) and of school coordinators for implementing the Programme (implementation and coordination of environmental projects) (table 5.2). Textbooks and educational materials were produced for preschool and school levels. Eco-standards were established, eco-management was introduced in kindergartens and schools and a network of eco-schools and eco-kindergartens was set up.

At September 2018, 74 of the 1,212 public kindergartens and schools have been awarded a green flag (10 kindergartens, 40 primary schools and 10 secondary schools) or silver (7 schools) or bronze (7 schools) level of eco-school. A small grants programme was established enabling eco-kindergartens and eco-schools to apply for financial support from OXO for implementing environmental projects. At September 2018, 124 environmental projects (44 on energy efficiency, 30 on water saving, 30 on waste management and green policy and 20 on schoolyard organization) have been implemented.

Table 5.2: In-service training provided within the Programme on integration of environmental education into the education system, 2010–2015, number

	2010–2015
Total trained principals, teachers, pedagogues,	6 500
of which:	
on environmental management	3 000
on preparing project proposals	1 500
on integrating environmental education across subjects	1 500
on integrating environmental education into school annual programmes	500
Total institutions covered by training,	510
of which:	
kindergartens	50
primary schools	360
secondary schools	100

Source: OXO.

Seventy-two municipalities participate in the Programme, based on memoranda of cooperation signed with OXO and with kindergartens and schools. Participation includes financially supporting schools' eco-projects. The State Education Inspectorate participates in the Programme by having included eco-criteria and related assessment indicators in the evaluation of each kindergarten and school by education inspectors. At 2018, six eco-criteria cover energy, water, tidy and ecological schoolyard, ecological environment inside school, waste and transport. More than 100 meetings and one-day workshops for capacity-building were conducted for some 300 representatives of the Ministry of Education and Science, SEI, Centre for Vocational Education, Bureau for the Development of Education and State Examination Commission, as well as for representatives of municipalities.

Photo 5h: Eco-codex in schools





Box 5.9: Targets 4.7 and 12.8 of the 2030 Agenda for Sustainable Development



Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Target 4.7: By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development

To date, a few themes related to the environment and social dimensions of sustainable development are mostly included in civic education or are provided as elective courses. In preschool, primary and secondary education, environmental protection topics are integrated into Science, Natural Science, Biology, Geography, Chemistry and Physics as part of the curricula for these subjects. Eco-schools endeavour to integrate environmental protection across all subjects. Environmental protection and sustainable development themes are included to some degree in programmes and offered as elective courses in universities that prepare teachers for preschool, primary and secondary education. Efforts are made to include environmental themes in student assessment in primary schools. CSOs are the driving force for promoting environmental education and ESD, based on project and grant activities.

There are no legal requirements for, or a strategic document on, ESD to guide the integration of all dimensions of sustainable development into the formal education programmes at all levels of education for the coherent implementation of ESD. The institutional framework for implementing ESD is not established with clear roles and responsibilities. ESD is not part of teacher education, teacher competences or in-service training of teachers. ESD is not included in student assessment.

To achieve progress in ESD by 2030, the Government should:

- (a) Expedite the integration of ESD into all national education policies in a coherent manner to ensure continuity and consistency in learning through all education levels;
- (b) Define the institutional framework for ESD with clear roles and responsibilities;
- (c) Include ESD in formal curricula at all levels, not only in civic education and elective courses;
- (d) Revise future teacher education programmes to include ESD as a mandatory course and integrate sustainable development issues across all courses;
- (e) Include ESD in the in-service training of teachers;
- (f) Revise student assessment to ensure the evaluation of knowledge and skills for sustainable development;
- (g) Enable the implementation process and make it sustainable and effective by providing adequate financial support from public funds to support the broad implementation of ESD, including to help all schools become eco-schools;
- (h) Based on the good practice thus far, involve CSOs in promoting and advancing ESD on the ground.

Goal 12. Ensure sustainable consumption and production patterns

Target 12.8: By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature

The achievement of target 12.8 is closely linked to the achievement of target 4.7. The Law on Free Access to Public Information serves as a good legal basis to enable access to information, if it is implemented effectively by all stakeholders. The Ministry of Environment and Physical Planning is a key institution in making available and ensuring open and user-friendly access to environmental information. SSO is the key partner in providing information related to sustainable development, having published annually, since 2011, statistics related to sustainable development.

User-friendly and comprehensive information related to sustainable development is largely absent in the country. Moreover, the lack of awareness in civil society about the availability of environmental information and procedures to access it is a bottleneck hindering efficient access to information. Although there have been efforts by governmental institutions to improve communication with the public on environmental matters, in many cases, information regarding the environment is still given in a manner that is too technical for the public to understand and linkages to human health and safety are not explicitly shown, thus limiting the comprehension of information.

The Government should:

- (a) Ensure open, free and user-friendly access to information related to the environment and sustainable development;
- (b) Enhance the knowledge and develop the capacity of public servants responsible for the provision of information related to the environment and sustainable development;
- (c) Develop and provide information on the environment and sustainable development in formats to be understood by public, including by making explicit links to the impact on human health and the well-being of animals, crops and vegetation, and offering examples of possible action by civil society to help mitigate related concerns;
- (d) Increase outreach and awareness-raising activities to provide information related to the environment and sustainable development, including by conducting surveys of the public, similar to those being conducted on climate change, to measure the level of public awareness and adapt promotional measures accordingly.

Institutional framework

Ministry of Education and Science

The Ministry of Education and Science adopts plans and programmes for schools and manages and partially finances the education system through transfers to municipalities. Environmental education and ESD are not explicitly mentioned in the mission and vision of the Ministry.

There are no dedicated staff dealing with environmental education and ESD. Nevertheless, since 2009, the Ministry has hosted a project unit for the implementation of the Programme on integration of environmental education into the educational system. The employment of staff on the Ministry budget for implementation of this Programme did not materialize, despite it being envisaged.

The Bureau for the Development of Education operates under the Ministry as a key institution for the development of standards, curricula and syllabi for preschool, primary and secondary schools, vocational education, specialized education and adult education. It promotes environmental education (ecological behaviour and knowledge) through civic education in primary and secondary education.

Ministry of Environment and Physical Planning

The Ministry of Environment and Physical Planning carries out non-formal and informal education activities promoting environmental protection and sustainable development. The Ministry's Unit for Communication, Public Relations and Education organizes environmental awareness-raising initiatives several times per year.

Other institutions

The Ministry of Labour and Social Policy oversees preschool education. It is engaged in the development and organization of VET. The Ministry is also engaged in adult education by identifying the needs for training and retraining of adults, preparing new vocational qualifications and occupational standards and contributing to professional orientation events. No dedicated staff are dealing specifically with environmental education or ESD.

The State Education Inspectorate has a role in monitoring and assessing the implementation of the

annual education programme in schools. Education inspectors monitor progress according to education indicators, including some related to environmental education.

The Vocational Education and Training Centre and the Adult Education Centre do not include specific activities to integrate environmental education or ESD into programmes or courses.

The National Examination Centre is involved in the national evaluation of student achievement in primary and secondary education. The Centre is engaged in the evaluation of school principals, in line with the Programme for training and examination of principals of primary and secondary schools, which includes a module on integrating environmental protection into the education process. Since 2006, the Centre is evaluating fourth-grade pupils' knowledge and abilities in the subject Nature and Society.

The Lifelong Learning Centre is an association that serves as a platform for non-formal adult education and lifelong learning; it is involved in preparing the methodology for and establishing a system of validation of non-formal and informal learning. The Centre's work does not include environmental education or ESD.

The Macedonian Civic Education Centre is a CSO active in the development of educational programmes. Activities are conducted through projects, including an international project, "Education for Sustainable Development Partnership Initiative", carried out in the period 2010–2012 with EU funding.

Municipalities' engagement in education

Following the decentralization of the education system in 2005, municipalities established education units within their administrations and appointed education inspectors to supervise the delivery of education (box 5.10). Municipal authorities have a role in "greening" the educational institutions, for instance through supporting water and energy efficiency activities, paper, plastic and e-waste recycling and greening the schoolyard area. Municipalities participate in activities within the Programme on integration of environmental education into the education system, including more than 50 municipalities that promote eco-schools in local media and websites and 30 municipalities that financially support eco-projects in schools, help eco-schools pay the annual membership fee and engage in events organized by eco-schools.

Box 5.10: Tetovo Municipality's approach to environmental education

Tetovo Municipality has a unit for education in charge of 18 educational institutions (12 primary schools and six secondary institutions, including four VET institutions), and a unit for social, medical and child protection in charge of nine preschool institutions.

The Municipal Council's decision-making on issues related to education is supported by the Commission for Public Affairs, which is composed of five members, including four from the Council and one primary school teacher. Environmental education is a component part of the annual education programme prepared by each educational institution in the municipality. Following their approval by the school boards, the annual education programmes and implementation reports are approved by the Council. Four municipal and 10 state education inspectors monitor the implementation of educational programmes in the Municipality. In monitoring the environmental education component, the local education inspectors cooperate with the local environmental inspectors.

Schools

Schools' responsibilities include adopting the school statute, developing annual programmes and preparing reports on school performance for municipal council consideration and approval. Schools play an important role in embracing environmental education and ESD, by including environmental protection and sustainable development activities in their annual programme, putting them into practice and reporting on their implementation. The school boards oversee the integration of environmental education in annual programmes and are involved in implementation. Eco-schools serve as a good model for implementing a whole-school approach in educational institutions in the country.

University "Ss. Cyril and Methodius",

Skopje

Within the University, the Faculty of Pedagogy "St. Kliment Ohridski" Skopje is the main institution that prepares educators for preschool and teachers for lower primary education (up to fifth grade). The Faculty follows the developments in relevant legal and policy frameworks and in curricula and cooperates closely with relevant governmental authorities. The Faculty of Natural Sciences and Mathematics prepares teachers of subjects related to the environment for lower and upper secondary education. The Institute of Pedagogy belongs to the Faculty of Philosophy and prepares pedagogues; it also organizes pedagogical and methodological training for teachers in vocational secondary education institutions who graduated from non-teaching faculties, and trains principals for primary and secondary schools. Specific courses on environmental education or ESD are not offered.

Civil society organizations

In practice, CSOs are the driving force for environmental education, which is implemented mainly through project-based activities (box 5.11).

5.8 Participation in international agreements and processes for education for sustainable development

The country does not participate in activities under the United Nations Decade of Education for Sustainable Development (2005–2014) nor in the Global Action Programme on Education for Sustainable Development implemented under the leadership of the United Nations Educational, Scientific and Cultural Organization (UNESCO).

North Macedonia adopted the 2005 ECE Strategy for Education for Sustainable Development and, at the beginning, participated in activities to implement the Strategy. However, the country did not submit any of the three national implementation reports in 2007, 2010 and 2015, nor the report due in October 2018 within the framework of the fourth cycle of the mandatory national implementation reporting. Since 2011, the country does not participate in the work under the Strategy.

The Ministry of Environment and Physical Planning cooperates with the United Nations Children's Fund (UNICEF) on preparing an analysis of the climate landscape for children, which includes environmental education among its priority areas. Based on the analysis, policy briefs will be developed to support policymaking and decision-making in the country.

Box 5.11: Civil society organizations – the drivers of environmental education

OXO has promoted the inclusion of environmental education in the education system since 1998, including by producing and disseminating various materials on the environment for kindergartens, schools and teachers. OXO helps establish eco-sections in schools and promotes the eco-schools concept, in its capacity as the national operator for the network of eco-schools. OXO's work on environmental education has included organizing training for teachers and other staff involved in education activities.

OXO expanded its work in 2014 by developing a TV show for children, "Five Plus", in the Albanian and Macedonian languages, which focused on raising awareness and behavioural change on environmental protection. These activities were carried out in cooperation with the Ministry of Education and Science, the Bureau for the Development of Education and the municipal departments of education, with support through donor funding, mostly by the Swiss Agency for Development and Cooperation.

Other CSOs, such as Go Green, the Centre for Environmental Research and Information Eko-vest, Zero Waste and Macedonian Civic Education Centre, are supporting environmental education in schools by promoting and helping them to establish processes for paper, plastic and e-waste recycling, carry out activities for water and energy efficiency and green the schools' premises, and by conducting civic education activities.

5.9 Assessment, conclusions and recommendations

Assessment of environmental democracy

Environmental democracy is under development with uneven progress in the implementation of its three pillars. The legislative framework is in place and efforts are concentrated on putting it into practice. A list of environmental information holders is published on the website of the Ministry of Environment and Physical Planning, though the list has not been updated since 2007. The website of the Ministry contains most of the environmental information, which is accessible to the public; however, some information is outdated or not easy to find. Additional efforts are required to ensure online access to all environmental information based on a single-window integrated information system. Adequate expertise and financial resources are lacking to ensure effective implementation.

Public participation in decision-making is progressing well in some areas, while in some other areas the right of and effective procedures for public participation need to be established or revised to align them with the Aarhus Convention. Public participation in decision-making in environmental matters is limited by the established procedures for most of the activities not covered by EIA, SEA and integrated environmental permitting. However, in all cases, the public concerned has the right to challenge a decision before the State Commission for Decision-Making in Administrative Procedures and Labour Relations Procedures in Second Instance. Public participation in developing legal and policy documents is enabled by allowing the public to make comments on the draft documents posted on the website and during public hearings organized to discuss the draft documents. Challenges exist with effective public participation in public hearings. Specific procedures for public participation

in decision-making processes regarding GMOs, chemicals and waste are not established.

Access to justice in environmental matters has been promoted since 2012, mostly as a project-based activity to develop the capacity of the judiciary and CSOs. The public can submit cases related to environmental matters to the Ombudsman before deciding whether to file a court case. There is no difference between individuals and CSOs in accessing the justice system, with the exception that costs can be waived for disadvantaged individuals. Court expenses are no different for environmental cases and there is no exemption from court expenses for CSOs. The public has the right to challenge in court decisions on specific activities relating to the environment by submitting an administrative lawsuit against an administrative act (within 30 days) and can appeal the decision of a court of first instance to a court of appeal (within 15 days), which might be too short a period for complex cases requiring extensive coordination among CSOs. The main bottleneck in promoting effective access to justice in environmental matters is the lack of capacity and expertise in governmental authorities, and on implementing access to justice in environmental matters in courts and other judicial institutions.

Assessment of education for sustainable development

Progress has been made in promoting environmental education and engaging relevant national and municipal institutions and schools. Environmental education is driven by CSOs. Since 2009, environmental education is promoted in the education system, mainly based on the Programme on integration of environmental education into the education system, the implementation of which is coordinated by an independent project unit located on the premises of the

Ministry of Education and Science. The expansion of eco-schools represents a good example for promoting environmental education in the country.

Some themes of the environmental and social dimensions of sustainable development are included in civic education and offered as elective courses. However, ESD is still at the inception stage of development in the country and concerted efforts to develop and implement ESD in formal education at all levels, as well as in non-formal and informal education, are lacking.

Conclusions and recommendations on environmental democracy

Access to information

Public access to information related to environmental media is hindered by the lack of an open, updated and user-friendly environmental portal, which is also a challenge to the achievement of the environmental dimension of target 16.10 of Sustainable Development Goal 16. The lack of awareness in civil society about the availability of environmental information and procedures to access it is another challenge.

Access to environmental information on the websites of public institutions other than the Ministry of Environment and Physical Planning is largely lacking. A minimal approach to comply with the Law on Free Access to Public Information is implemented by the provision of only the list of information without online access to actual documents. For passive access to information, the allowed extension of an additional 30 days for complex information requests often renders useless the information finally provided, because it was needed for events taking place during the first 30 days. Information related to public hearings is often published at short notice. EIA reports are not easy for the public to understand. The required procedures for getting access to various types of information are in place, but the quality of the information provided and the efficiency of these procedures are often questionable.

Consolidated versions of laws and secondary legislation are not available to the public free of charge. This refers not only to environmental legislation. To increase the accessibility of environmental legislation, the Ministry of Environment and Physical Planning publishes such legislation on its website, but the scope of legislative acts published is limited to core environmental topics and the texts displayed are not the latest versions and do not include consolidated versions of the laws that incorporate all amendments.

Recommendation 5.1:

The Ministry of Environment and Physical Planning should:

- (a) *Improve its website to ensure the provision of continuously open and user-friendly free access to environmental information, and enhance the use of social media;*
- (b) *Ensure that the future national integrated environmental information system is fully accessible through its website;*
- (c) *Ensure free online access to a wider spectrum of updated environmental legislation;*
- (d) *Support other relevant institutions to make available environmental information in their possession on open access on their websites;*
- (e) *Conduct awareness-raising activities to enhance the civil society capacity to access environmental information and monitor progress in raising the level of public awareness of environmental issues.*

See also Recommendation 4.5.

Public participation

The main challenges in ensuring effective public participation in decision-making on specific activities in line with the provisions of the Aarhus Convention are: (i) the lack of adequate financial resources; and (ii) the lack of appropriate expertise and insufficient human capacities. Effective public participation procedures are largely not developed. There is no public participation envisaged in the decision-making on chemicals. The lack of effective public participation procedures is a barrier to delivery on the environmental dimension of target 16.7 of Sustainable Development Goal 16.

Recommendation 5.2:

The Ministry of Environment and Physical Planning should:

- (a) *Ensure effective public participation procedures;*
- (b) *Develop capacity and expertise to ensure effective public participation, including by conducting training for public officials responsible for public participation procedures;*
- (c) *Enable public participation in decision-making on chemicals, for instance by initiating dialogue with the involvement of authorities and relevant stakeholders, including producers, researchers, civil society organizations and health and environmental specialists.*

Public participation in decision-making on genetically modified organisms

North Macedonia has not ratified the 2005 Almaty Amendment on Genetically Modified Organisms to the Aarhus Convention. The Law on Genetically Modified Organisms provides for public participation in decision-making, but by-laws setting detailed procedures for engaging the public are lacking. To date, the Ministry of Environment and Physical Planning has not received an application for a GMO-related licence.

The Law on Food Safety does not include provisions for public participation in decision-making on food products containing or consisting of GMOs.

Recommendation 5.3:

The Government should:

- (a) *Establish detailed procedures to ensure effective public participation in decision-making on the deliberate release of genetically modified organisms (GMOs) into the environment and placing them on the market;*
- (c) *Amend the 2010 Law on Food Safety to include provision for public participation in decision-making on food and food products containing or consisting of GMOs, and establish detailed procedures to ensure effective public participation, in anticipation of accession to the European Union.*

Access to justice

The lack of knowledge, capacity and expertise in the governmental authorities, judiciary and independent review bodies in promoting and implementing effective access to justice in environmental matters is the main bottleneck in access to justice in environmental matters. That bottleneck, as well as the lack of a specific law, by-law or guiding document on procedures for processing environmental cases in the courts, is also an impediment to effective delivery of target 16.3 of Sustainable Development Goal 16.

No guidance document on the application of environmental legislation exists.

Recommendation 5.4:

The Ministry of Justice should:

- (a) *Ensure, in cooperation with the Academy for Judges and Public Prosecutors and the Ministry of Environment and Physical Planning, regular training on environmental*

legislation for judges, prosecutors and lawyers;

- (b) *Promote, in cooperation with the Ministry of Education and Science, Ministry of Environment and Physical Planning and respective universities, the inclusion of a course on environmental law, as either a mandatory or elective course, at major faculties of law;*
- (c) *Raise awareness, train public officials and develop other preventive measures, in cooperation with the Ministry of Environment and Physical Planning and Ministry of Internal Affairs, to protect environmental defenders from being penalized, persecuted or harassed in any way in exercising their rights.*

Recommendation 5.5:

The Ministry of Justice, in cooperation with the relevant judicial branch, should develop a guiding document for the courts on the application of environmental law.

Enabling the promotion of environmental democracy

A considerable challenge in implementing effective public access to environmental information, public participation and access to justice in environmental matters is the lack of dedicated centres across the country to actively promote environmental democracy to the public at large and contribute to the development of the capacity of environmental CSOs.

Challenges identified for effective implementation of access to information, public participation and access to justice in relation to environmental matters by the Ministry of Environment and Physical Planning include the lack of human and financial resources and the lack of expertise. However, the resource needs are not estimated.

Recommendation 5.6:

The Government should consider establishing mechanisms to actively promote access to information, public participation and access to justice in relation to environmental matters.

Recommendation 5.7:

The Ministry of Environment and Physical Planning should undertake a comprehensive analysis to estimate the necessary expenditures (human and financial resources) for the satisfactory implementation on the ground of access to information, public participation and access to justice in relation to environmental matters.

Conclusions and recommendations on education for sustainable development

From environmental education to education for sustainable development

The framework for environmental education is provided by the Programme on integration of environmental education into the education system, which is not formally adopted and implemented by the Government. ESD is broader than environmental education and no legal document includes ESD. The 2005 Law on Environment has a requirement to integrate environmental protection into the curricula of primary or secondary education as either an optional or compulsory subject, which is not sufficient for the adequate implementation of ESD.

Furthermore, no formal strategic or policy document on ESD is available in the country as at November 2018. A detailed assessment of VET programmes, with a view to integrating ESD into them, was made in 2016 in the framework of the project “Introducing the United Nations Sustainable Development Goals in Schools in South Eastern Europe (SEEDLING)”. The Ministry of Education and Science’s role in integrating environmental education and ESD into curricula and overseeing implementation is not clearly defined.

The lack of a legal framework or a formal strategic or policy document on ESD is a barrier towards achieving the global targets 4.7 and 12.8 of the Sustainable Development Goals.

Recommendation 5.8:

The Ministry of Education and Science, in cooperation with the Ministry of Environment and Physical Planning, Ministry of Labour and Social Policy, municipalities and other relevant institutions, should:

- (a) *Develop an action plan for education for sustainable development (ESD);*
- (b) *Develop competences for educators in ESD;*
- (c) *Integrate ESD into the curricula of all education levels and in lifelong learning, teacher education and in-service training;*

- (d) *Integrate ESD into student assessments at all education levels.*

Enabling the implementation of education for sustainable development

Environmental education and ESD are promoted mostly within project-based activities; the process is not continuous and sustainable. Progress has been made in environmental education, mostly in primary and secondary schools and mostly through the eco-school programme. Eco-schools serve as a good example of integrating environmental education and show the interest and involvement of teachers, students and parents in environmental activities.

State-supported in-service training for teachers does not exist. In-service training for teachers does not include ESD. The lack of teacher in-service training on ESD is a barrier towards achieving global target 4.7 of Sustainable Development Goal 4.

In the review period, the country has not benefited from the tools and materials developed in the framework of the ECE Strategy for Education for Sustainable Development, such as indicators to measure the implementation of ESD, the ESD competences for educators, the tools for policy and practice workshops on competences in ESD and examples of good practices in ESD, including in support of greening the economy.

Recommendation 5.9:

The Government should:

- (a) *Assign a clear mandate on ESD for the Ministry of Education and Science;*
- (b) *Establish a coordination mechanism on ESD among all relevant stakeholders;*
- (c) *Nominate a national focal point and participate in ECE regional activities on ESD;*
- (d) *Amend the mandate of the Academy for Teachers to include ESD in its activities and establish the Academy so that it can support the in-service training of educators and teachers;*
- (e) *Allocate resources for the implementation of ESD, including to support eco-schools.*

PART II: DOMESTIC–INTERNATIONAL INTERFACE

Chapter 6

IMPLEMENTATION OF INTERNATIONAL AGREEMENTS AND COMMITMENTS

6.1 General priorities for international cooperation

The status of North Macedonia as a candidate for accession to EU since 2005 has influenced the country's progress in terms of participation in and implementation of international agreements and commitments. As at 2018, the country has ratified nearly all relevant global and regional environmental agreements. However, some challenges remain in terms of effective implementation and compliance with the obligations under MEAs in the country, especially recently ratified agreements.

6.2 Global, regional and subregional agreements

Participation and reporting

The country is usually represented at the most relevant meetings of MEA decision-making bodies by one representative, although it was never represented at the meetings of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

The country has made efforts to comply with its international reporting obligations; however, the absence of adequate monitoring data on species and habitats (mostly due to the lack of adequate national financing for these activities) had some impact on timely reporting in these fields. This has affected the quality of the national reports on the nature conservation and biodiversity domains.

CSOs are rarely involved in the preparation of national reports on the implementation of MEAs. Furthermore, CSOs are not involved in the decision-making processes regarding the country's participation in MEAs, neither do they participate in the development of the country's position for international meetings or preparation of the national reports (except the national implementation report of the Aarhus Convention, the draft of which is posted on the website of the Ministry of Environment and Physical Planning to enable the submission of comments by the public).

The list of ratified MEAs is available to the public on the Ministry's website. However, there is a general absence of information provided to the public by the Ministry of Environment and Physical Planning on the status of implementation of MEAs, including the national reports submitted (except the national reports to the Aarhus Convention and to the Convention on Biological Diversity, which are posted on the website).

MEAs bring with them a variety of obligations in the fields of environmental legislation, enforcement, monitoring and reporting, with some requiring highly specialized expertise and effective intersectoral cooperation. Since each MEA also has its own national reporting mechanisms and its own institutional arrangements based on meetings (MOPs) or conferences (COPs) of the parties, the cumulative technical and administrative burden is considerable. The country faces special challenges in responding to these competing demands.

Synergies in implementation of various multilateral environmental agreements

For the implementation of multilateral agreements in the area of nature protection, national focal points have been appointed in the Ministry of Environment and Physical Planning, mainly in the Department for Nature and the Unit for International Cooperation, and national committees have been established for certain conventions.

The country has made some progress in establishing synergies among the Basel, Rotterdam and Stockholm (BRS) Conventions. A project on strengthening the national capacities for the coordinated implementation of the BRS Conventions in North Macedonia, presented at the regional meeting on SAICM in Skopje in September 2013, aimed at assisting the Government to strengthen its capacities to effectively implement these Conventions in a coordinated and integrated manner. The activities under this project included: (i) analysis and assessment of the status of implementation of the BRS Conventions; and (ii) development of a national strategic action plan for the coordinated implementation of the three Conventions (roadmap). In 2017, the country reported that

coordination mechanisms existed at intraministerial level and were in use for the preparatory phase of the 2017 triple COPs of the BRS Conventions..

However, the coordination structure among relevant state institutions charged with the implementation of the obligations in respect of biodiversity deriving from global and regional environmental agreements is lacking. Issues exist concerning harmonization of the obligations under the high number of ratified multilateral agreements and the absence of the necessary harmonization of activities with other sectors that have or may have impact on biological diversity.

The lack of coherence and harmonization of biodiversity conservation and land use planning activities among different stakeholders and different institutions is identified as one of the root causes of inefficient biodiversity conservation in the country. Communication, cooperation and coordination among the institutions dealing with biodiversity conservation, the forestry sector and land use planning remain challenging. In general, there is a lack of joint activities to share experience on synergies at the national, regional and international levels.

Conservation and sustainable use of biodiversity and nature

Convention on Wetlands of International Importance especially as Waterfowl Habitat

The country has been party to the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention) since 1995. Two sites are included in the Ramsar List: Lake Prespa (1995) and Lake Dojran (2008). The responsible authority for coordination of activities regarding these sites is the Ministry of Environment and Physical Planning and Macedonian Ramsar Committee. The Ministry and the Committee have prepared the national reports for the 12th and 13th COPs to the Ramsar Convention on Wetlands. Reporting is regular, and the country is usually represented at the most relevant meetings of MEA decision-making bodies.

Lake Dojran is a Monument of Nature, Balkan Green Belt and CORINE site. The lake hosts several endemic species and subspecies of fish as well as 11 endemic invertebrates and many protected bird species. A decreasing water level from overabstraction is perceived as a potential threat.

Lake Prespa is a Strictly Protected Nature Reserve, Ornithological Reserve. The main conservation

challenges in relation to water management in Prespa over the last 30 years have mostly related to the degradation of water quality, especially the alarming signs of eutrophication, and the significant decrease in the water level of Great Prespa Lake, which is an issue that has yet to be fully explained. To address water quality degradation and the reduction in water quantity in the Prespa basin, a wide spectrum of activities has been implemented at both transboundary and national level.

Not all the catchment is under protection status in the country. This is somewhat compensated for by the fact that the country is the only part of the Wider Prespa Area in which local spatial planning regulations are in place.

Several international and regional projects concerning wetlands protection in the region have been implemented. A trilateral project for protection and sustainable use of Lakes Ohrid, Prespa and Skadar, which are part of the Drin River Basin, has been carried out in the period 2012–2014 and it has strengthened cooperation between the Ministry of Environment and Physical Planning, the then Ministry of Environment of Albania and Ministry of Sustainable Development and Tourism of Montenegro for the purpose of undertaking common activities for biological diversity monitoring and conservation in the Drin River Basin. The project was supported by the German Ministry of Foreign Affairs and implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). Project activities have been aimed at fauna and flora monitoring in accordance with Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (Habitats Directive), sustainable fishing through definition of quotas, protection and revitalization of aquatic/swampy habitats, and definition of the obligations based on Directive 2000/60/EC on establishing a framework for Community action on water policy.

Some results have been achieved through partial implementation of activities undertaken by the management body and rangers on Lake Prespa and in Nature Reserve Ezerani. Other projects include:

- “Transboundary Biosphere Reserve Prespa – Support to National Park Prespa of Albania”, funded by KfW (2010–2015);
- “Restoration of the Lake Prespa Ecosystem” (RPE), funded by the Swiss Agency for Development and Cooperation (2012–2018);
- Support of the Society for the Protection of Prespa, funded mainly by WWF International and the MAVA Foundation (1991–2016).

Each of the efforts presented is currently at a different stage of deployment. Some may already be mature and long lasting, or concluded, while others may yet be in their infancy. So it is not possible to evaluate their success applying the same standards and criteria across all efforts.

The regional project in the Drin River Basin, “Conservation and Sustainable Use of Biodiversity at Lakes Prespa, Ohrid and Shkoder/Skadar Project”, is supported and coordinated by GIZ and implemented in cooperation with the competent ministries in the beneficiary Drin riparian countries. The project aims to improve the implementation of legislation, regulations and management plans for the conservation and sustainable use of biodiversity at Lakes Prespa, Ohrid and Skadar/Shkoder.

Cross-border cooperation for nature protection between North Macedonia, Albania and Greece has been promoted within the establishment of Prespa-Ohrid Nature Trust (PONT) (chapter 11).

At the moment there is an initiative to nominate Lake Ohrid as a Ramsar site.

The main obstacles in implementation of this Convention are the lack of capacity and financial resources at the national and regional levels.

Convention on International Trade in Endangered Species of Wild Fauna and Flora

The country has been party to CITES since 2000. As at 2018, the country was not represented at any meetings of the Convention. In the period 2006–2014, the Law on Nature Protection was supplemented by provisions providing for adoption of by-laws to implement provisions transposed from multilateral conventions for biodiversity protection, including CITES.

The Government has adopted several regulations, such as lists of threatened and protected wild species, decrees on the manner and procedure of issuance of permits or certificates, decrees on the manner and procedures applied by customs authorities and other competent bodies, and decisions on the distribution of imported and exported goods. Rulebooks were adopted by the Minister of Environment and Physical Planning on the format and the content of the application form, permit and certificate for trade in threatened and protected wild species of plants and animals and their parts, as well as documentation to be enclosed with the application.

The Ministry of Environment and Physical Planning is the competent authority for issuance of CITES permits. In the period 2000–2017, the Ministry of Environment and Physical Planning issued a total of 624 CITES import and export permits and re-export certificates for threatened species of wild fauna and flora. No seizures, confiscations or forfeitures of CITES specimens have been reported; neither have there been any criminal prosecutions of significant CITES-related violations reported. Records of issued CITES permits/certificates are kept by the Administration for the Environment of the Ministry of Environment and Physical Planning.

A veterinary certificate is issued by the Agency for Food and Veterinary Medicine and concerns the health status of animals, protection against infectious diseases that may be communicated to people and veterinary and sanitary examination.

The competent authority for CITES enforcement is the Customs Administration. Customs officers are obliged to establish whether the trade in threatened and protected species is conducted in compliance with the issued import or export permit or re-export certificate. One of the main gaps in CITES enforcement issues is the lack of training of Customs Administration officers to recognize endangered species.

There are instances of illegal hunting still taking place, especially on the border with Albania. Poaching remains a problem as there have been a few indications of Balkan lynx (Appendix II of CITES) being killed. Overall, little progress has been achieved and implementation of this Convention is still at its initial stages.

Convention on the Conservation of European Wildlife and Natural Habitats

The country ratified the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) in 1998. For the period 2013–2014, the country reported an exception concerning strictly protected fauna species, referring to five specimens: northern goshawk (*Accipiter gentilis*), lesser white fronted goose (*Anser erythropus*), great snipe (*Gallinago media*), wolf (*Canis lupus*) and wildcat (*Felis silvestris*).

Reporting has been regular. The National Focal Point, the Cabinet of the Deputy Prime Minister responsible for Economic Affairs, and National Scientific Focal Point participated in the work of the Group of Experts for conservation of natural flora and fauna species and their habitats supported by the Council of Europe and the Bern Convention Secretariat.

The establishment of Natura 2000 is at the initial stage. In the period 2002–2008, the national Emerald Network was designated, including 35 Areas of Special Conservation Interest (ASCI) (chapter 11).

A plan for the implementation of the Birds and Habitats Directives was adopted. Eight potential Sites of Community Importance (SCIs) under the Habitats Directive and three potential Special Protection Areas (SPAs) under the Birds Directive have been identified and a plan for future field research work was developed.

In response to a case filed in 2013 to the Standard Standing Committee of the Bern Convention by the Macedonian Society Eko-Svest in respect of the planned construction of two large HPPs in the Mavrovo National Park (Boshkov Most and Lukovo Pole), on 4 December 2015, the Standing Committee recommended the country urgently:

- “1. Suspend the implementation of all government projects, in particular the hydropower plants foreseen and related infrastructure, within the territory of the Mavrovo National Park, until a Strategic Environmental Assessment will be completed taking into account the following point of the Recommendation, putting specific emphasis on cumulative effects of all planned development activities on the territory of the Park, also taking into account [the] social aspect; the assessment needs to consider the regional long-term effects on the water regimes of the Drin and Vardar rivers;
2. In the frame of the assessment above, address the specific conservation needs of those species of fauna and flora for the conservation of which the Mavrovo National Park bears special responsibility, including the species and habitats for which this site was nominated as [a] candidate Emerald site; take into account the results of the analysis recommended under the point above when adopting the Management plan for the area; and
3. Keep the Standing Committee regularly informed about the progress in the implementation of this Recommendation.”

It also invited international financial institutions to consider the results of SEA when deciding on the financing of HPPs in the National Park.

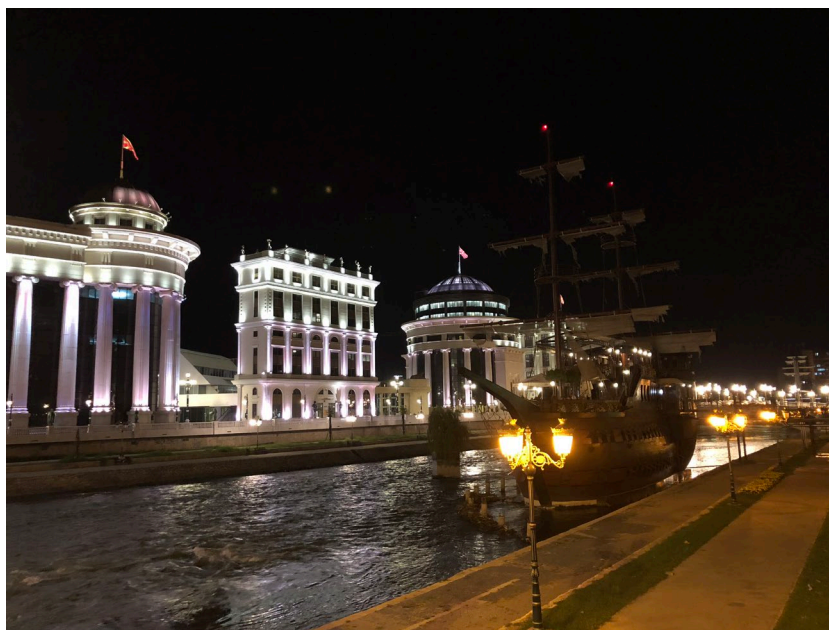
Convention on the Conservation of Migratory Species of Wild Animals

In 1999, the country became party to the Convention on the Conservation of Migratory Species of Wild Animals (CMS). Reporting is regular, and the country is usually represented at the most relevant meetings of MEA decision-making bodies.

Conservation measures are implemented by the Management Authority responsible for the Ornithological Nature Reserve Ezerani on Lake Prespa. The Research, Education and Training Ornithological Centre is managed by the Macedonian Bonn Committee. The training programme for observation and monitoring of water birds at Lakes Ohrid, Prespa and Dojran has been implemented. Ornithologists and rangers have organized monitoring of migratory birds in 2016–2017 in Galičica National Park and Nature Reserve Ezerani and Lakes Ohrid, Prespa and Dojran.

In 2006, the Macedonian Ecological Society, in cooperation with the Swiss non-governmental organization (NGO) Carnivore Ecology and Wildlife Management (KORA) and the German NGO EuroNatur, initiated a programme for monitoring and conservation of the Balkan lynx. In 2015, the International Union for Conservation of Nature (IUCN) published the Balkan lynx on its Red List of Threatened Species as Critically Endangered. The Balkan lynx's only confirmed breeding grounds are in Mavrovo National Park in North Macedonia and the Munela Mountains in Albania. The programme is now implemented by several CSOs, scientists and volunteers from the region with support from EuroNatur, KORA and the Norwegian Institute for Nature Research (NINA).

In 2014, the CMS COP adopted the Strategic Plan for Migratory Species 2015–2023, adapting for migratory species the Strategic Plan for Biodiversity 2011–2020 of the Convention on Biological Diversity (CBD), including the Aichi Biodiversity Targets (United Nations Environment Programme (UNEP)/CBD 2010). The five goals and corresponding performance targets must now be integrated into relevant policies and planning instruments. The monitoring of wild endangered species involved in national and international trade is proposed in the National Biodiversity Strategy and Action Plan (NBSAP) for the period 2018–2023.

Photo 6a: Vardar River, Skopje

Agreement on the Conservation of Populations of European Bats

The country acceded to the Agreement on the Conservation of Populations of European Bats (EUROBATS) under the CMS in 1999. The Department for Nature within the Ministry of Environment and Physical Planning and the Macedonian Bonn Committee had prepared two national reports for EUROBATS MOP6 and MOP7. The National Focal Point (Ministry of Environment and Physical Planning) and the National Scientific Focal Point have participated in the last three EUROBATS MOPs, supported by UNEP/CMS and EUROBATS. The country regularly reports and participates in MOPs under this Agreement.

The last national report was prepared for the period from May 2010 to June 2014. In the reporting period, the Department of Biological Diversity and Nature, with the cooperation and assistance of the Macedonian Bonn Committee, Birds Study and Protection Society and Bat Study Group Macedonia, implemented measures and actions for the protection of bat populations and their habitats in forests and caves. According to the national report of 2014, 26 species of bats are known to occur in the country. Two new species (*Plecotus auritus* and *Pipistrellus pygmaeus*) were recently added to the list by the Bat Study Group. The status and trends of species conservation are the same as in previous years. A detailed inventory and evaluations have not been done due to financial constraints.

A project for evaluation of biodiversity components and natural heritage in the Matka Canyon and Treska River has been carried out in 2010 to include several important areas for protection of the bat population in the country. The list of fauna species has included bats species from Rhinolophidae (*Rhinolophus blasii*, *Rhinolophus euryale*, *Rhinolophus ferrumequinum*, *Rhinolophus hipposideros* and *Rhinolophus mehelyi*) and Vespertilionidae (*Barbastella barbastellus*, *Miniopterus schreibersi*, *Myotis blythi*, *Myotis capaccinii*, *Myotis emarginatus* and *Myotis myotis*).

In 2013, with the support of the United Kingdom Department for Environment, Food and Rural Affairs and the EUROBATS Secretariat, a project for Capacity-Building for Bat Species Identification and Future Monitoring was realized by the Bat Study Group in Prespa Region. The Batlife Macedonia has several people who are prepared to implement or join a monitoring programme or bat study on a local or national level. No national monitoring programme for bats is in place in the country, although there are some attempts at local monitoring.

Agreement on the Conservation of African-Eurasian Migratory Waterbirds

In 2000, the country became party to the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA) under the CMS. Reporting is regular under this Agreement, with the last national report for the implementation of the Agreement for the period 2015–2017 submitted in 2018. The national report indicated that the level of implementation of

this Agreement in the country is currently very low due to capacity and financial constraints.

Convention on Biological Diversity

The country acceded to CBD in 1997. Reporting is regular, and the country is usually represented at the most relevant meetings of CBD decision-making bodies.

The process of revision of the first NBSAP, prepared in 2004, started in January 2013, in the framework of the project to support North Macedonia's revision of the NBSAP and development of the fifth national report to CBD, financed by GEF and implemented by the Ministry of Environment and Physical Planning and UNEP Office in Vienna. For the purpose of defining national targets, a process of consultation with the relevant stakeholders was undertaken, through which the goals of the first NBSAP, the status and trends of biological diversity in the country and identified threats to biological diversity, as well as the guidelines for implementation of the global Aichi Biodiversity Targets were reviewed. The revised NBSAP was adopted in early 2018 for the period 2018–2023. Of the total of 217 actions defined to achieve the main goal and the objectives of the first NBSAP, only 64 actions (30 per cent) have been implemented, 57 (26 per cent) have been implemented partially and 96 have not been implemented (around 44 per cent of the total number of defined actions). Obstacles to NBSAP implementation that have been identified include, among others, insufficient financial resources, lack of capacities, education and public awareness, and insufficient mainstreaming of biodiversity into different sectors.

For implementation of programmes of work under CBD, in the last few years, activities were focused mainly on protected areas, plant conservation, communication, education and public awareness and implementation of the Cartagena Protocol on Biosafety, as well as preparatory activities for acceding to the Nagoya Protocol.

Certain progress has been achieved in the domain of research on biological diversity; the amount of knowledge has been augmented, legislation for its protection has been improved, a considerable number of project and published results and scientific papers have been implemented and congresses and conferences have been organized, all indicating that there are solid scientific capacities and potential to implement CBD in the country. However, on the other hand, biological diversity protection, on both the national and local levels, faces a series of challenges

related mainly to the lack of financial, human and technical resources.

Nature protection is a multisectoral issue that requires high levels of coordination and collaboration between the responsible ministry for environmental affairs and many different sectors, such as forestry, agriculture, transport, energy and tourism. Insufficient intersectoral coordination and cooperation, as well as overlapping responsibilities, weak communication, lack of capacities at the national and local levels and lack of financial resources have been identified as the main obstacles for implementation of CBD at the national level. The benefits acquired from biodiversity and ecosystem services are usually overlooked and undervalued by decision-makers, which not only leads to the loss of biological diversity but has adversely affected human health. The preparation of the sixth national report to CBD is in an early phase of development.

Cartagena Protocol on Biosafety

In 2005, the country ratified the Cartagena Protocol on Biosafety. The country is not yet party to the Nagoya – Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol. The Ministry of Environment and Physical Planning is the primary National Focal Point for the Cartagena Protocol. As at 2018, five meetings of the National Coordinating Committee had been held.

For implementing the Cartagena Protocol and regulating the issues related to GMOs, the Law on Genetically Modified Organisms was adopted in 2008 and by-laws were prepared during 2013, in order to finalize the regulatory regime for biosafety.

Activities to implement the Cartagena Protocol in the country started in 2004. North Macedonia has been implementing two UNEP/GEF projects: (i) development of a biosafety framework; and (ii) capacity-building for effective participation in the Biosafety Clearing House. In March 2012, workshops were held in Skopje on implementation of the national framework for biosafety in the country. Training on the topic of biosafety and on the various Rulebooks issued in the period December 2009 to January 2011 for the implementation of the Law on Genetically Modified Organisms and on GMO assessment and risk management was conducted in April 2014. Within the UNEP/GEF project on capacity-building for effective participation in the Biosafety Clearing House, several training modules have been implemented, mainly on awareness-raising regarding the Protocol and biosafety.

The main challenge to implementing the Convention is the lack of a mechanism for reviewing risk assessment, including bodies to examine risk assessment.

Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization

The country has not joined the Nagoya Protocol. In the course of 2013, in the framework of the project for revision of NBSAP, initial activities were carried out, including translation into Macedonian of the Nagoya Protocol and the Bonn Guidelines on Access to Genetic Resources and the Fair and Equitable Sharing of the Benefits Arising out of their Utilization. Furthermore, brief analysis of the Protocol and Bonn Guidelines was made and presented to the second workshop of stakeholders concerning revision of NBSAP (held in October 2013, in Berovo). Financial support is expected under GEF's sixth programme for development of assessment of the national capacity for participation in the Nagoya Protocol.

Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa

The country became a party to the United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (UNCCD) by accession in 2002. Reporting is regular, and the country is usually represented at the most relevant meetings of UNCCD decision-making bodies. However, due to logistical issues, the country's delegation did not attend the meeting in 2017. The Ministry of Environment and Physical Planning has been designated as the competent authority for the implementation of the Convention, in close cooperation with the Ministry of Agriculture, Forestry and Water Economy and related institutions. Only one person within the Ministry of Environment and Physical Planning is tasked with implementation of the Convention.

The country has neither an integrated strategy for nor a partial analysis of the various processes of desertification and drought. The 2005 Law on Environment requires the preparation of the national action plan and national action programme on combating desertification and mitigation of drought effects. The process started in 2005 but has not been finalized due to a lack of funds and the non-existence and/or availability of relevant data and information.

The National Committee on Combating Land Degradation and Desertification and Mitigation of the Effects of Drought has been established but has never met.

Protection of the World Cultural and Natural Heritage

The Convention concerning the Protection of the World Cultural and Natural Heritage was ratified by the country in 1997. In 1979, the Ohrid Region was added to the UNESCO World Heritage List. The property "Natural and Cultural Heritage of the Ohrid Region" was initially inscribed on the World Heritage List for its outstanding natural values and was extended a year later to reflect the Region's extensive cultural attributes. The Ministry of Culture is designated as the competent authority, while the Ministry of Environment and Physical Planning is responsible for the segment on natural heritage. In 2010, the Law on the Management of the World Natural and Cultural Heritage in the Ohrid Region was adopted, and the Management Plan for the Natural and Cultural Heritage of Ohrid Region with an action plan was prepared and submitted to the UNESCO World Heritage Committee. In 2014, Galičica National Park was designated as part of UNESCO's World Network of Biosphere Reserves.

The World Heritage Property site benefits from several transboundary agreements, strategic plans, bodies and designations. The EU-funded project "Towards strengthened governance of the shared natural and cultural heritage of the Lake Ohrid region" supports the implementation of concrete actions by North Macedonia and Albania for the protection of the Lake Ohrid Region, implemented as phase two of the pilot upstream project initiated in 2012 with the support of the Ministry of Environment of Albania.

Implementation of the Convention is constrained by institutional arrangements for the management of natural and cultural heritage. Except for Galičica National Park, the protected areas of Lake Ohrid are understaffed and have very limited capacity, financial support and equipment to properly manage the area. The existing transboundary management structure, such as the Lake Ohrid Watershed Committee, is limited to monitoring (species and eco-management) and promotion, and thus does not sufficiently address numerous issues pertaining to the shared transboundary management of the Lake. In addition, institutional structures are lacking to support cross-border cooperation for the protection of the cultural values.

As at 2018, the country recorded three heritage sites on its tentative list, all added in the years 2004 and 2009: Markovi Kuli (natural category), Slatinski Izvor Cave (natural category) and Archaeo-astronomical Site Kokino (cultural category).

At its 38th Session in Doha in 2014, the World Heritage Committee expressed concerns with several major infrastructure projects planned within Galičica National Park, including the Ohrid–Peshtani road. In 2016, CEE Bankwatch Network also raised concerns about the adequacy of the SEA procedure and insufficient public involvement.

As requested by the World Heritage Committee at its 40th session (Istanbul/UNESCO, 2016), a joint World Heritage Centre/ICOMOS/IUCN Reactive Monitoring mission was invited by the State Party to the Lake Ohrid and Galičica National Park and was carried out from 9 to 14 April 2017. The mission, in its 2017 report, expressed its concerns about the threats faced by the natural values of the World Heritage property, relating primarily to Lake Ohrid and Galičica National Park, and in particular: (i) extensive urban development, (ii) inappropriate exploitation of the coastal zones, (iii) current proposals for large infrastructure and construction projects, (iv) heavy pressures from tourism, and (v) dumpsites. Considering the level of threats to the property, the Reactive Monitoring mission identified a set of recommendations, some of which needed to be prioritized and fulfilled over the next two years, in addition to those adopted in 2016 that still need to be fulfilled.

The findings of the mission suggest that the overall state of conservation can be considered as vulnerable, and if the priority recommendations are not implemented within the suggested two-year timeframe (i.e. in 2019), the property may meet the criteria for inscription on the List of World Heritage in Danger. The Reactive Monitoring Mission Report Recommendation No. 6 was a requirement to put in place a moratorium on any coastal and urban transformation within the World Heritage property, at least until all relevant planning documents (Management Plan, Outstanding Universal Value (OUV)-based Urban/Coastal Master Plans, etc.) have been prepared and adopted, effective protective juridical regulations have been approved and effective control mechanisms are established. Later, in September 2018, a complaint was logged to the Standing Committee to the Bern Convention, at its 38th meeting in Strasbourg, 27–30 November 2018, from the Environment Citizens Association concerning implementation of Recommendation No. 6 of the Reactive Monitoring Mission Report. Although

this Recommendation was part of the immediate measures to be taken (February 2018), according to the complaint, Macedonian authorities have still not introduced a moratorium on the coastal and urban transformations in the Ohrid Region and are continuing to implement activities that are contrary to the Reactive Monitoring Mission Report recommendations. Having examined Document WHC/17/41.COM/7B.Ad outlining findings of the Reactive Monitoring Mission Report, Decision 41 COM 7B.34 of the World Heritage Committee requested:

“...4. The State Party to develop a Strategic Environmental Assessment (SEA) that comprehensively assesses the cumulative impacts of all infrastructure and development plans and other major projects on the property’s OUV based on the recommendations and advice provided by the 2017 mission, as well as any necessary Heritage Impact Assessments (HIA), and to submit them to the World Heritage Centre for review by the Advisory Bodies, before any further work is undertaken;

5. The State Party to halt the construction projects of the sub-sections (a) and (e) of the A3 road and the Galičica ski resort within the property, which may have negative impacts on its OUV;

6. The State Party to urgently undertake a comprehensive comparative study of alternative routes for the railway of the Pan European Corridor VIII, including those that do not pass in close vicinity of the lakeshore, and in particular avoiding one of the last well-preserved stretches of the lakeshore on the Albanian-Macedonian border;

7. Further requests the State Party to fully implement all the recommendations of the 2017 mission ...”

The Ohrid–Prespa Transboundary Biosphere Reserve (TBR) has been added to the World Network of Biosphere Reserves, following its designation as a site by the International Coordinating Council of the UNESCO Man and the Biosphere (MAB) Programme, at its 26th session in Jönköping (Sweden) and in the East Vättern Landscape Biosphere Reserve. With this new inscription, Albania and North Macedonia joined the World Network of Biosphere Reserves. The MAB Programme contributes to global efforts on education and capacity-building, particularly within the framework of the 2030 Agenda for Sustainable

Development and its Sustainable Development Goals, as well as to the Lima Action Plan for UNESCO's MAB Programme and its World Network of Biosphere Reserves (2016–2025).

No additional measures have been taken by the country in the context of the implementation of the 2005 UNESCO Convention on the Protection and Promotion of the Diversity of Cultural Expressions. The current status of the country vis-à-vis target 11.4 of the 2030 Agenda for Sustainable Development is described in box 6.1.

Water protection

The country acceded to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes in 2015 but it is not party to the Protocol on Water and Health. Reporting is regular, and the country is usually represented at the most relevant meetings of MEA decision-making bodies. The UNDP/GEF project “Enabling Transboundary Cooperation and Integrated Water Resources Management in the Extended Drin River Basin” is expected to promote joint management of the extended transboundary Drin River Basin, based on

the Drin Memorandum of Understanding signed in Tirana on 25 November 2011. This project, prepared by UNDP/GEF, ECE and the Global Water Partnership Mediterranean (GWP-Med) in cooperation with the Drin Core Group and endorsed by the GEF operational focal points of Albania, North Macedonia and Montenegro, was approved by the GEF Council in November 2012. The project started in 2015 and is ongoing. The Drin Core Group, as a joint coordination body, meets at least once per year. The 14th meeting of the Drin Core Group was held in Podgorica, Montenegro in November 2017.

The project “Restoration of the Prespa Lake Ecosystem” (2011–2018), financed by the Swiss Government and implemented by UNDP, helps hundreds of farmers to learn and apply more environmentally sustainable practices and reduce the use of fertilizers and pesticides. The project will further apply the recommendations of the Prespa Watershed Management Plan developed with UNDP support in 2012. They include large-scale reforestation to combat the effects of erosion, the introduction of wetland restoration techniques for controlling floods and filtering the water of the Golema River, and nature-based upgrades of wastewater management.



Box 6.1: Target 11.4 of the 2030 Agenda for Sustainable Development

Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable

Target 11.4: Strengthen efforts to protect and safeguard the world's cultural and natural heritage

The country has appropriate legal measures in place for the protection of cultural heritage, in particular the 2004 Law on Protection of Cultural Heritage. Most related policy priorities for target 11.4 are identified in the National Strategy for Culture Development 2018–2022. The institutional framework is represented by the Ministry of Culture.

The property “Natural and Cultural Heritage of the Ohrid Region” was initially inscribed on the World Heritage List for its outstanding natural values and was extended a year later to reflect the Region's extensive cultural attributes. The Ministry of Culture is designated as the competent authority, while the Ministry of Environment and Physical Planning is responsible for the segment on natural heritage. In 2010, the Law on the Management of the World Natural and Cultural Heritage in the Ohrid Region was adopted, and the Management Plan for the Natural and Cultural Heritage of the Ohrid Region with an action plan was prepared and submitted to the UNESCO World Heritage Committee. However, large infrastructure projects such as the Galičica Ski Centre, A3 express road, Pan-European Corridor VIII and Highway A2 have been put forward with negative impacts on the Outstanding Universal Value of the site, which calls for urgent measures on SEA, integrated protection and setting necessary control mechanisms. A joint World Heritage Centre/International Council of Monuments and Sites/IUCN Reactive Monitoring mission on the state of conservation of the site and the scope and development of SEA took place in spring 2017. During 2017, a management committee was set up and a draft plan for integrated protection of the Old Town, detailed urban plans and technical documentation for a number of large-scale infrastructure works have been finalized, but SEA is still pending.

The Ministry of Environment and Physical Planning should

- (a) Strengthen efforts to finalize SEA to comprehensively assess the cumulative impacts of all infrastructure and development plans and other major projects on the property's Outstanding Universal Value, as well as any necessary Heritage Impact Assessments (HIAs);
- (b) In collaboration with the Ministry of Culture and other relevant institutions, undertake a comprehensive comparative study of alternative routes for the railway of the Pan-European Corridor VIII, including those that do not pass in close vicinity of the lakeshore, and specifically avoiding one of the last well-preserved stretches of the lakeshore on the Albanian–Macedonian border.

These improvements in agricultural practices and watershed management are expected to significantly reduce the pressures on the Lake, bringing the process of eutrophication under control. Another project, “Prespa-Ohrid Nature Trust (PONT)”, financed by KfW Development Bank and the MAVFA Foundation, included activities to implement measures to improve the status of the water in Lake Prespa and concluded at the end of 2018.

The transboundary Prespa Park was established in 2000, with an informal institutional scheme operating for 10 years until a quadrilateral agreement on the official operation of the park was signed in 2010. The formal institutions of the Park have been in limbo since then due to the lack of ratification, a situation which has only very recently changed, with Greece finally ratifying in the spring of 2017. There are four national parks over the three sides of the basin, with two additional lesser protected areas in the country, though not all the Wider Prespa Area is covered by these protective regimes. In addition, parts of the Wider Prespa Area are also covered by the Ohrid-Prespa Transboundary Biosphere Reserve, which was declared in 2014.

A management plan for Great Prespa Lake was not developed until 2012, following funding from a project on integrated ecosystem management in the Prespa Basin in Albania, North Macedonia and Greece, funded by GEF and other donors and carried out from 2006 to 2012. The contribution of the project to water protection and management at the national

level was rather marginal in Albania, while it had substantial results in North Macedonia, where it also consumed a considerable portion of the project funds (approximately US\$1.5 million). The project also included activities aiming to strengthen the institutional water management basis in the country, with the setting up of a Prespa Watershed Management Council, a cross-sectoral participatory body consisting of all the national stakeholders in the Great Prespa Lake area. It has not been reactivated following the conclusion of the project.

According to the 2017 Report to the Prespa-Ohrid Nature Trust, the management authorities for the protected areas are weak in all aspects, but particularly in terms of expertise and funding.

Preparatory work is also under way to join the Protocol on Water and Health and a working group under the Ministry of Health and Ministry of Environment and Physical Planning is examining the need for accession to the Protocol. In 2016, the country prepared a report on the assessment of equitable access to water and sanitation in the framework of the Protocol (box 6.2).

The country is not party to the Convention on the Law of Non-navigational Uses of International Watercourses and no discussion about accession takes place.

The current status of the country vis-à-vis target 6.5 of the 2030 Agenda for Sustainable Development is described in box 6.3.

Box 6.2: Achieving the human right to water and sanitation

The report “Achieving the Human Right to Water in Sanitation”, prepared by the country in 2016, provides an assessment of the country’s current situation and capacity to provide equitable access to water and sanitation “for all members of the population, especially those who suffer a disadvantage or social exclusion”. The score card for equitable access to water and sanitation was used as a tool for self-assessment of access to water and sanitation, which was implemented in the country for the period April 2015–February 2016. The score card served as a self-evaluation analytical tool to establish a baseline, track progress, prompt discussions on actions needed to achieve equitable access to water and sanitation and support the implementation of policies and practices. During implementation of the project, a descriptive and quantitative approach was used in three municipalities, Skopje, Veles and Kumanovo, with a detailed focus on the gender dimensions of equitable access to water and sanitation.

The results of the study identified a number of gender-related challenges related to access to water and sanitation, in particular: (i) toilets that sometimes are not suitable for menstrual hygiene management; (ii) no access to accurate and pragmatic information for menstrual hygiene (in the educational system); (iii) no accessible facilities; (iv) no access to water and soap in places that provide an adequate level of privacy; (v) lack of finance in the municipalities to develop and maintain access to water and sanitation; (vi) access for disabled people to public health facilities but not to a toilet; and (vii) no access to drinking water and sanitation in religious facilities.

The report highlights recommended actions to address gender-specific challenges based on the results of the study, which include: (i) improving menstrual hygiene management facilities in educational facilities, as part of Equitable Access Action Plans; (ii) increasing the capacity of municipalities to develop and maintain access to water and sanitation; (iii) setting standards for toilets in public institutions, schools and religious facilities; and (iv) setting up and implementing measures for social protection of the population.



Box 6.3: Target 6.5 of the 2030 Agenda for Sustainable Development

Goal 6: Ensure availability and sustainable management of water and sanitation for all

Target 6.5: By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate

The country is active in transboundary water cooperation, especially on shared transboundary lakes. The effectiveness of existing agreements is also an important issue, as, for example, there is no evidence of regular meetings of the Greek–Macedonian permanent commission on transboundary freshwater issues. Bilateral agreements exist with Bulgaria on the Strumica River Basin and with Greece in respect of the Vardar River Basin, but cooperation has not functioned recently and has to be re-established.

According to the information provided by the country in 2017 as part of the reporting under the Convention on the Protection and Use of Transboundary Watercourses and International Lakes and for Sustainable Development Goal indicator 6.5.2 (Proportion of transboundary basin area with an operational arrangement for water cooperation), the total surface area of transboundary basins of rivers and lakes within the territory of North Macedonia is 27,766 km², whereas the total surface area of transboundary basins/sub-basins of rivers and lakes covered by operational arrangements within the territory of the country is 3,771 km². Thus, only 13.6 per cent of all transboundary river and lake basins have an operational arrangement for water cooperation in place. There is no information about transboundary groundwater covered by operational agreements on water management, as the available data in the country are not sufficient to delineate the area of transboundary aquifers.

The Government should:

- (a) Advance cooperation on transboundary water management through strengthening formal communication of the Greek–Macedonian permanent commission on transboundary freshwater issues;
- (b) Re-establish the agreements with Bulgaria on the Strumica River Basin and with Greece on the Vardar River Basin by updating the coordinated water management plans, setting up regular data and information exchange between the competent authorities and securing regular cooperation mechanisms for monitoring and evaluation of the plans' implementation;
- (c) Make existing cooperation arrangements operational by developing and regularizing activities or expanding the coverage of cooperation arrangements, seeking to optimize and use effectively available human, technical and financial resources, if the country target of 80 per cent of transboundary basin area by the year 2030 is to be reached.

Air protection and ozone layer protection

Convention on Long-Range Transboundary Air Pollution

The country has been party to the Air Convention since 1997 and its six Protocols since 2010, and, since 2014, to both the Protocol on Further Reduction of Sulphur Emissions (Oslo Protocol) and Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol) to the Convention.

The Ministry of Environment and Physical Planning is responsible for preparing reports on ambient air quality for implementing obligations under the law, as well as reports in accordance with obligations under the ratified MEAs.

The third twinning project, “Further strengthening the capacities for effective implementation of the acquis in the field of air quality”, implemented in 2015–2017, assisted the country to prepare the whole time series inventory for the period 1990–2016 and EMEP gridded data. Available air emissions data (according to the CORINAIR methodology) is submitted on a

regular basis (once a year according to the requirement) to EMEP and ECE, as well as to EEA.

There are plans to prepare emissions projections for 2025 and 2030 and equip the EMEP Lazaropole station according to the EMEP Protocol requirements in the new project within the framework of the IPA II programme.

Substantial actions towards implementation of the Protocols' requirements have been taken. However, implementation is constrained by the institutional capacities, which are limited to a very small team and financial resources.

The country has not yet taken steps towards acceptance of the amendments to the Gothenburg Protocol and of the Protocol on Heavy Metals and Protocol on Persistent Organic Pollutants (POPs Protocol). The country plans to start the process of acceptance of the amendments to these three Protocols after the adoption of the emissions projections for 2020 and 2030, which should be finalized in 2020, and the adoption of a new law on industrial emissions, given that setting ELVs and emissions reduction

targets are the most significant obligations under the Protocols.

The country ratified the Protocol on the Reduction of Sulphur Emissions or their Transboundary Fluxes by 30 per cent (Sulphur Protocol) in 2010. In 2014, the Secretariat made a referral regarding the country's activities to reduce sulphur emissions and to provide a timetable for expected compliance with its obligations under the Sulphur Protocol. As at December 2018, the Implementation Committee under the Air Convention continues to consider the referral by the Secretariat concerning the country's compliance with the Sulphur Protocol. The public electricity and heat production sector is the main source of emissions, with only a few power plants being the major contributors. The energy sector is the key source of emissions of the following pollutants covered by the Protocols: SO_x, NO_x, PM_{2.5}, Cd, Pb and Hg. The National Emission Reduction Plan (NERP), covering all large combustion plants in the country, was adopted in 2017. At the thirty-ninth Session of the Implementation Committee, the Government stated that implementation of the Plan was under way and that it was expected that the country would comply with its obligations in time for the reporting required around 2020.

Problems exist around implementation of the BAT and compliance with ELVs, due to the need for large investments to replace old technology and the use of low quality raw materials (e.g., coal with 0.7 per cent sulfur content and heavy oil).

Convention for the Protection of the Ozone Layer and Montreal Protocol on Substances that Deplete the Ozone Layer

The country ratified the Convention for the Protection of the Ozone Layer (Vienna Convention) and the Montreal Protocol on Substances that Deplete the Ozone Layer in 1994 and its amendments, except the Kigali Amendment. The national delegation regularly participates at the Vienna Convention COP and Montreal Protocol MOP. The annual reports were electronically submitted in due time.

The country's major achievement is the limitation of ODSs, including the importation of hydrochlorofluorocarbons (HCFCs). No ODSs are produced in the country, so their consumption is equal to their importation. Results achieved through the implementation of the Products Containing HCFC Phase-out Management Plan (HPMP) 2010–2015 include:

- A significant part of the national legislation is in place;
- Annual consumption of ODSs, including HCFCs, in 2017 is zero;
- Under the training programme in good service practice for service technicians, 537 service technicians were trained in the framework of HPMP;
- In the frameworks of recovery and recycling scheme implementation, 208,316 kg of refrigerants were processed.

The Kigali Amendment is legally binding and will come into force from 1 January 2019. The Government has confirmed its intention to apply its best efforts to ratify the Kigali Amendment as early as possible. Requests for funding of enabling activities were submitted by the country in 2017, in line with decision No. 79/46 of the Montreal Protocol MOP. The main objective of these enabling activities is to prepare the country for the ratification and early implementation of the Kigali Amendment through the following lines of action:

- Support for the early ratification of the Kigali Amendment;
- Support for the institutional arrangements;
- Review of the licensing systems;
- Review of the data reporting systems;
- Preparation for national strategies.

Photo 6b: Observing the international day for the preservation of the ozone layer at “Josip Broz – Tito” High School, Skopje



*Climate change and energy*United Nations Framework Convention on Climate Change

The country has been a (non-Annex I) party to the UNFCCC since 1998 and acceded to the Kyoto Protocol in 2004. As at 2018, three national communications on climate change have been submitted to the UNFCCC (2003, 2008, 2014), all supported by GEF through UNDP. The country delivered its intended nationally determined contribution (INDC) to reduce CO₂ emissions from fossil fuels combustion by 30 per cent, that is, for 36 per cent at a higher level of ambition, by 2030 compared with the business as usual (BAU) scenario. The country ratified the Paris Agreement under the UNFCCC in 2018.

The Ministry of Environment and Physical Planning has been designated the National Focal Point for the UNFCCC and a Designated National Authority for the implementation of the Kyoto Protocol. Other ministries that have responsibilities related to climate change aspects are the Ministry of Agriculture, Forestry and Water Economy, Ministry of Economy, Ministry of Transport and Communication, Ministry of Health and Ministry of Finance. The National Climate Change Committee is entrusted with the monitoring and coordination of implementation of the Convention. Although good initial steps have been taken through the establishment of this Committee, there remains a need for greater funding and effectiveness of institutional arrangements about climate change and adaptation.

The process for producing national communications and biennial reports is led by the Ministry of Environment and Physical Planning. The National Climate Change Committee and the Technical Group at the National Sustainable Development Council also participate in this process, along with other key stakeholders in government and civil society. International institutions and donors, specifically GEF and UNDP, have provided financial and technical support for this reporting process. In fact, UNDP has provided support for the majority of climate change policy documents in the country, including its three national communications, biennial update reports, INDCs, a climate change strategy for the City of Skopje and others.

In 2016, the Ministerial Council of the Energy Community, of which the country is a contracting party, adopted a non-binding recommendation to implement EU Regulation 525/2013 on monitoring, reporting and assessment of GHG inventories and

steps taken to address climate change. The recommendation involves providing an annual report to the Energy Community on anthropogenic GHG emissions (to be submitted by 15 January each year, starting in 2019). Information provided to the Energy Community by the country will simultaneously be provided to UNFCCC. The energy sector in the country demonstrates the highest GHG abatement potential, accounting simultaneously for economic indicators and technological limitations. Energy planning is crucial for the segment of GHG emissions reduction. On the one hand, the use of fossil fuels has a direct impact on GHG emissions into the atmosphere, and on the other, the utilization of RES and energy efficiency has direct effects on reducing the emissions of these gases and a cleaner environment. Therefore, energy policy and policy for a sound environment should contribute jointly to the achievement of the targets for reduced climate change, in a manner that will secure sustainable development.

The regional project in the Drin River Basin, “The Climate Change Adaptation Programme in Western Balkans”, supported and coordinated by GIZ and implemented in cooperation with the competent ministries in the beneficiary Drin riparian countries, aims to improve adaptation to climate change and includes, among other matters, a range of activities in the fields of flood and drought risk management. The main components of the programme include the Drin–Buna Flood Early Warning System, climate change adaptation strategies, local flood and drought management plans and implementation of defined measures, regional water resources management and climate change adaptation in urban areas.

Protocol on Energy Efficiency and Related Environmental Aspects and Energy Community Treaty

The country ratified the Energy Charter Treaty and Protocol on Energy Efficiency and Related Environmental Aspects in September 1998. As a contracting party to the Energy Community Treaty since 2006, the country has the obligation to implement the energy acquis in force. Parallel to the adoption of secondary legislation, the implementation of the acquis gives rise to diverse reporting obligations. Directive 2001/80/EC on the limitation of emissions of certain pollutants into the air from large combustion plants sets ELVs for three pollutants (SO₂, NO_x and dust). The country has 10 combustion plants of more than 50 MW capacity; the NERP covers eight of these plants. Given certain gaps and calculation discrepancies identified, the draft NERP submitted to the Secretariat in 2015 was considered by the Energy Community Secretariat to be not fully compliant with

the Policy Guidelines. In this regard, the Secretariat provided recommendations to improve the country's compliance, which the Government subsequently addressed. As at 2018, the NERP for large combustion installations was approved by the Energy Community Secretariat.

Directive 2009/28/EC on the promotion of the use of energy from renewable sources requires the adoption of a national renewable energy action plan setting out the contracting parties' national targets for the share of energy from renewable sources consumed in transport, electricity and heating and cooling in 2020 and adequate measures to be taken to achieve those national overall targets. However, the country has failed to comply with its obligations under the Treaty. The 2015 Renewable Energy Action Plan until 2025 with Vision until 2030 was amended in April 2017 foreseeing a 23.9 per cent target in 2020. In November 2018, the Energy Community's Ministerial Council has adopted a decision lowering the country's 2020 target for the share of RES in gross final energy consumption from 28 per cent to 23 per cent. The Action Plan sets out the trajectory for meeting the country's 28 per cent target in 2030 (chapter 1).

Despite the incomplete legal framework for renewables, several renewable energy projects have become operational in recent years, contributing to an increasing share of energy from renewable sources in the energy mix each year. However, the country faces challenges in meeting its legally binding renewable energy target, due to its reliance predominantly on fossil fuels (low-grade lignite and oil) and hydropower, and its dependence on electricity imports. Despite the country's solar PV capacity being the highest in comparison with neighbouring countries, currently, this potential is hardly tapped.

Issues also exist in respect of institutional capacity – there is no dedicated ministry charged with energy sector development. The responsibility for meeting the obligations under international and regional agreements falls on the Department of Energy in the Ministry of Economy, which currently has limited human resources (only 11 staff).

Waste and hazardous chemicals

Convention on Persistent Organic Pollutants

The country ratified the Stockholm Convention in 2004. With funding from GEF and the assistance of the United Nations Industrial Development Organization (UNIDO), the Ministry of Environment and Physical Planning prepared the first National

Implementation Plan (NIP) for the country in 2005, which was last updated in 2017.

National implementation measures include:

- Registration and evidence of polychlorinated biphenyls (PCBs) and PCB PCB-containing equipment;
- Treatment of obsolete and waste POPs;
- Strengthening the institutional and legal frameworks;
- Providing synergy with the Rotterdam and Basel Conventions.

Numerous projects aimed at the reduction and elimination of POPs were prepared, most of which were submitted as proposals to several international financial institutions. In the early stages of the NIP implementation, the main emphasis was put on eliminating PCBs and PCB-containing equipment. The project on elimination of PCBs and equipment containing PCBs in North Macedonia for the period 2008–2013 has been concluded with the successful construction and commissioning of a facility for provisional storage and treatment of PCB-contaminated equipment.

A state-of-the-art facility that meets the highest safety standards was built and sophisticated technology was installed for the treatment of PCB-contaminated transformers, which is in compliance with BAT and best environmental practices (BEP) principles. As a result, 167 tonnes of PCB waste were eliminated, 800 tonnes of transformers were decontaminated and the majority of the PCB-containing equipment were identified and registered in the designated database under this project.

As a result of the construction of the temporary storage facility and installation of PCB treatment technology: (i) the national capacities in PCB management were strengthened; (ii) the cycle of environmentally sound PCB management was completed, and, as a result, the negative effects caused by PCBs on human health and the environment were either eliminated or reduced; and (iii) the owners of PCB-containing transformers were enabled to meet the requirements emerging from the legislation, as well as to avoid the larger expenses involved in treatment abroad.

Convention on Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade

The country acceded to the Rotterdam Convention in 2010. The country is regularly represented at the meetings of the COP to the Rotterdam Convention.

The Designated National Authorities include the Ministry of Environment and Physical Planning and Ministry of Agriculture, Forestry and Water Economy. Also, the procedure of the Rotterdam Convention related to external trade in PCBs is the responsibility of the Ministry of Environment and Physical Planning. The Ministry of Health keeps a register of chemicals that have been placed on the market in the country, a national list of new chemicals, and a list of chemicals and mixtures that have already been classified. The Chemicals Department of the Ministry of Health is responsible for management of hazardous substances, issuing permits for the importation and export of chemicals, and for involvement in the decisions on which chemicals are suitable for marketing.

The intersectoral Chemicals Committee is responsible for the registration of chemicals and for risk assessment of hazards related to chemicals and their classification, whereas the Department is responsible for the acceptance, reporting, risk assessment and classification of chemicals.

Pursuant to the ratification of the Rotterdam Convention, the Ministry of Agriculture, Forestry and Water Economy is responsible for controlling the imports and exports of the group of pesticides listed in the Convention. It is responsible for issuing approvals for the importation of pesticides regulated by the Convention.

As at 2018, 47 importation responses have been submitted to the Convention Secretariat.

Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal

The country acceded to the Basel Convention in 1997. The Ministry of Environment and Physical Planning is responsible for ensuring compliance with the obligations under the Convention. Obligations towards the Basel Convention have been incorporated into the Law on Waste Management. Notifications for the export, importation and transit of waste are handled without obstacles, and the Ministry of Environment and Physical Planning issues some 50 permits per year, on average, for this type of activity. National reporting under the Basel Convention has not been undertaken in years, with the last report being submitted in 2002.

Minamata Convention on Mercury

The country signed the Minamata Convention on Mercury in 2014. To assist with preparations for the ratification and implementation of the Convention, the Government conducted a Minamata Initial

Assessment in March 2018. The primary activities of the Assessment included: (i) a review of institutional and capacity needs for implementation of the Convention; (ii) an assessment of national regulations, policies and legislation to assist with preparations for compliance with the obligations of the Convention; and (iii) identification of the primary existing sources of mercury emissions and releases as part of a detailed National Mercury Profile. The assessment was conducted with financial assistance from GEF and implemented in collaboration with UNEP. In December 2017, a UNEP project was implemented through the preparation of the National Inventory on Mercury Releases.

Strategic Approach to International Chemicals Management

Within the framework of SAICM, a UNEP project entitled “Strengthening institutional capacities for mainstreaming quadruple synergy schemes in implementation of the national action plans for implementation of SAICM and inclusion of the Minamata Convention” is planned.

SAICM, in collaboration with the Government, organized the fifth Central and Eastern European (CEE) regional meeting on SAICM in Skopje on 23–27 September 2013. Key outcomes of the meeting included a request for WHO to support capacity-building in line with the CEE report on Poison Control Centres. Meeting participants visited the state-of-the-art facility for temporary storage of PCB-containing transformers and waste, which provides sound management and removal of PCBs from transformer oil, complying with the highest BAT/BEP standards. The facility is part of the company Rade Koncar – Service in Skopje; its establishment was supported through a project by GEF, the Swiss Government represented by the Swiss Agency for Development and Cooperation and Rade Koncar – Service, implemented jointly by UNIDO and the Ministry of Environment and Physical Planning.

The GEF-financed project “Strengthening capacities for the development of the national Pollutant Release and Transfer Registers (PRTR) and supporting SAICM implementation” is to be completed by the end of 2018. The Ministry of Environment and Physical Planning ensures its coordination.

Industrial accidents

The country acceded to the Convention on the Transboundary Effects of Industrial Accidents (Industrial Accidents Convention) in 2010. The Ministry of Environment and Physical Planning is the

competent authority for the Convention. Reporting is regular, with the latest report prepared on implementation of the Convention for the period 2014–2015. The country is expected to submit an implementation report for the period 2016–2019 in 2019.

According to the last report, most legislation on the identification of hazardous activities and industrial accidents prevention is in place. Identification and notification of hazardous activities to neighbouring countries was not covered by the legislation during the reporting period and was anticipated to be adopted in 2014. Preparedness and response are mostly covered by the protection and rescue legislation. Facilities that may cause major accidents involving hazardous substances are identified in the country. However, the country did not identify hazardous activities falling under the scope of the Convention and subsequently did not notify potentially affected countries.

The main difficulty in implementing the Convention is having sufficient financial resources to create an efficient system for prevention and control of industrial accidents, as well as protection and rescue – particularly in respect of accidents that could cause transboundary impacts – as well as the lack of human resources and appropriate training of industrial operators' representatives, particularly on practical implementation of the provisions of the Convention.

North Macedonia's Centre for Crisis Management is the point of contact for the Industrial Accidents Notification System functioning under the Convention and allowing countries to send and receive notifications of industrial accidents as well as request assistance. The country also uses the Emergency Response Coordination Centre of the European Commission in Brussels. The Centre is accessible 24/7 and can spring into action immediately when it receives a call for assistance. The Centre works in close cooperation with national crisis centres throughout the 32 countries participating in the mechanism (EU-28, North Macedonia, Iceland, Liechtenstein and Norway). The Centre handles more than 20 emergencies a year, up from single-digit figures in the first few years of its existence.

In the framework of the Convention's Assistance Programme, the Sectoral Checklist for Preparation and Inspection of a Safety Report and the Guidelines to the Sectoral Checklist were prepared, and a training session on the evaluation of safety reports was also held. The country benefited from a subregional workshop for the countries in South-Eastern Europe on industrial accident prevention: identification and

notification of hazardous activities and linkages with the relevant EU legislation (Zagreb, February 2017). During the reporting period under the Convention, two rulebooks were adopted: Rulebook on the safety report content and Rulebook on the prevention plan content. The first safety report was submitted in 2016.

The country submitted the last national self-assessment and action plan under the Convention's Strategic Approach in 2012. Since 2012, the country did not submit an updated national self-assessment and action plan and related project proposals addressing needs and challenges identified through the self-assessment and in the national action plan.

The country did not identify hazardous activities falling under the scope of the Convention and consequently did not notify potentially affected countries.

Environmental assessment

The country acceded to the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) in 1999 and ratified the Protocol on Strategic Environmental Assessment (Protocol on SEA) in 2013. The country has not accepted the first and second amendments to the Convention.

As at December 2018, three transboundary EIA procedures have been carried out on the development projects: (i) "Railway, Pan-European Corridor VIII" on the border with Albania; (ii) "Construction of the motor road Demir Kapija–Smokvica" on the border with Greece; and (iii) realization of the project "Constriction of section 3 of the rail corridor VIII: Kriva Palanka – border with Bulgaria". In respect of the third project, as a country of origin, North Macedonia sent a notification letter of intention to Bulgaria in July 2017 via the Ministry of Foreign Affairs. In respect of the second project, the relevant governmental institutions in Greece were also notified by the Ministry of Environment and Physical Planning through the Ministry of Foreign Affairs, as the project might have an adverse transboundary impact. No response from Greece was received. North Macedonia has very limited experience on transboundary SEA (chapter 1).

Technical and human capacity in the SEA field is low, with only two members of staff dealing with implementation of the SEA obligations starting with 2014 (before 2014 it was only one staff).

Bucharest Agreement on Environmental Impact Assessment

The country is a party to Multilateral Agreement among the countries of South-Eastern Europe for implementation of the Convention on Environmental Impact Assessment in a Transboundary Context (Bucharest, 2008). The country's reporting obligation is overdue. According to the Report of the MoPs to the Espoo Convention on its seventh session and of the MoPs to the Espoo Convention serving as the Meeting of the Parties to the Protocol on SEA on its third session, concern was expressed that the country has not responded to the questionnaire and the country was urged to provide the overdue responses to the questionnaire for the period under review.

Access to information, public participation and access to justice

The country acceded to the Aarhus Convention in 1999. The country ratified the Protocol on PRTRs in 2010 (chapters 4 and 5). The country is not party to the Almaty Amendment on Genetically Modified Organisms to the Convention. The appointment of a national focal point for the Convention has been pending for several years (chapter5).

6.3 Bilateral and trilateral cooperation on the environment

The country is participating in bilateral cooperation on environmental protection with an emphasis on cooperation with neighbouring countries and receiving technical and other assistance from donor countries. The country signs agreements and memoranda of understanding, although the effectiveness of cooperation often depends more on funds for joint programmes and projects than on the existence of a formal agreement.

Bilateral and trilateral cooperation is primarily focused on the integrated management and conservation of transboundary natural resources and ecosystems, such as transboundary lakes shared with neighbouring countries, i.e. Lake Ohrid (shared with Albania), Lake Prespa (with Albania and Greece) and Lake Dojran (with Greece). Significant steps in the transboundary context have been made in the Ohrid-Prespa Region through the initiative for establishment of the Ohrid-Prespa Transboundary Biosphere Reserve. This initiative is based on the existing trilateral agreement on Prespa Park and bilateral agreement signed between the Governments of North Macedonia and Albania in 2004.

The Bilateral Secretariat was established for Lake Ohrid Basin management in the framework of the Ministry of Environment and Physical Planning, with its seat in Ohrid. So far, it has implemented many transboundary and national projects and activities.

The driving force relevant for bilateral cooperation regarding transboundary waters is the WFD, as well as the Water Convention.

In the Drin River Basin, coordinated action has been absent, until the development of the Strategic Shared Vision for the sustainable management of the Drin Basin and the signing of a related memorandum of understanding (Tirana, 25 November 2011) by the ministers of the water and environment management competent ministries of the Drin riparian countries. This was the outcome of the Drin Dialogue coordinated by ECE and GWP-Med.

As for the Vardar River Basin, bilateral cooperation between North Macedonia and Greece is taking place concerning the conservation of Lake Dojran, following a first bilateral meeting in 2001. Although a Joint Water Management Committee of the two countries was established in 2001, this has not resulted in active cooperation in river basin planning or management of Lake Dojran. The country had three meetings with Greece during past years to discuss the preparation of the RBMP for the Vardar River.

In 2010, a legally binding quadrilateral agreement was signed by the Ministers of Environment of Albania, Greece and North Macedonia and the EU Commissioner for the Environment. This was followed by a period of less-intensive state cooperation in the Wider Prespa Area, which has lasted until very recently, since Greece only ratified the agreement in spring 2017. Nevertheless, local actors, especially the CSOs but also the local municipalities, have kept transboundary cooperation alive during these years.

Key challenges in cross-border cooperation still exist in relation to transboundary waters, including with Greece on the management of the Vardar River and in respect of the Drin River. Over the last decade, numerous projects have been carried out in this region, some of high importance and some small and with local benefits.

Cross-border cooperation also takes place under the IPA II programme and covers cooperation with Albania, Bulgaria and Greece, which also includes environmental aspects.

6.4 International technical assistance on the environment

Various bilateral and multilateral donors in the past years have provided an important amount of support for the country. EU assistance through IPA is the predominant source of development assistance. There is significant bilateral assistance provided by France, Italy, Japan, Norway, Slovenia, Switzerland and others. Some of the bilateral donors have changed their focus. Notwithstanding the changes in the composition of external assistance, the Government continuously seeks to enhance coordination with the donor community. Some of the donors pursue their own priorities, for which they provide funds or other non-financial support, and some leave it to the Government to decide how the funds should be most effectively used. Activities for nature protection in the country are largely financed by foreign funds, such as GEF and EU Funds, and donations/grants from other countries, among which Austria, Germany, Italy, the Netherlands, Switzerland, and certain other countries have provided the most significant support.

Although the resources channelled by donors are crucial to advancing environmental protection, the financial needs of the country go well beyond the resources currently available from domestic and external sources. In general, the donor community has, until recently, mostly concentrated its financial support on capacity-building, the development of policy and legal frameworks, and small to medium-

scale projects. The country is receiving development assistance on an annual basis. However, there is a lack of key information on the website of the key institution for aid coordination regarding the use of the funds (aid), as well as a lack of coordination in funds distribution among different donors.

6.5 Participation in non-binding processes related to the environment, sustainable development and green economy

10-Year Framework of Programmes on Sustainable Consumption and Production Patterns

There is no single strategy or action plan in the country focused specifically on sustainable consumption and production (SCP). The topic of resource efficiency and natural resources is covered in the 2010 National Strategy for Sustainable Development for the period 2010–2030. The Ministry of Economy and Ministry of Environment and Physical Planning have a shared responsibility in the domain of resource efficiency. Due to the capacity and financial constraints, the Government does not place significant emphasis on SCP in national policymaking. The use of specific mechanisms to promote SCP is generally low. SCP goals are not integrated into energy, transport and agricultural policies.

The current status of the country vis-à-vis target 12.1 of the 2030 Agenda for Sustainable Development is described in box 6.4.



Box 6.4: Target 12.1 of the 2030 Agenda for Sustainable Development

Goal 12: Ensure sustainable consumption and production patterns

Target 12.1: Implement the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries

There is no single strategy or action plan in North Macedonia focused on SCP, nor is there a policy document for circular economy. Most related policy priorities for target 12.1 are identified in the NSSD for the period 2010–2030. Related policy priorities are also included in the third National Energy Efficiency Action Plan. No system is in place for collecting data and information on resource efficiency and material flows. Such a system would cover the main policies and sustainable activity in forest management, agriculture, waste management, industry and energy. The Government should:

- (a) Establish institutional structure that will cover relevant aspects of sustainable development, circular economy and material resource efficiency;
- (b) Introduce the concept of circular economy and material resource efficiency;
- (c) Introduce standards and some incentives on the efficient use of materials, so business could more easily adjust or promote circular economies;
- (d) Introduce policies that enhance material efficiency;
- (e) Provide incentives for SCP patterns;
- (f) Enhance customer awareness for such products;
- (g) Develop a national action plan on SCP;
- (h) Establish systems in stakeholders' institutions for collecting data and information on resource efficiency and material flows.

United Nations Forum on Forests

The country did not present voluntary national reports to the United Nations Forum on Forests. Attendance at the meetings is also not frequent, due to capacity constraints at the Ministry of Agriculture, Forestry and Water Economy, which is limited to just one member of staff.

Transport, Health and Environment Pan-European Programme and European Environment Health Process

The Institute of Public Health, Ministry of Environment and Physical Planning and Ministry of Transport and Communication are the National Focal Points for the Transport, Health and Environment Pan-European Programme (THE PEP). Within the framework of THE PEP, the work has focused on capacity-building, development and dissemination of tools, and monitoring of implementation. These activities aim at reducing emissions from transport and increasing physical activity levels in the population through active mobility. The country regularly participates in the relevant meetings and high-level events.

The country is also party to the European Environment and Health Process (EEHP). The Ministry of Public Health is the National Focal Point for the EEHP and regularly attends meetings of the Task Force of the EEHP. Specific activities under the umbrella of these two processes were implemented, including: (i) preparation of the Climate Change Health Adaptation Strategy and Action Plan (2011); and (ii) the Sustainable Urban Mobility Plan for Skopje (2011). The Bicycle Master Plan 2014–2017 foresaw the creation of over 50 km of cycle paths by the end of 2017, alongside improvements to the public bicycle share scheme and promotion campaigns for cycling.

Environment for Europe process

The country has not submitted any voluntary commitments under the two initiatives endorsed by the ministers at the Eighth Environment for Europe Ministerial Conference (Batumi, Georgia, 8–10 June 2016): the Batumi Initiative on Green Economy (BIG-E) and the Batumi Action for Cleaner Air (BACA).

6.6 Legal, policy and institutional framework*Legal framework*

The Constitution prevails over the ratified international agreements. Any ratified international agreement constitutes part of the internal legal system

at the moment of publication in the Official Gazette. An international agreement that has been ratified by law prevails over the other laws of the country that might conflict with this international agreement. The RIA instrument is in place to assess the needs for participation in additional international agreements.

Policy framework

No single document outlines the general framework for international cooperation on environmental protection, although national priorities on environment can, in part, be drawn from the National Programme for the Adoption of the Acquis Communautaire (NPAA), which stipulates that the country shall retain its focus on: (i) implementation of the INDC to the Paris Climate Agreement of 2015; (ii) implementation of the national legislation and increasing investments, especially in the areas of waste and water; and (iii) assessment of the investments required for implementation of the environmental legislation and strengthening administrative capacities.

Institutional framework

The responsibilities in international environmental cooperation are mostly concentrated within the Ministry of Environment and Physical Planning. Among these responsibilities are development and implementation of environmental policy and coordination of activities under the NPAA for Chapter 27 – Environment.

The Department for the European Union within the Ministry of Environment and Physical Planning has overall responsibility for coordination of IPA assistance. The Department consists of four units: (i) Unit for Harmonization of Legislation and Negotiations; (ii) Unit for Standards; (iii) Unit for Coordination and Technical Implementation of the Instrument for Pre-Accession Assistance; and (iv) Unit for Programming and Monitoring of Implementation under the Instrument for Pre-Accession Assistance. The last two Units are directly involved in the coordination process within the environmental sector, in terms of planning implementation and monitoring the IPA Transition Assistance and Institution Building (TAIB) projects.

In addition to these IPA-specific Units, the Unit for International Cooperation in the Department for Coordination of the Work of the Minister is responsible for coordination of activities related to bilateral cooperation with other countries, as well as with international organizations and bodies. It has overall responsibility to keep records of international

assistance and a regular register of projects that are implemented in the Ministry of Environment and Physical Planning.

Projects for assistance are being proposed by the Department for the European Union within the Ministry, in cooperation with other departments of the Ministry and the local administrations. The staff of the Department for the European Union have received relevant IPA training to develop, prepare, implement, monitor and evaluate projects and to ensure appropriate analysis and reporting on the projects. The operational structure within the Ministry of Environment and Physical Planning includes 10 employees whose work relates to IPA. These include the designated IPA Coordinator (who is Head of the Unit for Coordination and Technical Implementation of the Instrument for Pre-Accession Assistance), the Advisor for technical monitoring of implementation in the framework of IPA, and eight employees in the positions of advisors and junior and senior associates.

The IPA units are currently not sufficiently and adequately staffed. Since 2017, four employees who previously occupied senior positions at the Ministry have left their posts. Furthermore, with the 2018 Decision to perform working duties No. 02-1758/1, the employee in the position of Advisor for technical monitoring of implementation in the framework of IPA now also performs the duties of the Head of Unit for Programming and Monitoring of Implementation under the Instrument for Pre-Accession Assistance. Moreover, that employee has also been appointed to fulfil various additional roles: (i) with the 2018 Decision No. 02-3793/1, the additional role of the IPA Coordinator of the Ministry for the implementation of the regional development component of the IPA; (ii) with the 2018 Decision No. 02-3795/1, the additional role of the IPA Coordinator of the Ministry for implementation of the assistance from IPA II; and (iii) with the 2018 Decision No. 02-3796/1, has also been nominated for the role of Senior Programme Officer for the IPA TAIB component within the Ministry. These authorizations are difficult to justify, given that the Head of the Unit for Programming and Monitoring of Implementation under the Instrument for Pre-Accession Assistance and the IPA Coordinator are the key positions in the Department for the European Union within the Ministry, and these jobs are defined as highly sensitive, due to the obligations for approval of the documents and expenditure verification of payments of all IPA contracts in the area of environment.

The Department for Nature within the Ministry of Environment and Physical Planning is responsible for the implementation of the national legislation and

multilateral agreements on nature protection. Focal points for international agreements are experts responsible for the relevant clusters, e.g., biodiversity, chemicals and climate change, within the Ministry. The Department for Nature faces a lack of capacity (currently, it has only around 15 employees) and lack of financial resources to implement relevant legislation and other tasks, including planning, establishment and supervision of protected areas.

The Vienna Convention and its Montreal Protocol, the Stockholm Convention and SAICM are under the one umbrella of the Ministry of Environment and Physical Planning. The Ozone and Persistent Organic Pollutants Unit (hosted by the Ministry, but not within its budget) has been covering these three areas for almost 13 years.

Within the Ministry of Environment and Physical Planning, MEIC is charged with implementation of the POPs Protocol to the Air Convention. The Department for Industrial Pollution and Risk Management and its Unit for Chemicals and Industrial Accidents are responsible for initiating the ratification of international agreements on chemicals and implementation of the provisions of international and national legislation on chemicals.

Overall, the Ministry of Environment and Physical Planning has limited staff and resources and the resources allocated for implementation, compliance and enforcement are inadequate for the scale of the problems confronting the country's environment, with the number of staff employed at the Ministry having been significantly reduced since 2011. For example, currently, one person is responsible for IPA coordination as well as performing the duties of being the National Focal Point for UNCCD.

The Secretariat for European Affairs supports and coordinates governmental institutions regarding EU integration. Among its tasks are the coordination of foreign aid from the EU and other foreign aid assistance. In 2009, the Secretariat introduced the Programme-Based Approach (PBA) as a mechanism for strengthening aid management. The goal was to further improve the effectiveness of aid by focusing external development assistance on a few priority sectors (mutually agreed with the international partners) and by ensuring systematic strengthening of national programming and implementation capacity. Currently, there is no information available on the PBA assessment of the working group reports on the Secretariat's website. There is also a lack of key information on the Secretariat's website regarding the use of the funds (aid), as well as a lack of coordination in funds distribution among different donors. The

Sector Policy Coordination Framework, introduced by the Secretariat and supported by GIZ in 2016, has replaced the PBA coordination framework in line with the requirements of the sector-wide approach as defined by the European Commission.

Dedicated committees have been established to harmonize the implementation of international agreements on nature protection, but they lack sufficient activity, with many being no longer operational. The National Committee for Biological Diversity was established in 1999 with the aim to coordinate implementation of CBD on a national level. It is composed of approximately 20 scientists and other experts and was especially active during the elaboration of the Country Study on Biological Diversity (first national report, 2003) and the first NBSAP (2004); however, presently it is almost inactive. A proposal for revision of this Committee was prepared in the process of revision of NBSAP in 2014, and therefore it should be re-established by the Government and actively involved in implementation of requirements according to CBD.

The Watershed Management Committee for Lake Ohrid was established in 2015. The Committee is responsible for drafting and applying standards, environmental criteria and requirements for sustainable development as a basis for the integrated protection of Lake Ohrid and its watershed. The Prespa Park Coordination Committee was a non-legal entity whose members were appointed by the three ministers in charge of environment of Albania, Greece and North Macedonia. The Committee was a vital instrument over all these years and was transformed into the Prespa Park Management Committee (PPMC) with the signing of a trilateral agreement in February 2010 by Albania, Greece and North Macedonia on the protection and sustainable development of the Prespa Park area. On 14 February 2017, The Parliament of Greece ratified the international “Agreement for the Protection and Sustainable Development of the Prespa Park Area” by an overwhelming majority. This Agreement does give clear directions for the future development of Prespa Park, defines the members and terms of work of the PPMC and obliges the parties to establish an office for the secretariat.

International cooperation at the level of local authorities, municipal councils and mayors may result in autonomous decisions on matters of municipal international cooperation, subject to, in certain limited instances, providing information to higher national authorities for an opinion. For example, the Monument of Nature Lake Dojran is under the authority of the Dojran Municipality. The Municipality is obliged to develop and implement

long-term plans for management of the Monument of Nature Lake Dojran, as well as the annual plans for nature protection. This management plan and annual programmes should be in line with the Dojran Basin Management Plan, i.e. not focused solely on the narrow protected area but, rather, on the whole watershed, considering different activities that take place in the whole basin and protecting all the waters connected to the lake.

6.7 Assessment, conclusions and recommendations

Assessment

The ratification of several more MEAs since 2011, such as the Paris Agreement, the Water Convention and the Protocol on SEA, is evidence of the political importance that the Government attributes to being an engaged participant in international cooperation in the environmental domain. However, the adoption of environmental legislation in the country is mainly driven by the aspiration for EU membership.

Adequate participation in international negotiations, and full implementation of and compliance with MEAs, remain challenges, due in part to understaffing and limited financial resources in the ministry responsible for environmental issues. An effective response to international agreements and commitments depends on the capacity and financial resources of the Ministry of Environment and Physical Planning, and other involved entities, being consistent with the responsibility of being party to MEAs. Furthermore, the lack of monitoring data affects timely reporting and the quality of national reports. CSOs are not given any role in such reporting, and neither do they participate in the development of the country's position for international meetings.

Conclusions and recommendations

Capacity and resources

The extended mandate of environmental bodies and units in the public administration to ensure the country's implementation of and compliance with obligations deriving from global and regional agreements has not been matched by increased capacity and financial resources. Currently, in addition, no efficient coordination structure among relevant state institutions charged with the implementation of those obligations is established. Furthermore, there are difficulties with the harmonization of obligations under the high number of ratified MEAs. Also, there is no harmonization of

activities with other sectors that have or may have an impact on biological diversity.

Recommendation 6.1:

The Government should:

- (a) *Establish efficient coordination mechanisms among relevant state institutions, scientific institutions and civil society organizations;*
- (b) *Undertake an in-depth analysis of the administrative and technical capacity and financial needs of the bodies in charge of the implementation of obligations deriving from multilateral environmental agreements (MEAs);*
- (c) *On the basis of the analysis, prepare an action plan to ensure that the adequate administrative and technical capacity and financial resources are secured for the implementation of obligations deriving from MEAs;*
- (d) *Increase efforts to fulfil its reporting obligations under MEAs and ensure the quality of national reports;*
- (e) *Ensure the participation of its representatives in the meetings of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).*

Energy sector

Since 2011, two non-compliance cases were filed under the Bern Convention and the 1985 Sulphur Protocol to the Air Convention; both cases concerned activities in the energy sector. These cases point to gaps in the current environmental governance and inadequate streamlining of environmental considerations in the country's energy sector development. Notwithstanding the presence of a requirement for compliance with MEAs in the Energy Development Strategy, in practice, its implementation in conformity with MEAs has proved to be challenging. The priorities for energy sector development, aimed to be harmonized with MEAs, have driven the national energy policy in the direction of rapid construction of HPPs, with many planned in protected areas, resulting in tensions with obligations under the Bern Convention.

Elevated ELVs for sulphur, mainly granted to large coal-fired TPPs, caused a breach of sulphur reduction commitments under the 1985 Sulphur Protocol for the period 2013–2015. Furthermore, the country failed to fulfil some obligations under the Energy Community Treaty. Challenges exist in meeting the country's legally binding renewable energy target, due to its reliance predominantly on fossil fuels and

hydropower, while its solar energy potential remains untapped.

Concerns have also been raised by CSOs with respect to a lack of transparency on the number and locations of the proposed HPPs. This points to a need for a more harmonized approach in the energy sector, development of which inherently touches upon several cross-cutting environmental issues covered by MEAs. In the absence of such an approach, the future implementation of MEAs will continue to be constrained and more non-compliance cases are likely to occur in the domain of energy sector development. Nature protection obligations should be recognized and respected by the Government whenever hydropower, mining or large infrastructure investments are planned.

Recommendation 6.2:

The Ministry of Environment and Physical Planning and Ministry of Economy should:

- (a) *Revise all legal and strategic documents that regulate and foresee hydropower construction to ensure that the site selection criteria applied to hydropower plants are based on international best practice, which excludes hydropower construction in protected areas and areas with high hydro-morphological and biodiversity status;*
- (b) *In cooperation with neighbouring countries that are pursuing a similar path in energy sector development, conduct a transboundary study into the cumulative and combined effects on the environment of planned small hydropower plants and associated new infrastructure construction, taking into consideration seismic and climate change effects;*
- (c) *Promote the production of electrical energy from renewable sources other than hydropower;*
- (d) *Ensure that SEAs carried out on energy sector plans and programmes under development are based on international best practice and provide greater transparency and public engagement.*

Industrial accidents

The country did not identify hazardous activities falling under the scope of the Industrial Accidents Convention and subsequently did not notify potentially affected countries. As a beneficiary country of the Convention's Assistance and Cooperation Programme, North Macedonia benefited from a subregional workshop for the countries in

South-Eastern Europe on industrial accident prevention by identification and notification of hazardous activities and making linkages with the relevant EU legislation.

Since 2012, the country did not submit an updated national self-assessment and action plan under the Convention's strategic approach, nor related project proposals addressing needs and challenges identified through the self-assessment and in the national action plan.

No progress has been made on transposing Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances (Seveso III Directive).

The country is expected to submit an implementation report for the period 2016–2019 in 2019.

Recommendation 6.3:

The Ministry of Environment and Physical Planning should:

- (a) *Transpose into national legislation Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances (Seveso III Directive) and work on implementing it;*
- (b) *Identify hazardous activities falling under the scope of the Convention on the Transboundary Effects of Industrial Accidents and notify potentially affected countries accordingly;*
- (c) *Submit an updated national self-assessment and action plan under the Convention's strategic approach, together with project proposals addressing needs and challenges identified;*
- (d) *Prepare in a participatory and transparent manner the implementation report on the Convention for the period 2016–2019 and submit it by the due date to the Convention's Secretariat.*

Access to information and public participation

The list of ratified MEAs is available to the public on the Ministry of Environment and Physical Planning website. However, no information on the status of implementation of MEAs or other international commitments, including the national reports submitted, is provided by the Ministry of Environment and Physical Planning to the public, except the 2018 national implementation report to the Aarhus Convention and the 2014 national implementation report to the CBD. The public, including CSOs, is not

involved in the decision-making processes regarding the country's substantive contributions to and participation in MEA-related and other international processes.

Recommendation 6.4:

The Ministry of Environment and Physical Planning should:

- (a) *Make publicly available the information on the participation of the country in environmental agreements and international environmental processes and commitments, and the related national implementation and progress reports;*
- (b) *Provide timely access to information on environmental agreements and international processes and commitments to enable effective public participation;*
- (c) *Ensure the effective participation of the public in decision-making on environmental agreements and international processes and commitments, and in the preparation of national reports and other substantive inputs on their implementation;*
- (d) *Include representatives of relevant environmental civil society organizations in national delegations participating in international environmental processes.*

Participation in multilateral environmental agreements to which North Macedonia is not party

The country is clearly committed to preventing and combating air pollution and to accession and implementation of international agreements in this domain. Further joint work between the country and the ECE Secretariat of the Air Convention would allow the country to accept amendments to the Protocol on Heavy Metals, POPs Protocol and Gothenburg Protocol.

Though the country is a party to the Aarhus Convention, it has yet to ratify the 2005 Almaty Amendment on Genetically Modified Organisms. Although some preparatory work was carried out, the country has yet to accede to the Protocol on Water and Health and the Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer. Furthermore, the country has not yet joined the Nagoya Protocol and has yet to accede to the Sofia and Cavtat Amendments to the Espoo Convention. Although the Government has already conducted primary activities of the Minamata Initial Assessment in 2018, it has not yet ratified the Minamata Convention on Mercury.

Recommendation 6.5:

The Government should start the necessary preparatory work and proceed with:

(a) <i>Ratification of the Minamata Convention on Mercury;</i> (b) <i>Accession to the Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer;</i> (c) <i>Accession to the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity;</i> (d) <i>Acceptance of amendments to the Protocol on Heavy Metals, Protocol on Persistent Organic Pollutants, and Protocol to Abate</i>	<i>Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol) to the Convention on Long-Range Transboundary Air Pollution;</i> (e) <i>Ratification of the Almaty Amendment on Genetically Modified Organisms to the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters;</i> (f) <i>Accession to the Protocol on Water and Health to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes;</i> (g) <i>Accession to the Sofia and Cavtat Amendments to the Convention on Environmental Impact Assessment in a Transboundary Context.</i>

Chapter 7

CLIMATE CHANGE

7.1 Current and foreseeable economic and environmental impacts from climate change

Environmental impacts from climate change

Weather

North Macedonia is a landlocked country that covers 25,713 km² on the Balkan Peninsula. Despite its relatively small size, the country is rather diverse from a climatic point of view, ranging from alpine climate in the west and north-west of the country to sub-Mediterranean in the south. The climate of the country tends to be heavily influenced by altitude, with sub-Mediterranean climate found at 50–500 m, moderate/continental/sub-Mediterranean climate found at up to 600 m, hot continental climate found at 600–900 m, cold continental climate found at 900–1,100 m, sub-forest/continental/mountainous climate found at 1,100–1,300 m, forest, continental or mountainous climate found at 1,300–1,650 m, sub-alpine mountainous climate found at 1,650–2,250 m and alpine mountainous climate found at altitudes higher than 2,250 m. Despite its geographically influenced variability, the climate of the country is generally characterized by cold winters, hot summers and a highly variable precipitation regime. Overall,

weather conditions in the country are expected to become hotter and drier, with more frequent and more intense heatwaves, droughts and flood events.

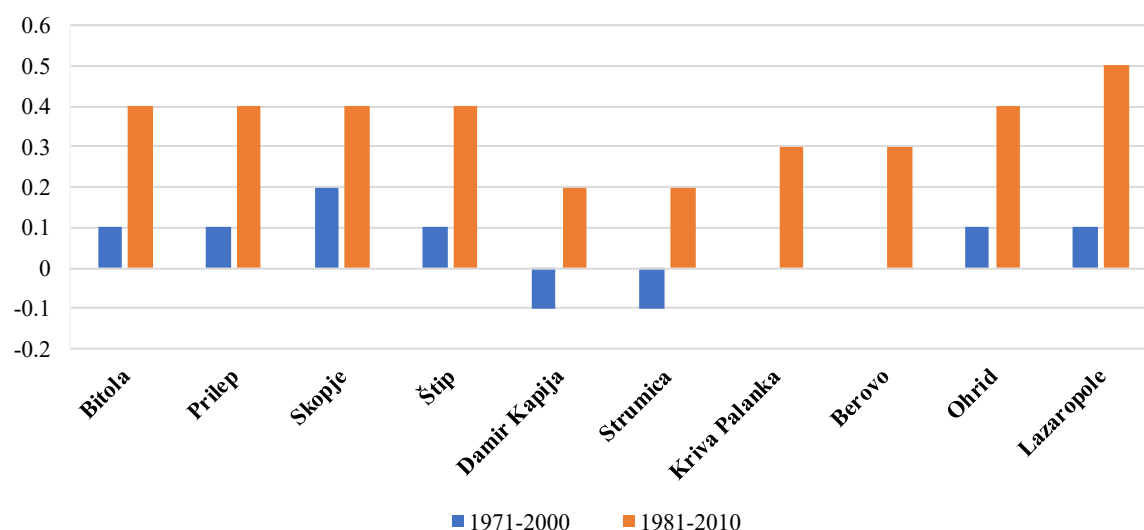
Temperature

According to the Third National Communication to the UNFCCC, climate change impacts on temperature are already evident in the country. Comparing the average temperature in the 30-year period 1961–1990 with the 30-year periods 1971–2000 and 1981–2010, it can be observed that both the periods 1971–2000 and 1981–2010 tended to be warmer than the period 1961–1990 in most locations, with the period 1981–2010 being warmer in all sampled locations (figure 7.1).

According to the Third National Communication, analysis of the period 1961–2012 shows an increase in yearly summer days in the later years of the period as opposed to the earlier years. An increase in the number of tropical nights has also been observed.

The fastest warming is projected in the mountainous north-west region of the country, while the south-east and central regions of the country are projected to warm at a more sustained pace.

Figure 7.1: Deviation of the 30-year average from the average air temperature for the period 1961–1990 in selected locations, °C



Source: Third National Communication to the UNFCCC, 2014.

Note: In the instances where the column is not visible, there is no significant deviation in comparison with the reference period 1961–1990 for the corresponding location.

Precipitation

According to the Third National Communication, a decreasing trend in precipitation can already be observed in the country. Projections from 2025 to 2100 confirm this decreasing trend and predict a decrease in total average precipitation of 8 per cent in 2075 and 13 per cent in 2100, as compared with the chosen reference period 1961–1990. The changes in precipitation are expected to occur mostly in the summer months, which are expected to have an almost total absence of precipitation by the end of the century. Precipitation in winter months is expected to decrease less dramatically. The most affected region will be the eastern part of the country. Despite the overall decrease in precipitation, precipitation will be more likely to result in extreme weather events, with potential negative consequences in terms of flash floods. Overall, water availability is expected to decrease by 18 per cent in 2100 as compared with 1990.

Wind

According to the climate change scenarios developed as part of the Third National Communication, very limited variations in wind speed are expected on the territory of the country.

Water

Climate change is expected to result in reductions in available surface water for both the Vardar River and Bregalnica River. The Strumica River Basin, already relatively poor in water resources, is expected to be the most affected by climate change. Apart from the decrease in water quantity, climate change is also expected to negatively influence the quality of water resources, with extreme weather events increasing the likelihood of flash floods (chapter 9).

Soil and land

Climate change is expected to negatively affect soil, especially in terms of erosion. Soil erosion is already a big concern for the country, with over 95 per cent of the entire territory of the country being affected by erosion. Erosion in the country is due to both natural phenomena (mountainous terrain, fluctuation between drought and heavy precipitation periods) and anthropogenic activity (inefficient irrigation schemes, overuse of pesticides, overuse of chemical fertilizers).

Forests

Climate change is expected to have a negative impact on forests in the country, especially with a higher

incidence of wildfires. While no specific studies have been conducted on the incidence of forest fires under changed climatic conditions in the country, the Forestry and Climate Change assessment prepared under the Third National Communication postulates a probable increase in the incidence.

While no clear trend of increase in forest fires can be identified, it is interesting to note that the peaks in burned forest correspond to a clear increase in GHG emissions from forestry and other land use (FOLU) (figures 7.2 and 7.3), also highlighting how serious the problem of wildfires is for the country, even without considering the probable impacts of climate change. The same assessment also identifies pests and diseases as a possible source of increased negative impacts for forests, without quantifying the expected impacts on forests under climate change.

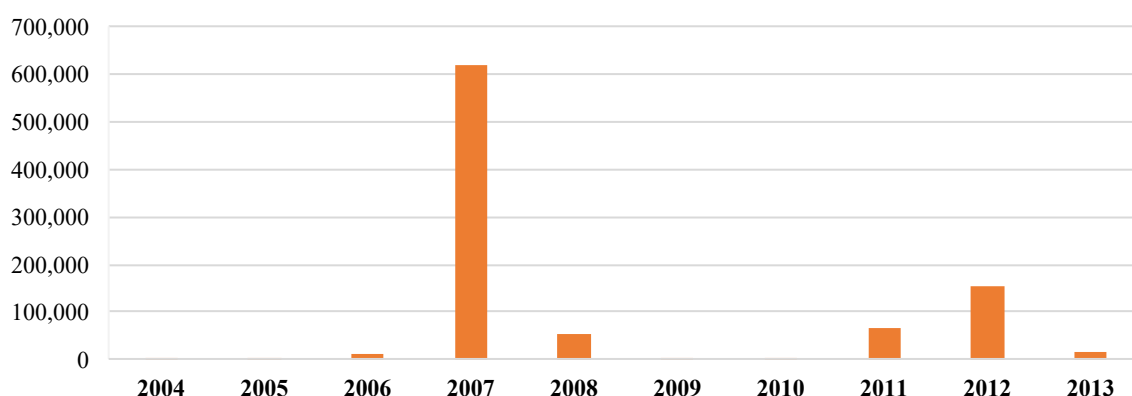
Biodiversity

Despite its limited size, the country can be considered a “hotspot” for biodiversity in Europe, with eight of nine biomes of the Balkan Peninsula being present on the territory of the country. More than 16,000 species have been recorded on the territory of the country, of which 854 can be considered endemic. The increase in temperature and decrease in total volume of precipitation is expected to result in extinction or in a reduced area range for several subalpine and alpine species and habitats. Specifically, a total of 18 habitats have been identified as potentially affected by climate change and 58 plant species and 224 animal species have been identified as vulnerable to climate change.

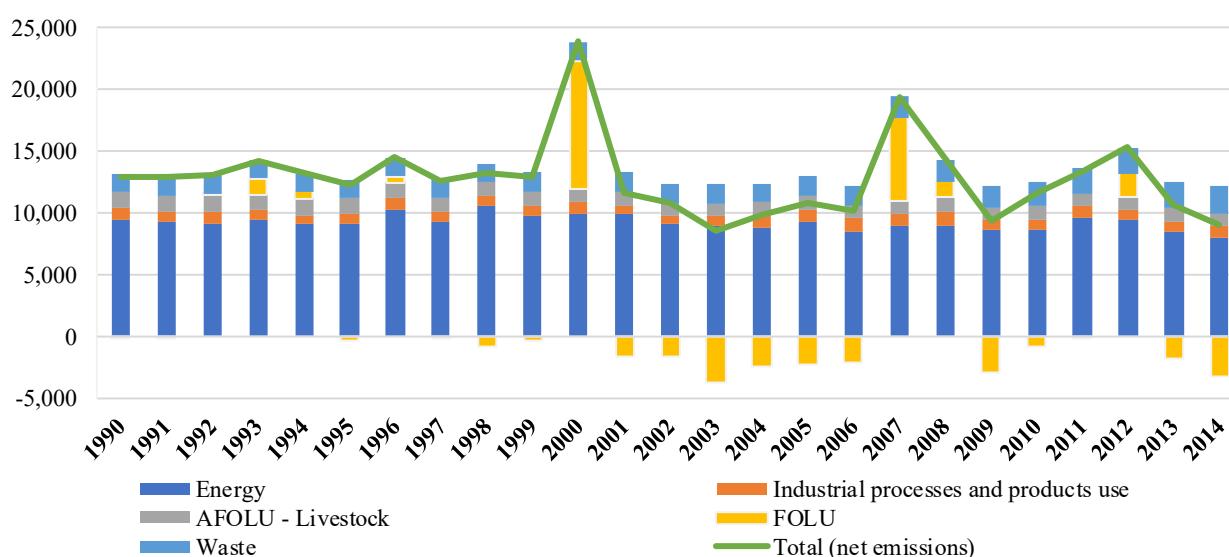
Human health

Climate change is expected to have a negative effect on human health in the country. Future drier and warmer conditions, as well as more frequent extreme weather events, are expected to negatively affect morbidity and mortality in the country. With an expected increase in the annual incidence of heatwaves, direct health effects of heatwaves are expected to increase, especially considering the relatively high urbanization of the country and the increasing trend in urbanization.

Apart from the direct effects of heatwaves, an increase in certain infectious diseases is expected. According to expert findings, a linear increase in cases of salmonella could be expected with each degree of increase in temperature. In the Strumica Region, the highest level of seasonal index of salmonellosis was registered, mainly in the warm months of March, July and August, and the lowest in December and January.

Figure 7.2: Burned forest, 2004–2013, m³

Source: Forest Fire Country Studies, Regional Environmental Centre for Central and Eastern Europe.

Figure 7.3: Greenhouse gas emissions and removals by sector, 1990–2014, Gg of CO₂-eq.

Source: Second Biennial Update Report on Climate Change, 2017.

Vector-borne diseases are also expected to have a higher incidence in the country. Some climate-sensitive vector-borne diseases have already occurred in the country, e.g., West Nile fever, while others, such as malaria, have not been reported in the country but are expected in the future.

While the possibility that some positive effects on human health could be registered in the next decades due to, for example, fewer deaths caused by cold, these limited positive effects are expected to be dwarfed by negative consequences on human health such as those caused by rising temperatures and more frequent heatwaves in the summer. Increasing temperatures in the next decades are also expected to have an impact on aeroallergens, and in particular pollen, exacerbating the condition of allergy sufferers. Considering that the elderly tend to be more vulnerable to extreme weather conditions, future

health burdens are likely to be exacerbated by an ageing population.

Economic impacts from climate change by sector and costs of mitigation and adaptation

While the country expects access to international funding sources, such as the Green Climate Fund (GCF), to significantly contribute to the implementation of adaptation and, especially, mitigation measures, the country is also dedicating internal resources to climate-related activities. According to the Second Biennial Update Report on Climate Change (SBUR), in 2017, 1.98 per cent of the planned government budget contributed (directly or indirectly) to climate change mitigation, while the budget of Skopje for the same year anticipated a US\$1,952,000 contribution to climate-related initiatives. Additionally, in the period 2015–2017, the Fund for Innovation and Technology Development

financed climate-related projects in the amount of €447,592.

Energy

According to a UNDP study published in 2011, “Assessing Economic Impact of Climate Change”, climate change is expected to increase energy demand, especially with regard to cooling needs during the warmer periods of the year. Conversely, climate change, contributing to an overall decrease in precipitation and water resources availability in the country, is also expected to negatively influence hydropower production.

Industry and mining

There is a lack of information on the impacts of anthropogenic climate change on industry and mining in the country. Climate change and extreme weather events might hazardously impact mining legacy sites.

Agriculture

Agriculture is an important sector for the economy of North Macedonia, contributing 9 per cent of GDP in 2017 and over 17 per cent to employment in the country in 2015. According to the Vulnerability Assessment of the Agriculture Sector developed during the preparation of the Third National Communication, agriculture in the country is highly vulnerable to climate change and is expected to suffer adverse effects from changes in temperature, precipitation and the frequency of extreme events such as droughts, floods and forest fires. These events, including decreased rainfall, would likely result in the loss of topsoil and reduced overall soil quality, decreased biomass production and crop yields and limited fodder availability for cattle farming. The negative impact of climate change on agriculture is expected to translate into negative impacts on yields by 2050, especially in respect of perennial and summer crops.

Forestry

According to the Vulnerability Assessment of the Forestry Sector developed during the preparation of the Third National Communication, the forestry sector is vulnerable to climate change, with rising temperatures, increased incidence of forest fires, extreme weather events, changes in species composition and diseases and pests all likely to negatively influence the health of forests. Changes in the distribution of tree species are likely to occur. Three endemic species of oak – Downy Oak (*Quercus pubescens*), Macedonian Oak (*Quercus macedonica*)

and Kermes Oak (*Quercus coccifera*) – and two local coniferous species (*Pinus nigra* and *Juniperus excelsa*) have been identified as most resistant to climate change and thus suitable for afforestation. The assessment did not offer conclusions on the effect that climate change is expected to have on forest productivity, noting that some factors (such as rising temperatures and CO₂ fertilization) could be expected to contribute positively (at least until 2025) while other factors (such as water deficits and extreme weather events) are expected to contribute negatively. In the period 2008–2013, no changes in forest productivity have been recorded.

Transport

Transport infrastructure is vulnerable, due to the topographical, geological and hydrogeological conditions of the country. Climate change is expected to exacerbate this vulnerability due to a higher incidence of extreme weather events.

Tourism and leisure

With a direct contribution of 1.8 per cent to GDP (which grows to 6.6 per cent if the total contribution is considered) in 2017 and 816,06 tourist arrivals in 2015 (485,530 of which are foreign tourist arrivals), tourism is a sector of growing importance in the country. The Vulnerability Assessment and Adaptation Measures of Tourism highlights the vulnerability of winter tourism, due to its high dependence on snow, and of cultural heritage tourism, due to the vulnerability of cultural heritage in the country to extreme weather events. The Assessment also highlights the lack of investigations of the impact of climate change on the sector in the country.

Health-care systems

The negative impact that climate change is expected to have on human health in the country is expected to translate into increased costs for the health-care system. In particular, it is expected that the increasing incidence of extreme weather events such as floods will result in an increase in costs related to the health-care system. Using a tool developed by WHO, an estimate of the adaptation cost was made at 12 million local currency units (as opposed to 170 million local currency units in climate-related damage).

Costs of inaction

Despite the economic impact that climate change is expected to have on various economic sectors in the country, there is no univocal estimation of the costs of inaction for the different sectors. Considering the high

sensitivity to climate change of important sectors of the economy, as well as the vulnerability of the country to extreme weather events, not taking necessary adaptation measures would result in significant costs in the future.

7.2 Greenhouse gas emissions by economic sector

The country has been developing an inventory of anthropogenic GHG emissions by sources and removals by sinks since 2000 as part of its national communications and biennial update reports. The latest available data are presented in SBUR, updated to 2014. The inventory of SBUR includes CO₂, CH₄, N₂O, PFCs and HFCs, as well as precursors and indirect emissions of CO, NO_x, NMVOC and SO₂.

In 2014, emissions per capita were 5.9 t of CO₂-eq. (approximately 30 per cent lower than that of an EU citizen), while total GHG emissions, including FOLU, were 9,023.2 Gg of CO₂-eq., a decrease from 10,720.7 Gg of CO₂-eq. in 2013. In 2014, the energy sector accounted for 65.20 per cent of the emissions (excluding FOLU), equivalent to 7,957.52 Gg of CO₂-eq. The industrial processes and product use (IPPU), agriculture and waste sectors accounted for, respectively, 7.55 per cent (921.58 Gg of CO₂-eq.), 8.21 per cent (1001.81 Gg of CO₂-eq.) and 19.04 per cent (2,323.43 Gg of CO₂-eq.) of the emissions (excluding FOLU). Table 7.1 summarizes historical GHG emissions and removals by sector in selected years between 1990 and 2014.

Total emissions in 2014 were below the levels of 1990 by 29.82 per cent (including FOLU). Figure 7.3 illustrates the fluctuation and GHG emission trends by sector in Gg of CO₂-eq. Looking at the historic trends in GHG emissions in the 25-year period 1990–2014, the most evident phenomenon is the wide variability of the impact of FOLU on total emissions (figure 7.4). While, usually, FOLU is a sector with negative emissions, in some years (as is particularly evident in 2000, 2007, 2008 and 2012) it has been a major emitter of GHGs, resulting in an increase in overall GHG

emissions. This phenomenon is caused by a dramatic increase in wildfires in these years. In 2014, CO₂ accounted for 69.3 per cent of total GHG emissions (excluding FOLU), with CH₄, N₂O and F gases accounting for 25.6 per cent, 3.6 per cent and 1.5 per cent respectively.

Energy

Energy is by far the highest emitting sector in the country, with 7,957.5 Gg CO₂-eq. in 2014, thus accounting for 65.20 per cent of the total GHG emissions of the country (excluding FOLU), and 88 per cent of net emissions. Almost all emissions are of CO₂, which accounts for 96.8 per cent of the emissions, with CH₄ and N₂O accounting for 2.5 per cent and 0.7 per cent respectively. The high emissions in the energy sector are due to the fact that fossil fuels, primarily domestic lignite, account for over 80 per cent of total energy consumption in the country. While a limited decrease can be observed in the share of fossil fuels, this is primarily due to an increase in electricity imports.

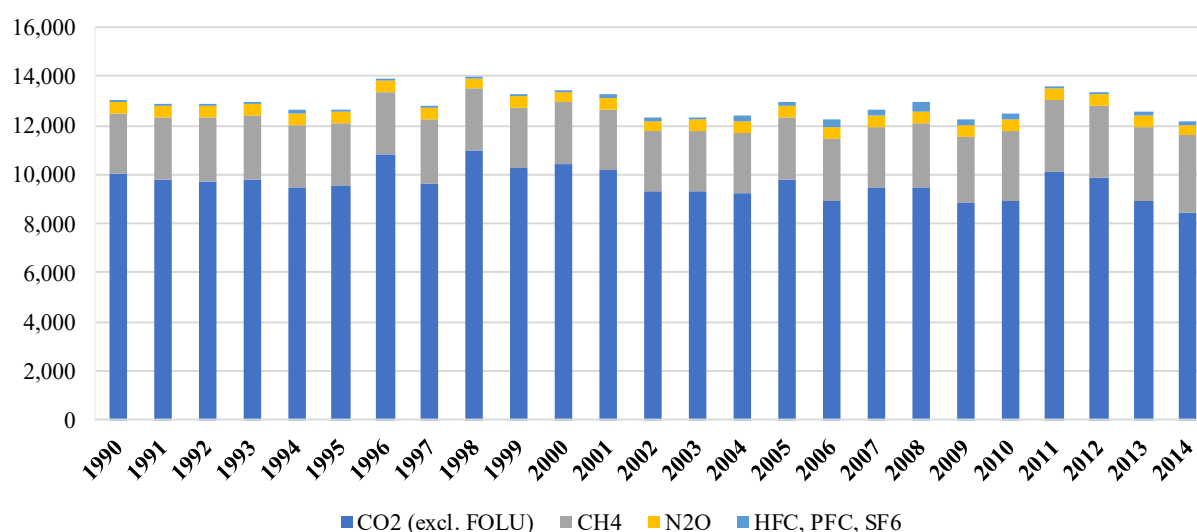
Industry and mining

The GHG emissions from the IPPU sector in the country originate mainly from production industries or from the use of substitutes for ODSs in cooling (air conditioning and refrigeration). The metal industry is the main contributor to GHG emissions, accounting for 49.1 per cent of the sector's emissions in 2014. The mineral industry is the second largest contributor to the sector's GHG emissions – mainly due to industries devoted to cement production – while the remainder of the sector's emissions is due to the use of substitutes for ODSs. Only a negligible share of GHG emissions come from the chemicals industry, given that the country lacks a developed chemicals industry. In 2014, the IPPU sector accounted for 7.6 per cent of the total GHG emissions (excluding FOLU), corresponding to 921.6 CO₂-eq. Figure 7.5 illustrates GHG emissions from the IPPU sector in Gg CO₂-eq. over time and by contributing category.

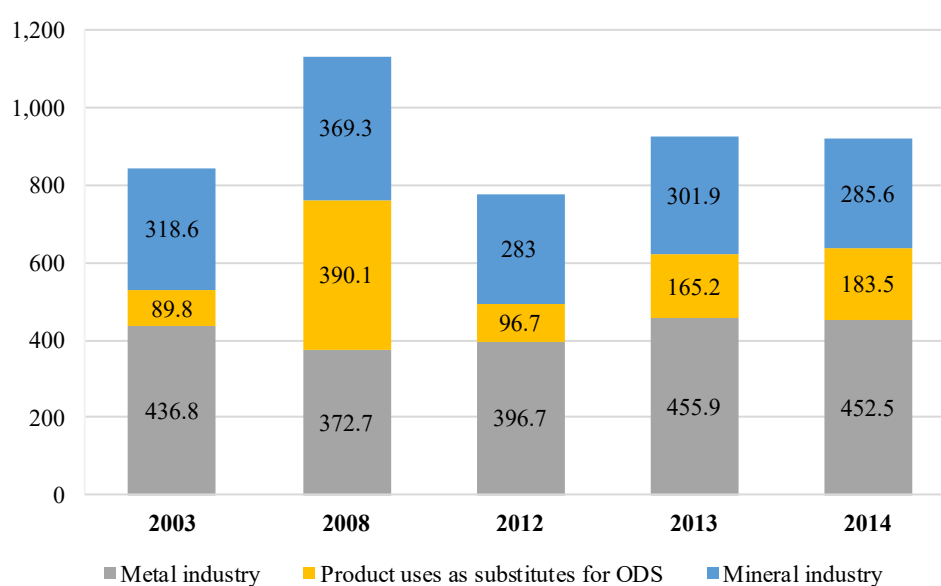
Table 7.1: Greenhouse gas emissions and removals by sector, 1990, 2000, 2010–2014, Gg CO₂-eq.

	1990	2000	2010	2011	2012	2013	2014
Energy	9 415.52	9 983.75	8 561.21	9 558.96	9 450.60	8 419.37	7 957.52
Industrial processes and products use	941.83	828.09	901.46	937.51	776.43	923.05	921.58
AFOLU - Livestock	1 327.68	1 108.94	1 040.56	1 076.25	1 019.38	989.20	1 001.81
FOLU	- 220.04	10 418.45	- 868.11	- 236.93	1 914.75	- 1 837.01	- 3 181.09
Waste	1 391.54	1 522.77	1 980.97	2 055.18	2 146.85	2 226.07	2 323.43
Total (net emissions)	12 856.53	23 862.01	11 616.09	13 390.98	15 308.01	10 720.68	9 023.25
Total (excluding FOLU)	13 076.57	13 443.56	12 484.19	13 627.90	13 393.25	12 557.69	12 204.34

Source: Second Biennial Update Report on Climate Change, 2017.

Figure 7.4: Total greenhouse gas emissions by gas, excluding FOLU, 1990–2014, in Gg CO₂-eq.

Source: Second Biennial Update Report on Climate Change, 2017.

Figure 7.5: Greenhouse gas emissions from the IPPU sector, 2003, 2008, 2012–2014, Gg CO₂-eq.

Source: Second Biennial Update Report on Climate Change, 2017.

If subdivided by gas, 79.88 per cent of GHG emissions in 2014 were CO₂, with HFCs ranking as the second highest contributor, accounting for 19.91 per cent of total emissions, and CH₄ contributing a very limited 0.21 per cent.

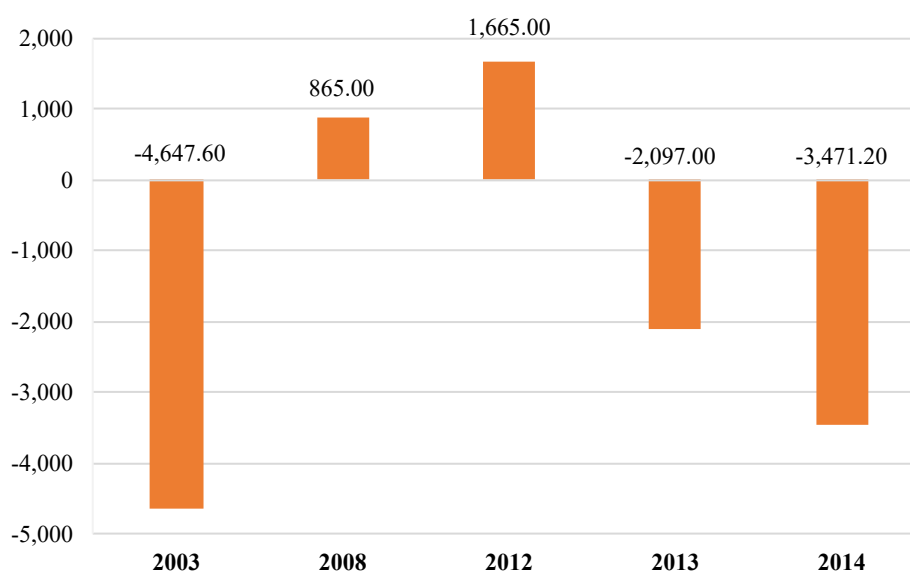
Agriculture

Agriculture (excluding FOLU) accounts for 8.2 per cent of the country's total GHG emissions in 2014. The majority (52.1 per cent) of agriculture sector emissions are a consequence of livestock production activities, chiefly due to enteric fermentation, metabolic processes and manure management;

consequently, about 80 per cent of these emissions are CH₄.

Forestry

Forests and forest lands are the greatest contributors to CO₂ removals in the country, turning to CO₂ emitters only in years with a high incidence of wildfires in terms of burned area. Figure 7.6 illustrates the fluctuation of GHG emissions in the sector over time, mainly as the result of the high incidence of this phenomenon. Another, minor but constant, source of emissions in the sector is the use of fuelwood by households. In both 2013 and 2014, the sector had negative emissions.

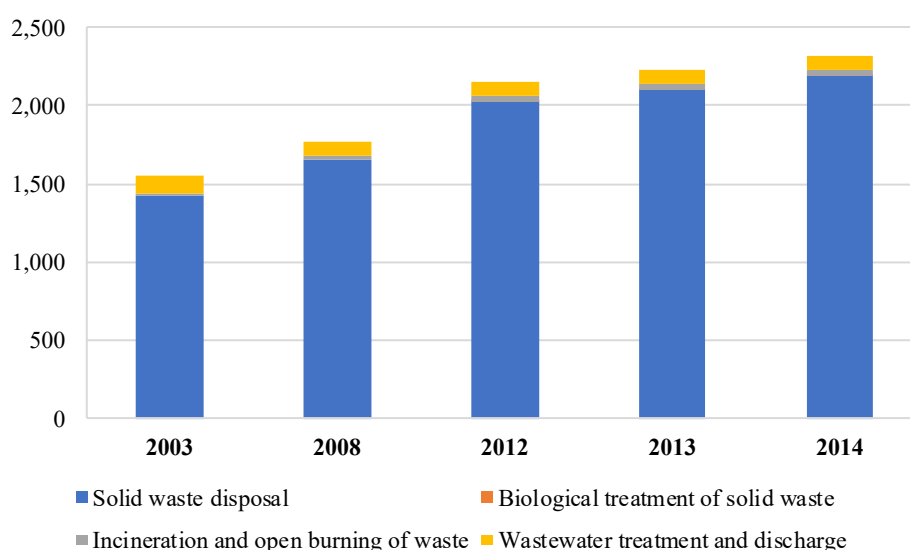
Photo 7a: Reconstruction of Mavrovica dam**Figure 7.6: Greenhouse gas emissions from the FOLU sector, 2003, 2008, 2012–2014, Gg CO₂-eq.**

Source: Second Biennial Update Report on Climate Change, 2017.

Waste

In 2014, the waste sector is the country's second highest emitting sector, accounting for 19 per cent of total emissions, excluding FOLU. This is an increase compared with 2013, when the waste sector accounted for 17.7 per cent of the total emissions. Although the increase between 2013 and 2014 is 4.4 per cent of the total GHG emissions, excluding FOLU, it amounts to

48.64 per cent compared with 2002 and to 66.97 per cent compared with 1990. Figure 7.7 illustrates the GHG emission trends of the sector from 2003 to 2014 in Gg CO₂-eq. The greatest contributor to the sector's emissions is, by far, solid waste disposal, which is also the highest growing category in terms of emissions. Analysing the sector's emissions by gas, the preponderance of CH₄ is evident, with methane emissions accounting for 97.6 per cent.

Figure 7.7: Greenhouse gas emissions from the waste sector, 2003, 2008, 2012–2014, Gg CO₂-eq.

Source: Second Biennial Update Report on Climate Change, 2017.

Transport

Transport accounted for 20.5 per cent of the overall emissions of the energy sector in 2014, with an increase in emissions of 16.4 per cent compared with 2012. The great majority of the emissions are due to road transport.

7.3 Legal, policy and institutional framework

Legal framework

The country has no law on climate change issues as at 2018. The preparation of a law on climate action has started in 2018. The three main objectives of the legislation on climate action currently under development are the full transposition and implementation of the EU climate acquis, achieving a low-carbon economy and achieving a more “climate resilient” society. Consequently, the new law is expected to encompass the European Commission’s long-term low-carbon strategy, Energy Roadmap 2050.

Law on Environment

Climate change issues are currently prescribed in legislation by the Law on Environment, under the chapter on global issues.

Specifically, the Law on Environment prescribes the institutional arrangements for climate change issues, as well as the development and adoption of a national plan for climate change designed for a six-year period, an action plan for prevention of the causes and mitigation of the negative effects of climate change

designed for a three-year period, as well as a national inventory of anthropogenic GHG emissions by sources and sinks. In fact, the three national communications of the country to the UNFCCC are considered to be the national plans on climate change, which are adopted by the Government.

Law on Waters

The 2008 Law on Waters lists “protection and improvement of environment and nature, aquatic ecosystems and biological diversity and protection of human health” among its objectives. However, it contains no explicit references to climate change.

Law on Waste Management

The 2004 Law on Waste Management lists human life and health while protecting the environment as one objective, but contains no explicit references to climate change.

Law on Ambient Air Quality

The 2004 Law on Ambient Air Quality sets a framework for the avoidance, prevention and reduction of harmful effects of ambient air pollution on the environment and human health. Among other measures, the Law establishes limit and target values for air quality as well as alert thresholds and a system of air quality monitoring. Climate change is considered in the Law, with one of the stated goals of the Law being to “prevent and reduce pollution that may lead to climate change”.

Law on Energy

The main innovation of the 2018 Law on Energy is that it transposes the Third Energy Package. The Law also contains climate considerations, listing a decrease in the use of fossil fuels, an increase in the share of renewable energy, and climate change mitigation as goals of the country's energy policy.

Policy framework

The country does not have a dedicated strategy on climate change adaptation and mitigation. The preparation of a long-term climate change strategy for the country has started. The strategy is expected to cover both mitigation and adaptation.

Strategy for the Clean Development Mechanism

The National Strategy for the Clean Development Mechanism for the period 2008–2012 (i.e. for the first commitment period of the Kyoto Protocol) was adopted with the aim of enabling the country to host CDM projects. Consequently, the main aims of the Strategy were the operationalization of the National Designated Authority, identification of priority areas for CDM projects and capacity-building for participation in CDM projects. Since the adoption of the Strategy, the country has hosted seven registered CDM projects.

National Strategy for Sustainable Development for the period 2010–2030

The 2010 NSSD for the period 2010–2030 clearly identifies climate change as a key challenge and as a cross-cutting issue relevant for a range of sectors from energy to rural development, with the key objective of limiting climate change and its costs and negative effects on society and the environment.

Energy Development Strategy for the period 2008–2020 with Vision until 2030

The declared objectives of the 2010 Energy Development Strategy for the period 2008–2020 include both the intensification of efforts for improvement of energy efficiency in production, transmission and consumption of energy and the increase in utilization of RES. Environmental and, in particular, climate change impacts of the energy sector are explicitly considered in the Strategy.

Strategy for the Use of Renewable Energy Sources until 2020

The main objective of the 2010 Strategy for the Use of Renewable Energy Sources until 2020 was to provide an analysis of the renewable energy potential of the country, in particular to identify technically and commercially feasible opportunities for renewable energy exploitation. The Strategy also sets a 21 per cent renewable energy target as a percentage of gross final energy consumption by 2020, in line with the EU Renewable Energy Directive. The 2015 Renewable Energy Action Plan until 2025 with Vision until 2030 sets a target of 21 per cent RES until 2020, 25 per cent RES until 2025 and 28 per cent RES until 2030. The Action Plan was amended in 2017, setting a new target of 23.9 per cent RES until 2020 with a view to be able to meet the target of 25 per cent until 2025.

Energy Efficiency Strategy until 2020

The objective of the 2010 Energy Efficiency Strategy until 2020 is to develop a framework for acceleration of the adoption of energy efficiency, thus reducing import dependence, energy intensity and the non-productive use of electricity, as well as facilitating the achievement of the RES target through the potential impact of energy efficiency measures on final energy consumption.

Climate Change Health Adaptation Strategy and Action Plan

In order to enable the health sector to adapt to climate change, the country, in collaboration with WHO, developed the Climate Change Health Adaptation Strategy and Action Plan in 2011. The overarching objectives of the Strategy are to raise awareness about climate change and its effect on health in the country, identify and monitor climate-change-related risks for human health, and improve the health system's promotion, prevention and timely response to climate-change-related risks for human health.

While most of the activities identified under the Action Plan have been at least partially implemented, some areas still require action, including intersectoral engagement and coordination that includes local governments, improvement of information and transparency in food safety control and implementation of the Hazard Analysis Critical Control Point System, strengthening the vector-borne communicable diseases surveillance system, and a cost-benefit analysis for adaptation measures in the health sector.

A Heat–Health Action Plan has also been developed in 2011 with the support of WHO. The Action Plan clearly links climate change with an expected increase in the incidence of heatwaves in the country and includes an early warning system implemented in cooperation with the Hydrometeorological Service.

Strategy for Waste Management for the period 2008–2020

One of the stated aims of the 2008 Strategy for Waste Management for the period 2008–2020 is to contribute to sustainable management of natural resources and waste, as well as to reduce emissions of GHGs arising from waste. In terms of reducing GHG emissions, little has been implemented due to financial concerns, with the waste sector being the second highest contributor to GHG emissions in the country after the energy sector, mainly due to poor waste management practices at authorized but non-compliant municipal landfills and to the presence of approximately 320 dumpsites on the territory of the country.

Skopje Sustainable Energy Action Plan

The 2011 Skopje Sustainable Energy Action Plan contains an inventory of GHG emissions for the City of Skopje, a list of priority mitigation actions and a reduction target of 21 per cent of CO₂ emissions by 2020 in comparison with 2008, which was taken as a reference year. The priority measures identified focus on the building sector, with a more limited set of measures focusing on the transport sector. While the City has implemented some measures, it is difficult to assess the extent to which it will be successful in reducing its emissions at this stage, as the latest GHG inventory is updated only to 2012. This inventory, however, shows an 8 per cent increase in GHG emissions for the City, from 4,947.80 kt CO₂-eq. in 2008 to 5,342.72 kt CO₂-eq. in 2012.

Resilient Skopje – Climate Change Strategy

The City of Skopje, with financial and technical support from UNDP, has prepared and adopted a Climate Change Strategy in 2017. The Strategy, which also contains an action plan, assesses the potential of a reduction of GHGs at the city level as well as the vulnerability of a number of sectors to climate change. The action plan has a list of concrete measures, both geared towards emissions reductions and aimed at strengthening the resilience of the City. Based on the analysis contained in the Strategy, should the measures within it be implemented, it is concluded that the City is on track to ensure a 22 per cent CO₂ emissions reduction by 2020, compared with the reference scenario (scenario without measures).

Municipal Climate Change Strategies

Under the scope of the USAID-financed “Municipal Climate Change Strategies Project” implemented by the CSO Milieukontakt Macedonia, eight municipalities (Bogdanci, Bogovinje, Krivogashtani, Mavrovo/Rostushe, Pehcevo, Studenici, Tearce and Vinica) have developed and adopted climate change strategies in 2015. These strategies have been developed through a participatory process aimed at including the local population in policymaking and simultaneously familiarizing them with climate-change-related issues, and adopted as official documents by the respective municipalities with a 10-year time frame. An educational-promotional campaign in each municipality was an important component. In the framework of the project, some small-scale urgent actions have been identified and implemented (energy efficiency adaptations in public buildings, riverbed rehabilitation, installation of water meters).

Draft national transport strategy for the period 2018–2030

The draft national transport strategy reflects on the consequences of transport on climate change and aims to reduce emissions through the application of the concept of “green transport”. The majority of climate-relevant considerations focus on the mitigation potential of the sector. While the strategy explicitly recognizes the negative impacts of climate change on transport infrastructure, apart from the preparation of a study measuring the impacts of climate change, climate variability and extreme climate events on infrastructure and services, there are no objectives directly relevant to adaptation and climate-proofing of transport infrastructure.

Emissions projections for GHG emissions from the transport subsector of the energy sector have been incorporated (processed and adopted in the SBUR) into the draft national transport strategy. Other sectors that are under the competence of the measures envisaged in the INDC, especially the strategic and planning documents on energy, energy efficiency and RES, are expected to include GHG emissions projections.

Sustainable Development Goals and targets relevant to this chapter

The current status of the country vis-à-vis targets 1.5, 11.b, 13.1, 13.2 and 13.3 of the 2030 Agenda for Sustainable Development is described in box 7.1.



Box 7.1: Targets 1.5, 11.b, 13.1, 13.2, 13.3 of the 2030 Agenda for Sustainable Development

Goal 1: End poverty in all its forms everywhere

Target 1.5: By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters

Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable

Target 11.b: By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015–2030, holistic disaster risk management at all levels

Goal 13: Take urgent action to combat climate change and its impacts

Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries

Target 13.2: Integrate climate change measures into national policies, strategies and planning

Currently, North Macedonia does not have a national strategy on climate change adaptation and mitigation. Climate change concerns are at least nominally included in most important national policies and plans.

According to the current legislative provisions pertinent to social housing, housing can be provided to members of vulnerable groups in need. The definition of vulnerable groups includes, among others, internally displaced people.

Data on indicators 1.5.1 and 13.1.1 (Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population) are partly available from WHO Global Health Observatory (World Health Statistics 2017). The average death rate due to natural disasters per 100,000 population during the period 2011–2015 was zero. In 2016, due to a devastating flash flood, the country was among the top 10 in the world most affected by both disaster mortality and damage, with 1.06 deaths per 100,000 population and US\$550 million in damage, and the country with the highest percentage of GDP loss (greater than 5 per cent of GDP).

The country has participated in the Hyogo Framework for Action 2005–2015 and has submitted two national progress reports on implementation, for the periods 2013–2015 and 2011–2013, yet the experience has not been used to further advance strategic developments. However, the country does not have a national disaster risk strategy in line with the Sendai Framework for Disaster Risk Reduction 2015–2030, despite having significant vulnerability to disasters.

Concerning indicators 1.5.4, 11.b.2 and 13.1.3 (Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies), at the local level, eight municipalities and the City of Skopje and its municipalities have developed and adopted climate change strategies with the assistance and support of international and foreign donors, with the aim to reduce local disaster risk and strengthen resilience to climate-related hazards and natural disasters.

In the absence of a national policy framework, it is difficult to ensure coherence among the different activities and learn from good examples to progress towards holistic disaster risk management at all levels in the country (target 11.b: By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015–2030, holistic disaster risk management at all levels).

The Government should adopt:

- (a) A strategy on climate change adaptation and mitigation that would allow municipalities to develop local strategies on climate change adaptation and mitigation;
- (b) A disaster risk strategy in line with the Sendai Framework for Disaster Risk Reduction 2015–2030.

The Government should ensure that climate change concerns are integrated into sectoral strategic and policy documents

Target 13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning

Climate change is not integrated into primary, secondary and tertiary education curricula, although some ad hoc cases are reported. In the wake of the Strategy for Health Sector Adaptation to Climate Change, climate change issues have been included in courses in the Faculty of Medicine of the University “Ss Cyril and Methodius” in Skopje. These, however, are not

the consequence of organic interventions but of personal initiatives of lecturers involved. The Ministry of Environment and Physical Planning and local governments, as well as international organizations and CSOs present in the country, have all been active in initiatives and campaigns to raise awareness and advance citizens' education on climate change and responsible choices in everyday life.

In respect of indicator 13.3.2 (Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions), the institutional, systemic and individual capacities to tackle climate change are still relatively limited in the country.

Institutional framework

Ministry of Environment and Physical Planning

The Ministry of Environment and Physical Planning is the designated National Focal Point for UNFCCC, the National Designated Authority for CDM and the key governmental body responsible for policymaking with regard to climate change issues. The Ministry is also identified as the main institution responsible for coordinating inter-institutional cooperation for the preparation of the national plans on climate change and action plans. The Ministry is also responsible for the process of preparation of the GHG inventory and reporting obligations to UNFCCC.

Despite the centrality of the Ministry's role on climate action issues, the Ministry has very limited institutional and human capacities for the role. Although the 2017 Rulebook on the internal organization of the Ministry of Environment and Physical Planning foresees a unit of four staff within the Unit for Climate Change Policy under the Department for Sustainable Development and Investments, it currently has no staff. The State Councillor for Climate Change is the only Ministry staff member directly working on climate change issues.

Ministry of Economy

The Ministry is responsible for the energy sector, among other matters, and as such is closely involved with climate-relevant issues.

Ministry of Health

Within the Ministry of Health, the Commission for Monitoring Heat Health Consequences has been functional since 2007 and the Committee on Climate Change and Health has been functional since 2009. The Ministry of Health is represented on the National Climate Change Committee.

Deputy Prime Minister responsible for Economic Affairs and Coordination with the Economic Sectors

The Deputy Prime Minister responsible for Economic Affairs and Coordination with the Economic Sectors is responsible for coordination of the implementation of the Sustainable Development Goals at the national level and serves as the National Designated Authority for GCF and for chairing the National Council on Sustainable Development.

Crisis Management Centre

The Crisis Management Centre plays a fundamental role in the country's crisis management system and has responsibilities in prevention, early warning, crisis mitigation, recovery and coordination. It incorporates 35 regional crisis management centres on the territory of the country.

Macedonian Academy of Sciences and Arts

The Macedonian Academy of Sciences and Arts, in particular through its Research Centre for Energy and Sustainable Development, has been engaged in the development of GHG inventories in the country. This engagement, however, tends to be project based, given that the country's reporting to UNFCCC has been supported by UNDP.

Hydrometeorological Service

HMS is a legal entity within the Ministry of Agriculture, Forestry and Water Economy. It is responsible for performing measurements, monitoring and research related to climate-meteorological and hydrological parameters in the country. It also provides early warnings of meteorological and hydrological hazards. The Hydrometeorological Service has been engaged in the elaboration of climate change scenarios, usually on a project basis.

National Climate Change Committee

The National Climate Change Committee (NCCC) was established in 2000 as an advisory body for policymaking related to climate change issues in the

country. As such, it reviews and approves all components of the national plans. Consequently, the NCCC has participated in the development of the three national communications and two biennial update reports submitted by the country so far.

It consists of 32 representatives from state bodies (such as the Ministry of Agriculture, Forestry and Water Economy, Ministry of Culture, Ministry of Economy, Ministry of Education and Science, Ministry of Finance, Ministry of Foreign Affairs, Ministry of Health, Ministry of Transport and Communications), public institutions, CSOs and representatives of the business community, all appointed officially upon request of the Ministry of Environment and Physical Planning.

While the existence of an interministerial advisory body on climate change issues is positive, participating ministries tend not to have units or departments dedicated to climate change; this translates into limited capacities. This can raise questions regarding the mechanism's effectiveness.

Economic, fiscal and information measures

The country has no emissions trading schemes and no carbon tax in place as at 2018.

As part of the process of developing the Third National Communication, a Climate Change Communication Strategy and Action Plan has been developed for the country. The main declared objective of the Strategy is to raise awareness on climate-change-related issues, as well as to foster broader stakeholder engagements. The Strategy identifies three separate target groups: local governments, the business community and the general public. For each target group, a set of specific measures is identified, mainly based on cost effectiveness (maximum effectiveness with the least resources). The report on implementation of the Strategy and its Action Plan for the period 2013–2016 shows many achievements related to all three target groups but acknowledges that the system for monitoring implementation is insufficiently developed. A new Action Plan was prepared for the period 2017–2020 to implement the Climate Change Communication Strategy.

The Ministry of Environment and Physical Planning is active on the Internet, with two exhaustive websites in English and local languages, which gather together both official documents on climate change issues in the country and awareness-raising materials. The City of Skopje is also active on the Internet with a dedicated website on climate change.

Despite the fact that awareness of issues related to climate change has grown, and that these issues are often linked to phenomena that are acutely perceived in the country, such as air pollution or heatwaves, overall, awareness is still insufficient, especially in more rural areas. This limited awareness among the rural population was highlighted in the Training Needs Assessment for CSOs prepared under the scope of the Let's Talk About Climate Change Project implemented by CSOs, the Centre for Environmental Research and Information, Connecting Natural Values and People Macedonia, and Ecologists' Movement of Macedonia.

7.4 Adaptation and mitigation measures

Mitigation scenarios

Intended Nationally Determined Contribution

North Macedonia submitted its INDC in 2015. The country intends to achieve a reduction in CO₂ emissions of 30 per cent (with existing measures (WEM)) or 36 per cent at a higher level of ambition (with additional measures (WAM)) by 2030, compared with the BAU scenario. INDC also estimates the additional cost of the measures necessary for the two mitigation scenarios, at €4.2 billion for the WEM and €4.5 billion for the WAM scenario. All three scenarios assume an annual GDP growth of 4.5 per cent until 2035 and a population annual growth rate of -0.09 per cent in the same period. The mitigation scenarios focus on the energy sector due to its predominant contribution to the country's CO₂ emissions. Despite a marked decrease in CO₂ emissions compared with the BAU scenario, if compared with 1990, the WEM and WAM scenarios would imply an increase in CO₂ emissions of 31 per cent and 20 per cent respectively by 2030.

Second Biennial Update Report on Climate Change

SBUR includes three GHG emissions scenarios: without measures (WOM), with existing measures (WEM) and with additional measures (WAM). Unlike INDC, the mitigation scenarios in the SBUR also include measures from the agriculture, forestry and other land use (AFOLU) and waste sectors, as well as CH₄ and N₂O emissions. All three scenarios are based on the assumption of average annual GDP growth of 4.3 per cent until 2035; this figure is slightly lower than that assumed in INDC, but still very optimistic.

Photo 7b: Street with private houses in Ohrid

Under the WOM scenario, the country's emissions would increase continually until 2035, ultimately increasing by 49 per cent in comparison with 2012. Under the WEM scenario, GHG emissions would increase continuously between 2015 and 2032, with an increase of 2.6 per cent in 2035 in comparison with 2012. Under the strictest emissions reduction scenario (WAM), GHG emissions would still increase continuously between 2015 and 2032, but, due to a sharper decline after 2032, GHG emissions in 2035 would be 14 per cent lower than the emissions in 2012. Figure 7.8 shows projections of the three scenarios for the energy sector compared with historical emissions data.

In respect of the energy sector, the greatest contributor of GHG emissions in the country, under the WOM scenario there would be an increase of emissions by as much as 90 per cent in comparison with 1990; under the WEM scenario there would be a 21 per cent increase. Only the WAM scenario would result in a decrease of GHG emissions for the energy sector in 2035: a modest 10 per cent less than 1990.

Energy

The energy sector is by far the greatest contributor to GHG emissions in the country. It is also the focus sector in INDC for the identification of mitigation measures contributing to the WEM and WAM scenarios, with identified measures targeting both energy supply and building energy efficiency.

Mitigation measures have been implemented in the energy sector, ranging from the introduction of energy

audits to subsidies for energy efficiency measures in households. Because of the dominant use of domestic lignite for electricity production, there is potential for GHG emissions reductions. The potential for emission reductions was also noted in INDC.

The originally set 28 per cent renewable energy target as a percentage of gross final energy consumption in 2020 was revised in 2017 to 23.9 per cent. According to the Second Progress Report on the Promotion and Use of Energy from Renewable Sources (December 2016) and to the Second Report of the Secretariat to the Ministerial Council on the Progress in the Promotion of Renewable Energy in the Energy Community, the share of RES in 2014 is 19.7 per cent and in 2015 it is 19.9 per cent. The climate resilience of new hydropower investments is not taken into account considering the projected overall decrease in water resources by the end of the century.

Industry and mining

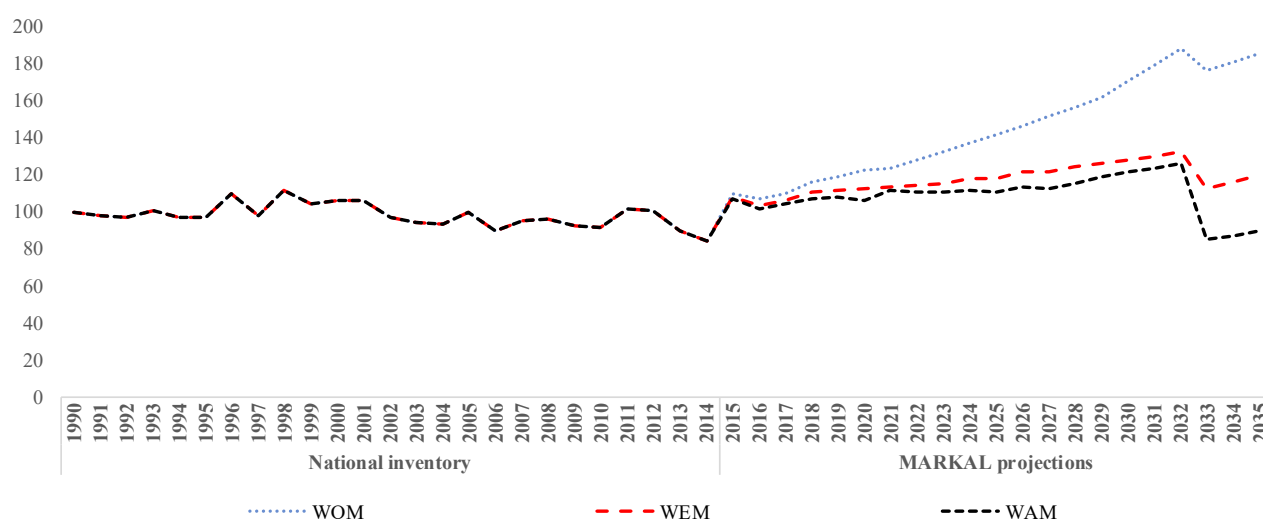
Currently, there is no evidence of sector-wide specific mitigation or adaptation measures being implemented.

Agriculture

The Vulnerability Assessment of the Agriculture Sector highlights the importance of adaptation measures (especially those regarding irrigation) and proposes (together with the Third National Communication) specific adaptation scenarios for maize, wheat and sunflower. There are barriers for the implementation of adaptation measures in the agriculture sector. The dependence of the agriculture sector on small-scale primary producers and the preponderance of small agricultural plots, coupled with a low level of awareness about the effects of climate change among the key actors in the sector, hinder the fully effective implementation of adaptive measures.

Photo 7c: Repairing the road after a landslide

Figure 7.8: Comparison of historical greenhouse gas emissions with emissions in the WOM, WEM and WAM scenarios, 1990–2034, 1990=100



Source: Second Biennial Update Report on Climate Change, 2017.

Forestry

The Vulnerability Assessment of the Forestry Sector proposes a series of measures for adaptation of the forestry sector, including developing a programme for adaptation of forestry to global climate change, establishing five monitoring stations in forest regions to follow climate changes, purchasing adequate vehicles and equipment for early response to forest fires, biomass stocking and development of a training centre for sustainable forest utilization. There is little evidence these measures have been implemented.

Transport

The transport sector is one of the three sectors specifically considered in the INDC for the identification of mitigation measures contributing to WEM and WAM scenarios. Many of these mitigation measures are explicitly considered in the draft transport strategy, some with a short-term implementation time frame.

Tourism and leisure

The Vulnerability Assessment of the tourism sector proposes a series of measures for adaptation of the sector, the most important of which is adaptation through diversification away from highly climate-sensitive activities such as skiing and visits to outdoor natural heritage sites that are expected to be negatively affected by climate change. However, the lack of awareness of relevant stakeholders has translated into limited implementation of the suggested adaptation measures.

7.5 Participation in international agreements and processes

United Nations Framework Convention on Climate Change

The country has been a non-Annex I party to UNFCCC since 1998 and a non-Annex B party to the Kyoto Protocol since 2005. The country submitted its First National Communication in 2003, its Second National Communication in 2008 and its Third National Communication in 2014. The First Biennial Update Report on climate change was developed and submitted to UNFCCC in 2015 and SBUR was submitted in 2018. The country submitted its INDC in 2015 and became party to the Paris Agreement in 2018. Under its INDC (to be considered a Nationally Determined Contribution after the ratification of the Paris Agreement), the country intends to achieve a reduction in CO₂ emissions of 30 per cent, or 36 per cent at a higher level of ambition, by 2030 compared with the BAU scenario. INDC has no adaptation component.

The country has participated in CDM envisaged by the Kyoto Protocol during its first commitment period (2008–2012). During this period, six projects were registered in the country, with an additional project registered in 2014 (table 7.2).

North Macedonia is eligible to receive funding from GCF. As at late 2018, it is in the process of preparing the Country Programme for GCF, which will prioritize, at the national level, projects that the country will submit to GCF for funding.

Table 7.2: Registered Clean Development Mechanism projects

Registration date	Title	Annex I party	Reduction*
4-Dec-2009	Skopje cogeneration project	The Netherlands	54 623
1-Aug-2012	Macedonian small hydropower plants bundle	United Kingdom	37 442
30-Oct-2012	223 MWel combined cycle power plant (CCPP), Skopje	United Kingdom	444 248
13-Nov-2012	Bogdanci wind park 36.8 MW	Germany	66 177
19-Dec-2012	PCC hydro climate conservation Macedonia	Germany	12 319
29-Dec-2012	Macedonian SHPP Bundle III	United Kingdom	46 757
28-Jan-2014	Fuel switch at the hot plate mill of MAKSTIL A.D.	Japan	8 563

Source: UNFCCC CDM Project Search at <https://cdm.unfccc.int/Projects/projsearch.html>

Note: * Estimated emissions reductions in metric tons of CO₂-eq. per annum, as stated by the project participants.

This document is of great importance, especially as the country is highly dependent on external funding for climate action. Given the importance of GCF as a potential source of funding for such action, special attention should be paid in the elaboration of the Country Programme to align it with existing climate change priorities and commitments. GCF is already contributing, through the technical assistance of UNDP, to the development of a national adaptation plan for the country, and to urban resilience through the Green Cities Programme implemented by EBRD.

Energy Community Treaty

The country has been a contracting party of the Energy Community Treaty since 2006. The stated aim of the Energy Community Treaty is to expand the EU internal energy market to neighbouring countries, requiring all contracting parties to approximate their legislation to EU standards by adopting key EU laws relating to the energy field. Under the framework of the Energy Community, the country assumed a binding 28 per cent renewable energy target in the final energy consumption in 2020; however, the country's 2015 Renewable Energy Action Plan until 2025 with Vision until 2030 (amended in 2017) has a less ambitious 23.9 per cent target. In November 2018, the Energy Community's Ministerial Council has adopted a decision lowering the country's 2020 target for the share of RES in gross final energy consumption from 28 per cent to 23 per cent.

The Monitoring Mechanism Regulation (Regulation (EU) 525/2013) has recently entered the Energy Community acquis, with the Ministerial Council adopting a recommendation on the monitoring of GHG emissions. It is recommended that the contracting parties prepare the preconditions (legal and institutional) for the implementation of the fundamental elements of the Regulation, which, once implemented, is expected to strengthen GHG reporting.

Contracting parties are also expected to develop national energy and climate plans. Only preparatory

activities have been conducted in the country, with a national working group on development of such a plan yet to be established. A draft national energy strategy by 2040 is expected to be drafted in line with the Energy Community Guidelines for Integrated Energy and Climate Plans.

The establishment of a working group to prepare an integrated national energy and climate plan is pending adoption by the Government. The working group would be composed of, but not limited to, representatives from the Ministry of Economy, Ministry of Environment and Physical Planning, Cabinet of the Deputy Prime Minister responsible for Economic Affairs and Coordination with the Economic Sectors, Secretariat for European Affairs, Energy Agency, Ministry of Transport and Communications, Ministry of Finance, Ministry of Agriculture, Forestry and Water Economy, Macedonian Academy of Sciences and Arts, and the JSC "Macedonian Power Plants" ELEM.

Covenant of Mayors for Climate and Energy

The City of Skopje acceded to the Covenant of Mayors for Climate and Energy in 2008 and submitted the Skopje Sustainable Energy Action Plan in 2011. The objective is to decrease by 21 per cent the level of CO₂ emissions in 2009, from 1,222,330 tons to 865,640 tons of CO₂ by 2020. Skopje is the only city in the country to have submitted a sustainable energy action plan, while two smaller settlements, Karpos and Kochani, are also signatories of the Covenant.

7.6 Assessment, conclusions and recommendations

Assessment

The country ratified UNFCCC, Kyoto Protocol and Paris Agreement. It regularly fulfils its reporting obligations and has submitted three national communications and two biennial update reports

under the UNFCCC. The country submitted its INDC in 2015 and has recently been praised as one of only 16 countries globally that are on track to honour their commitments under the Paris Agreement.

The country does not have legislation to specifically address climate change, nor an overall strategic document on the issue. With climate change the country will face increasing temperatures, decreasing water resources and an increased incidence of extreme weather events. While strategic documents dealing with issues related to climate change have been developed on the local and sectoral levels, both the policy framework and the human and technical capacities devoted to tackling climate change are not sufficient to tackle the challenges posed by climate change.

Conclusions and recommendations

Establishing a strong legal and institutional framework

The country lacks a comprehensive law on climate change and an overall long-term strategy on climate action. While there is coordination among the different ministries that participate in the National Climate Change Committee, participating ministries tend not to have units or departments dedicated to climate change.

Recommendation 7.1:

The Ministry of Environment and Physical Planning should develop a law on climate change and an overall long-term strategy on climate action.

Recommendation 7.2:

The Government should:

- (a) *Strengthen human capacities of the most relevant institutions, especially those participating in the National Climate Change Committee, by establishing in all participating ministries climate change units or climate focal points with a clear mandate for mainstreaming climate change in the relevant sectors;*
- (b) *Provide a stronger institutional framework to the national greenhouse gas (GHG) inventory preparation process, which is currently implemented through international projects.*

Adaptation to climate change

There is no dedicated strategy for adaptation to climate change. A draft project is being developed for GCF to

prepare a national action plan for adaptation to climate change.

Within the national plans on climate change (also known as National Communications under UNFCCC), vulnerability and adaptation assessments have been prepared for the sectors of agriculture, forestry, water, health, biodiversity, crisis management, tourism and cultural heritage protection. Therefore, in the absence of another strategic document for adaptation to climate change, the national plans on climate change serve as strategic documents for adaptation to climate change. The country is very vulnerable to climate change, especially to extreme weather events, as has been tragically shown during recent flash floods. The country lacks clear strategic priorities to be able to adapt to climate change and reduce disaster risks. Despite the economic impact that climate change is expected to have on various economic sectors in the country, no estimation of the costs of inaction for the different sectors is carried out.

Recommendation 7.3:

The Government should:

- (a) *Develop a national adaptation plan in response to climate change, covering all relevant sectors, including specific measures;*
- (b) *Develop a national disaster risk reduction strategy in line with the Sendai Framework for Disaster Risk Reduction;*
- (c) *Estimate the costs of inaction, and where possible undertake cost-benefit analysis for different sectors;*
- (d) *Implement specific measures identified in the Vulnerability Assessment of the Forestry Sector, including a programme for the adaptation of forestry to climate change;*
- (e) *Conduct a specific study on the incidence of forest fires under changed climatic conditions in the country;*
- (f) *Address the issue of the increasing vulnerability of the agricultural sector to climate change;*
- (g) *Update and fully implement actions contained in the 2011 Climate Change Health Adaptation Strategy and Action Plan, including intersectoral engagement and coordination with local governments, and improvement of information on climate change health adaptation.*

Climate change mitigation

The WEM and WAM scenarios prioritize the energy sector for the identification of mitigation measures.

Mitigation measures have been implemented in the energy sector, ranging from the introduction of energy audits to subsidies for energy efficiency measures in households. Because of the dominant use of domestic lignite for electricity production, there is potential for GHG emissions reductions. The percentage of renewable energy reached 19.9 per cent in 2015, leaving a gap to fill in order to reach by 2020 the renewable energy target of 23.9 per cent as a percentage of gross final energy consumption.

Recommendation 7.4:

The Government should integrate climate change issues into overall energy planning and develop integrated climate and energy plans, which would include the gradual switch from the use of domestic lignite for electricity production to more sustainable and less polluting sources of energy, and the increase of the percentage of gross final energy consumption from renewable energies to meet the national target of 23.9 per cent by 2020.

The waste sector is the second highest emitting sector in the country, accounting for 19 per cent of the total emissions in 2014, excluding FOLU. Solid waste disposal is by far the greatest contributor to the emissions of the waste sector, which is also the highest growing category in terms of emissions. Analysing the sector's emissions by gas, the preponderance of CH₄ is evident, with methane emissions accounting for 97.6 per cent of the emissions of the waste sector.

Recommendation 7.5:

The Government should address GHG emissions from the waste sector through an integrated approach, including by improving the current waste management system.

Action at municipal level

The City of Skopje has implemented some measures included in the 2011 Skopje Sustainable Energy Action Plan, mostly in the building sector and, to a limited extent, in the transport sector. However, the 2012 GHG inventory shows an 8 per cent increase of GHG emissions for the City compared with the reference year 2008. Skopje has prepared and adopted the Climate Change Strategy in 2017 with financial and technical support from UNDP. It is estimated that the City would be on track to ensure a 22 per cent CO₂ emissions reduction by 2020, as compared with the reference scenario (scenario without measures), provided the measures contained in the Strategy are implemented. In 2015, eight municipalities developed and adopted climate change strategies within the USAID-financed "Municipal Climate Change Strategies Project". These strategies have been

developed through a participatory process aimed at including the local population in policymaking and simultaneously familiarizing them with issues related to climate change and adopted as official documents by the respective municipalities with a 10-year time frame. An educational-promotional campaign in each municipality was an important component.

Recommendation 7.6:

The Government should:

- (a) *Encourage cities to become signatories to the Covenant of Mayors for Climate and Energy and to subsequently prepare, adopt and implement sustainable energy (and climate) action plans;*
- (b) *Support at municipal level the implementation of measures that would achieve GHG emissions reduction, which are included in the 2011 Skopje Sustainable Energy Action Plan;*
- (c) *Advise the City of Skopje to integrate the updated 2011 Skopje Sustainable Energy Action Plan with the 2017 Resilient Skopje Climate Change Strategy, financed by the United Nations Development Programme, to avoid duplications and overlaps;*
- (d) *Advise municipalities to use the experience gained in the implementation of the 2015 Municipal Climate Change Strategies Project, funded by the United States Agency for International Development (USAID), for the eight municipalities involved, including the project participatory process, in considering the preparation of their local climate change strategies and in raising the awareness of the local population.*

Awareness

Despite improvements in awareness of climate change, overall, awareness remains limited. Climate change issues are not integrated into primary, secondary and tertiary education curricula. Most awareness-raising measures are foreseen in the framework of donor-financed projects.

Recommendation 7.7:

The Government should:

- (a) *Regularly and systematically implement measures aimed at raising awareness on climate-change-related issues;*
- (b) *Ensure that climate-change-related issues are integrated into primary, secondary and tertiary curricula.*

PART III: MEDIA AND POLLUTION MANAGEMENT

Chapter 8

AIR PROTECTION

8.1 Urban and rural air quality

Air quality monitoring has been performed automatically in the country since the late 1990s. Since 2012, the results of continuous measurements are accessible to the public in near-real time. The Ministry of Environment and Physical Planning and MEIC compiled a report on air quality assessment covering the decade between 2005 and 2015. The main highlights of the report show that “air pollution in the country is a cause of serious concern, as the limit values set for protection of human health, especially for particulate matter, are exceeded significantly”.

Figure 8.1 shows the 36th highest mean average daily concentration of PM₁₀ emissions recorded in selected stations throughout the country, for the period 2006–2016. PM₁₀ is monitored at all stations within the state air quality monitoring network but, due to frequent failures of the monitoring equipment, there is insufficient time coverage and significant data gaps, thus not allowing the presentation of trends in average annual values or highest mean daily values for all stations.

Although figure 8.1 shows the highest recorded values, with significant peaks recorded at the Lisiče station in Skopje in 2011 (326 µg/m³) and in Tetovo in 2015 (298 µg/m³), the reason for concern is obvious, since all values are well above the daily limit

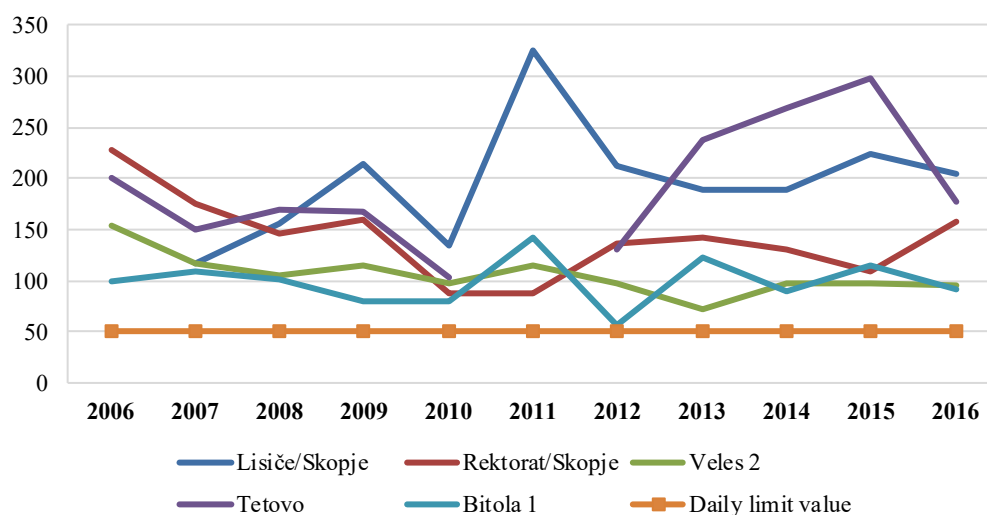
value of 50 µg/m³ set by the national and European legislation as well as by the WHO guidelines.

The annual mean concentrations of PM₁₀ have exceeded the annual limit value of 40 µg/m³ at all urban monitoring sites in all years since 2006 (figure 8.2). PM₁₀ was also monitored at the only rural station, at Lazaropole, but data with sufficient time coverage (more than 75 per cent of valid measurements throughout the year) are available only for 2006, 2007 and 2014, when the concentrations of PM₁₀ were significantly lower than in urban locations (15.3 µg/m³ on average).

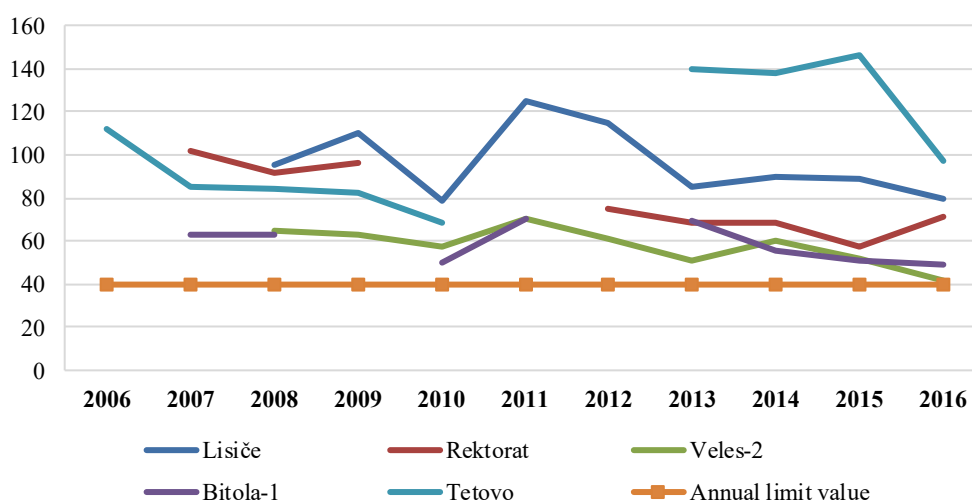
Concentrations of fine particulate matter (PM_{2.5}) have been measured at two sites in Skopje since 2012. Annual average concentrations have been in the range of 40 µg/m³–50 µg/m³, which is twice the level of the limit value of the national and European legislation and above the corresponding WHO guideline of 10 µg/m³.

There is a clear and stable decreasing trend of SO₂ concentrations in ambient air during the observed decade. While in 2006 the highest annual average recorded concentration of SO₂ was 27.7 µg/m³ at Veles and 25.4 µg/m³ at Skopje Centre, during 2016, the highest average annual concentrations were recorded at the stations Miladinovci in Skopje (4.05 µg/m³) and Bitola 1 (located 14 km from TPP Bitola) (4 µg/m³).

Figure 8.1: 36th highest mean average daily concentration of PM₁₀, 2006–2016, µg/m³



Source: Environmental Indicators 2018, Ministry of Environment and Physical Planning.

Figure 8.2: Annual average concentration of PM₁₀, 2006–2016, µg/m³

Source: Environmental Indicators 2018, Ministry of Environment and Physical Planning.

Between 2006 and 2016, the mean annual concentration of NO₂ ranged from 34.06 µg/m³ in 2006 to 21 µg/m³ in 2016, not exceeding the annual limit value of 40 µg/m³. Exceedances of concentrations of nitrogen oxides were recorded at individual stations in Skopje, but since 2013 there were no exceedances. However, the mean annual concentration at the station Rektorat in Skopje for 2017 was 36.85 µg/m³, which highlights the possibility of exceedances in the future and the necessity of having less polluting transport in the city.

No data meeting data quality objectives on measured values of SO₂ and NO₂ at the only rural background station (Lazaropole) are available, except for SO₂ in the last three years (2015–2017) when the critical level for the protection of vegetation and natural ecosystems (20 µg/m³) was not exceeded. Data from other stations are not relevant for assessment of the risk posed by air pollution to vegetation and natural ecosystems, since it has to be monitored away from urban areas.

Concentrations of tropospheric ozone fluctuated between 2006 and 2016. Ozone concentrations are monitored in 15 urban stations and the only rural station (Lazaropole). As expected, the highest eight-hour mean concentrations are detected at the rural station in Lazaropole, on average 120 µg/m³, which is over the WHO recommendation (100 µg/m³ eight-hour mean) and at the national/European long-term target value for the purpose of human health protection, set at 120 µg/m³, as the maximum daily eight-hour mean value during a calendar year. At the same time, concentrations in Skopje were, on average, between 30 µg/m³ and 40 µg/m³. Considering the concentrations at Lazaropole, there could be a similar situation in other rural locations where high ground-

level ozone concentrations can negatively affect vegetation. Although tropospheric ozone is widely monitored throughout the territory, data recorded at urban stations cannot provide enough information on the impacts of ozone concentrations on vegetation. Considering the nature of ground-level ozone as a secondary pollutant formed out of its precursors by photochemical reactions in the polluted air, it is usually measured at background locations and is often combined with assessment of impacts on vegetation growth (foliar damage) and biodiversity.

Concentrations of heavy metals and polycyclic aromatic hydrocarbons in PM are not monitored on a regular basis in the country, since there is no accredited analytical laboratory to perform this task. Some data of an indicative nature are available from a campaign measurement and analysis realized in the period August 2015–March 2016 in Skopje and October 2015–February 2016 in Tetovo. The campaign showed increased concentrations of benzo(a)pyrene during the heating season in Skopje – 8 ng/m³ compared with the target value of 1 ng/m³. According to the results of this campaign, the heavy metal concentrations were well below the target values set for the protection of human health, in both Skopje and Tetovo. In the scope of this campaign, the content of PM₁₀ particles were also analysed for the presence of levoglucosan, the major organic component of smoke particles from biomass burning. The average levoglucosan level at Karpos station in Skopje during the campaign was very high, 852 ng/m³, which is among the highest values measured in Europe.

There are not enough data on concentration of benzene to establish a long-term trend. According to the Air Quality Assessment Report for the period 2005–2015,

benzene has been continuously monitored at two automatic stations in Skopje during the period 2012–2014. The limit value for benzene was exceeded at the Skopje Centre station in 2013, while, in 2012, recorded values were very close to the limit value at both stations. During 2011–2012, benzene was measured at two different locations in Skopje, with annual mean concentrations in the range of $3.2 \mu\text{g}/\text{m}^3$ – $3.7 \mu\text{g}/\text{m}^3$. Benzene is monitored at three automatic stations, which are all located in Skopje, but the latest available data meeting data quality objectives are for the station Karpos for 2013, where the annual mean concentration was $2.8 \mu\text{g}/\text{m}^3$.

Although six pollutants (SO_2 , NO_x , PM_{10} , $\text{PM}_{2.5}$, CO and O_3) are continuously monitored, in many cases, the data time coverage is lower than 70 per cent. However, on the basis of available monitoring data and other information, it is clear that air quality has been improved over the last decade, but several problems persisted throughout the observed period:

- High concentrations of PM in winter months, followed by high concentrations of CO and benzo(a)pyrene and high content of levoglucosan in PM_{10} , coupled with statistical data on the structure of domestic heating, indicate that the burning of fuelwood presents a significant threat to air quality;
- Elevated levels of NO_x concentrations in Skopje, as well as high background levels of tropospheric ozone, show that the traffic in the capital is another important issue for air quality;
- Insufficient data on the levels of heavy metals in ambient air prevent reasoned conclusions on the impact of the metal industry on air quality;

- Data on rural air quality and the impact of air pollution on ecosystems are lacking. Data on ozone concentrations from the only rural air quality monitoring station (Lazaropole) pose a matter of concern.

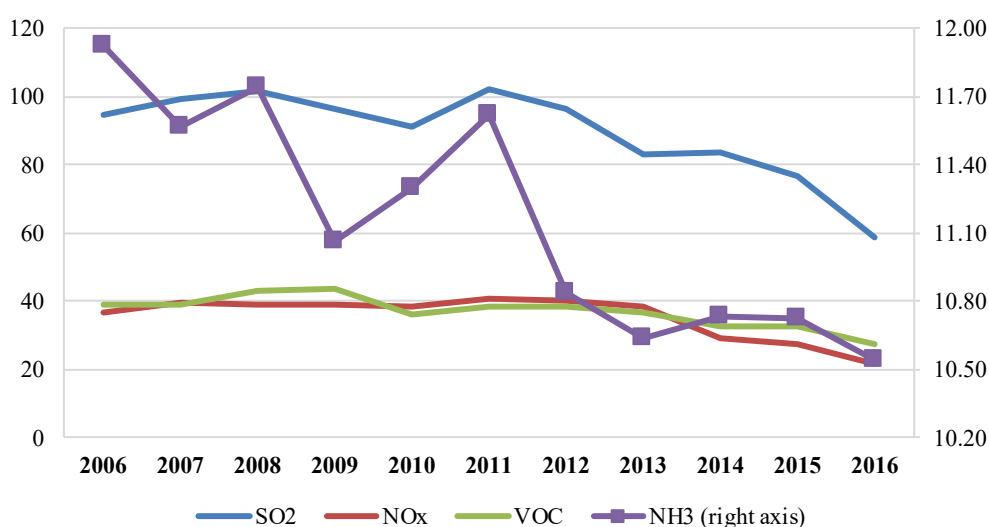
8.2 Trends in emission levels

The last report on emission levels, submitted in April 2018 to the Secretariat of the Air Convention, covers emissions in the period 1990–2016 (figure 8.3). The report was compiled in accordance with the revised Air Convention Reporting Guidelines (2014).

With regard to SO_2 and NO_x , there is a visible decreasing trend in emissions in the observed period, which, according to the explanation given in the report, vary and depend on the coal consumption in electricity production, the dominant source of emissions of these pollutants. Apart from a reduced amount of burnt coal in TPP Bitola, reduced operation of TPP Oslomej and the gasification of some heating plants, the latest drop in emissions, from 2015 to 2016, is partially due to the introduction of use of a national emissions factor in the calculation of emissions from the electricity production sector. Emissions reduction of SO_2 and NO_x in the observed decade is about 40 per cent for both pollutants.

There has been a fluctuating but persistent downward trend in emissions of ammonia (NH_3), which have reduced by 12.5 per cent in the period 2006–2016. This can be explained by the decrease in emissions from agriculture (manure management) related to the decline in livestock numbers. Emissions in 2016 were 12 per cent below the national emissions ceiling (12 Gg NH_3).

Figure 8.3: SO_2 , NO_x , NMVOC and NH_3 emissions, 2006–2016, kt



Source: 2018 Informative Inventory Report.

Emissions of VOCs have also declined since 2006. In the 2018 Informative Inventory Report, this decline is attributed to a decrease of emissions from industrial processes and other sources such as residential heating.

As for emissions of POPs, the National Inventory System provides data on emissions of polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/Fs) expressed in grams, using toxic equivalency (TEQ), which enables the expression of the mixture of dioxins and dioxin-like compounds by a single number that represents the product of the concentration and individual values of the toxic equivalency factor for each congener (figure 8.4). It also provides information on emissions of polyaromatic

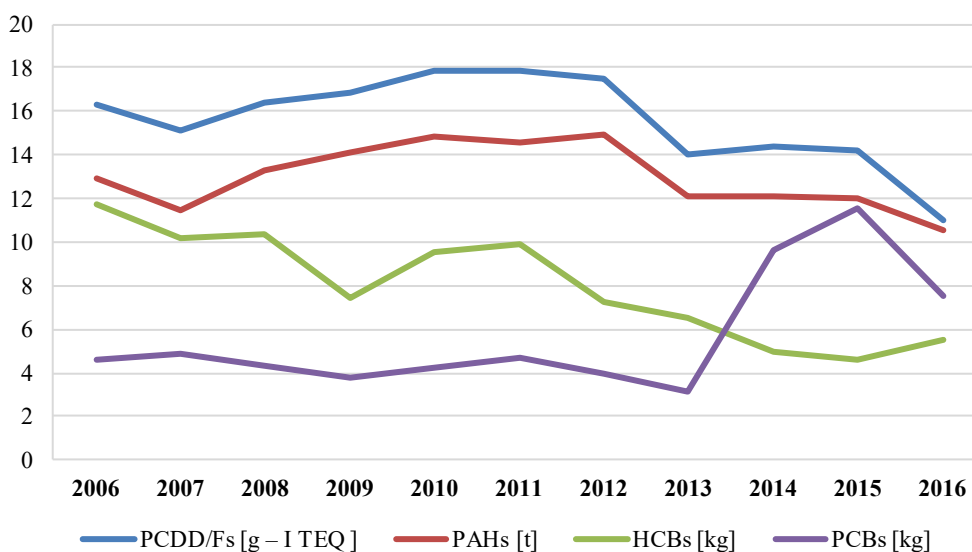
hydrocarbons (PAHs) in tons and polychlorinated biphenyls (PCBs) and hexachlorobenzene in kilograms.

The country did not exceed the emission levels set in the POPs Protocol in 2016. Although figure 8.4 shows some fluctuations, POPs emissions reduced in the period 2006–2016 as follows: PCDD/Fs by 32.4 per cent, PAHs by 19 per cent and HCBs by 52.6 per cent. During the observed period, the quantity of PCBs has increased significantly since 2013, although the emissions in 2016 were only 7.5 kg. The most important PCBs emission source in 2016 was lead production, accounting for 74 per cent of total national emissions.

Photo 8a: Electric car in Skopje



Figure 8.4: Persistent organic pollution emissions, 2006–2016



Source: 2018 Informative Inventory Report.

The main emissions sources for PM₁₀ are residential heating (46 per cent), industrial processes – mainly ferroalloys production (22 per cent) and energy production (11 per cent). Similarly, the main emissions sources for PM_{2.5} are residential heating (58 per cent), industrial processes – mainly ferroalloys production (20 per cent) and energy production (6 per cent).

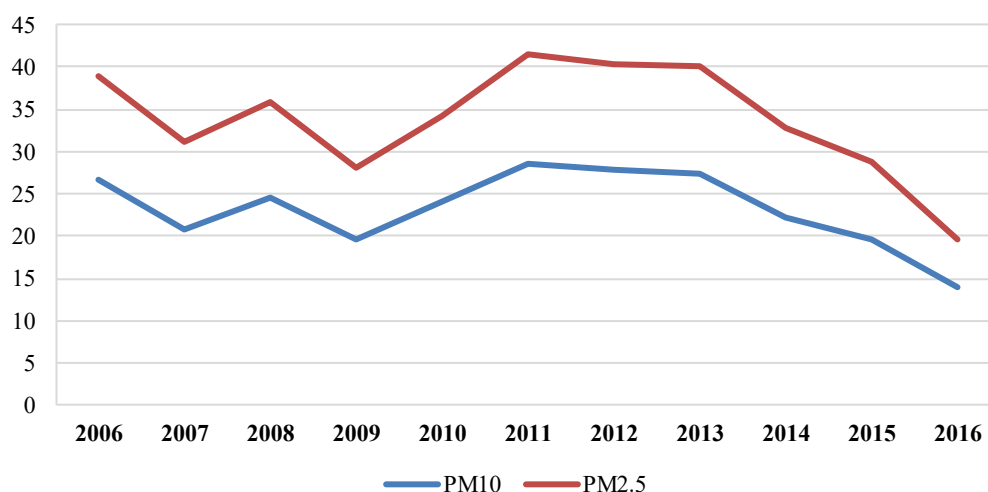
The reduction of emissions of PM in recent years is attributed to decreased production of ferroalloys (figure 8.5). The installation producing ferrosilicon has functioned with limited capacity since the end of 2014 and during 2015 and was closed again in November 2016 for non-compliance with conditions related to air emissions abatement equipment in its IEP. Furthermore, the decrease in emissions is

associated with the reduced consumption of coal and heavy fuel oil in recent years.

Emissions of lead and mercury are low and have been stable since 2003 (figure 8.6), when the smelter located in Veles ceased production of lead and zinc. Additional reductions in lead emissions were achieved by prohibiting gasoline with lead additives in 2006 and emissions of mercury from residential heating were decreased by changing the fuel in residential heating systems in Skopje to natural gas. Emissions of cadmium were also reduced by some 70 per cent in the period 2006–2016 due to reduced metal production.

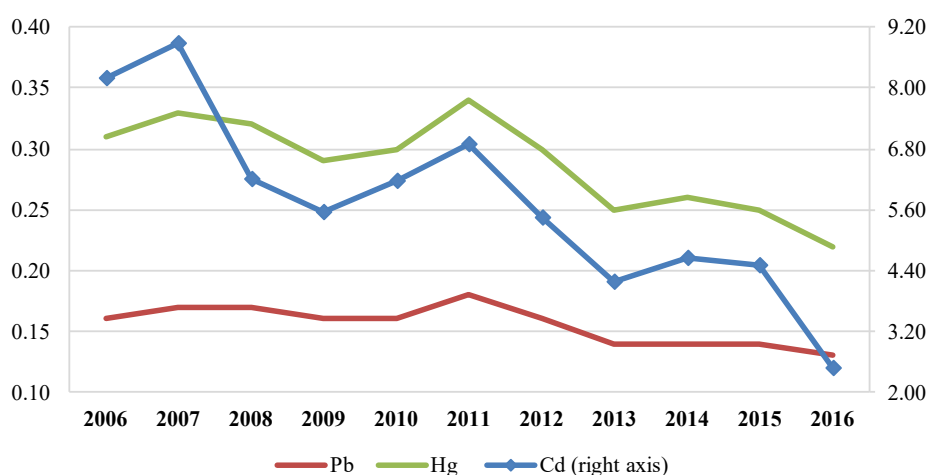
Although consumption of HCFCs is still permitted in accordance with the Montreal Protocol, consumption of these ODSs has been phased out in North Macedonia as at 2016 (figure 8.7).

Figure 8.5: PM₁₀ and PM_{2.5} emissions, 2006–2016, kt

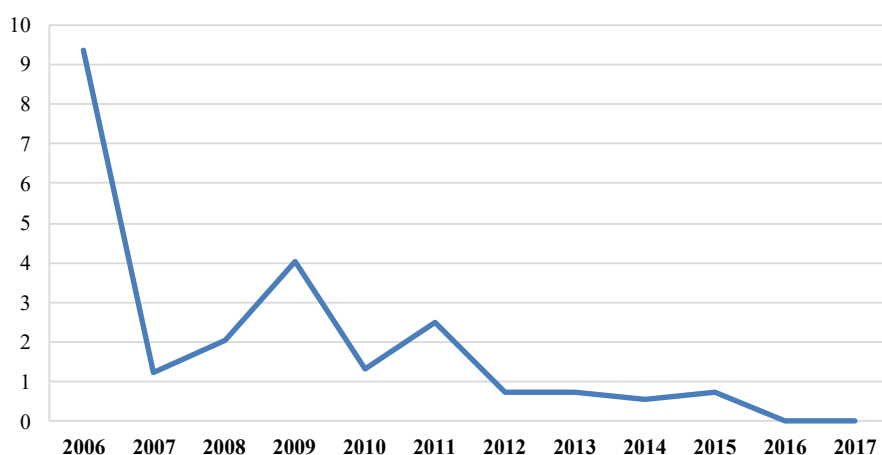


Source: 2018 Informative Inventory Report.

Figure 8.6: Emissions of heavy metals, 2006–2016, kt



Source: 2018 Informative Inventory Report.

Figure 8.7: Consumption of ODSs, 2006–2017, t

Source: Ministry of Environment and Physical Planning, 2018.

North Macedonia submitted its SBUR to the UNFCCC Secretariat in January 2017. Before this last report, three National Communications (2003, 2008 and 2014) and the First Biennial Update Report (2015) had been submitted (chapter 7). SBUR updates existing inventory data and adds data for 2013 and 2014. Figure 8.8 presents the trend of total net emissions of GHGs expressed in Gg of CO₂-eq.

The peak of total net GHG emissions in 2012 is attributed to emissions from the FOLU sector, due to intense forest fires during 2012. This peak is not distinctive when emissions from this sector are excluded (blue line).

The country is committed to reducing CO₂ emissions from fossil fuels combustion by 30 per cent by 2030, that is, by 36 per cent at a higher level of ambition compared with the BAU scenario in accordance with the Paris Agreement (chapter 7). CO₂ emissions from fossil fuels combustion account for almost 80 per cent of the country's total GHG emissions, with a dominant share of the following sectors: energy supply, buildings and transport.

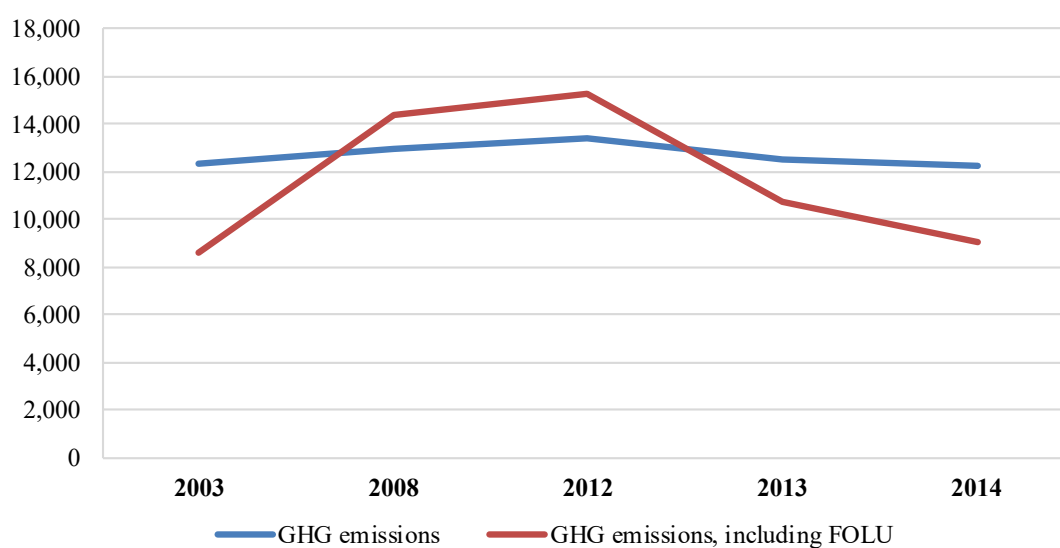
8.3 Performance and gaps in air monitoring networks

The state automatic monitoring system for ambient air quality consists of 17 fixed monitoring stations (table 8.1). In addition, one mobile station is used to complement monitoring results. For the purpose of air quality assessment, North Macedonia is divided into western and eastern air quality zones, along with the agglomeration Skopje.

The latest upgrade of the state automatic air quality monitoring system was in 2017, when measurement instruments in the Kumanovo, Bitola 2 and Tetovo stations were replaced. As at 2017, concentrations of PM_{2.5} are also measured at these three locations. Furthermore, a new mobile station was installed in Skopje. This upgrading was funded by the EU technical support project.

Monitoring stations are often positioned so that they are affected by multiple factors, e.g., both industry and traffic or traffic and domestic heating. When these impacts are not dominant, stations monitor representative background pollution. In other cases, without further analysis, it is difficult to determine the particular level of contribution of different sources. Irrespective of the type of station, almost the same parameters are monitored at each station. Although the country is party to the EMEP Protocol to Air Convention, the only rural background station (Lazaropole) is not equipped as an EMEP station in order to monitor parameters foreseen by EMEP, including transboundary transportation of pollution. One station is not enough to assess rural air quality and the impacts of pollution on the environment.

In the period 2006–2016, PM_{2.5} and benzene (BTX) were measured only in Skopje agglomeration. Analysis of heavy metals and PAHs in PM is performed only occasionally, when the budget is available, since there is no accredited laboratory for air quality assessment in the country.

Figure 8.8: Greenhouse gas emissions, 2003–2014, Gg CO₂-eq.

Source: Second Biennial Update Report on Climate Change, 2017.

Table 8.1: State automatic monitoring system for ambient air quality

AQ zone	Location	Station type	Parameters measured
Agglomeration Skopje	Centre	Urban traffic	O ₃ , NO ₂ , SO ₂ , CO, PM ₁₀ , PM _{2.5} , BTX
Agglomeration Skopje	Gazi Baba	Suburban background	NO ₂ , SO ₂ , CO, PM ₁₀
Agglomeration Skopje	Karpos	Urban background	O ₃ , NO ₂ , SO ₂ , CO, PM ₁₀ , PM _{2.5} , BTX
Agglomeration Skopje	Lisiče	Urban traffic/industrial	O ₃ , NO ₂ , SO ₂ , CO, PM ₁₀
Agglomeration Skopje	Rektorat	Urban traffic	O ₃ , NO ₂ , CO, PM ₁₀ , BTX
Agglomeration Skopje	Miladinovci	Industrial	O ₃ , NO ₂ , SO ₂ , CO, PM ₁₀ , BTX
Western zone	Bitola 1	Industrial	O ₃ , NO ₂ , SO ₂ , CO, PM ₁₀
Western zone	Bitola 2	Urban background	O ₃ , NO ₂ , SO ₂ , CO, PM ₁₀ , PM _{2.5}
Western zone	Kicevo	Suburban background	O ₃ , NO ₂ , SO ₂ , CO, PM ₁₀
Western zone	Lazaropole	Rural background	O ₃ , NO ₂ , SO ₂ , PM ₁₀
Western zone	Tetovo	Urban traffic/industrial	O ₃ , NO ₂ , SO ₂ , CO, PM ₁₀ , PM _{2.5}
Western zone	Gostivar	Suburban background	O ₃ , NO ₂ , SO ₂ , CO, PM ₁₀
Eastern zone	Veles 2	Suburban background	O ₃ , NO ₂ , SO ₂ , CO, PM ₁₀
Eastern zone	Kavadarci	Urban traffic	O ₃ , NO ₂ , SO ₂ , CO, PM ₁₀
Eastern zone	Kocani	Suburban background	O ₃ , NO ₂ , SO ₂ , CO, PM ₁₀
Eastern zone	Kumanovo	Suburban background	O ₃ , NO ₂ , SO ₂ , CO, PM ₁₀ , PM _{2.5}
Eastern zone	Strumica	Suburban background	O ₃ , NO ₂ , SO ₂ , CO, PM ₁₀

Source: Ministry of Environment and Physical Planning, 2018.

Note: BTX refers to mixtures of benzene, toluene and the three xylene isomers.

Measurement instruments are regularly and professionally maintained and calibrated by the Air Quality Calibration Laboratory of the Ministry of Environment and Physical Planning, which participates in interlaboratory comparisons organized by the European Commission Joint Research Centre and WHO, and the results are traceable and completely satisfactory. However, since there is no an official accreditation of that laboratory, the accuracy of data on air quality can be questioned, especially

when it comes to their international comparability and their use for reporting to EIONET.

Air quality data from the state monitoring network are collected by MEIC. MEIC has established and manages the air quality information system AIRVIRO, which collects, validates and processes the air quality data. This system is connected to a web portal for air quality.

8.4 Pressures on air quality

Summarizing the findings of the 2018 Informative Inventory Report it can be concluded that the energy sector, including (as per the reporting nomenclature) public electricity and heat production, transport, other sectors (mainly residential heating) and stationary combustion in manufacturing industries and construction, is a major source of air emissions. The IPPU, agriculture and waste sectors also contribute to emissions of the main pollutants.

The major part of NO_x emissions (41 per cent) comes from public electricity and heat production, while transport and stationary combustion in manufacturing industries and construction contribute 31 per cent and 20 per cent respectively. Public electricity and heat production is responsible for more than 90 per cent of SO₂ emissions. Agriculture is the major contributor of ammonia emissions (89 per cent). Residential heating is the major contributor of PAH emissions (79 per cent). Residential heating is a major source of PM emissions, responsible for 46 per cent of emissions of PM₁₀ and 58 per cent of PM_{2.5}. The IPPU sector contributes 22 per cent of emissions of PM₁₀ and 20 per cent of emissions of PM_{2.5}, while public electricity and heat production is responsible for 11 per cent of emissions of PM₁₀ and 6 per cent of emissions of PM_{2.5}. Public electricity and heat production is also a major contributor to emissions of heavy metals, accounting for 49 per cent of total emissions of cadmium and 45 per cent of total emissions of mercury. For emissions of VOCs, there is no single dominant source: 29 per cent are emitted from residential heating, 20 per cent from IPPU, 16 per cent from agriculture, 14 per cent from waste and 9 per cent from transport.

Agriculture

According to the 2018 Informative Inventory Report, 89 per cent of the total national emissions of NH₃ are emitted from the agricultural sector. Agriculture also contributes some 16 per cent of emissions of VOCs and 12 per cent of total PM₁₀ emissions. The majority of emissions come from animal husbandry and manure management, the use of inorganic nitrogen-based fertilizers and animal manure being applied to soils.

The share of agriculture in total GHG emissions is 8.2 per cent. SBUR on climate change states that, within the agriculture sector, the dominant emitter of GHGs is livestock production activities, which generated 52.1 per cent of emissions. It also points out that GHG emissions from crop production are generated by

inadequate or excessive fertilization with mineral fertilizers, infrequent and inadequate application of manure, inadequate management of arable land and improper management when fertilizing.

Statistical data show that 59 per cent of the total agricultural land is in pasture and that over the period 2012–2016 an average of 0.35 livestock units were reared per hectare of utilized agricultural area, which is almost half the EU-28 average. According to the Rural Development Programme 2014–2020, the latest data show the average level of use of mineral fertilizers to be low (around 104 kg NPK/ha⁴ of arable land or 12 kg NPK/ha of agricultural land).

Energy

In 2016, energy production (public electricity and heat production) contributed 41 per cent to the total emissions of NO_x and a full 91 per cent to total SO₂ emissions. Its contribution to CO emissions is only 8 per cent, while its contribution to PM₁₀ and PM_{2.5} emissions is estimated at 11 per cent and 6 per cent respectively. Consumption of energy, especially in residential heating, makes a major contribution to PM emissions.

Energy production is also a dominant source of emissions of lead (38 per cent), mercury (45 per cent) and cadmium (49 per cent).

Public electricity production is dominated by two large plants that use lignite as a major fuel and heavy fuel oil as a supporting fuel, while natural gas is not widely used for power generation. District heating plants are all operated using natural gas. As at 2018, biofuels are not used for power or district heat generation.

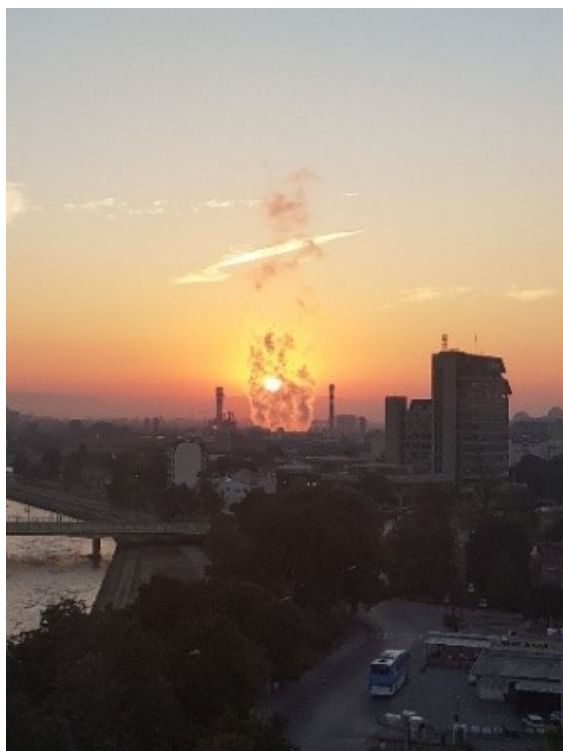
The 2012 Programme for Gradual Reduction of Emissions of Certain Polluting Substances covers nine large combustion plants and their contribution to emissions of NO_x, SO₂ and total suspended particles (TSP). According to the Programme, TPP Bitola has by far the most dominant impact on air pollution – 70.88 per cent of all NO_x, 62.96 per cent of SO₂ and 74.37 per cent of TSP. TPP Bitola is coal fired and has three blocks with a total capacity of 675 MW. As at November 2018, it does not have an IEP.

Industry and mining

Industry including solvent use contributes around 20 per cent of emissions of NMVOCs, NO_x and PM₁₀.

⁴ NPK: nitrogen, phosphorus and potassium

Photo 8b: Vapors from the central heating plant, Skopje



Production of lead alone is a major source of PCB emissions, accounting for 74 per cent. Metal production also contributes 6 per cent of emissions of PCDD/Fs and is a significant contributor of emissions of heavy metals.

Manufacturing industries contribute 10 per cent of emissions of PAHs, 11 per cent of emissions of SO₂ and 9 per cent of emissions of CO.

Some industries are taking action to abate air pollution, e.g., by installing electrostatic filters in two rotary kilns as well as scrubbers for reduction of emission gases from two electric furnaces, thus fulfilling the terms of their IEP, while others have been closed for failing to install abatement equipment requested under their IEP.

Transport

According to the 2018 Informative Inventory Report, transport is one of the key sources of CO and NO_x national emissions, contributing 67 per cent of emissions of CO and 31 per cent of NO_x. It also contributes 9 per cent of the total national emissions of VOCs.

Environmental statistics for 2017 present the total annual emissions of air pollutants by sector under the Selected Nomenclature for Air Pollution. Using that methodology, it is estimated that emissions from the

transport sector in 2014–2015 have been around 14 per cent, on average.

Of passenger transport, which is dominant in the transport structure, in 2016, passenger cars constitute the greatest share (77 per cent), followed by buses (22.1 per cent), while rail accounted for only 0.9 per cent. The average age of passenger cars in 2016 was 18.6 years and of buses, 17.8 years.

Since 2015, with support from EBRD within the Railways Fleet Renewal Project, the country acquired four new diesel, and two new electric, passenger multiple units. Moreover, since 2011, 312 buses compliant with the Euro-4 standard have been procured for public transport; however, many of them are out of order. The public transport enterprise of Skopje added three gas-powered buses and one electric bus to the public transport system. There was also a successful technical project undertaken by the Faculty of Mechanical Engineering of the University of Skopje to retrofit old diesel buses to use gas.

Housing

Residential heating contributes a major share of total national emissions of PAHs (79 per cent) and PCDD/Fs (77 per cent). It also contributes 67 per cent of total national emissions of carbon monoxide, although emissions of this pollutant had decreased by 14 per cent in 2016 compared with 2015, due to greater use of natural gas and briquettes and pellets for residential heating instead of fossil fuels and wood. Residential heating also has a dominant share in emissions of PM₁₀ (46 per cent) and PM_{2.5} (58 per cent), which represent a major air quality concern in the country. Moreover, it contributes 29 per cent of total national emissions of VOCs, 10 per cent of emissions of PCBs and 8 per cent of emissions of NH₃.

A survey conducted in 2014 and published in 2015 by SSO showed that 62 per cent of households rely on wood for heating, 29 per cent use electricity, 8 per cent are connected to district heating systems and 1 per cent use other types of heating. According to the World Bank study “Biomass-based Heating in the Western Balkans – A Roadmap for Sustainable Development”, biomass use for heating in North Macedonia is already high (39 per cent of current heat demand) but is mainly inefficient: 74 per cent of biomass is used in traditional, inefficient stoves and not properly dried. District heating systems that use natural gas are only available in the City of Skopje, which plans to connect some 14,000 new consumers during the heating season 2018–2019. A 2018 UNDP survey of 5,044 households within the project “Skopje is heating” revealed that only 21 per cent of residents of Skopje

are connected to the central heating system, whereas 45 per cent heat their houses with wood. The same survey shows that over 90 per cent of houses do not have any thermal insulation in their walls and roofs.

8.5 Legal, policy and institutional framework

Legal framework

The 2004 Law on Ambient Air Quality aims to align national legislation with the relevant EU acquis and regulates sources of air pollution, limit and target values of concentrations and emissions of air pollutants, air quality assessment, monitoring and management, strategic documents on air protection, information and reporting, measures for air protection, competences, financing, supervision and penalties.

The Law gives competences on air protection to the authority in charge of environmental affairs, including development of the legal and strategic framework, monitoring, reporting and management of the information system. Measurement of emissions from stationary sources is outsourced to the private accredited laboratories.

North Macedonia has not transposed Directive (EU) 2016/2284 on the reduction of national emissions of certain atmospheric pollutants, which reflects the amended Gothenburg Protocol to the Air Convention.

Policy framework

The 2012 National Plan for the Protection of Ambient Air for the period 2013–2018 proposes more than 100 different measures for improvement of air quality. However, there are no reports on its implementation, nor an analysis of the effects of implemented measures. Although the time frame foreseen for the implementation of most of measures expired, the Plan was not updated. The Plan should cover a period of at least five years, but its updating is not regulated. No implementation reports were submitted, although the Ministry is obliged to report to the Government at least every two years.

The 2012 Programme for Gradual Reduction of Emissions of Certain Polluting Substances provides projections of emissions for SO₂, NO_x, NH₃ and VOCs for the period 2010–2020. The goal of the Programme was to identify the measures for reduction of emissions of these pollutants by key sources in order to prevent exceedances of the national emission ceilings established in accordance with the protocols to the Air Convention. So far, only reduction of emissions of SO₂ (by 30 per cent compared with 1980) was not achieved.

The 2017 National Emission Reduction Programme for Large Combustion Plants, as required under the Athens Agreement on the Energy Community, serves as an instrument for implementation of the EU Directive on Large Combustion Plants. According to the 2017 Energy Community Annual Implementation Report, its implementation began in 2018; hence, there is no information yet on the level of its implementation. Reporting under the Programme is envisaged to start in the beginning of 2019.

The Programme for Reduction of Air Pollution adopted in November 2018 contains a set of measures for which implementation is planned during the period 2019–2020. The goal of the Programme is to achieve reduction of air pollution by 50 per cent in Skopje and 30–50 per cent in other urban centres. Measures include improvement of air quality monitoring, increased capacities of environmental inspection, raising public awareness and a reduction of emissions into air from domestic heating, waste management, transport, industry and construction.

Description of measures is not detailed and does not contain financial estimations, an estimation of reduction of air pollution by measure, or exact deadlines and the authorities responsible for implementing them, and thus does not provide enough information on how the agreed goals of the Programme will be achieved. The Programme also foresees the establishment of the mechanism to monitor its implementation. The Programme foresees nine measures for reduction of air pollution from household heating to be implemented during 2019–2020, including increasing the number of consumers in the district heating network and gas supply network, supporting producers and users of eco-friendly appliances for domestic heating, energy efficiency in private homes and a ban on the sale of coal for domestic heating purpose.

The Programme recognizes the limited capacities of the environmental inspectorate and the need to improve its performance by increasing the number of staff and of regular inspections, amending legal acts to change the institutional set-up and contributing to a more efficient system of inspections. The Programme also foresees amendments to the draft law on industrial emissions and the publication of lists of companies with valid IEPs. The Programme envisages completely replacing the equipment in all monitoring stations with new instruments and applying modern air quality models for air pollution predictions. The Programme foresees urgent implementation of the Skopje City initiative to reconstruct neglected public areas and realization of the City Greening Plan during 2019–2020.

Bitola, Skopje, Veles and Tetovo adopted local air quality plans. The Law on Ambient Air Quality prescribes the obligation of local authorities to report on implementation of air quality plans to the Ministry. Of 51 measures in the Air Quality Plan for Skopje, about 33 (64 per cent) are implemented or their implementation is ongoing. Of 38 measures foreseen in the Air Quality Plan for Tetovo, only seven are implemented or ongoing, the majority through actions taken at the national level. The rest of the measures are not implemented or information on their implementation is not provided to the Ministry. Apart from 21 recommended measures for improvement of air quality, the Air Quality Plan for Bitola contains recommendations for the first revision in 2014 and

regular assessment of the effectiveness of the measures. However, an updated plan is still not developed. According to the 2018 report on implementation of the Air Quality Plan for Bitola, the implementation of over 80 per cent of the measures is ongoing, but the level of implementation is limited by a lack of financial resources and the limited legal competences of the local administration.

Sustainable Development Goals and targets relevant to this chapter

The current status of the country vis-à-vis targets 3.9 and 11.6 of the 2030 Agenda for Sustainable Development is described in box 8.1.



Box 8.1: Targets 3.9 and 11.6 of the 2030 Agenda for Sustainable Development



Goal 3: Ensure healthy lives and promote well-being for all at all ages

Target 3.9: By 2030 substantially reduce the number of deaths and illnesses from hazardous chemicals and from air, water and soil pollution and contamination.

Among other means, the achievement of target 3.9 is measured by the mortality rate attributed to household and ambient air pollution. During the preparation of the National Plan for Ambient Air Protection in 2012, the Institute of Public Health estimated the health effects attributable to outdoor air PM₁₀ exposure for selected health endpoints in the City of Skopje based on the WHO methodology. In 2010, 110 of 4,602 deaths (deaths from external causes excluded), 420 of 8,630 inpatient hospitalizations from respiratory diseases and 80 of 6,106 inpatient hospitalizations from cardiovascular disease were attributed to exposure to ambient air PM₁₀.

Assessment prepared in the framework of the Green Growth and Climate Change Analytical and Advisory Support Programme of the World Bank Group implemented in North Macedonia in 2012–2013 showed that approximately 1,350 deaths annually are attributable to exposure to PM. People also suffer from the day-to-day consequences of respiratory diseases. It is estimated that several thousand work-years are lost annually due to chronic bronchitis, asthma, hospital admissions and days of restricted activity. PM air pollution cost the economy about €253 million or 3.2 per cent of GDP in 2011. Moreover, the assessment has demonstrated that potential health savings associated with reductions in PM₁₀ and PM_{2.5} are substantial and could be over 2 per cent of GDP if EU limit values were reached.

One component of the twinning project “Further strengthening the capacities for effective implementation of the acquis in the field of air quality” was dedicated to strengthening the capacities for health impact assessment of air pollution. Activities included analysis of the current capacities of the Institute of Public Health and other central-level institutions to conduct health impact assessment and a draft plan on health impact assessment improvement in the country, including the needs for human and technical resources and information. Training and support on the basic health impact assessment methodologies were provided and a plan for establishing biomonitoring related to air pollution was developed.

In 2017, the Institute of Public Health demonstrated the potential health benefits of reducing PM_{2.5} levels in the main cities of the country (Bitola, Kavadarci, Kicevo, Kocani, Skopje and Tetovo) to EU limit and WHO guideline values. The current levels of population exposure to PM_{2.5} are responsible for 1,794 deaths annually in the cities: deaths can be avoided through active interventions to improve air quality. Reduction of PM_{2.5} levels to the EU limit value will save approximately 874 lives; reduction to the WHO guideline will bring greater health gains – up to 1,464 lives. The age-standardized mortality (rate per 100,000 population) attributed to ambient air pollution in the country is estimated at 46 in the WHO Global Health Observatory data repository. These data are in the United Nations Global Indicators Database and could serve as a baseline to monitor progress.

According to the 2018 report on air quality in Europe (EEA Report No. 12/2018), premature deaths attributable to PM_{2.5}, NO₂ and O₃ exposure in the country in 2015 were 3,000, 110 and 90 respectively. It also provides data on years of life lost (YLL) attributable to PM_{2.5}, NO₂ and O₃ exposure in 41 European countries. In North Macedonia, there were 1,469 YLL/10,000 inhabitants due to exposure to PM_{2.5}, 56 due to exposure to NO₂ and 52 due to exposure to elevated concentrations of O₃ in 2015; for EU countries, the corresponding data were 820 YLL/10⁵ inhabitants due to exposure to PM_{2.5}, 157 due to exposure to NO₂ and 36 due to exposure to O₃.

Household air pollution has not received due attention in the legal agenda even though people spend about 75 per cent of their life indoors. The draft strategy on health and environment recognizes the need for indoor air quality monitoring, especially

in schools and day-care centres, but it has not yet been adopted. According to the 2007 WHO analysis of the environmental burden of disease by country, exposure to indoor air pollution from solid fuel use (30 per cent of households) in North Macedonia is responsible for fewer than 100 deaths per year. The 2016 WHO Global Health Observatory estimate of the age-standardized mortality (rate per 100,000) in the country attributed to household air pollution is 43. The same data are in the United Nations Global Indicators Database to serve as a baseline.

The joint effects of ambient and household air pollution in terms of attributable age-standardized mortality is estimated at 82.2 – more than twice the corresponding European Regional average of 36.3 – indicating the rather high burden of ill health from air pollution in North Macedonia.

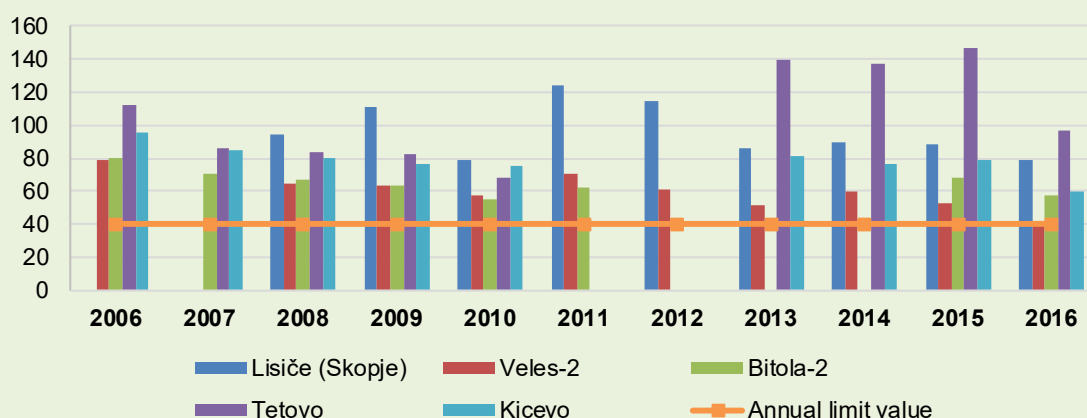
Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable

Target 11.6: By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management.

More than half the global population lives in cities. The environmental impact of urban living is often expressed through the air pollution level, and annual mean levels of fine PM in cities (population weighted) are used globally to monitor progress towards achievement of target 11.6. Data for reporting on this indicator are available, but the achievement of this target already presents a challenge for the country. The indicator can be found on the official portal of the Ministry of Environment and Physical Planning (www.moepp.gov.mk/?page_id=4819&lang=en).

Since there is exceedance of the annual limit value recorded at all measurement stations throughout the country during the whole observed period, on the basis of EEA methodology it is considered that the whole population is exposed to PM₁₀ concentrations exceeding the annual limit value of 40 µg/m³ (figure 8.9). The EEA report “Air Quality in Europe” notes that, according to data from 41 European countries, concentrations above the PM₁₀ annual limit value in 2016 were monitored at 6 per cent of all the reporting stations. Of the 17 stations in North Macedonia, 13 are among that 6 per cent.

Figure 8.9: Average annual PM₁₀ concentrations in selected cities, 2006–2016, µg/m³



Source: Macedonian Environmental Information Centre, 2018.

Achievement of the 2030 Agenda for Sustainable Development target for reducing the adverse per capita air pollution of cities requires an integrated and intersectoral approach to air quality management. Hence, the problem with quite high emissions of PM₁₀ throughout the country has to be managed from different angles.

Similarly, the annual average PM_{2.5} concentration for Skopje during the five-year period 2012–2016 is triple the WHO guideline value (10 µg/m³) and higher than the EU limit (25 µg/m³). The WHO Global Health Observatory provides estimates of exposure in the country in terms of the population-weighted average of the mean annual PM_{2.5} concentrations for 2016. For North Macedonia, the PM_{2.5} exposure is 33.0 µg/m³ for urban areas and 28.3 µg/m³ for the entire country. The corresponding averages for the European Region were 14.2 µg/m³ and 14.0 µg/m³ respectively. As regards household air pollution, the WHO Global Health Observatory provides country exposure data in terms of the proportion of the population using solid fuels (estimates) and of the population with primary reliance on clean fuels and technologies. In 2013, 33 per cent of the population in North Macedonia (56 per cent in rural areas and 15 per cent in urban areas) used solid fuels for heating and cooking. The proportion of the population with primary reliance on clean fuels and technologies has increased from 44 per cent in 2000 to 66 per cent in 2016.

The Government should:

- Continue to implement measures related to improvement of the energy efficiency of households, e.g., efficient windows and heaters;
- Further develop the gas supply network with the envisaged establishment of district heating with gas in Bitola;
- Strengthen measures related to mitigation of emissions from industry, including energy production;
- Advise the City of Skopje to undertake a study on measures needed to enhance its public transport infrastructure to increase its use by the public.

Institutional framework

Ministry of Environment and Physical

Planning

The Ministry of Environment and Physical Planning is performing most of the activities on air protection in the country through MEIC, covering not only technical and information issues (monitoring and reporting) but also those related to the policy and legal framework.

The Unit for Air Quality Monitoring within MEIC, with four staff, performs a variety of tasks. Maintenance and calibration of air quality monitoring instruments is performed by two staff. The other two staff bear the majority of the administrative burden, playing several roles that are not limited to the coordination of air quality monitoring, data validation and processing, reporting on air quality and providing access to air quality data to the public; they also include other non-technical tasks, such as development of the legal and policy framework, participation in international cooperation and reporting in accordance with the requirements of relevant international agreements, cooperation with relevant institutions, the private sector and citizens and coordination of air quality management in general, since there is no air quality department in charge of legislation, policy and cooperation with relevant national and international bodies in the area of air protection.

The Unit is supported by the Unit for Analytics and Reporting and Unit for Cadastre and Modelling in data collection on emissions of air pollutants, preparation of the national inventory of emissions, emission projections and air quality modelling. Monitoring and control over the transboundary transportation of pollutants into the atmospheric air is a legal obligation of HMS, but, in practice, in the absence of adequate monitoring of the transboundary transportation of air pollutants, MEIC develops dispersion projections of air pollutants on the basis of meteorological data provided by HMS.

State Environmental Inspectorate

SEI and local environmental inspectors control industrial emissions. Measurements are performed by three laboratories accredited for a limited number of parameters. In the case of non-compliance, an inspector can start a misdemeanour procedure but also has the opportunity to use softer instruments such as settlement or mediation. In that case, the operator is granted a period in which to achieve compliance, pay the fee or compensate for damage done. The Law on

Ambient Air Quality also prescribes the possibility of organization of educational training for the polluter to support him or her in overcoming the non-compliance. While “soft instruments” such as settlement are used in cooperation with operators, with a rather high level of tolerance (e.g., TPP Bitola still operates without an IEP), training for operators was organized within some internationally supported projects but is not part of the usual routine of environmental inspectors.

Other institutions

Competences to carry out the assessment of health effects associated with ambient air quality lie with the state administration responsible for public health. However, activities related to health impact assessment of air pollution are not performed on a regular basis and rely only on project-based activities supported by international donors.

Control over emissions from mobile sources of air pollution is carried out by the body responsible for determination of the technical functionality of individual mobile sources. The State Market Inspectorate performs control over the quality of fuels while the State Sanitary and Health Inspectorate is the competent body for control of the health and safety of plant production carried out on lands alongside roads.

Coordination among institutions responsible for air protection at national and local levels

The Ministries of Health and Economy are recognized throughout the legal framework as the main partners of the Ministry of Environment and Physical Planning in drafting the policy documents and prescribing air quality standards on which they should give official consents. The Ministry of Internal Affairs is also involved in management of traffic during periods of high air pollution episodes in affected locations, upon the proposal of the Ministry of Environment and Physical Planning. In practice, cooperation with other relevant institutions is mainly channelled through an intersectoral group on air quality. It was established in 2012 and consists of representatives of the relevant institutions, ministries, SEI, Hydrometeorological Institute and the Institute for Public health and its regional centres. In October 2017, the membership was partly changed, with the group extended to include members from CSOs in order to include citizens' opinions. The Deputy Minister of Environment and Physical Planning started to chair the group to raise political support for the recommendations made by the group in formal conclusions of its meetings. The group is active, especially during the heating season when there are episodes of bad air quality. However, these

conclusions are not of a mandatory nature and no instrument is in place to follow up on their implementation. Considering that this mechanism does not provide measurable results, coordination among institutions remains limited.

According to the Law on Environment, the Ministry of Environment and Physical Planning supervises local authorities in the implementation of their competences stemming from this Law, and if it finds that local authorities fail to implement necessary measures and activities, can take over their competences upon informing the ministries in charge of finance and local government affairs. Although local authorities are responsible for the development of local air quality plans, for zones and agglomerations that are considered to be of priority, the development of an air quality plan is led by the Ministry in cooperation with the local authorities.

The mayors of municipalities and the City of Skopje have the obligation to cooperate with the Ministry of Environment and Physical Planning, Ministry of Health and competent Information and Warning Centre in the event of an alert situation regarding air pollution. Municipal councils and the Council of the City of Skopje shall be involved, together with the Ministry of Environment and Physical Planning in cases of transboundary air pollution, in the drafting of common action plans with neighbouring country bodies. While cooperation between local and central authorities in alert situations and in everyday air quality issues is put into practice, there were no cases of drafting cross-border action plans due to transboundary pollution.

Economic, fiscal, information and other measures

Economic measures

There is a set of economic measures used to improve air quality in the country. The Government, as well as local authorities, approved funds for the application of energy efficiency measures (new windows, more efficient stoves), the purchase of more eco-friendly fuels such as pellets, the purchase and use of bicycles for more sustainable and less polluting transport, and investments in better public transport and the use of renewables (e.g., solar panels, heat pumps).

Fiscal measures

The SSO publication “Environmental Statistics 2017” provides information on the structure of environmental taxes. In 2015, the greatest proportion of taxes were energy taxes (64.6 per cent), followed

by transport taxes (34.5 per cent), while pollution taxes accounted for the lowest proportion (0.9 per cent).

The Law on Environment prescribes that pollution tax is defined based on the quantity, volume and impact on the environment of the emitted polluting substances. According to this Law, the authority responsible for environmental affairs has the obligation to maintain the register of pollution tax payers. Apparently, this register does not exist. Pollution taxes are required to be paid only by installations which should have an A-type IEP.

The tax is paid on application for issuance of the permit, request for a change in the conditions of the permit and closure of the installation. There is also an annual tax, calculated by a formula taking into account the area of the installation, number of emission discharge points and different pollutants. The average basic fee for emission of pollutants ranges from 3,000 to 9,000 denars. This basic fee is multiplied by the quantity of emissions, which is related to limit values (percentage of exceedance) but is not expressed in tons or kilograms or the pollutant’s toxicity and other features related to impact on the environment, including the recipient medium/media. Knowing that emissions are measured by private laboratories with accreditations that cover only a limited number of pollutants, this mechanism for collection of pollution taxes does not function well.

Apart from taxes, in the case of unresolved non-compliance, the polluter shall pay a fine in the range of €8,000 to €20,000 for failing to comply with ELVs for stationary or mobile sources, putting on the market fuel with a higher content of polluting substances or failing to implement measures envisaged in programmes or plans. In addition to the fine, the polluter may be prohibited from performing the activity for a period of up to 30 days.

Information measures

MEIC maintains an informative air quality portal that provides complete information on the state of ambient air in the country, including near-real-time status, an air quality index and daily, monthly and annual reports. Moreover, it gives information on measures for improvement of air quality, on sustainable transport and cleaner domestic heating practices for citizens, instructions to the public in the event of exceedances of information and alert thresholds set for certain pollutants, health advice from the Institute of Public Health, as well as information on monitoring network activities, legislative and policy documents,

projects, emission inventories and results of air quality modelling. All data are public.

Apart from its official air quality portal, the Ministry also communicates with citizens on air protection via social networks. International donors have also recognized the importance of air pollution and UNDP established a website, “Skopje is heating”, to promote the results of a study on household heating, while the City of Skopje had maintained its own webpage with local information on air pollution.

Public awareness measures

The last decade was also marked by a significant rise in public awareness of the sources and impacts of air pollution as well as on the measures to mitigate those impacts. The Ministry produced public awareness-raising brochures on understanding the effects of air pollution, good wood-burning practices at home and smart means of mobility and better living.

Other measures

The development of the natural gas supply system is ongoing. During the last two years, the total length of pipelines was doubled to some 200 km and it is planned to extend the system to a total of 340 km by 2020. One of the measures adopted under INDC to reduce GHG emissions in accordance with the Paris Agreement is the construction of a district gas heating system in Bitola. The pipeline system is already approaching Bitola and covers Kumanovo and Strumica as well as the industrial zone of Skopje. Natural gas comes from imports.

In October 2016, the Government adopted a programme for reimbursement of the costs for purchased and installed solar thermal collector systems and PVC or aluminum windows in households, with financial support from the state budget in the amount of 52 million denars (€845,000). Some 2,472 requests were submitted to the Ministry of Economy for installed solar thermal systems, in response to which 1,794 households have been reimbursed, and 2,401 requests were submitted for installed PVC or aluminum windows, with a total window area of 10,000 m², in response to which around 1,327 households have been reimbursed. In the budget of the Ministry of Economy for 2018, as a part of the Programme for Promotion of Renewable Energy Sources and Encouraging Energy Efficiency in Households, a total of 50 million denars were approved for the realization of a programme of

subsidies to partly compensate households for the cost of purchasing and installing solar collector systems, PVC windows and pellet stoves for 2018. The public call was published on January 31 and, by September 2018, 433 households who bought pellet stoves were subsidized up to 50 per cent but not more than €500 in denars equivalent per household.

Skopje's measures

The City of Skopje, through “Skopje Lab” and departments of the city administration, strives to provide better services to its citizens by understanding their needs and supporting their initiatives, in particular, on air pollution.

Some local measurements were performed by Skopje at one location in the centre of the city. Equipment was removed from that location, which is now a construction site. The instruments for measurement of concentrations of air pollutants at that spot were directly linked to an informative display that showed the key parameters and an air quality index to the citizens of Skopje in the main walking street. However, this air quality index (developed by the United States Environmental Protection Agency) is not harmonized with domestic legislation and the European Air Quality Index.⁵

Encouraging chimney sweeping is a good example of action being taken in Skopje. Even though Skopje has about half a million inhabitants and some 45 per cent of households use wood for heating, there are only eight registered chimney sweeps in the city. Skopje organized a three-month training course for new chimney sweeps during 2018. Trainees receive a monthly stipend of 9,000 denars and, after successful completion of training, a certificate and basic materials to work as an independent entrepreneur. This activity is expected to result in 100 chimneys being cleaned at no charge and to promote chimney sweeping to reduce air pollution. On the one hand, it offers an opportunity for self-employment and development of a small business, while on the other, it helps low-income families get free service and ultimately results in better air quality and increased awareness of the simple but important steps that every household can take to improve air quality in the city.

In November 2017, to encourage citizens to use RES to heat their homes, the City of Skopje implemented the measure to subsidize or provide a partial refund for purchased pellet stoves. The budget for this activity

⁵ <http://www.eea.europa.eu/themes/air/air-quality-index/index>

was 10 million denars (around €166,000) and supported some 340 households.

Skopje is also very active in renewal of the urban green area. In the first half of 2018, the City planted 4,000 new trees and plans to plant an additional 8,000 by the end of the year. In cooperation with the Public Enterprise “Parkovi i zelenilo”, some 40,000 m² of green areas were made or reconstructed in spring 2018. Work on an additional 10,200 m² is ongoing. Taking into account that Skopje seems to be one big construction site since the launch of the project “Skopje 2014”, and associated with its high dust emissions, increasing the city’s green areas is more than necessary.

Another action is related to the improvement of urban green areas by planting a tree for every newborn. In April 2018, Skopje, the University Clinic for Gynecology and Obstetrics, the Special Hospital for Gynecology and Obstetrics, Re-Medica and Acibadem Sistina signed a memorandum of understanding for implementation of the project “A tree for every child”. In accordance with the programme, parents of a newborn will be given a code, which should be registered to prompt the seasonal renewal of the city’s green areas. The tree planted for each newborn will bear a tag with the name and date of the baby. In the years to come, children can follow the growth of the tree planted in honour of their birth.

Skopje joined the Cities for Cycling network with a goal to raise cycling’s share in the modal split from 1.5 per cent to at least 5 per cent. It adopted a master plan with an action plan for reconstruction of cycling paths for the period 2014–2017, which was successfully implemented. During 2018, 3,133 citizens of Skopje received a grant to assist with buying a bicycle. The subsidy covered up to 50 per cent of the price but was limited to 3,000 denars per person.

8.6 Participation in international agreements and processes

In 2010, North Macedonia ratified all eight protocols to the Air Convention, to which it has been a party since 1997. However, in the period 2011–2014, there were negotiations on the proposed figures related to the baseline year emission levels (1990) and national emission ceilings for 2010. The Executive Body of the Convention, on its 32nd Meeting, decided to accept the last proposed figures for Annex II of the Gothenburg Protocol and Annex II of the Protocol on

Sulphur of 1994. With the adoption of the proposed amendments in September 2014, the country became a party to these Protocols. The country is not party to amended versions of the Protocol on Heavy Metals, the POPs Protocol and the Gothenburg Protocol.

The country fulfils its reporting obligations, except the obligation to report emissions projections for 2020 (for ammonia), 2025 and 2030, in the framework of the Convention and its protocols. According to the last available data (reported until November 2017) compiled by the Secretariat of the Convention in cooperation with the Centre on Emission Inventories and Projections (CEIP), the country is in compliance with established emissions reduction targets, except that the target for SO₂ is still not reaching the reduction of 30 per cent compared with the baseline year (1980), as set in the Protocol on the Reduction of Sulphur Emissions or their Transboundary Fluxes.

Photo 8c: Air quality display in the centre of Skopje



The country is not fully complying with the requirements set by the EMEP monitoring strategy. The implementation index is about 25 per cent.⁶ Observations are limited to PM₁₀ mass, SO₂ and O₃

⁶ See figure 9.1 in the EMEP Status Report 1/2018 (http://emep.int/publ/reports/2018/EMEP_Status_Report_1_2018.pdf).

concentrations in air at the Lazaropole monitoring station. The Chemical Co-ordinating Centre of EMEP offers support and guidance to countries to help them comply with the EMEP monitoring strategy.

The country is party to the key international agreements related to climate change UNFCCC, Kyoto Protocol and Paris Agreement (since January 2018), as well as the agreements related to protection of the ozone layer – the Vienna Convention and Montreal Protocol, including its four amendments. The country did not become party to the Kigali Amendment of the Montreal Protocol.

The country is party to the Stockholm Convention on Persistent Organic Pollutants. The Minamata Convention on Mercury was signed in 2014, but is not ratified yet.

Since September 2015, data from the state automatic air quality monitoring system is delivered to EEA in real time. The project “Development of Environmental Monitoring and Information System” is expected to be launched at the beginning of 2019. Within this project, it is planned to establish national environmental databases and to generally improve data acquisition, processing and sharing, including the introduction of environmental spatial data.

The country is not participating in the Batumi Action for Cleaner Air and has not determined any voluntary commitments in support of this initiative.

8.7 Assessment, conclusions and recommendations

Assessment

Air pollution decreased in the period 2006–2016. Reduced use of fossil fuels in energy production and gasification of heating plants contributed greatly to the improvements achieved – there is a clear decreasing trend in concentrations of SO₂ and even in concentrations of PM in the ambient air. Nevertheless, the whole population of the country is exposed to PM₁₀ concentrations exceeding the annual limit value, which poses a great challenge for achievement of the Sustainable Development Goals target 11.6.

Since 2013, there have not been any exceedances of the limit values for concentrations of NO_x, but values close to the limit at stations affected by frequent traffic indicate the need for further action. There are still occasional exceedances of air quality standards established for CO during the heating season.

There is no continuous monitoring of heavy metals and polycyclic aromatic hydrocarbons, while monitoring of ground-level ozone does not reveal the impact of elevated concentrations on vegetation. So far, data for benzene (BTX) are available only for Skopje, while data for PM_{2.5} are available for Skopje since 2012 and for Tetovo, Bitola and Kumanovo since the second half of 2017. Despite the regular calibration of existing equipment, the lack of an accredited calibration laboratory brings data quality into question.

Despite insufficient administrative capacities, major achievements in the improvement of air quality management were achieved with international technical assistance. The institutional capacity cannot cover all tasks and activities in air protection and air quality management. Policy documents and measures for the improvement of air quality are not regularly updated, their implementation is not monitored and the effectiveness of their implementation is not assessed.

Conclusions and recommendations

Improvement of air quality data

Air quality monitoring is in the competence of MEIC under the Ministry of Environment and Physical Planning, which has limited human resources and technical and financial capacities to perform this task.

Data on air quality are often fragmented, due to inconsistent measurement that leads to a failure to meet data quality objectives (75 per cent of measurements valid during the year) and makes them unsuitable for official use. The calibration laboratory is not accredited, which again puts data quality into question.

There is no accredited laboratory at the national level to analyse parameters such as heavy metals and PAHs. The air quality network mainly comprises stations positioned in urban settlements, which are affected by multiple sources (traffic, industry, household heating), and hence does not allow for the distinction of dominant sources from background pollution. All of these limitations distort the picture on air quality.

Recommendation 8.1:

The Government should ensure sufficient financial and human resources for:

- (a) *Regular maintenance and operation of the air quality monitoring network, including regular (every five years) recomposition of the network;*

- (b) *Accreditation of the existing calibration laboratory;*
- (c) *Establishment of an accredited analytical laboratory for the regular analysis of contents of heavy metals and PAHs in particulate matter or outsourcing of this task on a regular basis.*

Impact of air pollution on human health

Reliable data are lacking to assess the impact of air pollution on human health and the environment, establish cause-and-effect relationships and design appropriate actions to mitigate negative impacts. Although some project-based environmental health assessment activities are performed in the country, the mortality rate attributed to indoor and outdoor air pollution is not monitored. Integrated air quality and health assessments are not carried out on a systematic basis.

Recommendation 8.2:

The Ministry of Health, through its Public Health Institute, in cooperation with the State Statistical Office and Ministry of Environment and Physical Planning and other relevant stakeholders, should:

- (a) *Monitor population exposure to PM_{2.5} and PM₁₀, including in support of achieving Sustainable Development Goals target 3.9 and monitoring the global indicator 3.9.1 (Mortality rate attributed to household and ambient air pollution);*
- (b) *Implement an integrated environmental and health monitoring system with an adequate level of spatial resolution to enable monitoring of the implementation of policy measures on air pollution abatement and assessment of their effectiveness.*

Impact of air pollution on the environment

The lack of monitoring of air quality at rural sites prevents the assessment of the impact of air pollution on ecosystems and biodiversity. The only rural background station is at a high altitude and measurements of ozone and its precursors is highly inconsistent. There are no data on parallel assessments of foliar damage or other indicators of the impact of air pollution on vegetation.

Recommendation 8.3:

The Ministry of Environment and Physical Planning should ensure the monitoring of the negative impacts of air pollution on ecosystems, based on a network of monitoring sites that is representative of their freshwater, natural and semi-natural habitats and

forest ecosystem types, using a cost-effective and risk-based approach.

Monitoring of the implementation of policy documents

The current strategic framework for air protection was created in 2012, when all the main policy documents were created with the support of international technical assistance. By 2018, none of these documents has been updated and there are no reports on their implementation and the effect of the implemented measures. This makes air quality monitoring and analysis of emissions of air pollutants largely senseless, since gathered knowledge on recognized air pollution problems is not properly used for their solution.

The Ministry of Environment and Physical Planning focuses on the collection of data, their processing and the production of information on air pollutant concentrations and emissions, but the measures proposed to improve air quality, even those proposed by an intersectoral working group, are not given enough political backing to ensure their implementation.

The 2018 Programme for Reduction of Air Pollution does not contain precise deadlines and institutions competent for its implementation, measurable indicators, financial estimations and other elements to enable the smooth realization of proposed measures, their monitoring and estimation of their impact on the improvement of air quality.

Recommendation 8.4:

The Ministry of Environment and Physical Planning should establish a system to monitor the implementation of policy documents on air protection, entrusting this task to a separate administrative unit that would regularly estimate the effectiveness and appropriateness of implemented measures and, based on this, update policy documents to improve air quality and achieve progress towards the achievement of Sustainable Development Goals targets 3.9 and 11.6.

Renewal of the vehicle fleet

Transport is a significant source of pollution, especially in Skopje. The main characteristic of passenger transport, which dominates the sector, is a very high share of passenger cars (77 per cent), the average age of which was 18.6 years in 2016. The average estimated age of public transport buses in 2016 was 17.8 years. The share of urban and suburban public transport (11.9 per cent in 2016) is low

compared with the use of individual passenger cars. End-of-life vehicles and the low rate of use of public transport against that of passenger cars together multiply significantly the negative impacts of transport on air quality.

Recommendation 8.5:

The Ministry of Economy, in collaboration with the Ministry of Environment and Physical Planning, should:

- (a) *Introduce measures for renewal of the passenger vehicle fleet, favouring fuel economy through the “feebate” system of charges and rebates, whereby energy-efficient or environmentally friendly practices are rewarded while failure to adhere to such practices is penalized;*
- (b) *Introduce a green public procurement system and advise national public institutions and municipalities to renew the public transport fleet, including by using the green public procurement system, favouring electric and gas-powered buses.*

Reducing air pollution by improving energy efficiency

Energy production (public electricity and heat production) contributed 41 per cent of the total

emissions of NO_x and 91 per cent of the SO₂ emissions in 2016. Its contribution to CO emissions is 8 per cent, while its contribution to PM₁₀ and PM_{2.5} emissions is estimated at 11 per cent and 6 per cent respectively. Consumption of energy, especially in residential heating, makes a major contribution to PM emissions. Energy production is also a dominant source of emissions of lead (38 per cent), mercury (45 per cent) and cadmium (49 per cent).

Residential heating has a major share in total national emissions of PAHs (79 per cent) and PCDD/Fs (77 per cent). It also contributes 67 per cent of the total national emissions of carbon monoxide, although emissions of this pollutant decreased by 14 per cent in 2016 compared with 2015, due to greater use of natural gas and briquettes and pellets for residential heating instead of fossil fuels and wood. Residential heating also has a dominant share in emissions of PM₁₀ (46 per cent) and PM_{2.5} (58 per cent), which represent a major air quality concern in the country. Moreover, it contributes 29 per cent of total national emissions of VOCs, 10 per cent of emissions of PCBs and 8 per cent of emissions of NH₃.

Recommendation 8.6:

The Government should introduce measures to improve energy efficiency and to stimulate changes towards using more sustainable fuels in the housing and energy sectors.

Chapter 9

WATER MANAGEMENT

9.1 Water resources

The available water resources in the country are 3,040 m³/cap./year.

Groundwater

No comprehensive data on the quantity of groundwater bodies are available. Although numerous hydrogeological studies have been carried out in the past, there is no nationwide systematic and continuous monitoring and evaluation.

Groundwater resources can only be roughly estimated, as, to a large extent, no data on the resources are available. A hydrogeological map of 1977 serves as a basic information source about groundwater. According to data from the 1970s, there are about 4,400 sources, spring water and wells, with a total yield of 992 million m³/year. About 58 have a capacity of over 100 l/s. Only three of these sources are in the central part of the Vardar plain. All the others are in the western region. The eastern part of the country is poor in water and only seven springs with very small capacity are registered there.

The groundwater reserves for abstraction are estimated at about 50.2 m³/s with the quantity of exploitation of the reserves yield being 23.8 m³/s for spring water and 26.35 m³/s by the construction of wells.

Surface water

There are about 35 rivers and about 53 natural and artificial lakes. With an area of about 488 km², the

lakes cover about 1.8 per cent of the country's territory. The topography is essentially (79 per cent) hilly to mountainous.

The average annual available quantity of surface water in the country is about 6.8 billion m³/year. This value varies according to the amount of rainfall in the year, so that for a medium dry year the available amount of surface water is 4.5 billion m³.

The country is divided into four river basins (table 9.1 and map 9.1). The Juzna Morava River Basin is the smallest, with a catchment area of only 44 km², or 0.17 per cent of the country's territory.

With a catchment area of about 20,661 km², the Vardar River Basin covers about 80.4 per cent of the country's territory and is thus the largest in the country. It consists of the Vardar River and the main tributaries, the Treska, Lepenec, Pcinja, Bregalnica, Crn, Bosava and Dosnica Rivers. Within the catchment area lies Lake Dojran.

The Strumica River Basin is located in the east of the country and includes the Strumica, Cironka and Lebnica Rivers. It covers an area of 1,650 km². Water availability is the lowest in these parts of the country.

The Crn Drim River Basin is the richest region in water. The Crn Drim River rises from Lake Ohrid at the town of Struga and includes the two largest natural lakes in the catchment area – Ohrid and Prespa. While the flow direction of the Vardar and Strumica Rivers is northwest to southeast, the Crn Drim River's flow is south to north.

Table 9.1: River basins

River Basin	Catchment area		Surface water resources (million m ³)	Superficial run-off (l/s/km ²)
	(km ²)	(%)		
Vadar	20 661	80.35	4 600	7.00
Strumica	1 649	6.41	132	3.10
Crn Drim	3 359	13.06	1 640	12.30
Juzna Morava	44	0.17	9	..
Total	25 713	100.00	6 381	..

Source: 2012 National Water Strategy.

November 2018, 65 surface water stations and 38 groundwater stations are operational. For groundwater level, long time series at quite a few monitoring points are available. The surface water quality monitoring network comprises 20 sampling points (map 4.2). Although 15 automatic stations with data transmission were installed in the Vardar River catchment areas between 2004 and 2008, only one is still in operation.

No satisfactory data are available for both surface water and groundwater bodies. The human and financial resources to ensure reliable water monitoring are limited. In 2017, the annual budget for maintenance, measurement, fuel, etc. was only about 1,451,000 denars, around €25,000. In relation to the number of existing stations for surface water and groundwater monitoring, this represents only about 6,500 denars per station or less than 0.1 per cent of the investment cost of building a new station for maintenance.

An attempt is currently being made to implement monitoring in accordance with Directive 2000/60/EC establishing a framework for Community action in the field of water policy (WFD) guidelines, but HMS faces difficulties in monitoring some quality elements. Due to the lack of appropriate and modern laboratory equipment, only heavy metals (Cd, Pb and Ni) are analysed. For the ecological state, the current national monitoring programme comprises three biological elements: benthic invertebrate fauna, phytobenthos and phytoplankton. Sampling of these quality elements has started in 2018, to be undertaken two times per year, but the other two biological quality elements (macrophytes and fish) are not yet subject to routine monitoring. Therefore, the available monitoring data allow only a partial overview of the conditions of the surface water resources in the country. As HMS focuses on rivers, reservoirs and lakes monitoring data are not included.

The country lacks reliable data on groundwater quality and quantity. No groundwater quality monitoring network is operational. Therefore, there is no nationwide overview of groundwater quality. Due to a lack of financial resources, systematic and permanent groundwater monitoring is not carried out. Some data are provided from several projects but give only a basic picture in some regions. They are either not centrally stored, not recent or outdated. No data specific to interactions with ecosystems are available.

Monitoring of drinking water quality is conducted for public water supply systems by the 10 CPHs. Annual reports on drinking water quality monitoring are prepared by the Institute of Public Health, based on reports submitted by the centres. Control monitoring

of municipal public water supply systems is conducted by the Institute periodically.

9.3 Water quality

Groundwater

Statements on possible negative influences due to anthropogenic activities in areas such as waste, wastewater, agriculture (nitrate, pesticides) and industry, especially in the hydrogeologically sensitive areas of karst with high water permeability, are not possible. Single studies have revealed isolated findings, but no nationwide information is available.

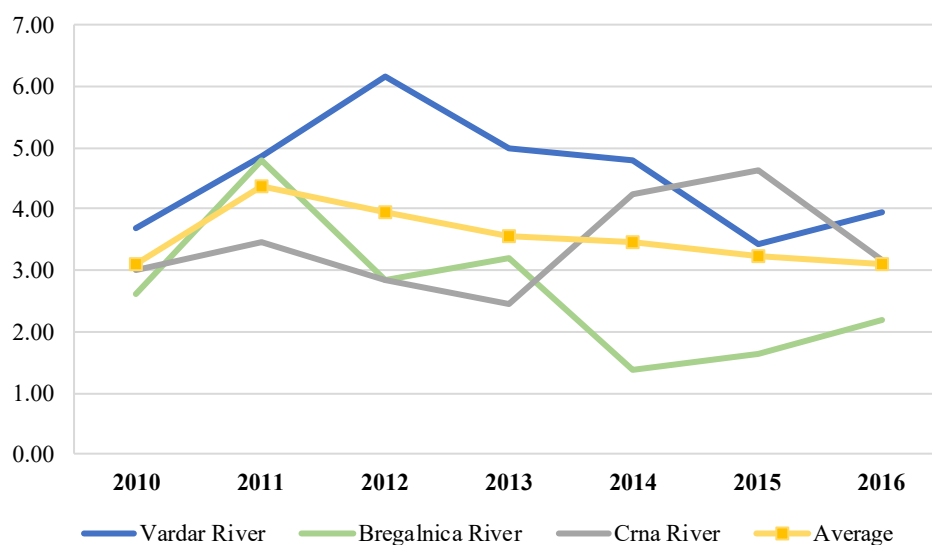
Surface water

Rivers

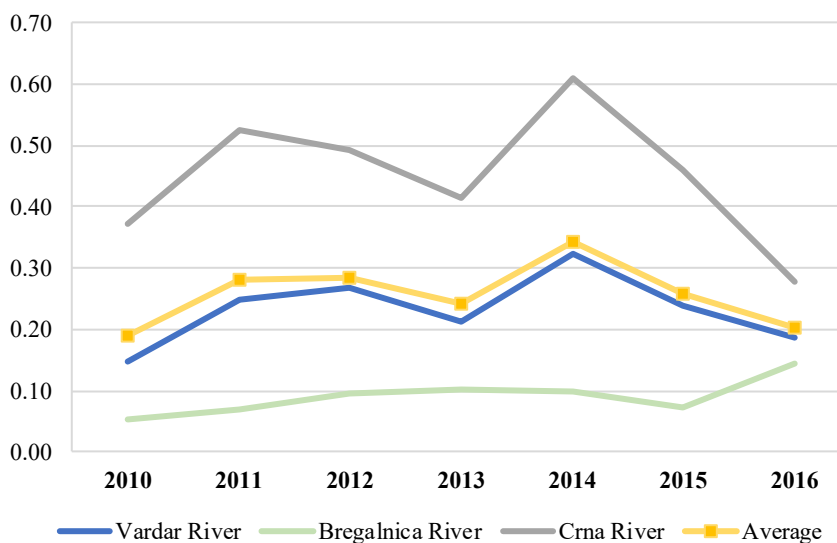
According to the Law on Waters, the categorization and classification of river waters is done in line with international standards. Water bodies are classified from “purity” (class I) to “pollution” (class V) in five quality classes. The permitted use criteria are defined for the respective quality classes. Due to the high load of sewage, especially below big settlements, the self-cleaning of waters is greatly limited. By contrast the hydromorphologic state of the waters overall is very good. In some areas, this state is negatively influenced by new projects. The concentrations of BOD₅ in rivers increased slightly in 2011, followed by a steady decrease until 2016, reaching the same level as in 2010 (figure 9.1). Moderate eutrophic status in relation to the level of BOD₅ is registered in the Crna and Vardar rivers, which could be the result of inefficient treatment of urban and industrial wastewater, and because of inadequate protection of river basins.

In the Vardar River, high concentrations of BOD₅ were registered in 2012, measuring 6.1 mg/l. In the period 2010–2016, concentrations of BOD₅ in the Crna River were found to be 2 mg/l–4 mg/l (class II). The lowest concentration of BOD₅ was determined on the Bregalnica River, where it was registered at 1.3 mg/l (class I).

Ammonium concentrations in rivers show a variable trend, increasing from 2010 to 2014 and decreasing from 2014 to 2016, reaching the 2010 level (figure 9.2). Ammonium is partly present in alkaline wastewater as toxic ammonia, which kills many aquatic organisms even in relatively low concentrations. Inorganic total nitrogen from wastewater also partly acts as a fertilizer for aquatic plants and algae. Overfertilization of water bodies can lead to algal blooms and a lack of oxygen in water bodies.

Figure 9.1: Biochemical oxygen demand in selected rivers and average, 2010–2016, mg/l

Source: Ministry of Environment and Physical Planning, National Hydrometeorological Service, 2018 (www.moepp.gov.mk/?page_id=4436&lang=en).

Figure 9.2: Total ammonium in selected rivers and average, 2010–2016, mg/l

Source: Ministry of Environment and Physical Planning, National Hydrometeorological Service, 2018 (www.moepp.gov.mk/?page_id=4436&lang=en).

The nitrate concentration is comparatively low compared with other European countries. In the Vardar River, the values are about 1.5 mg/l. In the Bregalnica and Crna rivers, the values are less than 1 mg/l (figure 9.3).

From 2010 to 2016, the average annual concentration of orthophosphates in the three rivers decreased slightly, except from 2013 to 2016, when the average annual concentration of orthophosphates increased (figure 9.4).

Lakes

Lake Ohrid is an oligotrophic lake with high transparency and, in total, low concentrations of phosphorous (0.001 mg/l P to 0.02 mg/l P). The water of Lake Ohrid is very clear and unpolluted and can be used for drinking without any treatment. Wide parts of the data recording total nitrate and total phosphorous concentrations show gaps. Besides, the sudden fluctuations within the data rows are not quite understandable.

Lake Prespa is a mesotrophic lake with higher concentrations of phosphorous (0.02 mg/l P to 0.09 mg/l P), thus increasing the risk of the lake's water eutrophication. The insufficient wastewater treatment and leakages in the sewerage system have a heavy impact on the lake's water status.

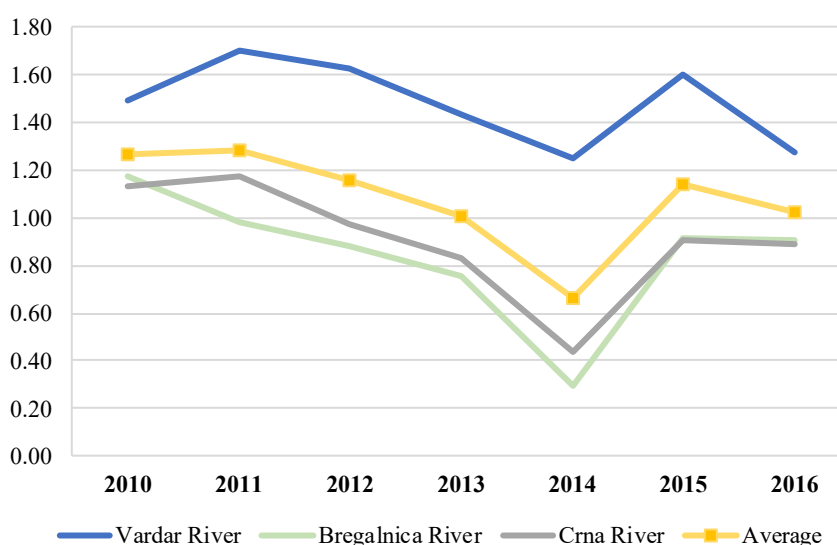
For Lake Dojran, only few data are available. Lake Dojran suffers from water abstractions and decreasing water level, which have had severe impact on its water quality, resulting in eutrophic status. During the past two decades, a rapid drawdown of Lake Dojran was observed, and there was a danger of losing the lake

completely. The reasons for the disappearance of the water from the lake were the dry hydrological cycle over more than 10 years and uncontrolled use of the water from wells for irrigation. To improve the situation, a pipeline system for recharging the lake with groundwater was installed.

Drinking water

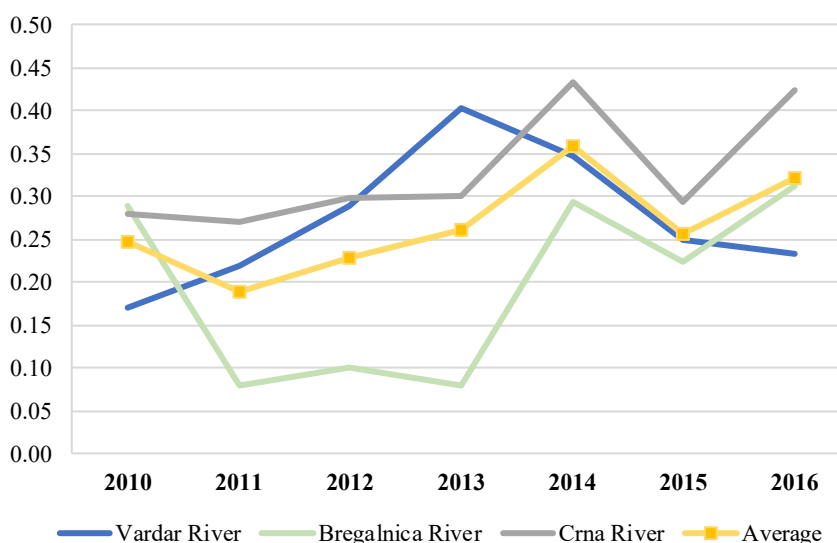
Water sampling is consistent with international standards and European directives for drinking water. In 2017, 94.4 per cent of samples analysed were compliant with norms.

Figure 9.3: Total nitrates in selected rivers and average, 2010–2016, mg/l

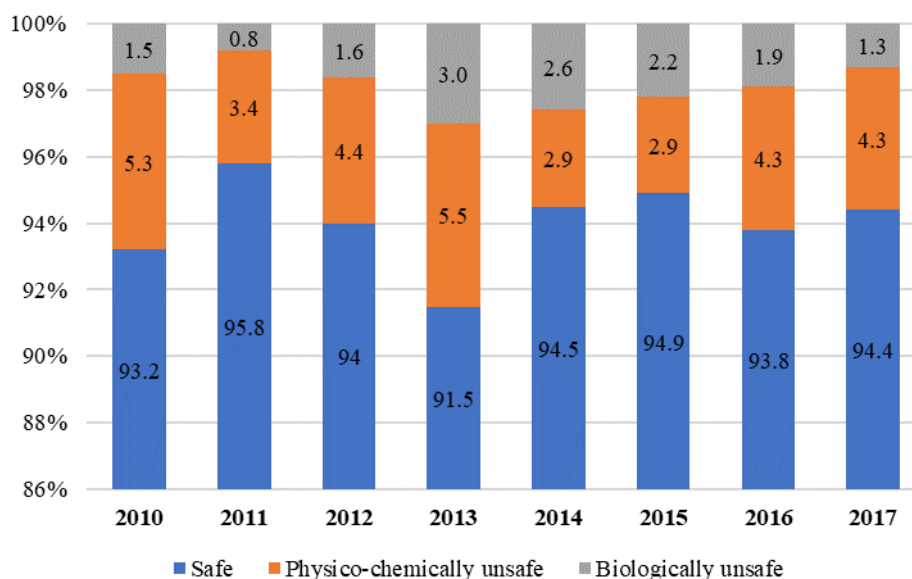


Source: Ministry of Environment and Physical Planning, National Hydrometeorological Service, Hydrobiological Institute, 2018 (www.moepp.gov.mk/?page_id=2785).

Figure 9.4: Total orthophosphates in selected rivers and average, 2010–2016, mg/l



Source: Ministry of Environment and Physical Planning, National Hydrometeorological Service, Hydrobiological Institute, 2018 (www.moepp.gov.mk/?page_id=2785).

Figure 9.5: Drinking water quality, 2010–2017, percentage

Source: Institute of Public Health, 2018 (www.moepp.gov.mk/?page_id=4900).

However, the trend in drinking water quality is fluctuating, with the highest level of compliance with norms (95.8 per cent) in 2011 and the lowest (91.5 per cent) in 2013 (figure 9.5). The most frequent causes of non-compliance in physical and chemical parameters include the absence of residual chlorine or increased content of iron in raw water and, in a very few samples, it is due to the increased content of nitrites from dug or drilled wells of individual users.

Bathing water

The percentage of samples from natural lakes with non-compliant quality is still very high, especially for physical and chemical parameters. The quality of water in the lakes is threatened by direct discharges of wastewater or by rivers entering the lakes that contribute to deterioration of the quality of lake water, but also by uncontrolled use of lake waters for agricultural and tourism purposes.

9.4 Management of water use and pressures on water resources

Water abstraction and use by sector

The water exploitation index (WEI) is the annual total abstraction of freshwater divided by the annual total renewable freshwater resource (7.9 billion m³), expressed in percentage terms. In years of intensive water use, the WEI is around 20 per cent and, at peak times, as in 2012, up to 35.7 per cent.

An actual trend that can be derived from macroeconomic contexts is not discernible. On

average, in the period 2007–2014, 81 per cent of the water demand is covered by surface water (table 9.2).

When considering the water demand over several years, it is generally noticeable that it is fluctuating. This applies not only to the total water demand of all sectors but also to the consumption of the various sectors. In 2012, the higher demand from agriculture was mainly met by surface water, while the higher demand from industry was met by groundwater. Another important factor in the comparison of water supply with water use is the water loss, from the water extraction to the place of use (tables 9.2 and 9.3). The water losses in water supply companies in the country are generally in the range of 40–65 per cent of the system input

Industry and mining

Industrial enterprises can be divided into two groups: those connected to public water supply systems using water of high quality, and those using own water resources (spring, wells, river diversion, reservoirs) (table 9.4). In comparison with the public water supply, companies' own water supply accounts for the largest share of water used. A very non-homogeneous picture also emerges from the data regarding the total water demand, but also regarding the sources used to cover the demand. An apparent doubling or halving of the total water demand within only a few years is not comprehensible. Similarly, no clear, sustainable use concept can be discerned for the resources used. In 2010, water from reservoirs was used almost exclusively to meet demand. In 2011, demand was met from watercourses while reservoirs were conserved or exhausted.

Table 9.2: Water abstraction by type and sector, 2007–2014, million m³

	2007	2008	2009	2010	2011	2012	2013	2014
Total abstracted surface water	422.6	527.9	886.0	1 357.8	754.4	2 033.5	679.9	467.2
Industry	107.9	67.7	299.3	959.5	448.7	637.4	410.5	51.0
Households	189.4	183.9	226.8	39.4	33.0	131.6	113.0	207.2
Agriculture, forestry and fishing	125.3	276.3	359.9	358.9	272.7	1 264.5	156.4	209.0
Total abstracted groundwater	116.3	155.0	162.1	326.9	227.9	775.1	59.8	60.0
Industry	79.1	104.5	114.1	130.2	55.3	652.9	25.3	17.6
Households	37.0	48.9	47.0	195.7	171.6	33.5	34.4	42.2
Agriculture, forestry and fishing	0.2	1.6	1.0	1.0	1.0	88.7	0.1	0.2
Grand total	538.9	682.9	1 048.1	1 684.7	982.3	2 808.6	739.7	527.2
Industry	187.0	172.2	413.4	1 089.7	504.0	1 290.3	435.8	68.6
Households	226.4	232.8	273.8	235.1	204.6	165.1	147.4	249.4
Agriculture, forestry and fishing	125.5	277.9	360.9	359.9	273.7	1 353.2	156.5	209.2
Water exploitation index	6.8	8.7	13.3	21.4	12.5	35.7	9.4	6.7

Source: Ministry of Environment and Physical Planning, 2018.

Table 9.3: Water resources use by sector, 2007–2014, million m³

	2007	2008	2009	2010	2011	2012	2013	2014
Households	114.8	79.0	273.8	235.0	205.0	165.1	147.3	249.0
Processing industry	174.5	215.0	622.0	659.0	254.0	218.8	391.8	58.0
Production of electric energy – cooling	12.3	8.0	18.1	18.0	15.0	0.0	0.0	12.0
Irrigation	125.5	278.0	360.0	293.0	360.0	1 353.0	156.5	209.0
Total	427.1	580.0	1 274.0	1 205.0	834.0	1 737.0	695.6	528.0

Source: Ministry of Environment and Physical Planning, 2018.

Table 9.4: Water supplied to industry and mining, 2008–2015, thousand m³

	Total	Own water supply					Public water supply	Other
		Groundwater	Springs	Water courses	Reservoirs	Lakes		
2008	1 922 147	107 598	42 249	18 052	1 533 464	220 753	68 452	4 143
2009	4 500 119	114 139	260 618	1 572 063	2 175 430	377 869	36 162	235 584
2010	6 368 589	130 168	532 162	494 360	4 680 863	531 036	516 497	35 468
2011	5 869 979	55 265	480 396	5 061 935	52 171	220 212	203 126	233 093
2012	5 006 246	65 293	147 494	2 639 871	1 901 038	252 549	102 695	5 901
2013	2 537 780	25 504	539 968	959 418	1 012 888	2	354 580	2 288
2014	3 427 825	17 606	1 654 162	481 822	1 010 409	263 827	32 283	2 819
2015	4 282 042	3 920	217 847	1 278 812	812 725	8 112	32 461	1 363

Source: Environmental Statistics, State Statistical Office, 2017.

The largest water resources cover industrial needs, such as electricity, gas, steam and air conditioning supply, which account for 99 per cent.

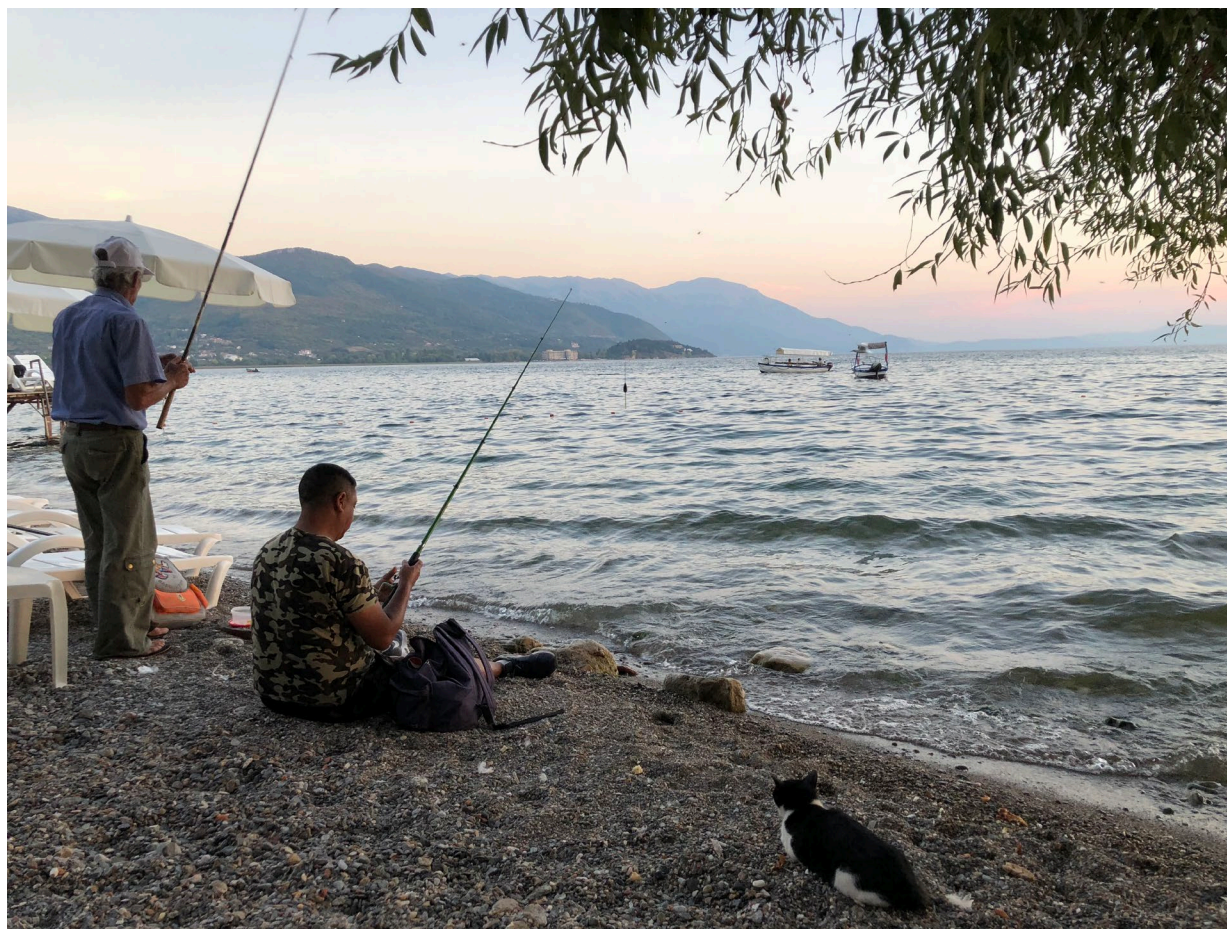
Water requirements for mining and quarrying and manufacturing are of secondary importance. Less than 1 per cent of the water demand is reused water.

Pressure from industry

Only a limited number of industrial WWTPs have been constructed, and most of them only have mechanical treatment. A limited number of industrial WWTPs have mechanical and chemical (or biological)

treatment. Some of the industrial WWTPs are out of operation due to malfunctioning, lack of spare parts or non-maintenance. About 99.6 per cent of the untreated wastewater is discharged into watercourses.

Heavy industrial plants, as well as existing and abandoned mines, could have an impact on water resources and concentrations of heavy metals could be detected in water. Blašnica River, for example, shows high concentrations of arsenic in water originating from the mining activities of an abandoned mine. Excessive concentrations of Pb and Cu are also recorded in water, as are concentrations of nickel and chromium in the sediment.

Photo 9a: Amateur fishing in Lake Ohrid

In Kavadarci, the strongest pressure is exerted by the metal industries, which burden the Luda Mara River downstream with manganese, copper and cadmium.

Agriculture, including irrigation

The total agricultural land area within the country is 1.264 million ha, of which the cultivated area is around 513,000 ha. The potential irrigated area is only around 164,000 ha of the total arable land area and only 126,617 ha of this area is equipped. About 99,918 ha are located in the Vardar River catchment area, 18,432 ha in the Strumica River catchment area and 8,267 ha in the Crn Drim River catchment area. The largest irrigation schemes are located in Bregalnica (29,315 ha), Tikvesh (19,225 ha), Strezevo (20,200 ha) and Turija (10,051 ha).

Most of the irrigation systems have been constructed before the 1990s. In 1998, there were about 160 large and small irrigation schemes with a storage capacity of 1.850 million m³. For this purpose, more than 27 large dams, more than 120 small dams, about 1,400 km of main channels/pipelines and about 6,800 km of detailed irrigation network had been built.

Irrigation is mainly from surface waters (reservoirs, streams, lakes). Due to the lack of information about groundwater status and use, there could be a high number of irrigated areas relying on groundwater sources (local wells). The three irrigation methods (surface irrigation, drip irrigation and sprinkling irrigation) are evenly used on the irrigated areas. Most of the irrigation schemes have no measuring devices on irrigation intakes. There are no reliable data on irrigation water used or quantitative data on water losses.

Apart from irrigation, drainage of the land is also an important issue concerning agriculture. The total drainage length is 7,637 km and the average drainage density is 0.30 km/km². The highest drainage density is in water management division Gorna Bregalnica, which belongs to the Vardar River Basin.

Due to agricultural use, pollution of soil and groundwater in certain regions cannot be ruled out. Especially in hydrogeologically sensitive areas with a high permeability to groundwater (karst), intensive use of fertilizers and plant protection chemicals can be expected to have negative effects, but no systematic monitoring and analyses are performed.

In the coming years, the demand for irrigation water might increase, due to the high and increasing water losses as well as the expected changes related to climate change.

Pressure from agriculture

The effects of agriculture on the status of surface water and groundwater can be separated by point and diffuse sources. Regarding the point sources, there are discharges of wastewater from livestock farms and slaughterhouses. The improper storage of waste and little use of waste treatment facilities could pollute the surface water or groundwater. Organic manure production amounts to about 3 million tons annually. No data on the quantity and quality of discharged wastewater from farms are available. No data on the use of mineral fertilizers or the consumption of pesticides are available.

Erosion

The country is one of the most erosion-affected territories on the Balkan Peninsula. Water erosion caused by rainfall and running waters are dominant in the country. Besides the natural reasons for erosion, like the erodibility of certain sediments, rocks and soils, there is also the long-term destructive impact of human presence and activity. The destruction of

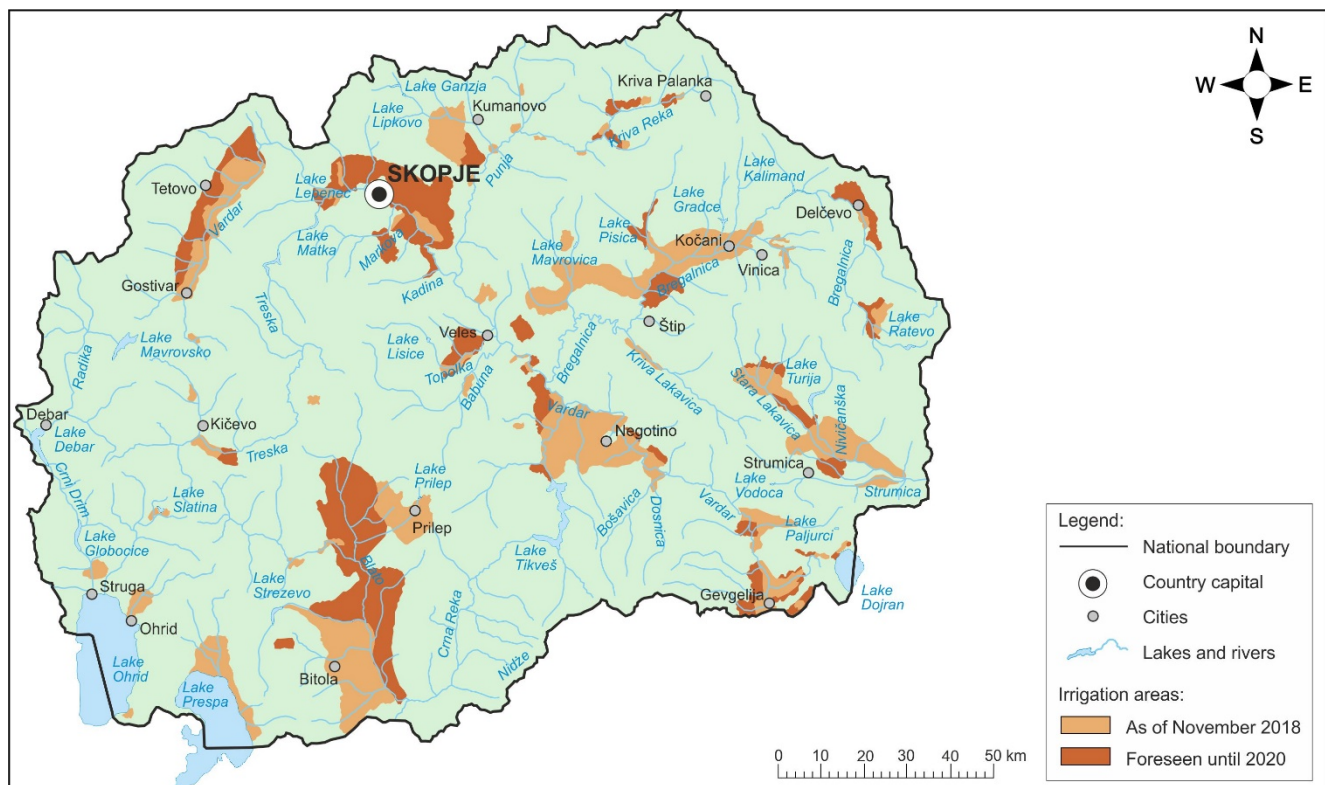
natural vegetation, the absence of measures for agricultural soil conservation and inadequate processing have resulted in the deterioration of physical soil properties. According to an EEA report, the country belongs to the so-called red zone of water erosion in Europe. According to the Ministry of Environment and Physical Planning, 96.5 per cent of the total territory is under the process of erosion. The total annual volume of erosion for the country is about 17 million m³.

In addition to the loss of cultivable land, erosion has negative effects on water status. During floods, sediment leads to a significant increase in damage to water bodies and a higher cost to eliminate the effects. Soil erosion was considered in detail in the Bregalnica RBMP. For the Bregalnica River Basin, there is an estimated annual loss of 7 million tons, with an average area-specific soil loss rate of 15 tons per ha/year.

Energy, including hydropower plants and reservoirs

The water demand for the energy sector is very low compared with other sectors. HPPs already play a role in energy supply. There are currently nine large and 73 small HPPs, with total installed power of 580 MW.

Map 9.2: Irrigation areas



Source: Agency for Real State Cadastre, Ministry of Environment and Physical Planning, 2010.

Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations

Pressure from hydropower

The available potential for construction of small HPPs at possibly 400 locations is assessed at 255 MW. There is a programme to build several new (small) HPPs. Many of the projects are in protected areas, such as national parks. Although small HPPs initially seem positive compared with conventional power plants, they have negative effects on water bodies, such as stopping fish migration and transporting gravel and sediment. To ensure fish migration, fish ladders are to be built.

The residual flow is defined as only 10 per cent of the average water flow. By faulty planning of fish passes and violation of the residual flow requirements, the function of existing fish ladders is endangered. In some cases, the residual flow is reduced to zero to increase the performance of HPP.

Households

Drinking water supply

About 70 per cent of the public water supply is covered by groundwater. In 2015, around 79 per cent of the country's 2.07 million inhabitants were provided with water from centralized drinking water systems operated by public water utility companies (table 9.5). Around 10 per cent of inhabitants are supplied through local rural water supply schemes by local communities and 11 per cent have their own, individual water supply. Of the total number of inhabitants in the country, around 60 per cent are supplied from karstic water sources, around 20 per cent from surface water resources and around 20 per cent from groundwater sources. Drinking water consumption varies across the country from 93 l/cap./day to 151 l/cap./day. Average consumption is 128 l/cap./day.

The majority of public water supply systems provide clean and safe drinking water. However, there are 11 municipal water supply systems and three municipalities connected to a regional water supply scheme where a lack of residual chlorine, turbidity, humid substances, iron or manganese were identified.

The major causes of non-compliance in small water supply systems is the lack of sanitary protection of the water sources, poor maintenance of structures and equipment, or absence of or inadequate chlorination. These scattered systems represent small water supply zones providing water for around 10 per cent of the total population in the country. The level of compliance in 2015 was around 35 per cent for microbiological parameters and 28 per cent for physico-chemical parameters. The provision of safe and secure drinking water from small water supplies is a complex and resource-intensive challenge. The most vulnerable category is individual water supply, due to frequent microbiological non-compliance.

The protected zones for drinking water supply are not fully identified. As at November 2018, there is no centralized database of protected zones. The information is possessed by various departments in the ministries and municipalities and available in different databases, electronic or physical formats. In 2012, technical regulations for the identification of protected zones for drinking waters were drafted but they are not yet adopted.

Sewerage systems

According to the 2002 Census of Population, Households and Dwellings, 40.1 per cent of the total number of dwellings are not connected to a public sewerage network, 21 per cent use septic tanks and 12 per cent have free wastewater discharge.

Table 9.5: Overview of drinking water supply service coverage

Administrative region	Population (2015 estimate)	Served by water supply systems operated by PUC		Supplied by means of local community system		With self-supply (individual wells, intakes)	
		(number)	(%)	(number)	(%)	(number)	(%)
Vardar	152 917	127 121	83.1	12 042	7.9	13 754	9.0
East	176 877	145 598	82.3	15 100	8.5	16 179	9.1
South-west	219 718	164 639	74.9	32 927	15.0	22 152	10.1
South-east	173 552	132 489	76.3	17 451	10.1	23 612	13.6
Pelagonia	230 880	195 926	84.9	13 235	5.7	21 720	9.4
Polog	320 299	183 385	57.3	90 699	28.3	46 216	14.4
North-east	176 231	115 486	65.5	17 235	9.8	43 511	24.7
Skopje	620 913	562 357	90.6	13 949	2.2	44 607	7.2
Total	2 071 387	1 627 000	78.5	212 636	10.3	231 751	11.2

Source: Development of National Water Study, 2017.

Table 9.6: Water service infrastructure coverage by settlement size

	Population	Households	Households connected to			
			Water system		Sewerage system	
			(number)	(%)	(number)	(%)
Urban	1 082 278	308 272	225 571	73	185 990	60
Suburban	289 163	101 734	76 145	75	55 691	55
Rural	303 595	79 188	65 277	82	10 395	13
Total	1 675 036	489 194	366 993	75	252 076	52

Source: Development of National Water Tariff Study, 2014.

Almost 180,000 dwellings that are connected to a public water supply system are not connected to a public sewerage system. The larger part of the constructed sewerage network has not resulted in a modern system of drains. In rural areas, only 13 per cent of the population have a wastewater connection. In Skopje, the coverage levels are markedly higher, with wastewater collection coverage of 70 per cent.

The current condition of the sewerage systems varies across urban and rural areas. Generally, the systems are rather old and worn out, and the collection network is constructed of different materials. The pipes are cracked and there are leakages of the wastewater. Capacity is very often not sufficient to collect all wastewater. The systems for urban wastewater and storm water are not separated, and, during floods, pipes are overloaded and suffer from increased pressure. Generally, existing sewerage systems in major urban areas are designed to collect and convey both wastewater and storm water.

Only 12 cities have constructed separate sewerage systems. Skopje has constructed separate systems for wastewater (56 per cent of the entire network) and for storm water (18 per cent of the network). Usually, storm water collectors discharge the water into the closest recipient body, while wastewater is discharged downstream from the urban areas. Sewerage systems are local systems for each urban area. Besides these, there are three larger or regional sewerage systems for protection of Lakes Ohrid, Prespa and Dojran. The sewerage system for protection of Lakes Ohrid and Prespa consists of collector pipelines, pumping stations and WWTPs. Even if the two lakes are very important for the tourism industry, the operation of the WWTP is not ensured.

Wastewater treatment

There are 24 WWTPs reported to be operating, with a total capacity of 525,000 pop. eq., which represents 24.5 per cent of the required capacity. In Skopje, with a population approaching 700,000, there is no WWTP. All sewage is discharged untreated into the Vardar River. Skopje is planning to build a WWTP.

Since 2011, additional capacity for approximately 258,000 inhabitants has been created. Under the EU Operational Programme for Environment and the Swiss Cooperation Strategy in Macedonia 2017–2020, it is expected to construct four WWTPs in the period 2018–2020: Bitola (112,474 pop. eq.), Tetovo (98,417 pop. eq.), Kocani (40,000 pop. eq.) and Delcevo (18,000 pop. eq.). This would mean an increase of almost 280,000 pop. eq. There is no wastewater monitoring of influent or effluent municipal sewerage system discharge to recipient bodies, except in places with operational WWTPs. However, even in cases where discharge is monitored, there are no restrictions in place, even when discharges exceed the normal limits.

Storm water system

The total length of the sewerage network in the City of Skopje in 2014 was 1,021 km, of which 302 km was the storm water system. In 2012, the total length of all pipe diameters in the storm water network in the whole country was 550 km. There are some projects to build additional storm water networks.

Photo 9b: Wastewater treatment plant in Novo Selo



Because of the costs of building separate systems for storm water and wastewater, and the lack of wastewater treatment, the most popular system is a combined network for storm water and communal wastewater. However, a combined network, although cheaper, causes functional problems during wet weather, namely, flooding of the streets with wastewater, but it is also an additional burden for WWTPs, where they exist.

Landfills

There are 54 non-compliant municipal landfills operating without permits. Only one landfill (Drisla) covers the region of Skopje; it has an operational permit and is the only waste site compliant with national requirements. It is estimated that there are about 1,000 dumpsites, most of them in rural areas (chapter 10). Active non-compliant municipal landfills are categorized according to assessment of the level of environmental risk they pose. According to this categorization, 16 non-compliant landfills are of high risk, 17 are of medium risk and 21 are of low risk (table 10.7). In hydrogeologically sensitive areas, such as karst terrain, water bodies or flood plains, industrial waste and MSW can have negative impacts on surface water and groundwater.

Little or no information is available on the history of the dumpsites from abandoned mining and processing industries and their environmental impact, and their legal heritage is not clear. Sixteen major industrial areas and dumpsites are identified as “hotspots”, given their high hazard potential.

Tourism

In the period 2007–2017, the number of tourists nearly doubled, from 536,212 to 998,841, but the number of tourist nights increased by 37.5 per cent from 2,019,712 to 2,775,152. Depending on the type of tourism activity, the duration of nights spent is from 1.2 to 2.7 nights, while for Skopje, in 2017, the state capital and cultural, economic and trade centre, it is 1.85 nights spent.

An additional load of wastewater is discharged by tourists. The water consumption norm in Skopje is from 0.28 m³/tourist/day to 0.40 m³/tourist/day.

During the tourist season, higher nutrient values can be registered in the lakes. Organic loading is also more intense during the summer period. The reason for this is the higher number of people present during this season and the number of tourist facilities, both of which contribute to pollution of the ecosystem. The tributaries also have significant influence in the lake watersheds, as they are affected by the communal and industrial water discharge systems and drainage from the surrounding agricultural areas.

Due to the lack of a WWTP in Skopje, the higher number of tourists has an impact on water quality in the city. This is the same phenomenon as at Lake Ohrid, where the permanent operation of the sewage treatment plant is not ensured. Otherwise (outside the tourist season), the capacity of the existing WWTP at Lake Ohrid is sufficient.

Photo 9c: Water pollution



Sludge

There is no sludge management. A proposed sludge management strategy was included in a draft national water management plan for the period 2018–2024, which was undergoing internal consultation with stakeholders as at January 2019. Adopting a separate strategy on sludge management requires first amending the Law on Waste Management.

The manner and procedure for sludge management from waste treatment plants is regulated. The reuse of sludge in agriculture is not regulated. Advanced sludge treatment (drying, composting) is not practised in the country. The use of sludge is rather negligible.

9.5 Impact from and adaptation to climate change

Since 2002, storms and flash floods in some regions have become more frequent and caused significant damage. Heatwaves have been more frequent in the last 10 years in the Skopje Region, the highest number being in 2012.

In order to assess trends, an observation period of 1951–2010 has been analysed for temperature, precipitation and discharge of selected rivers; for systematic observations and measurements, this is a very short period as a basis for assessing statistical trends on a long-term basis. The recorded annual average and maximum discharges from 2001–2010 show an increasing trend. According to the statistical trend analysis, the last decade can be recognized as a hydrological wet period.

In the observation period, generally, there is a reduction in the annual values of the average discharges for all river basins. The air temperature data from Strumica show an increasing trend for the last decade (2001–2010), which resulted in an increasing trend for the entire observed period (1951–2010). The south-eastern part of the country was identified as the most vulnerable.

Climate change has a high impact on irrigation. While air temperatures and water demand are increasing, precipitation and surface water – the main source for irrigation – have reduced. The year 2012 has shown how sensitive the irrigation sector in the country is. While other sectors showed no change in consumption, irrigation use quadrupled in comparison with average demand over the observed period.

At the national level, no specific priorities can be identified for tackling climate change on water management. In the 2012 National Water Strategy,

continuous adaption to climate change was pointed out without any priorities being set.

9.6 River basin management

The Ministry of Environment and Physical Planning has the leading role in river basin management. In terms of planning, the Ministry is responsible for the preparation of RBMPs. In terms of implementation, the Ministry has a leading role in the management of international river basins.

The Administration for the Environment under the Ministry has to ensure the fulfilment of expert activities and undertake measures and activities significant for water resources management for each river basin, such as the collection, processing and storage of data from water monitoring, the preparation of basic assessment of the characteristics of each river basin and the preparation of a programme of measures.

River basin management councils

No river basin management council (RBMC) is established. RBMCs have to be established for each river basin, and on a voluntary basis for sub-basins. Their purpose is the preparation, implementation and monitoring of the relevant RBMP, and proposal of measures to improve water management. RBMCs are the mechanisms ensuring the participation of local communities in water management.

The Government can approve RBMCs on the proposal of the Ministry of Environment and Physical Planning – one for each river basin area.

River basin management plans

The Government should adopt RBMPs and monitor their implementation. RBMPs for Lake Prespa and Bregalnica River are developed. RBMPs for the Strumica and Vardar River Basins have been drafted. None of the RBMPs developed so far has been adopted by the Government and no SEA has been done for any of them. RBMPs for the other river basins are still lacking. In the case of Bregalnica RBMP, a communication concept for public involvement was developed. Public participation was ensured on several levels. There had been several public project presentations and subregional workshops involving representatives of the Government, the municipalities of the Bregalnica Region, public utilities, CSOs and civil society. There had been municipal forums, organized by the municipalities, with the support of external moderators and public events to raise public awareness on water issues in the region.

Photo 9d: River training in Lipkovo

However, RBMPs suffer in some areas from the lack of data, due to the poor state of the qualitative and quantitative water monitoring system. Apart from this, some biological quality criteria, such as for fish, are not defined and so the real ecological status of the water bodies is not defined. In addition, the reference conditions to define the status of water bodies are still not yet established.

9.7 Flood management

Because of its geomorphology and climate, the country is prone to floods. Floods account for 44 per cent of all disaster events in the country.

The basis of the flood risk management plans are flood hazard and flood risk maps. Neither has yet been created.

Existing maps that partially show flood plains are not equivalent to flood hazard maps. Flood hazard maps show the extent of flood events of different years, while a map of a flood plain usually indicates one year. Flood hazard maps regard four criteria of the consequences of flooding: human health, the environment, cultural heritage and economic activity. A differentiated view of different events, their effects and the conclusions for adapted measures (prevention, preparedness, emergency response and recovery) is therefore not possible according to Directive 2007/60/EC on the assessment and management of flood risks. Due to the large deficits in monitoring surface waters, forecasting and estimating flood events is difficult. Therefore, it is attempted to ensure flood forecasting by means of precipitation measurements. The sole consideration of precipitation is essential, but is not sufficient to capture the actual discharge, in quantity and over time, in the water. The pressure from construction on the flood plains increases the risk potential in flood situations.

In January and February 2015, the country was affected by floods. The highest recorded rainfalls since measurements started in the country resulted in the significant rise in the levels of rivers, dams and accumulations, causing extensive flooding in 43 of the 80 municipalities in the country. Approximately 170,000 people were directly affected by the floods and nearly half the total population (965,569 people) were indirectly affected. The occurrence of floods has increased in frequency and the floods themselves in intensity over recent decades. During the last three decades, regional floods caused by the biggest rivers in the country caused an estimated total cost of damage of US\$193.8 million.

Several studies concerning the issue of floods are ongoing. For the City of Skopje, flood modelling based on Directive 2007/60/EC was carried out. Apart from plans and studies, large flood control structures (dams and reservoirs) also exist in the areas of Skopje, Pelagonija, Strumica and Struga.

Directive 2007/60/EC is not transposed into the national legislation. The Directive requires the mandatory creation and revision of flood risk management plans every six years. However, the issue of flooding and how to deal with it is regulated by law and some essential points of the Directive are thus fulfilled. The Law on Waters requires that a programme for protection against harmful effects of water is prepared within the respective river basin as an integral part of an RBMP. This would ensure the regular (six-year cycle) review of the programme, but its inclusion as an element within the RBMP would not do justice to the importance of the Directive.

9.8 Legal, policy and institutional framework

Legal framework

Law on Waters

The 2008 Law on Waters regulates issues pertaining to surface water, including: permanent watercourses or streams in which water occasionally flows, lakes, reservoirs and springs and groundwater; water habitats and their management, including distribution of water protection and conservation of water and protection against harmful effects of water; water facilities and services; and the organization and financing of water management, as well as the conditions, methods and procedures under which they use or release water. The Law defines principles of sustainable water resources management, such as the concept of ecological, social and economic management, the precautionary principle, minimal use of resources and stakeholders' participation. It stipulates competences in water

management at all levels of government. Through the decentralization process, the municipalities will be key executive players in environmental protection in the future and will provide most of the utility services: water supply, industrial and municipal wastewater, flood protection, erosion control and water discharge.

Law on Nature Protection

The Law on Nature Protection prescribes the protection of nature through biological and landscape diversity protection and natural heritage protection, in and outside protected areas. The Law regulates the protection of habitats and ecosystems, including those related to water.

Law on Drinking Water Supply and Urban Wastewater Drainage

This Law regulates drinking water supply, urban wastewater, water supply and sewerage systems and relationships between providers and consumers, as well as supervision of its implementation.

Law on Water Services Pricing

The Law on Water Services Pricing ensures the establishment of a financially self-sustaining water services system that ensures the high standard of services provided at an affordable price in accordance with the objectives of the 2012 National Water Strategy and of RBMPs.

Law on Water Economy

The Law on Water Economy regulates the management, use, operation and maintenance of hydro systems, irrigation systems and drainage systems.

Policy framework

The 2012 National Water Strategy defines the long-term policy to ensure sustainable water development by meeting the demands of all users and covers a period of 30 years. It remains general. There are no fixed requirements about time-specific implementation. In addition, there is no prioritization of the various areas such as water supply, monitoring and flood protection, and no prioritization of the measures mentioned. It provides a guideline for the preparation of action plans by individual ministries and their coordination with each other. No basis for water resources management has been drafted. A basis for water resources management provides the foundation for integrated planning and implementation of the programmes and measures for the development of waters in accordance with the

objectives of national sustainable development and harmonization of economic development, social progress and protection of the environment, as well as implementation of the 2012 National Water Strategy. Theoretically, it shall be adopted for a period of 20 years. RBMPs have to be prepared every six years. As at November 2018, there are only a few RBMPs in existence, i.e. for Lake Prespa and the Bregalnica and Strumica Rivers. RBMPs for Lake Ohrid and the Vardar River are under development.

Sustainable Development Goals and targets relevant to this chapter

The current status of the country vis-à-vis target 3.9 and Goal 6 of the 2030 Agenda for Sustainable Development is described in box 9.1.

Institutional framework

Ministry of Environment and Physical Planning

The Ministry of Environment and Physical Planning supervises the implementation of the legislation related to water. The Administration for the Environment fulfils responsibilities on water management. Within the Administration, the Department for Water is responsible for the implementation of provisions of the Law on Waters. Within the Department, there are six units: the Unit for Water Resources Planning and Management; Unit for Concessions and Interministerial Cooperation; Unit for Water Rights; Unit for Management of the Crn Drim River Basin; Unit for Management of the Vardar River Basin; and Unit for the Management and Maintenance of the Gjavato-Lake Dojran Hydrosystem and for Management of the Strumica River Basin. The Ministry is responsible for protection of waters from pollution, issuing water permits and concessions for water use, and protection against the harmful effects of water (floods and erosion), including establishment of measures in early warning plans. The Ministry prepares and manages monitoring activities, information for the public and definition of the contents of reports. It is responsible for the definition of a plan for water management for the use of funds.

Ministry of Agriculture, Forestry and Water Economy

Before the adoption of the 2008 Law on Waters, the Ministry of Agriculture, Forestry and Water Economy was responsible for overall water management. Since 2011, most of the competences moved to the Ministry of Environment and Physical Planning.



Box 9.1: Target 3.9 and Goal 6 of the 2030 Agenda for Sustainable Development



Goal 3: Ensure healthy lives and promote well-being for all at all ages

Target 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination

In respect of indicator 3.9.2 (Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services), the burden of disease in North Macedonia associated with unsafe water and sanitation and lack of hygiene is low. WHO estimates the mortality rate attributed to exposure to unsafe WASH services (per 100,000 population) in 2016 at less than 0.1. The European Regional average was 0.3.

Goal 6: Ensure availability and sustainable management of water and sanitation for all

Target 6.1: By 2030, achieve universal and equitable access to safe and affordable drinking water for all

In respect of indicator 6.1.1 (Proportion of population using safely managed drinking water services), according to WHO/UNICEF Joint Monitoring Programme (JMP) estimates in 2015, about 84 per cent of the total population in the country have access to safe drinking water (90 per cent of the urban population and 74 per cent of the rural population), thus drawing attention to some urban–rural disparities. Access for the total population increased from 91 per cent in 2000 to 93.5 per cent in 2015. Estimates of access for the rural population show an increase from 80.9 per cent in 2000 to 98.1 per cent in 2015. However, estimates of access for the urban population show a decrease from 98.1 per cent in 2000 to 90.1 per cent in 2015. The decrease in urban population access is primarily due to deterioration of the water network and lack of funds for its maintenance and rehabilitation.

With the negative time trend, the country is not on track to achieve the Agenda 2030 target on universal and equitable access to safe drinking water.

The Government should:

- (a) Seek funding mechanisms to invest in water network rehabilitation and metering to reduce losses, to reduce the impact on the environment and ultimately on public health;
- (b) Ensure that public buildings such as schools, kindergartens and day-care centres are connected to safe drinking water supply and sewerage systems as a matter of priority.

Target 6.2: By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations

In respect of indicator 6.2.1 (Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water), the WHO/UNICEF JMP estimates of the proportion of the population with access to improved sanitation facilities in 2015 are 94 per cent of the country's total population, 100 per cent of the urban population and 87 per cent of the rural population. Of those population groups, connections to a sewer are available for 71 per cent, 97 per cent and 36 per cent respectively. There are no data available on handwashing facilities. All hospitals and educational facilities in the larger cities, as well as in the villages with larger schools, have special toilets designated for men and women. Smaller regional schools have common toilets. Gender-related challenges with access to water and sanitation remain (box 6.2).

Target 6.3: By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally

In respect of indicator 6.3.1 (Proportion of wastewater safely treated), as at November 2018, it can be estimated that up to 24.5 per cent of wastewater is potentially treated. Most of the wastewater plants only have secondary treatment. Due to the lack of maintenance and other reasons, WWTPs sometimes need to discontinue operation. By providing a clear structure and concentrating responsibilities on singular central bodies, municipalities' access to technical assistance and capital funding in the wastewater sector could be facilitated.

In respect of indicator 6.3.2 (Proportion of bodies of water with good ambient water quality), country data reported in the framework of global monitoring and initial data collection in 2017 show that 8.7 per cent of all assessed water bodies are estimated to be of good ambient water quality, i.e. they meet at least 80 per cent compliance with the core parameters of country-defined target values based on the available monitoring data. None of the groundwater bodies or the open water bodies assessed during that time were of good ambient water quality. Only 12.5 per cent of the rivers assessed are of good ambient water quality. Because of the lack of wastewater treatment in many parts of the country and other adverse impacts on water, poor ambient water quality bodies can be found near settlements or in the lower courses of waters.

Target 6.4: By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity

In respect of indicator 6.4.1 (Change in water-use efficiency over time), no reliable data are available. Currently, water consumption varies considerably both between and within sectors, as do freshwater resources for the sectors across the years. It is expected that water losses will continue to increase in the future, due the outdated water supply infrastructure and the lack of investment, unless urgent countermeasures are put in place.

In respect of indicator 6.4.2 (Level of water stress: freshwater withdrawal as a proportion of available freshwater resources), in 2014, the overall pressure by all sectors on the country's renewable water resources is estimated at up to 13.78 per cent. Taking into account the lack of systematic quantitative information about groundwater, the high impacts on surface water related to water usage, and many human and other activities, as well as the effects of climate change, it can be concluded that the volume of freshwater available would be depleted and water shortage would increase, together with conflicts between demand and supply.

Target 6.5: By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate

In respect of indicator 6.5.1 (Degree of integrated water resources management implementation (0–100)), according to a 2016 UNEP survey, the current degree of integrated water resources management implementation is 22, which is classified as low. The country's target for 2030 is 65.

The Government should strengthen the country's water-related capacity and introduce effective managerial instruments to make rational and informed decisions between alternative actions and secure funding.

Target 6.6: By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

In respect of indicator 6.6.1 (Change in the extent of water-related ecosystems over time), although some of the water-related ecosystems, including Lakes Ohrid and Prespa, are in protected areas, this is not sufficient by far. The lack of systematic monitoring prevents the setting of priorities for protection and restoration of water-related ecosystems.

There needs to be greater initial focus on the extent of water-related ecosystems, and in particular surface-water-related ecosystems. Currently, these ecosystems account for about 2 per cent of the total land area and there is no trend of an increase in their area from 2005 to 2015. The nationally derived proportion of water bodies with good water quality in 2016 was below 9 per cent; that of rivers was up to 12.5 per cent.

The Government should raise public awareness about the water-related ecosystems and improve public knowledge about the possible and necessary extent of the water-related ecosystems.

Target 6.b: Support and strengthen the participation of local communities in improving water and sanitation management

In respect of indicator 6.b.1 (Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management), in the process of decentralization, responsibilities for water supply and sanitation are assigned to the municipalities.

Legal mechanisms allowing public participation in decision-making processes related to water resources management are in place and anticipated to have better effect while further developing and implementing RBMPs in compliance with the national legislation. The availability of financial means to perform these tasks is an important aspect of meeting the target.

In addition to general information related to water management, RBMCs are not established, leading to a lack of priorities that are relevant in the respective catchment areas. Although established, the National Water Council is not in operation. These institutions could develop targeted communication channels to specifically address the stakeholders involved in water management, such as the Ministry of Agriculture, Forestry and Water Economy and the farmers in areas subject to high erosion.

The Government should ensure the establishment of RBMCs and the operation of the National Water Council.

The Ministry of Agriculture, Forestry and Water Economy remained competent for functions related to irrigation and drainage, as well as protection of waters from pollution from agriculture.

Within the Ministry of Agriculture, Forestry and Water Economy, HMS is responsible for maintenance

and development of the meteorological and hydrological observation network and measurements, monitoring and research of atmosphere and water resources, and the application of meteorology and hydrology. Due to the insufficient financial and personnel resources, hydrological observations are not performed continuously. Therefore, there are gaps in

the data collected into a hydrometeorological information database. HMS informs the public on the state of waters and issues alerts when there are imminent dangerous or harmful hydrological circumstances. HMS provides information to the Crisis Management Centre on the quantity and level of water before critical levels are reached. HMS is responsible for the measurement of qualitative parameters of rivers. These measurements do not include reservoirs and lakes.

Ministry of Transport and Communication

The Ministry of Transport and Communication is responsible for communal infrastructure, issues of water supply and collection, drainage and treatment of wastewaters, especially the aspect of construction and management of water management facilities. The Ministry is responsible for supporting the development and management of communal water infrastructure; it supervises the activities and decisions of the municipalities about drinking water supply and acts through the mechanism of supervision over the legality of operation of the municipalities.

The Ministry implements a programme for removal, collection and treatment of urban wastewater, which is prepared based on the draft similar programmes prepared by the municipalities, the municipalities of the City of Skopje and the City of Skopje itself. The Ministry provides the manner of maintaining and protecting the water supply and sewerage systems. The Ministry supervises activities and decisions of the municipalities on public drinking water and water supply and sewerage services.

Ministry of Health

The Ministry of Health identifies water bodies suitable for human consumption and bathing waters and takes care of the health and safety of drinking and bathing waters, including the protection of the population from diseases transmitted through water. The protected zones for water intended for human consumption and public water supply are subject to strict sanitary control. The Ministry of Health provides conditions for economic activities in the protected zones for water that may affect the quantity and the quality of drinking water.

The Institute of Public Health is responsible for the monitoring of drinking water and surface waters, which it performs along with its 10 regional centres. The regional centres process and submit data to the Institute in annual and biennial reports. The Institute publishes an annual public summary report based on data submitted by the regional centres.

Ministry of Education and Science

The Hydrobiological Institute under the Ministry of Education and Science performs monitoring over the three main natural lakes in the country, Lakes Ohrid, Prespa and Dojran. Located in Ohrid, the Institute is an educational and research organization focused on hydrobiology issues on natural lakes, artificial lakes and rivers.

Ministry of Economy

The Ministry of Economy is responsible for the preparation of proposals for concessions for water use for industry and energy production. Its area of competence covers groundwater, use of mineral and thermo-mineral resources and electricity generation.

Others

SEI is responsible for inspections related to water. The State Communal Inspectorate is responsible for inspections related to public water supply systems and systems for collection, drainage and wastewater treatment. The State Inspectorate for Agriculture is responsible for the control of nitrates in vulnerable zones and irrigation and drainage, and the State Sanitary and Health Inspectorate is responsible for inspections related to drinking waters and bathing waters.

ERC is an independent regulatory body that regulates the prices of water services and sets up tariffs for bulk water supply and drinking water supply, collection and disposal of urban wastewaters and purification of wastewaters. In 2017, it published the Rulebook on the manner and procedure for determining the tariff for water services and the regulatory tariff for water services adopted by the Energy Regulatory Commission.

The Crisis Management Centre is an independent state body established to propose decisions, ensure permanent consultation, coordination, timely reaction and efficacy in the event of a crisis, and ensure assessment of safety and risks throughout the country. It also proposes to the Government early warning plans in coordination with the Ministry of Environment and Physical Planning.

The Department for Protection and Rescue is an independent state body under the Government and cooperates with the Ministry of Environment and Physical Planning on measures for protection against floods.

The National Water Council is a consultative body. The Council comprises members proposed by the following institutions: the Ministry of Environment and Physical Planning, Ministry of Health, Ministry of Transport and Communication, Ministry of Economy, Ministry of Agriculture, Forestry and Water Economy, ZELS, Macedonian Academy of Sciences and Arts, CSO sector and RBMCs. As at November 2018, the Council is not in operation.

Water economies have been established. These autonomous public entities are responsible for the management, use, operation and maintenance of hydro systems, as well as irrigation and drainage systems. Water communities were also created – non-profit associations of owners and users of agricultural land responsible for the use, maintenance, construction, extension and reconstruction of small irrigation and drainage systems. Both the public entities and water communities are responsible for the maintenance of beds and canals for their protection and the prevention of harmful effects of waters.

Regulatory, economic, fiscal and information measures

Water use permits, other single-medium permits (air, water, waste) and IEPs are implemented in the country. Wastewater discharge permits for installations that are included on legally binding lists are covered by the IEP. A permit for water abstraction has to be issued separately, prior to the issuance of a single-medium permit or an IEP. The 2008 Law on Waters defines the request for a water use permit, lists activities and works requiring a permit and describes the procedure to be carried out for the issuance of a water use permit. However, water abstraction of less than 10 m³ per day requires registration. Table 2.2 provides data for the period 2011–2016.

The use of water, including groundwater, is also regulated by the award of a concession for water. Concessions are awarded for generation of electricity in HPPs, water bottling for commercial purposes, lake traffic and the construction of permanent facilities for the purpose of tourism, sports and other recreational services.

Irrigation water charges are linked to irrigation norms of crops based on the profitability of irrigated crops and are different for pumped zones and gravity supply. Due to the lack of flow measurement equipment, they are also based on area rather than volume. Therefore, there are differences in fees, e.g., irrigation of tomatoes in the Strumica Region costs 10,000 denars/ha while it costs 5,820 denars/ha for the same

fruit in Kochani. At the same time, the irrigation of 1 ha of wheat in the Strumica Region costs 2,500 denars.

The fees for wastewater are lower than for fresh water. As a rule, the fees for citizens are significantly lower than those for companies. However, the fees are not high enough to cover costs. An additional problem is the inability to collect legitimate payments in full. In some cases, the collection rate is only 50 per cent.

The average cost of water services is that for 70–75 per cent of the households meeting an affordability threshold of 3 per cent of the average household income, which is at the lower end of the range set by the EU for water services (3–5 per cent). According to the national legislation, cost recovery of water services, including environmental and resource costs, is to be considered when setting prices. The currently applied tariffs do not fully respect the user pays principle, due to a significant cross-subsidy from non-households, e.g., from industry to household consumers. In addition, the tariff system does not cover all costs, e.g., maintenance of technical equipment.

The determination of tariffs is under the sole responsibility of the public water companies, which are owned by local governments or councils (table 3.3). Low tariffs, insufficient collection rates and the liability of utility companies to pay VAT on services provided that have not been paid for by users, lead to the lack of revenue, which results in no maintenance, no repairs and no possibility of infrastructure extension and improvement.

9.9 Assessment, conclusions and recommendations

Assessment

The monitoring of water quality and quantity, whether of surface water or groundwater, is insufficient to provide a picture of the state of water resources. The reasons are insufficient financial and staff resources. The network of monitoring stations has deteriorated. Monitoring and assessment of the state of water resources is essential for any sustainable management of those resources. Without accurate data, the preparation of a resilient and effective RBMP becomes questionable and the subsequent tracking of the results of implementation of programmes of measures is not possible.

Although some new WWTPs have been constructed, most wastewater – especially industrial wastewater – is still discharged untreated to the rivers. Therefore, rivers are largely polluted, and it can be assumed that

those river sections will not comply with the WFD criteria for “good” status. The main source of water pollution is poorly treated wastewater from various sectors. Only 25 per cent of necessary WWTPs have been built and, due to the lack of maintenance and for other reasons, the actual number could be lower. Even though the WFD has been implemented in the Law on Waters and Directive 2007/60/EC on the assessment and management of flood risks is intended to serve as a guideline for further action on flooding in the future, the practical implementation of both lines of regulation is lagging behind significantly. Due to the organization and responsibilities of the water industry prescribed by the Law on Waters, coordination between the ministries is of great importance in implementing the measures. The establishment of RBMCs for all river basin units for the implementation of the WFD and Directive 2007/60/EC on the assessment and management of flood risks therefore seems appropriate.

The country is very vulnerable to river floods and flash floods. Without hydrologic knowledge of the rivers, flood prediction, warning and the taking of appropriate measures in the event of a flood are difficult to implement. Simply relying on precipitation data is not sufficient for flood prediction. In preparing for climate change, a strong, long-running, monitoring network is necessary.

Conclusions and recommendations

Enhancement of water monitoring

No comprehensive data on the quantity of groundwater resources are available. Although numerous hydrogeological studies have been carried out, there is no nationwide systematic and continuous monitoring and evaluation. The same applies to surface water monitoring.

Recommendation 9.1:

The Government should allocate an adequate regular budget for remediation and maintenance of the water monitoring network to enable the systematic monitoring and assessment of the status of surface water and groundwater bodies in line with international and European Union practices.

Water supply

Due to the lack of accurate data, unknown and unregulated use of surface water and groundwater, especially by industry, can occur. Higher water requirements are sometimes required, for example, for irrigating agricultural land during hot weather periods. Water demand from other areas, such as for drinking

water, is increasing. The total national availability of water is expected to decrease. This would increase the value and importance of and competition for water. The loss of water in drinking network systems, leakage from degraded irrigation systems and awareness and technical devices for saving water resources are of major concern. The lack of sanitary protection of the sources leads to cases of non-compliance.

Recommendation 9.2:

The Government should:

- (a) *Improve data collection on groundwater and surface water abstraction and use;*
- (b) *Apply the water-user and polluter-pays principles for all water users and dischargers according to the 2008 Law on Waters, taking into account the needs of poor and vulnerable groups in the population;*
- (c) *Raise awareness of water-saving measures and provide water-saving technical devices;*
- (d) *Introduce domestic, municipal and industrial reuse and recycling of water, and rainwater collection for non-potable uses;*
- (e) *Ensure a special regime for the sanitary protection of sources of drinking water supply.*

Irrigation

The existing irrigation structures, facilities and equipment are in poor technical condition. High water losses are characteristic. There are no reliable data on water consumption for irrigation. The price for irrigation is defined by area and the cultivated crop and not by the water consumed.

Recommendation 9.3:

The Government should:

- (a) *Ensure rehabilitation of irrigation systems and expansion of the percentage of closed pipe systems in relation to open systems;*
- (b) *Provide measurement devices in irrigation systems for water quantity intake and water consumption by farmers and promote high-value, low-water-use crops;*
- (c) *Strengthen agricultural advice on different irrigation methods, selection of crops adapted to local boundary conditions and optimization of existing systems.*

Sewerage systems

About 12.5 per cent of rivers assessed are of good ambient water quality. One of the main reasons for this

low proportion is the discharge of untreated wastewater. Wastewater treatment capacity is meeting 25 per cent of the demand of settlements. Bigger cities still have no sewage treatment plants. The average rate of wastewater collection in sewage collection systems is around 60 per cent for households (2002 Census).

Although certain rural areas have developed combined domestic sewage and storm wastewater collection systems, no treatment is performed prior to wastewater discharge. This situation worsens during low-flow periods in rivers during summer, due to lower sewage dilution. Industrial wastewater is discharged without prior treatment, or pretreatment is carried out in poorly maintained and inefficient facilities. Besides organic matter, toxic sewage is being discharged into rivers. Landfills close to rivers or lakes are a further source of pollution by infiltration or run-off into surface water and groundwater.

Recommendation 9.4:

The Government should:

- (a) *Ensure the construction of wastewater treatment plants and sewage collection systems for cities over 100,000 population equivalent as a priority and for municipalities over 10,000 population equivalent as a secondary priority;*
- (b) *Ensure that the sewage collection systems focus on separating wastewater from storm water, with the storm water being returned to the hydrological cycle by infiltration;*
- (c) *Prevent the deterioration of the existing sewage collection systems, which should be repaired or renewed;*
- (d) *Ensure maintenance and operation of sewage collection systems;*
- (e) *Consider the establishment of decentralized sewage treatment systems in rural areas;*
- (f) *Ensure that industry applies appropriate wastewater treatment prior to discharge into water bodies according to national standards;*
- (g) *Close and remediate all dumpsites along river banks exposed to flooding and infiltration into groundwater.*

River protection

The national legislation requires good ecological status for rivers and lakes. That can be achieved through good water quality and good hydromorphology status of riverbeds, banks and flood plains. Although rivers and, in part, lakes suffer from wastewater discharges, most reaches of the rivers are not hydromorphologically degraded (except from reservoirs) by channelizing, embankments and loss of

flood plains. This offers an excellent opportunity to ensure that most water bodies can reach good ecological status according to the Law on Waters, once water quality has improved. Dams in rivers and reservoirs are severe interruptions in the structure and ecology of a natural river. Fish migration and gravel and sediment transport are stopped and sedimentation, eutrophication, warming and oxygen depletion occur.

Recommendation 9.5:

The Government should:

- (a) *Ensure a sufficient buffer strip along rivers and lakes for agricultural lands exposed to erosion, and that relevant cultivation methods are applied to protect from erosion;*
- (b) *Ensure that ecological improvements on dams, such as fish ladders and fish ways, are considered and that the environmental flow below dams is set and inspected;*
- (c) *Consider more twinning arrangements with countries that have experience in implementing Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for Community action in the field of water policy (Water Framework Directive) and river basin management;*
- (d) *Establish reference conditions for water bodies to enable their classification.*

Flood management

Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks is not transposed into the national legislation. Over recent decades, there have been many floods resulting in high levels of damage and even deaths. It took a long time to eliminate the negative consequences of those floods. Due to climate change, an increase in the number and size of floods is also to be expected. Nevertheless, there is still high pressure for new buildings, construction and land use on flood plains.

Recommendation 9.6:

The Government should:

- (a) *Ensure that flood plains are left open without further building, construction and land use involving water-polluting substances;*
- (b) *Consider preparing a handbook of flood-adaptation planning and building in flood areas if it is unavoidable;*
- (c) *Raise public awareness of floods through reconnaissance and preparation for flood events, supported by flood preparedness and*

- response exercises for those involved in flood management;*
- (d) *Ensure the maintenance of existing flood protection systems and consider the building of flood protection systems, including precise flood predictions and hydrological forecasts;*
 - (e) *Adapt the management of reservoirs to flooding;*
 - (f) *Promote the increase of the percentage of pervious surfaces in urban areas by considering the introduction of specific minimum values for new urban developments and for the regeneration of existing parts of urban areas;*
 - (g) *Promote the implementation of nature-based solutions in urban areas to increase adaptation to climate change.*

Institutional framework

In water management planning, the Ministry of Environment and Physical Planning has an exclusive and coordinating role. It is responsible for the protection of waters from pollution and water permitting. It also has to prepare and manage monitoring activities. Furthermore, in agreement with the Ministry of Agriculture, Forestry and Water Economy and the Ministry of Transport and Communication, and in collaboration with the Ministry of Finance, the Ministry of Environment and Physical Planning has a responsibility for the definition of a plan for the use of funds for water management.

Since 2011, the Ministry of Environment and Physical Planning has been strengthened in the water management sector. However, the HMS, which is responsible for the meteorological and hydrological observation network and measurements, and monitoring and research of water resources, is not under the structure of the Ministry.

Recommendation 9.7:

The Government should:

- (a) *Provide sufficient financial and personnel resources to the Ministry of Environment and Physical Planning to enable it to perform its role in water management;*
- (b) *Consider establishing comprehensive data management;*
- (c) *Consider concentrating all state investments in the water sector within the Ministry of Environment and Physical Planning, including for irrigation and public water supply;*

- (d) *Ensure, by contract, subsequent maintenance and operation and consider fines in the case of infringement;*
- (e) *Consider transferring the Hydrometeorological Service to the Ministry of Environment and Physical Planning to complete the transition of competences for water management.*

River basin management

According to the Law on Waters, river basin management councils (RBMCs) will be created with the purpose of preparing, implementing and monitoring river basin management plans (RBMPs), and for proposing measures for improving water management. The establishment of RBMCs is new in the country and many aspects of their functioning, such as detailed criteria for representation of various groups of stakeholders, methodological guidance and funding issues, are not yet defined and tested and may require adjustment after a certain period of their work. RBMPs for Lake Prespa and the Bregalnica River have been developed, while RBMPs for the Strumica and Vardar River Basins have been drafted. None of the RBMPs so far developed has been adopted by the Government and none of them has been subject to SEA. In addition, RBMPs suffer in some areas from the lack of data, due to the poor state of the qualitative and quantitative water monitoring system.

As at November 2018, the National Water Council is not in operation.

Recommendation 9.8:

The Government should:

- (a) *Establish as a pilot project, based on a proposal by the Ministry of Environment and Physical Planning, a river basin management council for which a river basin management plan is at the final drafting stage, and work out the modalities for the effective launch and functioning of the new institution by seeking support from other countries to benefit from similar experience;*
- (b) *Apply, in due time and taking into consideration the lessons learned, the tested working arrangements for establishing river basin management councils in the other designated river basins, based on proposals by the Ministry of Environment and Physical Planning;*
- (c) *Ensure that river basin management plans for the remaining river basins are developed;*
- (d) *Ensure that the National Water Council is operational.*

Chapter 10

WASTE AND CHEMICALS MANAGEMENT

10.1 Practices and trends in waste management

Data inconsistency

Data collection for most of the waste types is done by both SSO and the Ministry of Environment and Physical Planning. While SSO applies the internationally accepted standards for data collection, the latter relies only on reports from municipalities and from other legal entities that are subject to reporting as defined in the legislation related to waste management (e.g., health-care institutions, generators of hazardous waste or collective waste handlers). In the case of MSW, some municipalities do not report to the Ministry despite their legal obligations, so the data sets of SSO can be considered as official. However, with the lack of weighing gates at all non-compliant landfills (Drisla landfill is the exception), data are estimated. Data on the fulfilment of permits issued based on the legislation on EPR is exclusively collected by the Ministry.

Therefore, the datasets of SSO and the Ministry of Environment and Physical Planning do not comply with each other and are not comparable. This is the case especially with data related to hazardous waste, which both institutions collect and publish, but the amounts of waste reported to the Ministry are much larger than the total amount generated by economic activities published by SSO. There are discrepancies in almost all data sets that are maintained and published by the two institutions. The discrepancy is explained by the fact that the Ministry collects data from all legal entities that produce hazardous waste, while SSO collects data only from some of the economic activities that are included on the National Classification of Economic Activities (NACE) list.

Municipal solid waste and similar waste

MSW and similar waste collection is the responsibility of municipalities, which they usually fulfil through public communal companies. Public communal companies are the main service providers of waste management services in the country, conducting waste collection services and the final disposal of waste. Most of the public communal companies are owned by the municipalities; only a few of them operate as PPPs with private investors also owners.

Generation of MSW remained stable and varied between 786,000 tons and 797,000 tons in the period 2011–2017, except for 2011 and 2014 when the amounts were lower – 735,250 tons and 765,156 tons respectively (table 10.1). Accordingly, waste generation per capita remains relatively low, varying between 354 kg/cap. and 384 kg/cap.

Since 2017, data on the detailed waste structure within MSW are available. About 87 per cent of the total waste is mixed MSW, followed by organic waste, paper and textiles (figure 10.1). About 83 per cent of MSW is generated by households while 17 per cent can be defined as commercial waste.

The collection rate has varied between 70 per cent and 81 per cent; thus, a significant part of the population still does not have access to waste collection services – predominantly those in remote rural areas. The major part of the collected municipal waste is disposed of at non-compliant municipal landfills, with the exception of Skopje where Drisla landfill fulfils the basic requirements for landfilling (box 10.1) and where there is primary sorting of waste into wet and dry fractions. All the other municipal disposal sites do not fulfil even the basic conditions for safe waste disposal. However, they are controlled by SEI, given that they are envisaged to operate until the completion of regional landfills, which is expected to take at least another few years.

The country has been heavily affected by mass migration and refugee influx in the last few years, which peaked in 2015 when several hundred thousand people crossed through the country. Migration still affects the country, although at a much smaller magnitude than in 2015. Most of the migrants entered near Gevgelija and left the country near Kumanovo and most of them also stayed several days or longer in the transit reception centres (camps) established at these two locations, which are still partly in use. Consequently, these two camps, with an official accommodation capacity of 500 (Tabanovce) and 1,500 (Gevgelija), generated and continue to generate a significant amount of waste similar to MSW, but there were no official measurements or estimations made of the amount of waste generated.

However, municipal waste management companies could not deal with the increased amount of waste and

the local non-compliant landfills were not big enough to receive all the waste generated in these camps. Based on the initiative of the international donors (UNDP and the Government of Japan), a small temporary landfill was built near Gevgelija, which was planned in such a way as to comply with all the relevant national (and EU) regulations (e.g., EIA was done during the planning and a B-type IEP was requested). The construction and equipment of the landfill was finished by the end of September 2018 and

its operation is planned to commence at the beginning of 2019. The capacity of the landfill is 60,000 m³ and it is envisaged to serve the municipality of Gevgelija (around 15,000 inhabitants) for approximately the next five years until the regional landfill is constructed and commences operation. Also within this project, the local non-compliant landfill will be closed. In both camps, the separate collection of plastic bottles and the reuse of abandoned blankets/sleeping bags has been introduced.

Table 10.1: Generated and collected MSW by waste management region, 2011–2017, tons

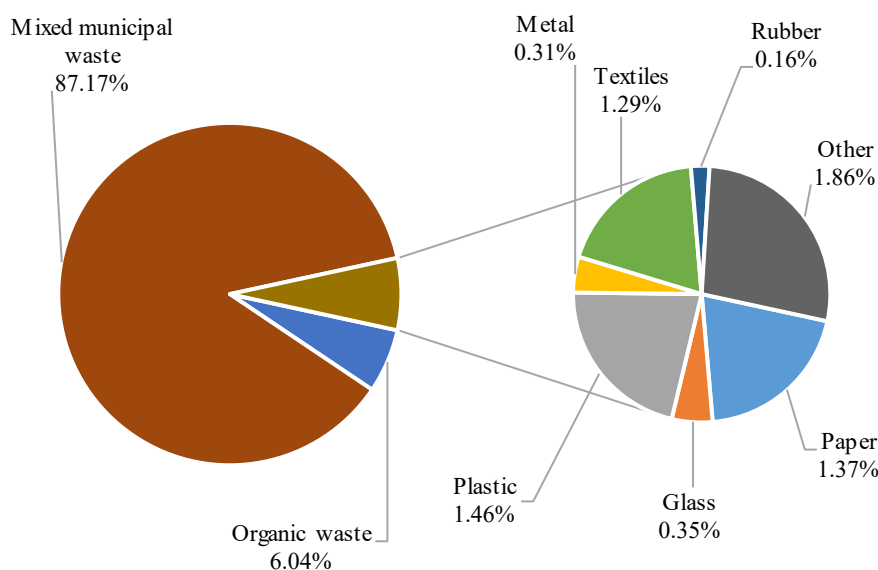
	2011	2012	2013	2014	2015	2016	2017
Total MSW generation	735 250	786 909	792 785	765 156	786 182	796 585	786 881
Vardar	77 935	118 780	128 573	73 417	93 238	76 824	84 051
East	81 251	82 849	72 241	65 848	72 303	65 995	55 828
South-west	87 820	86 960	97 061	96 249	94 391	110 039	95 827
South-east	91 364	68 146	51 465	75 865	46 860	59 707	58 656
Pelagonia	77 010	85 360	81 594	89 730	80 732	80 115	87 245
Polog	90 567	104 289	106 421	116 997	150 520	128 158	139 003
North-east	57 467	72 121	83 856	78 182	83 059	93 258	91 298
Skopje	171 836	168 404	171 574	168 868	165 079	182 489	174 974
Total MSW collection	543 954	555 760	554 938	569 794	620 328	610 227	635 875
Vardar	64 921	61 957	67 057	65 083	76 235	63 214	63 584
East	69 588	70 485	61 470	59 281	52 580	56 614	50 016
South-west	47 432	49 488	54 506	56 138	46 771	52 670	49 815
South-east	39 674	45 474	34 339	28 621	33 764	42 034	43 085
Pelagonia	65 066	72 176	69 010	70 173	69 446	70 724	77 203
Polog	62 388	59 096	60 296	71 318	117 645	92 127	108 047
North-east	47 080	52 492	61 040	65 747	72 295	72 554	79 879
Skopje	147 804	144 593	147 220	153 433	151 592	160 290	164 246
Collected waste (%)	73.98	70.63	70.00	74.47	78.90	76.61	80.81
Waste generation per capita (kg)	357	382	384	370	380	384	379

Source: State Statistical Office, 2018.

Box 10.1: Skopjes waste management

In Skopje, waste collection is done by the public company “Public Hygiene”, which is owned by the City of Skopje. “Public Hygiene” collects waste from households and companies that produce waste similar to MSW (commercial waste) from the whole urban area of the city and also from around 60–70 per cent of the suburban areas. Different tariffs apply for the two types of consumers: 3.59 denars/m² (+ VAT) for households and 5.5 denars/m² (+ VAT) for companies (as at September 2018), while households in suburban areas have a flat rate fee equivalent to €5 per month. Tariffs are regulated by the decision of the Council of the City of Skopje. The amount collected covers costs. The payment rate is around 80 per cent, while the cumulative payment rate is 95 per cent (after forced payments or charges imposed in court).

The company operating Drisla landfill was converted to a PPP because this would ensure more funds for the necessary upgrade of the landfill. A feasibility study was carried out in 2011, which incorporated all the necessary improvements (better leachate and surface water control, construction of a new landfill body, introduction of mechanical biological treatment, green waste composting, ensuring conditions for the proper treatment of construction and demolition waste, construction of a hazardous and non-hazardous waste treatment plant and construction of a new medical incinerator plant). Due to the termination of the contract, the landfill is owned by the City of Skopje and only smaller developments have been made since 2011. Still, the landfill fulfils the basic requirements for safe waste disposal and it holds an A-type IEP for waste management. It has a system for monitoring the wastewater and gases inside the landfill, leachate water is collected, and the residue is landfilled, atmospheric water is channelled around the landfill so that it does not enter the site, and the site is fenced and under video surveillance. Asbestos is landfilled at a special underground part of the landfill, separately from MSW. Construction and demolition waste is landfilled as MSW, but it is also used as the cover layer. Medical and hazardous waste in the country is only treated at the Drisla landfill: it is co-incinerated in the landfills furnace, in which new filters were installed in 2018.

Figure 10.1: Collected MSW and similar waste, 2017, percentage

Source: State Statistical Office, 2018.

Recycling of specific waste streams

Despite the introduction and operation of EPR schemes, separate collection and recycling, the overall recycling rate in the country remained very low. The only available official data on recycling are based on reports received from only eight municipalities (though including Skopje). According to that data, the recycling rate of non-hazardous MSW was 0.9 per cent in 2017, which shows very limited progress since 2011, when the recycling rate was 0.37 per cent. On the other hand, the recycling rate of waste streams that are regulated by EPR laws is much higher than the national recycling rate (table 10.2). The total recycling rate for all types of packaging waste in 2016 was 39 per cent, but the recycling of paper and cardboard reached 68 per cent, plastic 38 per cent and glass 23 per cent. For WBA, data show that recycled amounts are even larger than the amounts put on the market, so either illegal (not reported according to EPR law) amounts were too small or the data collection and reporting method was inappropriate (table 10.3).

Manufacturing waste

Manufacturing waste has been increasing from 2010 onwards (table 10.4). From 1,017,007 tons in 2010 it reached 1,638,238 tons in 2014. However, in 2016, the amount of waste was only 215,010 tons, which implies a possible change in data collection/analysis methodology.

Waste from the energy sector

Data on waste produced by the energy sector (electricity, gas, steam and air conditioning supply) (table 10.4) show a dynamic increase from 2010 (4,346 tons) until 2014 (12,475 tons). The 443,043 tons recorded in 2016 probably refers to inconsistency in data collection or a change in methodology.

Construction and demolition waste

Despite it is being estimated to be one of the largest sources (besides mining and manufacturing waste and MSW) of generated waste in the country, construction and demolition waste is still not covered by regular data collection. Although, for 2016, SSO published a detailed table on the amount of waste by economic sector, which contains data on construction waste (table 10.5), the data should be considered with caution, because the amount of construction and demolition waste is given as 1,235 tons, less than that generated by transport services (1,817 tons) or human health and social work activities (2,410 tons), which suggests that the data collection might not have covered all the construction activities in the country.

Mining and quarrying waste

The amount of waste was more than 800,000 tons in both 2010 and 2012. In 2014, it decreased sharply by more than a factor of 10 to 75,198 tons, then increased in 2016 to 700,550 tons (table 10.3). The data for 2014

might be a consequence of inconsistency in data collection, but the overall trend is a gradual decrease in the amount of waste.

Past pollution

In North Macedonia, the only comprehensive assessment of the situation related to environmental hotspots – former industrial and mining sites where a

larger amount of hazardous waste is still present and stored in an inadequate way, therefore being an actual or potential threat to the environment – was done in 2005. Since then, in the period 2010–2018, progress was made only in the case of the Organic Chemical Industry “Naum Naumovski-Borce” (OHIS) site in Skopje (box 10.2), which was ranked in the 2005 study as being one of the three hotspots with “high environmental risk”.

Table 10.2: Recycling rate of packaging waste, percentage

	2011	2012	2013	2014	2015	2016
Glass	no data	0.00	14.68	no data	10.02	23.06
Plastics	no data	31.00	29.17	no data	44.36	38.81
Paper and cardboard	no data	28.65	32.84	no data	59.89	68.00
Metal	no data	0.17	0.12	no data	1.47	5.74
Wood	no data	0.00	1.32	no data	9.89	11.41
Composite materials	no data	0.00	0.00	no data	0.00	0.00
Other	no data	0.00	0.00	no data	0.00	0.00
Total	11.75	18.82	22.84	27.38	35.30	39.47

Source: Annual Report on the Quality of the Environment in the Republic of Macedonia – 2011, 2012, 2013, 2014, 2015, 2016, Ministry of Environment and Physical Planning.

Note: Data presented in the table are compiled data collected from collective handlers, small producers and self-producers, which are obliged to report to the Ministry of Environment and Physical Planning.

Table 10.3: Waste batteries and accumulators, 2011–2015, kg

	Released onto the market	Collected	Treated and recycled	Recycling rate (%)
2011	1 548 690.13	2 604 413.33	2 365 584.00	90.83
2012	2 430 122.34	541 155.00	541 155.00	100.00
2013	2 523 473.88	2 081 690.00	1 873 931.50	90.02
2014	2 486 725.90	2 610 945.40	2 504 018.00	95.90
2015	2 751 515.99	3 311 933.70	3 137 070.00	94.72

Source: Ministry of Environment and Physical Planning, 2018.

Note: Data presented in the table are compiled data collected from collective handlers, small producers and self-producers, which are obliged to report to the Ministry of Environment and Physical Planning.

Table 10.4: Waste by selected economic sector and by type, 2010, 2012, 2014, 2016, tons

		2010	2012	2014	2016
	Total	1 876 208.41	2 112 372.96	1 725 911.44	1 358 602.89
	Non-hazardous	1 150 017.26	1 433 898.89	1 687 349.91	1 302 193.59
	Hazardous	726 191.15	678 474.07	38 561.54	56 409.31
Mining and quarrying	Total	854 855.64	802 124.34	75 198.14	700 549.75
	Non-hazardous	135 807.12	135 505.44	73 834.65	687 248.70
	Hazardous	719 048.52	666 618.90	1 363.49	13 301.05
Manufacturing	Total	1 017 007.14	1 303 806.21	1 638 238.43	215 010.13
	Non-hazardous	1 009 918.27	1 293 868.45	1 601 112.38	214 625.03
	Hazardous	7 088.87	9 937.76	37 126.05	385.11
Electricity, gas, steam and air conditioning supply	Total	4 345.65	6 442.41	12 474.87	443 043.01
	Non-hazardous	4 291.89	4 525.00	12 402.88	400 319.86
	Hazardous	53.76	1 917.41	72.00	42 723.15

Source: State Statistical Office, 2018.

Table 10.5: Waste by economic sector, 2016, tons

Section of economic activity	Generated	Stored	Received	Delivered	Recovered	Disposed of
Total	1 437 492.17	769 370.47	583 872.78	491 337.70	8 190.53	838 051.85
Non-hazardous	1 380 118.77	763 503.49	562 863.19	449 272.48	7 288.83	807 629.08
Hazardous	57 373.40	5 866.98	21 009.59	42 065.22	901.70	30 422.78
Agriculture, forestry and fishing	5.64	1.00	..	..	1.04	3.60
Non-hazardous	5.64	1.00	..	..	1.04	3.60
Hazardous	..	..	..	..	..	..
Mining and quarrying	700 549.75	689 405.29	..	2 040.58	..	9 160.47
Non-hazardous	687 248.70	684 605.10	..	1 987.06	..	659.15
Hazardous	13 301.05	4 800.19	..	53.52	..	8 501.32
Manufacturing	215 010.13	455.24	276.05	175 296.52	1.55	40 790.88
Non-hazardous	214 625.03	455.24	276.05	174 994.58	1.55	40 663.21
Hazardous	385.11	..	..	301.94	..	127.67
Electricity, gas, steam and air conditioning	443 043.01	10 587.00	..	232 279.92	..	200 378.54
Non-hazardous	400 319.86	10 587.00	..	210 541.54	..	179 414.79
Hazardous	42 723.15	..	..	21 738.38	..	20 963.75
Water supply, sewerage, waste management	56 512.65	68 595.49	580 987.53	63 947.87	8 187.94	581 541.88
Non-hazardous	56 512.45	67 693.79	560 267.94	44 097.67	7 286.24	581 541.88
Hazardous	0.20	901.70	20 719.59	19 850.20	901.70	..
Construction	1 235.10	4.36	..	174.33	..	1 073.18
Non-hazardous	1 211.98	0.64	..	134.87	..	1 058.34
Hazardous	23.12	3.72	..	39.46	..	14.84
Wholesale and retail trade, repair of motor	16 350.55	305.59	2 609.20	16 203.39	..	1 697.30
Non-hazardous	15 924.45	146.45	2 319.20	16 148.57	..	1 361.07
Hazardous	426.10	159.14	290.00	54.82	..	336.23
Transportation and storage	1 817.27	16.50	..	1 147.25	..	655.60
Non-hazardous	1 750.01	14.27	..	1 120.99	..	616.59
Hazardous	67.26	2.23	..	26.25	..	39.01
Accommodation and food service	276.61	..	..	148.72	..	135.89
Non-hazardous	272.58	..	..	148.52	..	132.06
Hazardous	4.03	..	..	0.20	..	3.83
Information and communications	50.39	..	..	0.33	..	50.06
Non-hazardous	50.39	..	..	0.33	..	50.06
Hazardous	..	..	..	..	..	..
Financial and insurance activities	2.33	..	..	1.26	..	1.07
Non-hazardous	2.33	..	..	1.26	..	1.07
Hazardous	..	..	..	..	..	..
Real estate activities	0.80	..	..	..	..	0.80
Non-hazardous	0.80	..	..	..	..	0.80
Hazardous	..	..	..	..	..	..
Professional, scientific and technical activities	8.97	..	..	1.00	..	4.01
Non-hazardous	8.97	..	..	1.00	..	4.01
Hazardous	..	..	..	..	..	..
Administrative and support services	1.61	..	..	0.16	..	1.45
Non-hazardous	1.61	..	..	0.16	..	1.45
Hazardous	..	..	..	..	..	..
Public administration and defence;	34.65	..	..	7.35	..	26.31
Non-hazardous	34.65	..	..	7.35	..	26.31
Hazardous	..	..	..	..	..	..
Education	177.85	..	..	69.98	..	108.19
Non-hazardous	177.85	..	..	69.98	..	108.19
Hazardous	..	..	..	..	..	..
Human health and social work	2 409.99	..	..	18.05	..	2 418.78
Non-hazardous	1 966.60	..	..	17.60	..	1 982.65
Hazardous	443.39	..	..	0.45	..	436.13
Arts, entertainment and recreation	4.60	..	..	1.00	..	3.60
Non-hazardous	4.60	..	..	1.00	..	3.60
Hazardous	..	..	..	..	..	..
Other service activities	0.27	..	..	0.01	..	0.26
Non-hazardous	0.27	..	..	0.01	..	0.26
Hazardous	..	..	..	..	..	..

Source: State Statistical Office, 2018.

Box 10.2: Project “Removal of Technical and Economic Barriers to Initiating the Clean-up Activities for Alpha-HCH, Beta-HCH and Lindane Contaminated Sites at OHIS”

The project for remediation of the former Organic Chemical Industry “Naum Naumovski-Borce” (OHIS) site, which is contaminated with lindane and hexachlorocyclohexane (HCH), was initiated in 2014. Approximately 50,000 tons have to be treated. Before the actual treatment and remediation, a certain amount of preparatory work had to be done. Most of the preparatory work was completed by mid-2018: the adoption of legal acts for the management structure and by-laws (rulebooks) to introduce them into the national legislation, preparation of technical tools; detailed site investigation and public procurement for the remaining works is the next step.

The project also includes the elaboration of a feasibility study, cost-benefit analysis, risk analysis and communications plan for public awareness-raising on this specific issue and project. The project itself will cover the treatment and removal of 10,000 tons of contaminated soil, while further funds need to be ensured for the removal and treatment of the remaining 40,000 tons. The experience gained through this project will serve as an example for further clean-up activities in North Macedonia and other countries, which is why a methodology was prepared as part of the preparatory work. To facilitate knowledge-sharing and raise professional and public awareness, the Instructions for the sustainable management of contaminated sites in the country were published in May 2018 in three separate books: “Assessment of Contaminated Locations”, “Remediation of Contaminated Sites” and “Standard Operating Procedures”.

The other two sites with high environmental risk (Bucim copper mine at Radovis and MHK Zletovo lead and zinc smelter at Veles) have since been privatized (granted concessions) and were operational in 2018. On the Bucim site, the concessionaire cleaned up the historical pollution based on the obligation prescribed in its concession contract. On the site of MHK Zletovo, the Government has contracted a private company to remediate the site (including excavation, packaging, transport and export of the waste from the country in accordance with the Basel Convention). Since 2010, feasibility studies were carried out for the following four sites: OHIS, Makstil (iron and steel plant), Silmak and MHK Zletovo. There are ongoing activities at Silmak ferrosilicon plant (former HEK Jugochrom), where the cleaning station is working on reducing Cr₆ to Cr₃.

Agricultural waste

No data exist on agricultural waste generation, treatment and disposal. However, a significant part of agricultural waste is recovered within the agricultural sector. There are two IPPC waste-to-energy installations that are using manure to produce electricity. The waste that cannot be (re)used is mostly treated as MSW or hazardous waste (e.g., pesticide packaging).

Hazardous waste

SSO publishes data for every second year, including data on hazardous waste generated by selected economic sectors for 2010, 2012 and 2014 (table 10.4) and, as at 2016, detailed data on hazardous waste generated by all economic sectors (table 10.5). According to the data, the total hazardous waste generated by selected sectors of economic activity in 2014 was 38,562 tons and, for those same sectors,

56,409 tons in 2016 (table 10.4). The total hazardous waste generated by all sectors of economic activity constituted 57,373 tons in 2016 (table 10.5). Data show that hazardous waste is predominantly (98 per cent) generated by three economic sectors: mining and quarrying, manufacturing and electricity, and gas, steam and air conditioning supply.

However, data published by the Ministry of Environment and Physical Planning for 2017, obtained from 103 business entities, reported total hazardous waste generated by them at 2,041,268 tons. The difference in the two data sets is explained by the different data collection methods: while the Ministry of Environment and Physical Planning collects data from industry, the mining sector and also other entities that generate hazardous waste, SSO gathers data only from some of the economic activities that are included on the NACE list, and thus does not cover all the entities that report to the Ministry.

Medical waste

Health-care institutions that generate medical waste submit an annual report on the generation and treatment of waste to the Ministry of Environment and Physical Planning. According to the data submitted from the health-care institutions, the amount of generated medical waste reported has almost doubled between 2011 and 2017, from 355 tons to 716 tons (figure 10.2). Most of the medical waste is classified as “waste, collection and disposal of which is subject to special requirements for protection from infections”; in 2017, this made up 87 per cent of the total medical waste. However, it is worth noting that the reported amounts do not equal the total amount of medical waste generated in the country, because they do not cover the medical waste generated by households (especially medicines) that ends up as

MSW because there is no separate collection for medical waste generated by households.

Medical waste collected by companies that have permits for this activity is mostly co-incinerated at Drisla landfill. A small part is exported for final treatment and disposal. However, the incinerator at Drisla landfill is old and uses an outdated technology, but once the new incineration furnace filter was officially put into operation in April 2018, it meets the criteria set by national regulation. The company operating Drisla has appointed an accredited laboratory to measure emissions of pollutants into the air from the furnace for combustion of medical waste. Measurement results between April and September 2018 show that the average emissions concentrations do not exceed the ELVs and are in accordance with the Rulebook on emission limit values for burning and combustion of waste and the conditions and method of operation of installations for burning and combustion. The medical waste stove filter has a capacity of 2,500 m³/hour.

Radioactive waste

Radioactive waste is only generated in very small amounts by hospitals but there are no data available on their management.

Persistent organic pollutants waste

No POPs are produced in the country, but they are still present as historic pollution at former industrial sites. The activities for removing and restoring the sites contaminated with POPs are almost exclusively project based and coordinated by the Ozone and Persistent Organic Pollutants Unit, which is a project unit external to the Ministry of Environment and

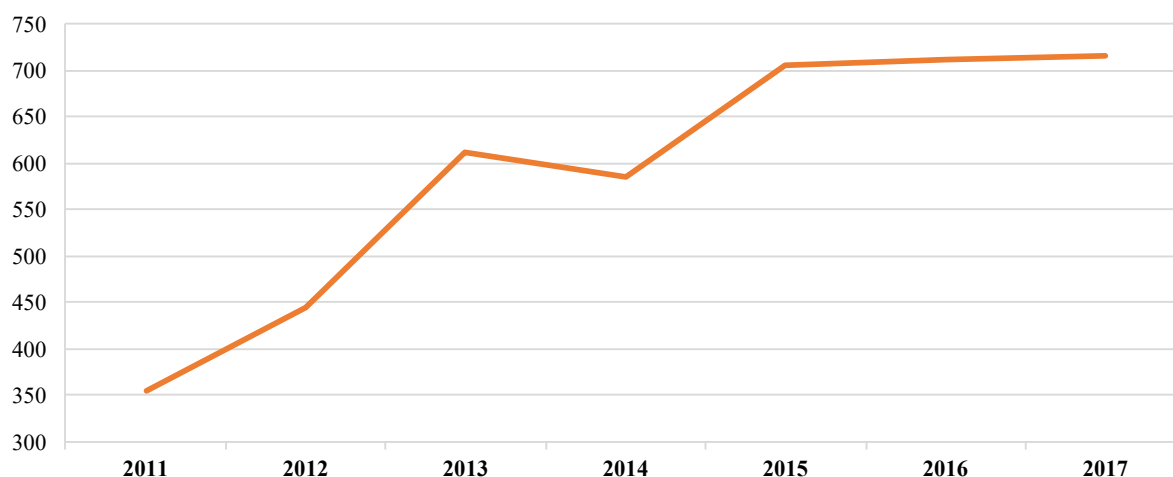
Physical Planning. There were a few very successful projects in the past decade and there are also ongoing projects (box 10.2); thus, the country is advancing in the clean-up of POPs and gradually moving towards removing all the existing obsolete POPs. In 2011, a demonstration project was implemented aimed at installation of technology for the treatment of PCBs at the Rade Koncar – Service site; 800 tons of PCBs, which had formerly been used for maintaining the transformers, were treated and then stored on site.

Waste generated by military activities

Unusable military assets, e.g., weaponry beyond its expiry date or for which repair would be uneconomical, that were used by the Army and the Ministry of Defence are discarded according to the prescribed procedure. After the adoption of a decision to decommission or dispose of them, they are recategorized as waste and handed over to the Army's Collection Centre, where they are stored in the warehouse and the procedure for their possible sale is initiated according to the prescribed procedure for sale.

The Army does not use chemicals or dangerous substances, poisons or their imitators in its weapons, nor radioactive materials or biological agents. Small amounts of chemical substances from old detecting devices or imitation devices, such as chemical detectors or chemical contamination imitators, are destroyed by neutralization, cracking, dusting and burning. Following these procedures, decontamination is performed on the spot according to a simplified procedure. To date, these actions have been undertaken in special places on the military base Krivolak and do not pose any threat to the environment.

Figure 10.2: Generated medical waste, 2011–2017, tons



Source: Ministry of Environment and Physical Planning, 2018.

Photo 10a: Glass recycling and separate waste collection in Skopje

Radioactive sources taken from obsolete detection devices are stored in appropriate containers. Used chemical sources from accumulators are offered for sale as waste. Used engine oil is collected in appropriate containers and stored in a special place in the barracks until its sale

Material assets such as ammunition and mine explosive materials are destroyed by a method of incineration in a cauldron and by detonation. By a Decision of the Ministry of Defence, the military base Krivolak was designated a temporary place for destruction of material by detonation.

The waste generated during the daily work of the Military Medical Centre-Skopje and by Army ambulances, which is treated as medical waste, is kept in central storage in accordance with the prescribed procedure and is handed over to a company under an agreement that authorizes the company to accept and destroy such waste.

10.2 Transboundary movement of waste

The volume of waste shipments varied between 46,000 and 70,000 tons (table 10.6) in the period 2011–2015, and showed no specific trend of growth or decline; the exported and imported amounts were also

quite similar over the period. Available data for the period 2015–2018 show that most waste imports were waste lead batteries, and, besides lead-acid batteries, different types of used oils were predominant among exports. In much smaller quantities, waste textiles, tobacco products and chemicals were imported and exported.

10.3 Practices and trends in chemicals management

The basis for proper chemicals management was set by a project initiated and financed through the framework of SAICM. Within the project “Mainstreaming Sound Management of Chemicals into MDG-based National Development Planning” implemented in the period 2008–2011, based on the recommendations given by international experts, the country has prepared two strategic documents for chemical management (National Action Plan for Sound Management of Chemicals and Roadmap for Mainstreaming of Actions for Sound Management of Chemicals into Development Planning Processes) and a new project was prepared to develop a national implementation plan for SAICM. The final outputs of the initial SAICM project still provide the basis for policy on chemicals management.

Table 10.6: Waste imports and exports, 2011–2015, tons

	2011	2012	2013	2014	2015
Imports	66 287	53 108	54 429	69 731	51 852
Exports	46 677	54 461	58 280	68 405	51 215

Source: State Statistical Office, 2018.

The Ministry of Environment and Physical Planning also hosts the National SAICM Committee, which is an interministerial and inter-institutional body involving several ministries, the Customs Administration, the State Agriculture Inspectorate and two academics. The Committee for SAICM Implementation has just started the procedure to upgrade SAICM on the national level.

Legal entities that produce and/or trade in chemicals shall meet the conditions that are regulated by the by-laws deriving from the Law on Chemicals, in terms of space, equipment and personnel, depending on the chemical hazard. Once they meet those conditions, they are approved by the Department for Chemicals of the Ministry of Health to produce, import or export chemicals for a period of five years.

The chemicals industry mainly produces finished products for other industries, but, to a lesser extent, consumer products are also produced. Products include medication, plastic products, PVC pipes, detergents and cleaning agents, cosmetics, technical gases and coatings. The industry does not produce all the basic chemicals the country needs but it still offers a wide range of products. The pharmaceuticals industry is a leader in the chemicals industry. The production of chemicals and chemical products accounts for 4.6 per cent of the total volume of national industrial production; plastics and rubber production accounts for 1.9 per cent. In 2015, there were 95 enterprises manufacturing chemicals and chemical products, 60 of which were members of the Chemical Industry Association.

Implementation of the HCH management plan

The country is preparing an amendment to the national legislation with the aim of banning all ODSs. HCH is the only remaining substance that is not banned. About 33 tons of HCH were consumed in 2010; by 2013, this had reduced by about 5 per cent. There is no production or export of HCH; only imported HCH is consumed, and there were no imports at all in 2017.

Usually HCH is used for servicing needs in the country. The Ozone and Persistent Organic Pollutants Unit is working on the introduction of the certification of service technicians, who will be obliged to

undertake theoretical and practical training and pass an examination. Since September 2018, the drafting of a certification system is ongoing. HCFCs and HCH from refrigerators are being recovered and recycled in the country. In 2017, about 36 tons of refrigerators were recycled by service companies that have permits for such work.

10.4 Pressures from waste and chemicals

Due to the lack of monitoring activities and installations at the existing non-compliant municipal landfills, the only evidence-based evaluation of the pressures and risks that non-compliant landfills are posing to the environment was made in 2011 within the project “Capacity-building for implementation of EU Landfill Directive – closure of dumpsites and inspections”. The study carried out a risk assessment using a methodology based on the following main criteria for which weighted scoring factors on a scale of 1–100 per cent (factors 0.01–1) were applied:

- Proportion of the hazardous/medical waste in the total volume disposed (factor 0.5);
- Extent of the landfill (factor 0.35);
 - Area of the landfill (factor 0.15);
 - Volume of wastes disposed of at the site (factor 0.20);
- Site characteristics and sensitivity;
 - Morphology of the landfill (factor 0.25);
 - Hydrogeological conditions/permeability of subsoil (factor 0.20);
 - Distance from water courses (factor 0.15).

The classes of risk (low, medium and high) were established according to the magnitude of the total scores (12.75–53.25), by introducing thresholds for the next class of higher environmental risk, as follows:

- 12.75–24 for low environmental risk;
- 24–30 for medium environmental risk;
- 30–53.25 for high environmental risk.

Based on the risk assessment, the 54 non-compliant municipal landfills were classified into one of the three risk groups (table 10.7): 16 were classified as high risk, 17 as medium risk and 21 as low risk. This study still provides the basis for prioritization of the closure of non-compliant landfills.

Table 10.7: Risk ranking of operating non-compliant municipal landfills

Rank	Municipality	Non-compliant municipal landfill	Score	Deposit (m ³)
1	Kicevo	City Landfill	53.25	50 000
2	Gevgelija	"Suva Reka"	53.25	17 000
3	Gostivar	v. Dolna Banjica "Susicki Most"	47.75	720 000
4	Meseista	Meseista	46.75	6 240
5	Krusevo (1)	"Kole Nalco"	46.75	5 400
6	Karbinci (1)	v. Karbinci	46.75	1 456
7	Karbinci (2)	v. Tarinci	46.75	5 824
8	Krusevo (2)	"pod Avtoturist"	43.75	3 600
9	Karbinci (3)	v. Radanje	43.75	416
10	K. Palanka	v. Konopnica	38.75	130 000
11	Radovis	City Landfill	37.50	50 000
12	Belcista + 3	"Belcista"	37.25	16 250
13	Sveti Nikole	v. Nemanjeci	36.25	60 000
14	Valandovo	"Suvodolica"	35.00	80 000
15	Ohrid	"Bukovo"	34.25	200 000
16	Murtino	"Dineva Bara"	31.00	5 000
17	Mak. Brod	"Barbaras"	29.75	12 000
18	Struga (2)	v. Vishni	28.25	50 000
19	M. Kamenica	"Kamenicki Rid"	28.00	50 000
20	Pehcevo	"Suvi Dol"	27.75	20 000
21	Vinica	v. Leski	27.75	430 000
22	Negotino	v. Dubrovo (Buceto)	27.25	120 000
23	Berovo	"Iljadin Valog"	25.50	22 000
24	Novo Selo	loc. Solena Reka	25.25	480
25	Blatec	"Pocivalo"	25.25	3 840
26	Oblesevo (1)	"Progon"	25.25	180
27	Stip (2)	"Krstot"	25.00	300 000
28	Bitola	"Meglenci"	25.00	1 500 000
29	Kumanovo	"Krasta"	25.00	1 832 200
30	Strumica	17 km northern	24.50	350 000
31	Prilep	v. Alinci ("Omec")	23.75	530 000
32	Delcevo	"Ostrec"	24.50	175 000
33	Kratovo	"Zeliznica"	24.25	35 000
34	Veles	"Bunardere"	23.75	620 000
35	Kavadarci	"Melci"	23.75	480 000
36	Zletovo	"Meliste"	23.75	72 000
37	Struga (1)	v. Kjafasan (Mali Vlaj)	22.75	50 000
38	Kocani	"Belski Pat"	22.00	300 000
39	Demir Kapija	"Pcenicni Dupki"	22.00	101 200
40	Resen	"Alchevi koshari"	22.00	200 000
41	Debar	"Krivici"	22.00	150 000
42	Probistip	v. Neokazi (Strmos)	22.00	22 000
43	Krivogashtani	"Livadski Pat"	21.00	800
44	Karbinci (4)	v. Krupiste	21.00	416
45	Orizari	"Bel Kamen"	20.75	7 000
46	Dolneni (2)	v. Crniliste	16.75	1 000
47	Bogdanci	"Brdanov Kamen"	16.75	50 000
48	Dolneni (1)	"Debreshte"	15.50	1 300
49	Miravci	"Karaivanovi kurii"	15.00	2 000
50	Dojran	"Dekil-Tas"	14.50	40 000
51	Stip (1)	v. Penush ("Trestena Skala")	12.75	8 000
52	Novo Selo	(the old one) "Sopov Rid"	12.75	80 000
53	Oblesevo (2)	v. Banja ("Jaz")	12.75	5 000
54	Lipkovo + 3	v. Nikustak	12.75	16 536

Source: "Capacity-building for implementation of EU Landfill Directive – closure of non-compliant landfills and inspections", Ministry of Environment and Physical Planning-SEPA, 2011.

10.5 Extended producer responsibility for waste packaging, electrical and electronic equipment, batteries and accumulators

The most significant measures on waste management in the country since 2011 were the introduction of an EPR system for packaging waste, WEEE and WBA. To regulate these areas, three separate laws were adopted between 2009 and 2012: the 2009 Law on Management of Packaging and Packaging Waste, 2012 Law on Management of Electrical and Electronic Equipment and Waste Electrical and Electronic Equipment, and 2010 Law on Management of Batteries and Accumulators and Waste Batteries and Accumulators. Their implementation was gradual. For packaging waste, the multi-phased implementation started on 1 January 2010 and the latest provision was due on 31 December 2012 (the deadline for producers to elaborate the programme for waste management). The implementation of the Law regulating WBA started on 1 January 2011 and it was fully implemented from 1 January 2012. The Law on Management of Electrical and Electronic Equipment and Waste Electrical and Electronic Equipment has been implemented since 1 January 2013 with a one-year phase-in period.

Packaging waste

According to the 2009 Law on Management of Packaging and Packaging Waste, producers and manufactures that put on the market products that are packaged (in plastic, metal, glass, wood, paper and/or cardboard, including plastic-coated paper) are obliged to fulfil the national targets related to their own generated waste (proportionally to the packaging waste that they generate) and to ensure the separate collection of packaging waste (including transporting and wholesale packaging) and their recycling or reuse. National targets until 2020 for packaging waste

recovery and recycling (table 10.8) defined that at least 60 per cent of the waste (measured in weight) should be recovered (which means that it can be energy recovery) and at least 55 per cent of the waste (measured in weight) should be recycled. There are different targets for the different types of packaging waste, ranging from 60 per cent for glass to 15 per cent for wood.

Producers who generate at least 30 tons of packaging waste annually are obliged to develop programmes for restriction and prevention of the creation of packaging waste, which, in particular, should include quantitative measures for restriction and prevention, measures for achieving the aims and mechanisms for quality control of packaging for the purpose of meeting the targets in accordance with technical and economic opportunities. Producers should organize the system of separate packaging waste collection, and they are obliged to take back the packaging waste from end users. To fulfil their obligations, they should cooperate with the mayors of municipalities and together designate locations where separate waste collection is available for citizens; thus, they should adequately inform the public of the possibility of separate packaging waste collection and the collection locations. Fulfilment of the Law can be reached independently by the producers (although they need to have a permit for such activity, i.e. for the handling of waste) or through collective management schemes. Collective waste management schemes were introduced by the Law in order to ensure economies of scale for handling packaging waste, and therefore to offer a more professional and cost-effective way for producers to fulfil their obligations. Collective packaging waste management schemes are run by non-profit companies specifically established for this purpose, which should attain a permit for their activity and cover at least 15 per cent but not more than 51 per cent of the packaging placed on the market.

Table 10.8: National targets until 2020 for separate collection and waste recovery as defined by related laws

Type of waste	Deadline	Target value
Packaging waste	By the end of 2020	Minimum 60 per cent of waste by weight to be processed by recovery or energy recovery
		Minimum 55 per cent, maximum 80 per cent of waste to be recycled
		Minimum 60 per cent of glass to be recycled
		Minimum 60 per cent of paper and cardboard to be recycled
		Minimum 50 per cent of plastic to be recycled
		Minimum 15 per cent of wood packaging to be recycled
	By the end of 2018	Minimum 22.5 per cent of plastic to be recycled into plastic
WEEE	By the end of 2016	Minimum 25 per cent to be collected separately
	By the end of 2020	Minimum 45 per cent to be collected separately
WBA	By the end of 2020	Minimum 4 kg/per capita/per year to be collected separately

Source: Related laws; ECE.

According to government estimates, the proportions of free-riders (i.e. those companies that are neither registered as individual handlers nor have entered into a contract with collective handlers and are not even paying the fee) is 30–40 per cent. The control of the companies, to determine whether they fulfil their obligations arising from this Law (except a few provisions which are controlled by the State Market Inspectorate), is done by SEI, but there is no information about its activity related to this Law. However, the high estimated rate of free-riders suggests that SEI does not have the capacity to fulfil its role related to packaging waste. The State Market Inspectorate is controlling the fulfilment of the ban on non-biodegradable plastic bags and the obligations related to the heavy metal limits and labelling.

Mayors of the municipalities also have a role in the management of packaging waste. The Law explicitly states that they are responsible for separate waste collection on the territory of their municipality. However, mayors can fulfil this obligation by contracting a collective scheme or individual handlers.

The Law has introduced smaller changes related to packaging waste: the option of deposit (return) packaging, the obligation of labelling the type of packaging and the limitation of heavy metals in packaging. Another novelty is that the Law has banned the release to the market of plastic bags unless they are biodegradable, regardless of whether they are offered free or for payment, but the rulebook that regulates this issue in detail has introduced exemptions (e.g., plastic bags for the transport of goods on the market that are intended to be used for garments, books, stationery, technical goods, furniture, sanitary ware, gardens, medicines and auxiliary medical products, household containers, toys, sports equipment and similar bulky goods that are not subject to everyday life and general consumption, and plastic bags used for measuring and packaging food and food products). The Law also prescribes a fee for the release of plastic bags that are non-biodegradable, but they are not even banned, due to the exemptions made in the rulebook.

Small producers are exempted from obligations prescribed by the Law, explicitly from those provisions that define that the producers need to reach the national targets for separate collection or recycling of packaging waste at their own cost; it therefore means that they dispose of the total amount of packaging waste that they generate. Those producers are considered small producers whose packaging output does not exceed any of the defined limit values by type of packaging material: 800 kg of glass, 100 kg of plastic, 300 kg of paper and cardboard, 100 kg of metal, wood or other packaging material.

Batteries and accumulators

Very similar EPR schemes to that of packaging waste have been introduced for WEEE and WBA. The 2010 Law on Management of Batteries and Accumulators and Waste Batteries and Accumulators prescribes labelling obligations and sets limits for three types of heavy metals in such products: mercury, lead and cadmium. The limits for exemptions for small producers and traders was set quite low, so that, in fact, almost all the market is covered by the Law: 50 kg for portable batteries, 10 kg for button batteries and 100 kg for vehicle accumulators. The national target is defined only for (separate) collection of WBA, not also for their recovery, and set as 25 per cent by 2016 and 45 per cent by 2020 (measured by weight).

Electrical and electronic equipment

The 2012 Law on Management of Electrical and Electronic Equipment and Waste Electrical and Electronic Equipment has introduced a ban on harmful substances such as lead, mercury, cadmium, chrome (Cr⁺), polybrominated diphenyl ethers (PDBEs) and polybrominated biphenyls (PDBs) and labelling obligations. The limits for exemptions for small producers and traders are 1,000 kg for electrical equipment and 50 kg for electronic equipment.

There is a special obligation for mayors to ensure at least one WEEE separate collection point in each municipality or at least one collection point for every 30,000 inhabitants. The national target for this scheme is as follows: by 2020, at least annually, 4 kg per capita of WEEE should be separately collected and companies must collect the amount proportionate to their share of the previous year's EEE sales.

Other specific waste streams

For other specific waste streams, there were laws under preparation (as at September 2018) for end-of-life vehicles, used tyres, waste textiles and waste oils, which would introduce very similar obligations and systems as those of the EPR schemes already operating. For other waste streams (which are partly recyclable or not recyclable, such as aerosol spray cans, wax, chemicals as municipal waste), there are plans for the introduction of separate collection at collection points, which will be organized by the municipalities and be part of the regional waste management system.

Collective waste handler companies (collective scheme)

Currently, there are three companies registered as collective packaging waste handlers, three companies as collective WBA handlers and four companies as collective WEEE handlers. The EPR schemes were set up in such a way as to ensure some level of competition among the waste handler companies and consequently better operation and fulfilment of obligations deriving from the legislation. At the same time, operational economies of scale are required by the setting of limits for market coverage (15–51 per cent in the case of packaging waste), which proved to be a good solution according to experience to date.

Reporting on implementation

Despite the new regulation and the mid-term targets for packaging waste and WEEE, no assessment on the fulfilment of targets and operation of the system has been carried out, even though the collective waste handlers are obliged to send reports about their performance and progress in fulfilment of their targets. No report based on the reports of collective waste handlers has been compiled; such a report would serve as a good basis for identifying the free-riders and for planning measures to involve more companies in the system.

In respect of the definition of national targets for separate collection and recovery (or recycling) based

on the total amounts of particular types of products and/or packaging sold (released to the market), the question arises of the adequacy and reliability of the targets and their fulfilment. The total amounts of products/packaging sold by those producers or traders who are not fulfilling their obligations cannot be calculated, because they are not reporting according to the Law. Consequently, the reported total amounts of waste separately collected and recovered are less than they should be according to the Law, because the non-reported amounts are not incorporated into the total amounts of products/packaging that entered the market.

Gaps in the implementation of extended producer responsibility schemes

It is uniform in all three Laws that collective waste handler companies (collective scheme) cannot perform any waste management activity by themselves, but they need to cooperate and enter into a contract with a communal company that is entitled to collect and treat waste (which are almost exclusively public companies) to do so, and to contract legal entities that have a permit for waste management according to the Law on Waste Management.

Photo 10b: Newly built landfill in Gevgelija



This means that, actually, they are not collecting the waste and they do not own the waste at any moment, but they can only indirectly promote separate collection and recycling in practice by establishing the conditions for separate collection. Within this activity, they provide and place bins and containers for separate collection on the streets or in public or private buildings and they contract communal companies to regularly empty and transport the waste from those containers and send it for recycling.

This separation of the activities prescribed by the Law to the handler of waste on the one hand and to the actual waste manager on the other hand hinders the provision and development of separate collection and recycling activities because the collective waste handlers cannot directly affect and enhance the efficiency of such activities – they have no means except public awareness-raising campaigns and extending the infrastructure and number of collection points. For example, citizens often call the packaging waste handlers to advise that the containers for separate collection are full and, in this case, the handler can only inform the communal company about the situation but it cannot order the communal company to empty the container by a certain deadline.

Also, this system hinders or at least discourages the waste handlers from overperforming on the national targets for separate collection and recycling defined by the Law, because there is neither an incentive in law for them to attain higher recycling rates nor can they can sell and make revenue from the collected waste.

10.6 Legal, policy and institutional framework

Legal framework

The 2005 Law on Environment sets the basic principles and policy-level requirements for waste management, but the detailed regulation is defined by the 2004 Law on Waste Management.

The Law on Environment has a chapter on Prevention and control of major accidents involving hazardous substances, which describes the obligations of the operators handling hazardous chemicals. Each operator has to prepare their internal emergency plan for accident prevention. This chapter in fact transposed the Seveso Directive and the Convention on Transboundary Effects of Industrial Accidents.

The Law on Waste Management defines all the relevant definitions, priorities, principles, strategic and planning requirements and responsibilities of the different territorial levels, as well as all the activities that need to be implemented by state bodies and

municipalities. It defines the rules for non-hazardous and hazardous (including special types) waste handling, sets the basic regulations for landfills, incineration and co-incineration, and shipment of waste, and the related monitoring activities and required information system on waste management. The Law also regulates exports and imports of waste in line with the Basel Convention and EU Waste Shipment Regulation.

The 2012 Law on Mineral Resources regulates the exploitation of mineral resources, including remediation and recultivation of mining sites. The exploitation of mineral resources and undertaking of mining works may be started after the concessionaire obtains a licence for exploitation of mineral resources.

A waste management plan and the plan for remediation and recultivation of the site are also part of the documentation that is requested by the Ministry as part of the process for granting the concession. All concessionaires are obliged to follow these plans regarding generated waste and landfilling, and remediation.

The waste management plan is part of the “Main mining project for exploitation of mineral resources” document and, as such, it is subject to the concession. Although the Law introduced a financial guarantee for remediation, it is not defined as an obligation and, as a result, this provision is not implemented; as at November 2018, none of the concessions issued included a payment guarantee for remediation due to the gap in the Law. The effects of this gap cannot be evaluated because none of the issued concessions has terminated since the adoption of the Law.

The 2006 Law on Sanitary and Health Inspection regulates the responsibilities and work of the State Sanitary and Health Inspectorate.

The 2010 Law on Public Health regulates tasks and activities for maintaining public health and it has some implications for sanitary requirements in the settlements that are connected to waste management.

The 2010 Law on Chemicals regulates chemicals management. It covers all chemicals except those that are considered waste, the shipment of chemicals and pesticides. It defines the basic rules for the classification, packaging and labelling of chemicals based on the EU Regulation concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH). It defines the rules for production and distribution, export and importation of chemicals and the notification on new substances, introduced safety cards and the register of

chemicals, and set the rules for the banning of chemical products. The Law also sets provisions for the National Control and Information Centre for Poisonings.

The Law on Plant Protection Products regulates all the issues related to pesticides. However, to comply with EU regulations, a draft law is under preparation.

The 2010 Law on Food Safety sets the basic requirement on food safety, which regulates issues related to the residues of pesticides and other contaminations.

The 2005 Law on Crisis Management defines the regulations on crisis management in general, regardless of the cause of the crisis.

The 2002 Law on Protection Against Ionizing Radiation and Radiation Safety sets the basic regulations and rules related to activities concerning radioactivity.

The management of medical waste is regulated by the Law on Waste Management and the 2007 Rulebook on the methods for management, packaging and labelling of medical waste.

The 2016 Rulebook on the export, importation and transit of waste specifies in detail the shipment of all types of waste in line with EU Regulation 1013/06. The Rulebook defines the following:

- Procedures for approving the export, importation and transit of waste;
- Types of waste under each type of control;
- Form and content of the written notice and general information;
- Form and content of the application and the permit for export and importation of waste;
- Manner of determining, activation and calculating bank guarantees and insurance;
- Procedure for issuing approval for a waste treatment installation;
- Procedure for supervising the export, importation and transit of waste.

Policy framework

The Strategy for Waste Management for the period 2008–2020 defines the strategic principles and priorities in waste management until 2020.

The National Waste Management Plan for the period 2009–2015 sets more detailed and quantitative objectives to be achieved by the end of 2014. Nevertheless, most of these objectives were

ambitious: e.g., 50 per cent of the collected MSW should be landfilled at landfills that comply with EU standards by 2014, or 100 per cent redirection of the flows of industrial hazardous waste from landfills for non-hazardous waste by 2010. The draft national waste management plan for the period 2018–2024 (for consultation) is about to define more realistic objectives based on the slow progress in the establishment of regional waste management systems and the construction of landfills. In parallel with the national waste management plan, the draft national waste prevention plan has been prepared and is pending adoption.

Municipalities are also obliged to prepare a municipal waste management plan for a period of three to six years and an annual waste management programme in order to facilitate the implementation of the 2009 National Waste Management Plan. In 2018, about 80 per cent of the municipalities had an adopted and valid waste management plan.

Landfills

Due to the legal obligation to establish regional waste management systems, all the eight regional waste management regions were obliged to prepare their waste management plans (map 10.1). So far, seven regional waste management plans have been prepared and adopted (eastern, north-eastern, Pelagonia, Skopje, Vardar, south-western and south-eastern), while that for Polog is under preparation.

The adoption of the regional waste management plans was the precondition for the construction of the regional landfills, which is under preparation in seven regions. In five of the eight waste management regions the technical documentation is already completed.

Landfills in two regions (eastern and north-eastern) will be financed through the IPA, while four regions (Skopje, Pelagonia, Vardar and south-western) still do not have a decision on financing. Polog is financed by the Swiss Government and the project for implementation has started. In the south-eastern region, even the required technical documentation is lacking.

Sustainable Development Goals and targets relevant to this chapter

The current status of the country vis-à-vis targets 3.9, 6.3, 11.6, 12.4 and 12.5 of the 2030 Agenda for Sustainable Development is described in box 10.3.



Box 10.3: Targets 3.9, 6.3, 11.6, 12.4 and 12.5 of the 2030 Agenda for Sustainable Development

Goal 3: Ensure healthy lives and promote well-being for all at all ages

Target 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination

Unintentional poisonings could be potentially associated with contamination from non-compliant municipal landfills and dumpsites, due to a lack of safe hazardous chemicals management, attributed mortality being just the tip of the health-effects pyramid with relatively very low levels of incidence. WHO estimates the burden of disease from unintentional poisonings for North Macedonia in terms of attributable mortality at 0.4 per 100,000 population in 2016, with the low levels remaining almost unchanged since 2000.

Goal 6: Ensure availability and sustainable management of water and sanitation for all

Target 6.3: By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally

With the exception of the Drisla landfill serving Skopje, which complies with the basic requirements for safe waste disposal, all other municipal waste collected (about 73–75 per cent of the total) is still dumped near human settlements, with the majority of the non-compliant landfills and dumpsites placing pressure on the environment and human health. Furthermore, the prevailing method of hazardous waste management, i.e. its removal by the generating business entities themselves, poses considerable risk to the environment and human health. The lack of sewerage connections and wastewater treatment facilities further aggravates the situation. With the slow progress in building regional landfills, the existing non-compliant landfills will continue to operate.

SEI conducts a minimum of two inspections annually of each non-compliant landfill and four inspections of Drisla landfill. For the non-compliant landfills, it checks only limited parameters. SEI should undertake relevant measures to stop environmentally harmful activities at non-compliant landfills.

Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable

Target 11.6: By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management

The MSW collection rate was in the range of 70–81 per cent in the period 2011–2017 without any increasing trend, indicating that a significant part of the population, predominantly in rural areas, still does not have access to waste collection services.

Most of the municipal waste collected is disposed of at non-compliant landfills, with the exception of Skopje, which means that, overall, around 50 per cent of the total MSW generated is adequately discharged. Progress in the implementation of regional waste management plans and construction of more sophisticated regional landfills is rather slow.

The Government should advance the establishment of regional waste management systems and the construction of regional landfills following clear prioritization based on risk assessment, with the aim to minimize and prevent risks to the environment and human health, with appropriate investments.

Goal 12: Ensure sustainable consumption and production patterns

Target 12.4: By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment

Indicator 12.4.1 refers to the Number of parties to international multilateral environmental agreements on hazardous waste, and other chemicals that meet their commitments and obligations in transmitting information as required by each relevant agreement.

North Macedonia is party to the Rotterdam, Basel and Stockholm Conventions and the Montreal Protocol on Substances that Deplete the Ozone Layer to the Vienna Convention for the Protection of the Ozone Layer. It has fulfilled the requirements for ratification of the Minamata Convention on Mercury, thus enabling it to benefit from international experience and cooperation on environmentally sound management of chemicals and waste materials.

Based on the information collected by each of the Conventions' Secretariats for the first baseline reporting cycle in 2017 (covering the period 2010–2014), the country has been in full compliance with the Montreal Protocol (100 per cent), close-to-full compliance with the Rotterdam Convention (over 92 per cent), and moderate compliance (50 per cent) with the Stockholm

Convention. However, fulfilment of the country's obligations in transmitting information to the Basel Convention is only at 16.7 per cent.

The country should strengthen its efforts to report regularly on the control of transboundary movements of hazardous wastes and their disposal.

Indicator 12.4.2 refers to Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment.

Both SSO and the Ministry of Environment and Physical Planning collect and publish statistics on the amount of hazardous waste managed, though with differences in methodology and data collection. SSO collects data on a two-year cycle on hazardous waste generated, treated and disposed of, covering the manufacturing sector only and expressed in kg per capita. In 2014 and 2016, data were much lower than in 2012 because of a new method of data collection and also a lower response rate.

There is a legally binding requirement for all commercial entities that generate hazardous waste to submit annual reports on hazardous waste to the Ministry of Environment and Physical Planning. A national indicator is produced on the hazardous waste generated, imported and exported, temporarily stored, and treated, and expressed in tons, m³ or percentage. The indicator methodology is based on the definitions and conditions set in the Law on Waste Management and uses the national classification of economic activities harmonized with the relevant international ones. A decrease in 2016 for the hazardous waste generated is again explained by the response rate, with the lack of annual reporting by REK Bitola, which is responsible for generation of about 90 per cent of the hazardous waste in the country.

Target 12.5: By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse

Indicator 12.5.1 refers to National recycling rate, tons of material recycled.

Despite the introduction and operation of EPR schemes, separate collection and recycling, the overall recycling rate of non-hazardous MSW in 2017, based on reports of only eight municipalities (Skopje included), remained very low – only 0.9 per cent. Separate collection and recycling under the EPR schemes for specific waste streams, such as packaging waste, WEEE and WBA have made some progress.

The Strategy for Waste Management and National Waste Management Plan (2008–2020), and also the relevant legislation, define and focus on targets for separate collection and waste recovery, and on recycling, but currently do not provide adequate measures to enable growth of the domestic recycling industry. The recycling rate could hardly be increased in the absence of a strong recycling industry in the country. Therefore, the Ministry of Environment and Physical Planning should take a range of measures to encourage sustainable waste management. These could include a dedicated national policy on waste reduction, reuse and recycling with an action plan and realistic targets and milestones.

The Ministry of Environment and Physical Planning, in cooperation with the Ministry of Economy and Ministry of Finance, should encourage recycling and reuse of waste by providing competitive advantage and incentives to waste collectors for the separate collection of different types of waste upon its generation and to domestic manufacturers to use waste as raw materials.

The Government should be conducting and favouring procurement for the use of recycled materials by the public administration and promotions for customers purchasing consumer goods made of recycled materials.

Emergency preparedness at the level of operators

There is no strategy or plan on chemical emergency preparedness.

Institutional framework

Ministry of Environment and Physical Planning

The Ministry of Environment and Physical Planning is responsible for waste management in general and, partly, for medical waste management (i.e. external transport, recovery and disposal); it is not responsible for radioactive, agricultural, mining and military

waste. The Ministry drafts regulations, prepares national plans, issues environmental permits and collects and validates reports related to waste. The Ministry is responsible for the clean-up of hotspots if they are on former industrial sites.

The Department for Coordination of Work of the LSGUs and Supervision Work receives the requests for waste permits and checks whether the documentation is complete, seeking the opinion of the Department for Waste Management.

The Unit for Chemicals and Industrial Accidents within the Department for Industrial Pollution and Risk Management is responsible for chemicals management and for the implementation of the SAICM and the Stockholm Convention.

Map: 10.1: Waste management regions

Source: Ministry of Environment and Physical Planning, 2018.

Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

Under the Administration for the Environment, the Department for Waste Management is the primary responsible unit for municipal and hazardous waste in the country. The Department for Industrial Pollution and Risk Management is responsible for the prevention of pollution from industrial sources, as well as for industrial accidents and chemicals management (related to industry, not in general).

MEIC processes waste-related data that it receives from the Department for Waste Management, which receives the reports from the obligated parties, i.e. municipalities in the case of MSW and other non-hazardous waste, health-care institutions in the case of medical waste, companies that are obligated to do so based on the laws, regulations and EPR schemes, and from companies that generate hazardous waste.

All these data are first collected by the Department for Waste Management, which validates and then transmits them to MEIC to process them for further reporting on the country level and for publishing. Despite the development of the Waste Management Information System, which was intended to facilitate reporting to the Ministry by all the obligated parties, the system is not operational because it is not fully compliant with the current legislation. Reports are still

submitted on paper, which makes their validation, further data processing and publication much more burdensome.

Ministry of Health

The Ministry of Health is responsible for defining the national policies related to medical waste (together with the Ministry of Environment and Physical Planning) and radioactive waste, and drafting the legislation related to both waste types. Also, the Ministry of Health is responsible for chemicals management.

The National Control and Information Centre for Poisonings⁷ under the Ministry of Health provides emergency advice on the management of poisoning cases, and also compiles data on toxic exposures and on toxic substances to support public health and chemical safety in prioritizing preventive efforts and management of the health impacts of chemical incidents. In the context of the International Health Regulations (2005), the Ministry of Health is leading the emergency preparedness and response to a range of biological, chemical and radiation hazards that may constitute a threat to public health.

⁷ <http://toxicocenter.com.mk/>

Ministry of Agriculture, Forestry and Water Economy

The Ministry of Agriculture, Forestry and Water Economy is responsible for drafting regulations on agricultural waste and on pesticides, as well as on the management of animal by-products.

Ministry of Economy

The Ministry of Economy is responsible for drafting regulations on the exploitation of mineral resources. Thus, it defines the regulations for deposits for remediation after the closure of mines and quarries, but it does not collect data about mining waste at all, and waste management is regulated on the level of concessions, i.e. individual mining sites. The Ministry is also responsible for the clean-up of hotspots if they are part of a former mining site.

Ministry of Defence

The Ministry of Defence is responsible for drafting regulations and for the management of all waste that is generated by military activities, e.g., weapons, ammunition, explosives. Its Department for Protection and Rescue is also involved in the event of any kind of emergency.

Ministry of Internal Affairs

The Ministry of Internal Affairs' only role related to waste is to impose fines on persons disturbing public order by littering in public spaces; charges are executed by the police.

Centre for Crisis Management

The Centre for Crisis Management is an independent state body responsible for preparation for and management of all kinds of crisis in the country, including those caused directly or indirectly by inappropriate waste management or chemicals management.

State Environmental Inspectorate

SEI is responsible for law enforcement related to waste management. It conducts environmental inspections to ensure compliance with regulations related to waste management, especially on hazardous, industrial and medical waste. It controls installations with an A-type or B-type (only for hazardous waste) IEP to determine whether they comply with the conditions set by the permit.

SEI controls whether landfills are complying with regulations, as well as the whole waste treatment and disposal process and the related (pre)conditions. In practice, it conducts annually a minimum of two inspections of each non-compliant landfill and four inspections of Drisla landfill. For the non-compliant landfills, SEI is checking only limited parameters. As a result of inspection, the public enterprises for communal services receive a decision to address the issues identified, to stop activities or to pay a fine.

State Market Inspectorate

The State Market Inspectorate is responsible for controlling the labelling obligations and limits for heavy metals related to products that are subject to EPR schemes. The Inspectorate controls the labelling and other requirements of all the chemicals that are put on the market.

State Sanitary and Health Inspectorate

The State Sanitary and Health Inspectorate controls the production and distribution of all the products of general use that might come into contact with people's skin, and the production and distribution of poisons and harmful materials. It also implements measures for protection against harmful substances and impacts on people's health, including chemicals. The Inspectorate checks whether the rules on generation, separate collection, packaging and disposal of medical waste are respected, so it controls all the state and private health-care institutions regarding medical waste regulations.

State Agriculture Inspectorate

The State Agriculture Inspectorate is responsible for implementing the controlling mechanisms based on the Law on Plant Protection Products. Phytosanitary inspectors perform the control by examining the residue levels in agricultural products, including by taking samples, which are sent to the State Phytosanitary Laboratory for examination, and preparing the report.

Municipalities

As part of decentralization in the country, many responsibilities were delegated to the municipalities. Municipalities are responsible for organizing the collection, transportation and disposal of municipal wastes; supervising transportation and disposal of industrial non-hazardous waste, deciding on the location of waste management facilities, issuing local regulations on waste management, financing and

supervising dumpsite and non-compliant landfill closures and closing waste management facilities.

Mayors also have a role in the implementation of EPR schemes. They are responsible for separate waste collection on the territory of their municipality. They need to cooperate (contract) with collective or individual waste handlers (collective schemes) and private waste collection companies or with their public communal enterprises.

Ozone and Persistent Organic Pollutants Unit

The Ozone and Persistent Organic Pollutants Unit is a separate body for the implementation of projects to remove obsolete POPs, but it also updates and defines national policy and legislation related to POPs, based on the experience and needs arising through the implementation of such projects. In practice, it works as a unit of the Ministry of Environment and Physical Planning, although it is not formally part of the Ministry. The Unit offers training, such as that on contaminated sites management in July 2018, and has also trained about 500 technicians on best practices of HCH handling. It prepared a handbook on the management of obsolete pesticide stocks in 2012.

Coordination among institutions responsible for waste and chemicals management at national, regional and local levels

In 2012, the Government established the intermunicipal waste management boards (IMWMBs) to speed up the establishment of regional waste management systems. The introduction of the IMWMBs aimed at reducing the risk that a limited number of municipalities might jeopardize the integrated regional waste management system in a region. Members of the IMWMBs must be mayors of the municipalities or persons designated by the mayors and have the following responsibilities with respect to managing the regional system:

- Approve the draft regional waste management plan;
- Organize the implementation of the regional waste management plan;
- Organize procurement and selection of suppliers and contractors for infrastructure development;
- Organize public procurement and selection of operator(s);
- Approve proposals for prices for waste treatment (per ton);
- Approve the draft investment programme;
- Exercise control of the activities of the chosen operator(s);

- Adopt and amend the Book of Rules of the IMWMB;
- Elect the Chairperson of the IMWMB.

So far, IMWMBs have not proven to be effective management bodies and their introduction did not speed up the establishment of the regional waste management systems; rather, they remain a formal legislative obligation to be fulfilled.

Regulatory, economic, fiscal and information measures

Permits

The Ministry of Environment and Physical Planning issues waste import permits. The Ministry is also responsible for issuing permits related to the transport of waste according to procedures of the Basel Convention, such as export and transit permits for shipment of waste, and hazardous waste export permits. The Ministry issues all types of permits related to waste management:

- A-type IEPs for the following activities and installations:
 - Installations for the storage (landfilling), recycling and/or co-incineration of hazardous waste, with capacity of more than 10 t/day;
 - Installations for co-incineration of municipal waste, with capacity of more than 3 t/hour;
 - Installations for landfilling on non-hazardous waste with capacity of more than 50 t/day;
 - Landfills with capacity of more than 10 t/day or total capacity exceeding 25,000 tons, with the exception of landfills for construction and demolition waste;
 - Installations for co-incineration of animal carcasses;
 - Installations for mining waste management;
- Permits for the collection and transport of non-hazardous waste (currently 124 valid permits);
- Permits for the collection and transport of hazardous waste (currently 4 valid permits);
- Permits for storage and treatment;
- Permits for export, importation and transit of hazardous and non-hazardous waste (currently 159 permits are valid);
- Permits for collective waste handling (packaging, WEEE, WBA) and for individual waste handling.

Permits are administered by the Department for Coordination of Work of the LSGUs and Supervision

Work, although its staff ask the opinion of the Department for Waste Management. Permits can be issued for up to 15 years, but, in practice, they are issued for five years in order to control the companies more frequently and because of the frequent changes in legislation.

The Department for Waste Management sends its opinion after it performs an on-the-spot check and the Department for Coordination of Work of the LSGUs and Supervision Work prepares the permits for signing by the Minister. This system was set up in 2014; before that, only the Department for Waste Management administered the permits. The most common reasons for refusal of a permit are the lack of technical requirements or unregulated land/property issues.

Permits are issued by the type of waste. As at September 2018, the following permits were issued by the Ministry:

- Waste paper and cardboard: 40 companies have a permit for storage and treatment, of which only two are undertaking recovery; the others are only selling or exporting;
- Metals: 87 companies have a permit for storage and treatment, of which only one is a smelter for scrap ferrous metal; the others are only selling or exporting;
- Plastics: 121 companies have a permit for storage and treatment, of which only four are undertaking recovery; the others are only selling or exporting;
- Glass: only three companies have a permit for collection and storage and they export all collected waste;
- Wood: 97 companies have a permit for storage and treatment.

B-type IEPs are issued by the municipalities for all installations for landfilling, recycling or co-incinerating of hazardous waste and landfilling of municipal waste, and for landfilling of non-hazardous waste that is not subject to an A-type IEP for waste management.

Taxes and fees

To ensure that the producers are fulfilling their legal obligations ensuing from the laws regulating EPR, fees for the management of particular types of waste have also been introduced (table 10.9). In fact, these are fines for those companies that either have not registered as individual waste handlers or have not entered into a contract with a collective handler and are not exempted by the laws' provisions for small manufacturers.

The fee for packaging waste management has been introduced to encourage and push companies either to register as individual packaging waste handlers or sign a contract with a collective handler. The fee varies by type of packaging, between 4,000 denars/ton for wood and 30,000 denars/ton for packaging consisting mainly of paper or cardboard and not used as packaging for drinks.

The fee for bags for the transport of goods applies to plastic bags that are put on the market (which are exempt from the ban on the sale of plastic bags), regardless of their material (i.e. whether or not they are biodegradable) and is paid based on their net weight (1 denar per 1 kg).

For portable small batteries and accumulators that are widely used in households, the fee for the management of WBA is 120 denars/kg. The fee to be paid for lead accumulators used in vehicles and industry (0.9 denars/kg) is much less than the fee for non-lead accumulators used in vehicles, e.g., those containing lithium (8.5 denars/kg). However, the fee is payable only if the producer/trader does not have a contract with a collective waste handler or has not registered as an individual waste handler.

There are 10 different sub-types of electrical and electronic devices defined by the Law and the fees for the management of WEEE vary between 50 denars/kg and 120 denars/kg, but the fees are payable only if the producer/trader does not have a contract with a collective waste handler or has not registered as an individual waste handler.

The 2007 Law against the Violation of Public Order introduced a fine for littering and illegal waste disposal in public buildings, public fountains, springs, beaches, parks, promenades or other public facilities and installations. The fine for breach of the Law could be €100–€400 in denars equivalent.

Awareness, education and training on waste

Since the introduction of the EPR schemes, awareness-raising on waste management is predominantly done by the collective schemes. They are obliged by law to undertake awareness-raising campaigns, enhance the effectiveness of their work, ensure that separate collection points are widely used by citizens and ensure that the targets for recycling and recovery prescribed by the three relevant waste-related laws are met.

Table 10.9: Fees introduced by EPR schemes for waste packaging, waste batteries and accumulators and waste electrical and electronic equipment

Type of waste	Subtype of waste	Fee
Packaging waste		Denars/t
	Glass	4 500
	Plastic	20 000
	Paper and cardboard	6 200
	Multi-layered packaging consisting mostly of paper or cardboard for beverages	22 000
	Multi-layered packaging consisting mostly of paper or cardboard for other purposes	30 000
	Metal cans	8 500
	Other metal packaging	6 200
	Wood	4 000
Waste batteries and accumulators		Denars/kg
	Portable batteries and accumulators	120.0
	Lead accumulators for vehicles and industry	0.9
	Other non-lead industrial and vehicle batteries and accumulators	8.5
Waste electrical and electronic equipment		Denars/kg
	Large household appliances	50
	Small household appliances	80
	IT and telecom equipment	60
	Screens	70
	Electronic equipment for entertainment and other consumer uses	60
	Televisions	90
	Lighting equipment	80
	Fluorescent, compact and other bulbs	120
	Electrical and electronic tools	100
	Electrical and electronic games and equipment for entertainment and sports	100
	Medical devices	100
	Instruments for monitoring and control	100
	Vending machines	50

Source: Related laws.

Photo 10c: Promoting collection of electronic waste in Skopje

These campaigns do not only target citizens in general; for example, one of the collective scheme operators agreed to offer schools containers for separate waste collection and after a certain amount of waste has been collected the operator gives the schools some reward (e.g., printing paper for collected paper and cardboard, monitors for collected WEEE). Other forms of awareness-raising related to waste prevention, reduction and management are also undertaken in schools.

Awareness, education and training for sound management of chemicals

The Ozone and Persistent Organic Pollutants Unit has published professional and communications material on chemicals management, targeted not only to experts but also to the public.

Waste Management Information System

The Waste Management Information System was developed in 2012 to facilitate reporting to the Ministry of Environment and Physical Planning by municipalities, health-care facilities, enterprises on the

EPR scheme and public communal companies. The system is not operational because it is not fully compliant with the current legislation, mainly due to the lack of required resources to upgrade and maintain an adequate waste management information system.

According to the Ministry's calculations, the cost of development of an adequate system is estimated to be from €1.5 million to €4 million and the cost of maintenance €185,000 per year. It is estimated that a team of five full-time experts will be required to manage the system, process the data and support the municipalities. The provision of adequate training for municipalities and operators would also be required. There might be offsetting savings related to the existing approach to data collection, although there might be additional costs for the transition period.

10.7 Participation in international agreements and processes

The country actively seeks to implement the Rotterdam, Basel and Stockholm Conventions and uses the funds and opportunities offered for their implementation not only on a practical level (as is the case with POPs removal) but also on the policy and institutional levels. To enhance the synergies of implementation on the national level, in 2014, the country prepared the Assessment of the Status of Implementation of the Basel, Rotterdam and Stockholm Conventions and the Action Plan for Synergetic and Coordinated Implementation of the Basel, Rotterdam and Stockholm Conventions for the period 2014–2017.

Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade

North Macedonia ratified the Rotterdam Convention in 2010. Since ratification, through the Convention's procedures, the country has reported 47 import responses, all of them in 2012. In most of the cases, the country has refused consent to import, while in 12 cases, consent to import was given with specified conditions.

Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal

The country has been party to the Basel Convention since 1997 and ratified the Ban Amendment in 2004. The National Focal Point is the Ministry of Environment and Physical Planning. The country's legislation related to waste shipment is aligned with the Basel Convention.

Convention on Persistent Organic Pollutants

The country signed the Stockholm Convention in 2001 and ratified it in 2004. In the year of ratification, the National Implementation Plan on Reduction and Elimination of Persistent Organic Pollutants was prepared and its upgrading was completed in 2014 by involving all the relevant stakeholders. The NIP was upgraded with new chemicals from the Stockholm Convention (PFOS, PBDEs, chlordecone, endosulfan and related isomers, lindane). The National Focal Point for the Stockholm Convention is the Ministry of Environment and Physical Planning. The Fourth National Report to the Stockholm Convention has been submitted in August 2018.

Minamata Convention on Mercury

North Macedonia signed the Minamata Convention in 2014 but has not yet ratified it. However, the country completed its Minamata Initial Assessment Report in March 2018, as well as the Minamata Inventory Report, which is a comprehensive inventory of mercury releases in the country with the base year of 2013. The Minamata Initial Assessment Report provides general recommendations for further prioritized steps towards phasing out mercury and for sustainable mercury management in the country.

Convention on the Transboundary Effects of Industrial Accidents

North Macedonia has acceded to the Industrial Accidents Convention and incorporated its provisions, as well as the provisions of the Seveso Directive, into the Law on Environment. The National Focal Point is the Ministry of Environment and Physical Planning, which is also responsible for policy-level regulation and implementation, in close cooperation with the Ministry of Defence and Centre for Crisis Management. The information system is operated by the Centre for Crisis Management.

10.8 Assessment, conclusions and recommendations

Assessment

Waste management in the country has made some progress since 2008 but, due to the lack of infrastructure, the overall performance of the waste management system is only moderate. Despite developments in the establishment of regional waste management systems and progress in the preparatory work, none of the regional landfills has been completed in the past period. Also, the much-needed and planned upgrade of the Drisla landfill serving the

City of Skopje has stalled, due to property disputes with the investor.

Until the completion of the regional landfills, the existing non-compliant municipal landfills continue to operate, but they do not fulfil even the basic conditions for safe waste disposal; thus, their control by SEI is limited. Due to the lack of adequate infrastructure, data collection is mostly not evidence based and, because of some overlap in institutional responsibilities, there are significant discrepancies in the published data sets for some waste types. Progress was made in the separate collection and recycling of waste streams that are under the EPR schemes, such as packaging waste, WEEE and WBA. However, the fine tuning of the laws that regulate the operation of these schemes, to give more influence to the operators in actual waste collection, would be fruitful by better fulfilling the overall objectives of the laws, i.e. the increase of separate collection and recycling rates.

The country's application of the principles of the SAICM provided the foundations for sound chemicals management in the country. Since then, numerous projects have been implemented targeting both the upgrading of policy and improvement of the situation with practical measures, mostly focusing on (preparing for) the remediation of contaminated sites but also undertaking smaller measures, such as training events. Chemicals management has also taken a big step forward with the adoption of the 2010 Law on Chemicals that transposed the EU REACH Regulation.

Conclusions and recommendations

Inspections

The current regulations on the inspection system and final waste disposal were designed with the aim to ensure adequate control of landfills that comply with the national law. However, in the current situation, the lack of proper landfills makes it impossible to control the municipal disposal sites against the standards set by the legislation. The existing non-compliant municipal landfills will continue to operate for at least another few years, but most of them do not fulfil the basic legal requirements and are subject to inspections checking only on limited parameters, which is not sufficient to ensure basic sanitary conditions.

Recommendation 10.1:

The State Environmental Inspectorate should undertake relevant measures to stop environmentally harmful activities at non-compliant landfills.

Separate collection and recycling

Collective packaging waste management schemes are run by non-profit companies, which cannot perform waste management activities by themselves. This means that the collective waste handling companies have only indirect tools to promote separate collection and recycling. This separation of the activities prescribed by the law for the handler of waste, on the one hand, and those undertaken by the actual waste manager, on the other hand, hinders the provision and development of separate collection and recycling activities, because the collective waste handlers cannot directly affect and enhance the efficiency of such activities. Nevertheless, the experience of the existing EPR schemes shows that this system is an adequate way to manage different waste streams; thus, it is worth considering covering new waste types within this system and to ensure their separate collection and recycling.

Recommendation 10.2:

The Ministry of Environment and Physical Planning should assess the efficiency and impacts of the existing legislation on extended producer responsibility and introduce extended producer responsibility for other waste streams, in particular waste textiles, waste oils, used tyres and end-of-life vehicles.

The 2008 Strategy for Waste Management and National Waste Management Plan (2008–2020), and the relevant legislation, define and focus on targets for separate collection of waste and waste recovery and recycling, but currently do not provide for adequate measures for the growth of a domestic recycling industry. In the absence of a strong recycling industry, the recycling rate within the country cannot be increased.

Waste collectors are not encouraged to collect waste separately (by type) wherever waste is generated. Industrial enterprises that use waste as raw material are not incentivized to recycle. Also, there is no encouragement of consumers to purchase products made of recycled materials. To address concerns related to waste reduction, reuse and recycling, a draft national waste prevention plan has been prepared and is pending adoption.

Recommendation 10.3:

The Ministry of Environment and Physical Planning should:

- (a) *Adopt the draft national waste prevention plan to serve as the national policy on waste reduction, reuse and recycling;*

- (b) Undertake, in cooperation with collective waste handlers, awareness-raising and information campaigns for manufacturers and consumers on reduction, reuse and recycling of urban waste;
- (c) Promote, in cooperation with the Ministry of Economy and Ministry of Finance, recycling and reuse of waste by domestic industry and manufacturers.

Waste management infrastructure

The slow implementation of regional waste management plans and regional landfills hinders the effectiveness of the whole waste management system in the country. Therefore, the completion of the regional landfills has to be high on the Government's agenda.

Recommendation 10.4:

The Government should support the establishment of the regional waste management systems and take measures to speed up the construction of regional landfills.

Data collection

For some waste types (e.g., MSW and hazardous waste), both SSO and the Ministry of Environment and Physical Planning collect and publish data. There are discrepancies in data published by the two institutions. Calculation methodologies are not adjusted, and there is a lack of clear delineation between the two institutions and their responsibilities in data collection, thus leading to overlaps.

Recommendation 10.5:

The Ministry of Environment and Physical Planning and the State Statistical Office should:

- (a) Adjust their data collection methodologies and clearly delineate their tasks and roles, and propose the necessary amendments to the legislation related to data collection on waste;
- (b) Establish an expert group to agree on waste-related indicators, underlying statistics, data collection and reporting methods, to avoid overlap and the duplication of efforts, especially under conditions of limited financial resources and capacity.

Waste Management Information System

The Waste Management Information System was developed to facilitate reporting to the Ministry of Environment and Physical Planning by all the obligated parties (municipalities, health-care facilities, enterprises on the EPR scheme and public communal companies). The system is not operational because it is not fully compliant with the current legislation. Reports are submitted on paper, which makes their validation, further processing and publication much more burdensome.

Recommendation 10.6:

The Ministry of Environment and Physical Planning should ensure the implementation of the activities necessary to bring the Waste Management Information System into operation, to facilitate the legally binding reporting of all obligated parties to the Ministry and reduce the burden for data validation, exchange, processing and publication of information.

Chapter 11

BIODIVERSITY AND PROTECTED AREAS

11.1 Trends in species and ecosystems

Due to the limited data deriving from nature inventories and scientific research activities, insufficient biodiversity monitoring and the non-operational National Biodiversity Information System, the available statistical data on biodiversity in North Macedonia should be considered rough estimates. This is also why a comprehensive assessment of the status and trends in species and ecosystems is not possible, which applies to almost all flora, fungi and fauna species occurring in the country, regardless of whether they are widespread or rare, native or alien.

Species

According to the Ministry of Environment and Physical Planning, in the period between the first and the fifth national reports to the Convention on Biological Diversity (2003–2014), there is an increase in knowledge on biodiversity, in particular in describing approximately 250 taxa new to science (six higher plants, more than 170 taxa of diatom algae and 48 invertebrate species). In addition, hundreds of previously unregistered species have been registered for the first time, including 23 higher plants and 237 fungi species. Moreover, quantitative assessments of the populations of several species (e.g., Balkan lynx, several bird species) have been carried out and trends in the populations of several bird species, such as griffon vulture (*Gyps fulvus*, LC), Egyptian vulture (*Neophron percnopterus*, EN), lesser kestrel (*Falco naumanni*, LC) and imperial eagle (*Aquila heliaca*, VU) have been documented. Progress was made in enhancing knowledge on algae diversity (primarily of silica algae) and fungal diversity.

A National Biodiversity Information System, established in 2011 at the Ministry of Environment and Physical Planning within a UNDP project, which includes a national biodiversity database, is not operational as at December 2018.

Species diversity

Since 2011, progress in biodiversity research, in particular since 2013, when the revision of the 2004 NBSAP commenced, has resulted in a higher number of flora, fungi and fauna species (in particular

invertebrate and fungi species) having been recorded recently, compared with 2011 data. According to the 2018 National Strategy for Nature Protection and Action Plan for the period 2017–2027, the number of species occurring in the country include some 3,200 vascular plant, 450 moss, 2,000 algae, 450 lichen, more than 2,000 fungi (compared with 1,250 in 2011), 13,000 invertebrate (10,000 in 2011), 85 fish and *Cyclostomata*, 14 amphibian, 32 reptile, 335 bird and 89 mammal species.

Threatened species

No national red lists of threatened species have been adopted so far, and consequently no corresponding red data books have been published. Therefore, it is not possible to identify which native species (including local endemics) are threatened by extinction.

The draft Red List of fungi and draft Red List of butterflies were prepared in 2012 and the draft Red List of orthoptera in 2014 by the Ministry of Environment and Physical Planning. Activities led by the IUCN Regional Office for Eastern Europe and Central Asia in Belgrade (IUCN ECARO) within the ongoing project “Achieving Biodiversity Conservation through Creation and Effective Management of Protected Areas and Mainstreaming Biodiversity into Land Use Planning” (2016–2020), funded by GEF, will support the preparation of the first complete national Red Lists and Red Data Book for 46 reptiles and amphibians and 14 national plant species selected according to their importance for international conservation.

The 2011 lists of strictly protected and of protected wild species indicate 194 strictly protected species (51 flora, 9 fungi and 134 fauna species) and 820 protected species (151 flora, 75 fungi and 594 fauna species).

However, the most recently published global IUCN Red List (version 2018–2, updated on 14 November 2018) contains records on 379 plant species, 1 species from the fungi and protist group and 946 animal species occurring in the country. Of 379 plant species, 4 are globally threatened by extinction, including 1 species categorized as Endangered (EN) and 3 as Vulnerable (VU), 6 plant species are categorized as Near Threatened (NT), 30 as Data Deficient (DD) and 339 as of Least Concern (LC). The species from the

fungi and protist group listed by IUCN is categorized as VU. As for the fauna, 2 species are categorized as Extinct (EX), while as many as 120 other animal species (6 mammal, 13 bird, 2 reptile, 13 fish, 71 mollusc and 15 other invertebrate species) are globally threatened by extinction, 19 species are categorized as Critically Endangered (CR), 34 as EN and 67 as VU. A further 60 fauna species are categorized as NT, 50 as DD and 714 as LC.

Not all reptile, fish, mollusc, other invertebrate, plant, fungi and protist species have so far been assessed for the global IUCN Red List. Therefore, the flora, fungi and fauna may include more species globally threatened by extinction that have not yet been assigned relevant IUCN Red List categories. Similarly, due to missing or incomplete data from recent field research and inventory work, many other species are temporarily categorized only as DD, despite their confirmed rarity status.

As for the regional approach, 113 species of vertebrates present in the country are included in the European Red List, compiled according to IUCN Regional Red Listing guidelines, and indicating species that are threatened by extinction at the European level.

In the light of the country's ongoing preparations for accession to the EU and establishment of the Natura 2000 network, another approach could be to perceive animal species listed in Annex IV (a) and plant species listed in Annex IV (b) to Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitats Directive), and bird species listed in Annex I to Directive 2009/147/EC on the conservation of wild birds (Birds Directive) as threatened at the EU level (and therefore requiring strict protection). According to the assessments of the 2009 Emerald Network project, 84 animal species from Habitats Directive Annex IV (a) and 10 plant species from Habitats Directive Annex IV (b) are present in the country. According to assessments carried out by the Macedonian Ecological Society in 2010 under the "Wings Across Balkans" EU project (2010–2012), amended in 2014 and 2015, the presence of 117 bird species (including 82 nesting or regularly occurring species) listed in Birds Directive Annex I, is reported on the national territory. The project "Strengthening the capacities for implementation of Natura 2000" (2016–2017), financed by EU IPA funds, concluded its activities in April 2017, resulting in strengthened administrative capacities at the central and local levels for the implementation of the legislation on nature protection, with a particular focus on the requirements of the Birds and Habitats Directives. Within the project, draft reference lists of

birds, species and habitats have been developed, as well as plans for implementation of the Birds and Habitats Directives.

The 2014 Fifth National Report to the CBD informs on negative trends in populations of several fauna species between 2003 and 2013. This is probably why neither the Fifth National Report nor the 2018 National Strategy for Nature Protection could indicate the number of threatened species, but provide information on three already extinct species of plants (*Acorus calamus*, *Sagittaria sagitifolia* and *Lysimachia thysiflora*) and two extinct bird species (bearded vulture, *Gypaetus barbatus*, NT; cinereous vulture, *Aegypius monachus*, NT) previously recorded in the country, and on the disappearance of at least 20 nesting bird species throughout the last 60 years. Both above documents mention several species considered as threatened, but do not provide exact information on their population trends and current status, except for the decreasing trend in populations of the griffon vulture (*Gyps fulvus*, LC), Egyptian vulture (*Neophron percnopterus*, EN) and lesser kestrel (*Falco naumanni*, LC), as well as the decline in the local populations of regionally endemic Balkan chamois (*Rupicapra rupicapra balcanica*, LC) in Mavrovo National Park and in the Multipurpose Area "Jasen".

According to the 2018 NBSAP for the period 2018–2023, the elaboration of red lists and red books (Action 12.1) is planned until 2023.

Endemic species

According to the global IUCN Red List (version 2018–2), 13 bird species occur naturally only in North Macedonia. Numerous other species present in the country are endemic on a regional scale (e.g., native endemics of South-Eastern Europe). The Macedonian pine (*Pinus peuce*, NT), forming an extensive forest stand of some 1,800 ha in Pelister National Park and present also in other parts of the country, the Balkan lynx (*Lynx lynx ssp. balcanicus*, CR) occurring in Mavrovo, Galičica and Pelister National Parks and in the Šar Planina Mountains, and the Balkan chamois are fine examples of such regionally endemic species, the conservation of which is particularly important. However, according to the 2018 Statistical Yearbook, the Balkan chamois is hunted –moreover, in still increasing numbers: 58 individuals hunted in 2013, 85 in 2014 and 149 in 2017.

According to the SoER prepared by the Ministry of Environment and Physical Planning in 2013, 976 species are endemic, of which 870 are considered to be local endemics. According to the Fifth National

Report, the country harbours some 150 endemic algae, 120 endemic vascular plants, more than 700 endemic invertebrates and 27 endemic fish species. The same source indicates Lake Ohrid as a centre of endemism (with 212 endemic species), in particular concerning lower plants. As for higher plants, according to the National Strategy for Nature Protection, 158 taxa are considered endemic to Lake Ohrid, while other locations can also be considered as centres of floristic endemism, in particular, high mountain regions, e.g., Galičica, Jakupica-Karadzica, Korab and Pelister, or Šar Planina, flora of which includes approximately 150 endemic species. Most of the endemic species at the national or local scale are vulnerable to extinction due to their very restricted range size. According to SSO's environmental statistics for 2017, there are more than 950 endemic species, including 196 algae, 109 Dicotyledoneae, 5 Monocotyledoneae, 2 moss, 1 fern, 27 fish and 3 mammal species.

Widespread species

Due to the gaps in biodiversity monitoring and official statistics, no reliable data are available on the population numbers and trends of species widespread in the country. The 2017 Environmental Statistics and the Statistical Yearbook, both published by SSO, contain data on species such as the European hare (*Lepus europaeus*), red deer (*Cervus elaphus*), roe deer (*Capreolus capreolus*), wild boar (*Sus scrofa*), common pheasant (*Phasianus colchicus*), grey partridge (*Perdix perdix*) and rock partridge (*Alectoris graeca*, NT). However, the information provided by both sources is not on the exact or estimated size of their living populations but on the numbers of animals hunted, showing an increasing trend in mammal species (roe deer, 0 hunted in 2011, 127 individuals in 2017; red deer, 0 in 2011, 8 in 2017; hare, 660 in 2011, 2,034 in 2017; wild boar, 438 in 2011, 1,318 in 2017). Other sources provide information on the occurrence of other widespread species, including the wolf (*Canis lupus*), Eurasian badger (*Meles meles*), fox (*Vulpes vulpes*), otter (*Lutra lutra*, NT) and pine marten (*Martes martes*).

In 2018, the Ministry of Environment and Physical Planning, in cooperation with the Macedonian Ecological Society, started working on developing a national strategy for anti-poisoning of the widespread species.

According to the 2018 NBSAP for the period 2018–2023, the development of scientific studies on the status of game species populations for the purpose of setting more appropriate hunting quotas is planned between 2019 and 2022 (Action 7.2.4).

Alien species

The country did not develop a list of invasive vascular plants. Currently, the preparation of a list of invasive aquatic and terrestrial plants is ongoing. Several invasive alien woody species have intentionally been introduced, either for afforestation, timber harvesting, engineering (e.g., slope and roadside stabilization, erosion and landslide prevention) or decorative purposes, including the black locust (*Robinia pseudoacacia*), Douglas fir (*Pseudotsuga menziesii*), tree of heaven (*Ailanthus altissima*), maple ash (*Acer negundo*), goldenrain tree (*Koelreuteria paniculata*) and Arizona cypress (*Cupressus arizonica*), as well as numerous other plant species, e.g., the common ragweed (*Ambrosia artemisiifolia*), wormseed (*Dysphania ambrosioides*) and Canadian waterweed (*Elodea canadensis*). According to the Fifth National Report, a programme of measures for controlling the spread of Douglas fir in Pelister National Park was already developed in 2008; however, as at November 2018, no information is available on implementation progress and results.

According to the 2018 NBSAP for the period 2018–2023, 17 introduced fish species are included in the approximately 85 fish species from 15 families found in the country. Ichthyofauna of Lakes Prespa and Ohrid have been severely endangered by the introduction of non-native species (12 in Lake Prespa and seven in Lake Ohrid). Ichthyofauna of Dojran Lake include 14 species, of which two are introduced.

According to the 2018 NBSAP for the period 2018–2023, the implementation of the National Target 8 “Develop and establish appropriate policy for recording, control and protection of non-native and invasive species” shall begin from the identification of non-native (in particular, invasive) species (Action 8.1.1), which is due to be completed by 2021, followed by the preparation and adoption of a national list of invasive species (Action 8.1.2), to be achieved between 2021 and 2022.

Ecosystems

According to official statistics, since 2011, the land use pattern has changed slightly. As at 31 December 2017, forests covered 1,001,489 ha, which accounted for 38.95 per cent of the country's territory (compared with 981,812 ha or 38.18 per cent as at 31 December 2011), despite the decreasing trend in afforestation activities (553 ha in 2017, compared with 2,081 ha in 2011). The total area and share of agricultural land increased to 1,266,000 ha (49.24 per cent of the territory) compared with 1,120,000 ha (43.56 per cent) in 2011. The total area and share of pastures increased

from 608,000 ha (23.65 per cent) in 2011 to 748,000 ha (29.09 per cent) in 2017, despite the ongoing succession of shrub and forest vegetation on abandoned post-agricultural land in depopulating, most remotely located rural areas (in particular in high mountain regions).

As at 2018, the country has not yet prepared the national inventory of forest resources, which is required by the 2009 Law on Forests. Between 2011 and 2017, the areas overgrown by deciduous and mixed forests increased (from 569,635 ha to 605,661 ha, and from 286,646 ha to 289,822 ha, respectively), while the areas of coniferous and degraded forests decreased (from 75,589 ha to 65,032 ha, and from 49,942 ha to 44,356 ha, respectively). Hence, at the end of 2017, deciduous forests accounted for some 60 per cent, mixed forests for 29 per cent, coniferous forests for 6.5 per cent and degraded forests for over 4 per cent of the total forest area.

Since 2011, the annual volume of harvested timber fluctuated between 857,000 m³ in 2011, 691,000 m³ in 2013, 890,000 m³ in 2016 and 807,000 m³ in 2017, with the prevailing share being of deciduous tree (beech, oak) timber, mostly used as fuelwood by households.

According to official data, the volume of illegal logging decreased from 25,189 m³ in 2011 to 18,662

m³ in 2016. However, for many reasons (including the lack of a forest cadastre and regularly updated forest inventory, gaps in monitoring and low motivation for forest patrolling), the actual amount of illegally harvested timber is not known and must be estimated well above these officially reported numbers.

Forest ecosystem services also include the provision of non-timber forest products, e.g., mushrooms, berries, medicinal, decorative and aromatic plants, and game animals, which include 133 wild fauna species acquired in 256 hunting grounds (including 112 hunting grounds for large game and 144 for small game). These hunting grounds are managed by either PEMF or private hunting associations that have been awarded a concession (20-year concessions in the case of large game hunting grounds and 10-year concessions for small game hunting grounds).

According to the Fifth National Report, 28 key ecosystem types, including 177 habitat types at level 3 of the European Nature Information System, were identified. Wetland habitats, degraded during previously undertaken drainage works, are currently the most threatened, together with their flora and fauna. Many areas of key importance for biodiversity conservation (including high mountain, forest and aquatic ecosystems) are shared with neighbouring countries.

Photo 11a: Mountaintop view, National Park Galicica



11.2 Pressures on species and ecosystems from

Land uptake

According to the Fifth National Report, ongoing urbanization processes threaten some of the last remaining parts of lowland priority habitats, in particular, wetland habitats. Other ecosystems and habitats are threatened by loss or fragmentation due to land uptake as the result of several transport infrastructure development projects. Furthermore, land uptake resulting in irreversible loss of habitats and species takes place in locations of open pit mineral resource extraction.

The Report mentions a number of endemic species associated with marbled limestone, directly threatened by marble exploitation works. According to data published by the Ministry of Economy, as many as 375 concessions for mineral resources exploitation have been awarded and 45 contracts for detailed geological surveys were concluded in 2016. Furthermore, since 2012, when the Law on Tourism Development Zones came into force, the demand for land suitable for tourism and recreational infrastructure development has increased, including in protected areas (three of the first eight planned tourist development zones are located in Galičica National Park), due to which anthropogenic pressures on natural habitats are expected to increase.

Development of energy installations and infrastructure

Construction of reservoirs in the river gorges leads to immersion of large areas of the ravines, which represent refugiums of relict flora and vegetation, resulting in degradation and partial destruction of the existing phytocenoses on the lower vertical profiles of the rivers, as well as to the reduction of the area of relict, endemic and rare plant species.

Habitat fragmentation and human-made barriers for migratory species

According to the Fifth National Report, between 2003 and 2013, several transport infrastructure development projects started or were announced, which may have impacts on biodiversity, causing fragmentation of habitats and intersecting wildlife migration routes; they are also located in ecologically sensitive and legally protected areas. Examples include the highway “Demir Kapija–Smokvica” and motorway “Bridge on the River Radec–Gradsko” (both expected to cross sensitive habitats in areas designated as Emerald Network sites, Important Bird Areas and Important Plant Areas), highways Miladinovci–Sveti Nikole–

Shtip and Shtip–Strumica (both passing through Important Bird Areas and Important Plant Areas), highway Kichevo–Trebenishta (affecting Habitats Directive priority habitats and potentially blocking ecological corridors designed under the National Ecological Network), A3 express road Ohrid–Sveti Naum planned across the territories of Galičica National Park (designated as a World Heritage property, UNESCO MAB transboundary Biosphere Reserve, Emerald Network site, Important Plant Area and Prime Butterfly Area) and motorway Kula–Makedonski Brod, passing through the MultiPurpose Area “Jasen”.

Logging and deforestation

The pressures on species and ecosystems from forestry operations and illegal logging seem to be insignificant. The deforestation process is not yet occurring, as the total area of forests in the country increased slightly within the reporting period (in the light of decreasing afforestation measures, most probably due to natural forest succession to post-agricultural land), while illegal logging usually takes place close to human settlements and, hence, the scope of disturbance of forest habitats is probably limited. However, the scale of anthropogenic impact and pressures cannot properly be determined in the absence of forest inventories and biodiversity monitoring programmes.

Acidification

The implementation of both the 2012 National Plan for the Protection of Ambient Air for the period 2013–2018 and the 2012 Programme for Gradual Reduction of Emissions of Certain Polluting Substances providing projections of SO₂, NO_x, NH₃ and VOCs emissions for the period 2010–2020 would support lowering the emissions of acidifying substances. However, no information on progress in their implementation and the impact achieved since 2013 is available.

Eutrophication

Since 2011, pressure from eutrophication decreased. With the support provided by donors, new WWTPs for several cities (e.g., Strumica, Kicevo, Radovis, Prilep) were built. No recent information on the current scale of this pressure is available. However, the eutrophication of aquatic ecosystems might still be the case in rural areas, as a result of uncontrolled livestock husbandry waste discharge into watercourses. Eutrophication of water in rivers and lakes threatens the viability of fish, amphibian and reptile populations.

Desertification

The scale of desertification in the country is not yet determined. Between October 2013 and December 2014, the Ministry of Environment and Physical Planning implemented a GEF-supported project “Support for the Development of National Action Program Aligned to the UNCCD 10-Year Strategy and Reporting Process under UNCCD”, with the objective to meet obligations under the UNCCD, by formulating a first national action programme and facilitating the reporting and review processes, for better decision-making concerning measures mitigating land desertification, land degradation and drought, and sustainable land management issues. No information on progress in implementation of the National Action Program is available.

Intensified agriculture

Pressures on ecosystems and species deriving from intensified agriculture include increased surface water intake for irrigation purposes, resulting in reduced water quantity and quality in lakes and rivers, pollution of groundwater with chemical plant protection products and livestock husbandry waste discharge, and accumulation of pollutants in water reservoirs (e.g., Lake Prespa). The abandonment of traditional agricultural and land use practices in meadows and pastures (e.g., haymaking, sheep grazing) in rural areas, along with depopulation due to migration from villages to urban settlements, results in threats to grassland habitats, as the previously grazed and mown meadows become subject to natural succession of shrub and forest vegetation. Most affected are the *Hordeeto-Caricetum distantis*, *Cynosureto-Caricetum hirtae* and *Trifolietum resupinatibalsae* plant communities.

Hunting and fishing

Hunting

The size of populations of widespread species, including game, has not yet been adequately investigated. Due to the non-operation of the national biodiversity monitoring system and the absence of nationwide assessments, and the non-availability of data on wildlife population sizes and trends, it is neither possible to assess whether hunting quotas are set at sustainable levels nor to properly assess the intensity of hunting pressure on wildlife. Since 2011, the number of hunted game mammal individuals increased significantly, which probably did not correspond to a comparable increase in their population numbers. Furthermore, hunting of game species decreases the availability of prey, including

carcasses, for rare and threatened predatory species, such as the Balkan lynx and numerous bird species, and therefore directly contributes to a further decline in their populations. However, a real threat to wildlife is poaching (sometimes with the use of traps, live snares and poison), for either subsistence purposes or illegal trade, also in rare and endangered species, such as the brown bear, Balkan lynx and Balkan chamois. The illegal use of poison baits has led to the disappearance of the bearded vulture and cinerous vulture, and to a drastic reduction in the populations of the Egyptian vulture and griffon vulture.

According to the 2018 NBSAP for the period 2018–2023, the development of scientific studies on the status of game species populations to enable the setting of more appropriate hunting quotas is planned between 2019 and 2022 (Action 7.2.4).

Fishing

There are several vulnerable fish species in the country, especially in Lake Ohrid. Monitoring of fish stocks has resulted in the lowering of catch quotas in the Lake Ohrid area. There are six fishery inspectors, of whom two work at Lake Ohrid. Aquaculture is forbidden in the lake. There is also a three-month ban on fishing the endemic Lake Ohrid brown trout (*Salmo letnica*, DD) during the reproduction period. The deliberate introduction of non-native fish species is forbidden, but alien species already present in the country also cause serious problems.

The endemic fish species populations in Lake Prespa are threatened by the degradation of the quality and reduction in the quantity of water and degradation of fish spawning grounds, competition from non-native species, illegal fishing, overfishing and the absence of a species conservation or management plan. The UNDP project “Restoring of the Ecosystem of Lake Prespa (2011–2018)”, with financial support from the Swiss Agency for Development and Cooperation, focused on activities to reduce the pressures on the ecosystem of Lake Prespa with a view to improving the health and resilience of the Lake.

Collection of non-wood forest products

Despite the prohibition by the Ministry of Environment and Physical Planning on collection of the species *Gentiana lutea* and *Gentiana punctata*, issued in 2006 for a five-year period, illegal collection of *Gentiana* continued, resulting in threat to this species population and degradation of its habitats. Other affected species include the common bearberry (*Arctostaphylos uva-ursi*) and the regionally endemic mountain tea (*Sideritis scardica*).

Photo 11b: Ubavica Cave Protected Area

Tourism

The impact of tourism sector development on biodiversity leads to a number of adverse consequences, in particular in the most-visited protected areas. Besides activities associated with various recreational uses, the most obvious threats relate to tourist activities in protected areas, increasing anthropogenic impact on and disturbance of valuable habitats and rare species, and other economic activities that are not fully regulated by the management plans, or when there are not enough resources to deal with the impacts successfully or implement the prescribed protection measures. As tourism is an important source of income for protected area management, it is difficult to regulate it in an adequate manner, and the “maximum carrying capacity” concept limiting tourist access cannot be implemented.

Other threats result from unplanned construction of certain tourist facilities, which degrade neighbouring ecosystems. The adverse side effects of increasing visitation, as well as recreational and tourism infrastructure development, include the growing volume of solid waste and wastewater, and changes in landscape. The Lake Ohrid area is a good example, as the wastewater treatment facilities cannot cope with the rapid increase in the number and capacity of hotels

and other tourist accommodation. Since the adoption of the 2012 Law on Tourism Development Zones, the pressure on development of new tourist facilities has increased, including in protected areas. Fishing tourism could also add to pressures on threatened fish stocks.

Climate change

Climate change poses a major threat to all natural ecosystems and the overall biodiversity of the country, as the rising temperatures and decreasing precipitation have adverse effects on the environmental conditions in habitats of rare and endangered plant species and communities, as well as decreasing the potential for the regeneration of the vegetation. This could result in extinction or significant reduction of the geographic range of several sub-alpine and alpine species, especially in mountain areas; for instance, dry grasslands, forests and aquatic ecosystems are vulnerable to climate change. According to estimates carried out for the elaboration of the Third National Communication to the UNFCCC, 18 habitats have been identified as potentially affected by climate change and 58 plants and 224 animal species vulnerable to climate change. Furthermore, climate change enhances desertification and soil erosion processes and the expansion of arid areas and

increases the threat of grassland and forest fires. According to official statistics, the size of areas destroyed by forest fires initially decreased, from as much as 34,443 ha in 2007 and 15,046 ha in 2008, to 8,702 ha in 2011, 2,844 ha in 2013, 1,150 ha in 2014, 3,165 ha in 2015 and 2,166 ha in 2016. However, in 2017, forest fires affected 13,405 ha. Most affected are the thermophilous oak forests and shrublands that are characterized by high diversity and/or the presence of species characteristic of Mediterranean coastal forests and maquis biome.

Living modified organisms and genetically modified organisms

According to the Law on Nature Protection, the introduction of species into the natural environment is generally prohibited, and requires a permit, regardless of whether the species concerned is native, alien or a living modified organism (LMO). The 2008 Law on Genetically Modified Organisms regulates the deliberate release or placement of LMOs on the market by means of licences. However, the Ministry of Environment and Physical Planning has not received any request for an LMO-related licence. No research results on, nor evidence of the potential adverse effects of, LMO release on the native ecosystems and species are available. Food and food products containing or consisting of GMOs, their

production, release and import is prohibited (since the 2013 amendment of the 2010 Law on Food Safety).

11.3 Performance and gaps in biodiversity and forests monitoring networks

The 2004 Law on Nature Protection contains numerous provisions related to biodiversity monitoring, concerning the monitoring of the state of habitat types, of landscape types and of the natural environment. The Department for Nature within the Administration for the Environment of the Ministry of Environment and Physical Planning is the body responsible for the establishment of the biodiversity monitoring system and the National Biodiversity Information System, as an integral part of the Environmental Information System. However, due to the limited human, technical and financial capacities, the National Biodiversity Information System, established in 2011 under a UNDP project, is currently not in operation. The methodology for monitoring the state of the natural environment has not been developed and a monitoring system has not been established across the country. Biodiversity monitoring activities are mainly carried out, depending on available resources, in three national parks (Mavrovo, Pelister and Galičica), and under various projects implemented by other organizations (e.g., monitoring of the ecosystems of Lakes Ohrid and Prespa, populations of the Prespa trout).

Photo 11c: National Park Galičica – habitat of the Balkan lynx (*Lynx lynx balcanicus*)



Since 2010, Galičica National Park has been carrying out the long-term monitoring of the non-animate natural environment, forest plant communities and habitats, herbaceous plant communities and habitats, and plant and animal species. Among the projects being undertaken by CSOs, the most important are long-term monitoring activities carried out by the Macedonian Ecological Society, including the continuous monitoring of vulture species (since 2003) and of the Balkan lynx (since 2006) under the multinational Balkan Lynx Recovery Programme, supported by the MAVA Foundation.

The Macedonian Ecological Society has also developed its own biodiversity monitoring database. A winter census of waterfowl in the three natural lakes, as well as some artificial lakes and fishponds, is not carried out on a continuous basis but with interruptions, depending on the possibilities for financing; however, the census has been done with increased intensity in the last few years. Hunting associations and hunting concessionaires monitor the numerous conditions affecting game species.

Under the ongoing IPA twinning project “Strengthening the capacities for effective implementation of the acquis in the field of nature protection” (November 2017–August 2019), implemented by Ministry of Environment and Physical Planning, a draft national biodiversity monitoring programme is expected to be prepared, together with monitoring protocols for 20 habitats, 20 species and 20 birds of EU interest harmonized with the requirements of the Habitats and Birds Directives, nature inventories in two pilot sites (Pelister National Park and Lake Prespa Monument of Nature), draft studies for nature valorization and draft management plans for two potential Natura 2000 sites. Moreover, the project will support the establishment of a new national information system for natural heritage, including biodiversity monitoring.

Within various projects, studies are carried out on certain specific changes that influence the state of the forests. Thus, in Pelister National Park, the revitalization of the old Molika forest is monitored by monitoring the course of the molybdenum renewal process.

No national forest inventory has been carried out so far, and forestry operations planning is based on ground inventories. Monitoring of the state of forest health within the reporting period has been carried out regularly by the Faculty of Forestry of the University “Ss. Cyril and Methodius” in Skopje, based on annual contracts with the Ministry of Agriculture, Forestry and Water Economy.

According to the 2018 NBSAP for the period 2018–2023, the establishment of the monitoring system for biological diversity (Action 14.3) is planned for the period between 2020 and 2023.

11.4 Trends in development and management of protected areas

National protected area network

The Law on Nature Protection constitutes the legal basis for the designation of protected areas in six different protective regime categories that were harmonized with the IUCN protected area management categories.

In 2017, the national network of protected areas included 86 areas with a total area of 229,719 ha and covered about 8.93 per cent of the country’s territory (table 11.1). National parks covered almost 4.5 per cent of the territory and monuments of nature 3 per cent, while protected areas of other categories accounted for approximately 1.4 per cent of the territory.

Table 11.1: Protected areas, 2012, 2014, 2016 and 2017, number and ha

Classification	Number				Area (ha)				Percentage of territory in 2017
	2012	2014	2016	2017	2012	2014	2016	2017	
Ia: Strict nature reserve	2	2	2	2	10 673	10 023	7 787	7 714	0.3
Ib: Wilderness area	0	0	0	0	0	0	0	0	0
II: National park	3	3	3	3	115 713	115 602	114 870	114 937	4.47
III: Monument of nature	57	67	67	67	70 424	71 396	78 968	78 939	3.07
IV: Nature park	15	12	12	12	3 376	2 763	3 045	3 086	0.12
V: Protected landscape	3	1	1	1	5 387	102	108	102	0
VI: Multipurpose area	1	1	1	1	26 923	26 923	25 305	24 941	0.97
Total	81	86	86	86	232 496	226 809	230 083	229 719	8.93

Source: Fifth National Report to the Convention on Biological Diversity, 2015; National Strategy for Nature Protection and Action Plan for the period 2017–2027.

A specific category is the multipurpose area, which is not excluded from economic use (in line with IUCN category VI) and comprises larger natural complexes of, for example, forests or meadows, and can serve as an ecological corridor to ensure the integrity of the ecological network.

According to official statistics, despite the increase in the number of protected areas (from 81 in 2012 to 86 in 2017), the total area under legal protection decreased from 232,495 ha in 2012 to 229,719 ha in 2017 (a decrease of 2,776 ha). Hence, as at 2017, protected areas accounted for only 8.93 per cent of the country's territory, while the CBD Aichi Biodiversity Target 11 stipulates that, by 2020, at least 17 per cent of terrestrial and inland water areas shall be included in effectively and equitably managed, ecologically representative and well-connected systems of protected areas.

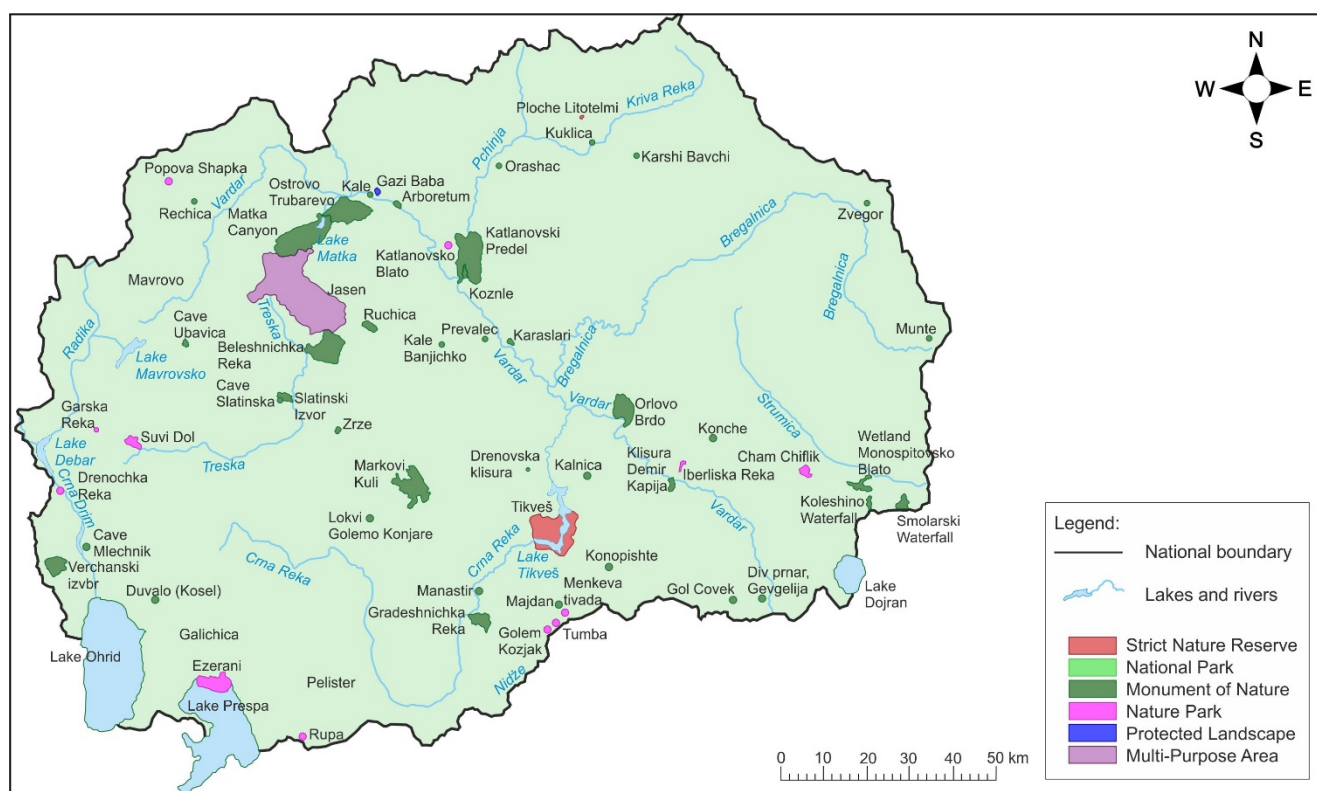
Most remarkable is the decreasing area of strict nature reserve, from 10,673 ha in 2012 to 7,714 in 2017 (a decrease of 28 per cent and encompassing only some 3.4 per cent of the total protected area in 2017). Strict nature reserves ensure the highest legal protective regime, restricting human interference and economic uses, and are therefore crucial for the conservation of natural ecosystems, habitats and species diversity, as

well as preservation of naturally ongoing processes, and they serve as reference areas for scientific research and monitoring.

The area of three national parks (Galičica, Mavrovo and Pelister) constitutes half of all protected areas in the country, while the high share (some 34 per cent of the total protected area) of monuments of nature results from such designation of the vast aquatic ecosystems of the three largest natural lakes (Ohrid, Prespa and Dojran). Furthermore, a striking disparity in the current distribution and size of protected areas between the western and eastern regions of the country is visible (map 11.1). Moreover, the current national protected area network is still not a “network” in the common meaning of the term; its current scattered spatial pattern is insufficient to ensure ecological continuity and connectivity, as linking ecological corridors are still missing. The only exception could be the Multipurpose Area “Jasen”, which serves as a corridor linking the adjacent areas of two monuments of nature (Beleshnichka Reka and Matka Canyon).

The national protected area network is not coherent since it includes areas proclaimed in different periods, in accordance with different categorization systems resulting from changes in the still-evolving nature conservation legislation.

Map 11.1: Geographical distribution of protected areas



Source: Ministry of Environment and Physical Planning.

Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

Consequently, the current network includes protected areas proclaimed in accordance with the old (no longer valid) categorization, two new areas recently proclaimed in accordance with the new categorization, some already reproclaimed and some currently being subject to the reproclamation procedure, while some other new areas are currently in the process of proclamation. The Law on Nature Protection requires the revalorization and reproclamation of protected areas.

Hence, the national protected area network can best be described as being still (since 2005) in a transitional phase of development, while the expected accession to the EU would then require the designation of Natura 2000 sites, upon the full transposition of the EU biodiversity-related acquis into the national legal framework.

Reproclamation process

The Ministry of Environment and Physical Planning is responsible for the revalorization of protected areas that have been placed under protection before the enactment of the Law on Nature Protection and for drafting new acts of proclamation in accordance with the provisions of this Law. Both these tasks were expected to be completed within six years of the entry into force of the Law (in 2005), therefore, prior to 2011. However, the process of revalorization and reproclamation of protected areas has not been completed.

Since 2011 (which marked the original deadline, set by the Law on Nature Protection), the process of protected area revalorization and reproclamation has been very slow, with only six areas reproclaimed: four monuments of nature (Slatinski Izvor Cave, Lake Dojran and Lake Prespa in 2011 and Vevcanski Izvori in 2012) and two nature parks (Prespa in 2012 and Gazi Baba in 2015).

Revalorization and reproclamation of a protected area is an indispensable precondition for its proper delineation, preparation and adoption of a management plan and the setting up of a management body. At December 2018, studies of valorization for natural heritage sites are being prepared for the Osogovo Mountains and Šar Planina, Pelister National Park and Lake Prespa Monument of Nature. In addition, in 2018, the study on valorization of Lake Dojran was prepared.

According to the 2018 NBSAP for the period 2018–2023, finalization of the process of protected areas redesignation (Action 11.1.2) is due to be completed by 2023.

Management plans

According to the Fifth National Report, management plans have been prepared and adopted for two national parks and one nature park with the support of foreign donors. The management plan for Pelister National Park was prepared under a Swiss-supported project (later approved by the Ministry of Environment and Physical Planning, and adopted in 2005), for Nature Reserve Ezerani under the GEF/UNDP/Ministry of Environment and Physical Planning project for Prespa Basin protection (adopted by the Municipality of Resen, which, in 2012, was entrusted by the Ministry of Environment and Physical Planning with the mandate of Ezerani managing body), and for Galičica National Park under the KfW-funded project “Transboundary Biosphere Reserve Prespa Park – support to Galičica National Park” (adopted in 2012). The latter became subject to amendments, on the motion of the Government, in order to accommodate the implementation of five infrastructure development projects concerning three tourism development zones, construction of a ski centre and construction of the A3 express road Kosel–Ohrid.

Furthermore, draft management plans were prepared for the Monuments of Nature Matka Canyon, Lake Tikvesh, Smolare, Koleshino Waterfalls and Markovi Kuli, as well as for the Multipurpose Area “Jasen” (under the GEF/UNDP/Ministry of Environment and Physical Planning project), for Mavrovo National Park (under a UCODEP/Ministry of Environment and Physical Planning project), and for the Lake Prespa Monument of Nature (under the Swiss Agency for Development and Cooperation/UNDP project for Lake Prespa revitalization). However, a draft management plan cannot be adopted prior to completion of the reproclamation procedure for the area concerned.

Another obstacle for the development of protected area management plans is the absence of a land cadastre, which would allow the assessment of both land use (e.g., forest, agricultural land) and land ownership of particular real estate properties concerned, and the accurate delineation of protected area boundaries, which could then be officially recorded. Similarly, both land ownership and protected area boundaries are not clearly marked on the ground. Moreover, the absence of a land cadastre is an impediment to the management of forests and protected areas, and also to law enforcement, as protecting forests against illegal logging and enforcement of other regulations related to the legal protective regime is problematic when ownership boundaries are not clearly marked and cannot be referred to.

According to the 2018 NBSAP for the period 2018–2023, finalization of the process of protected areas redesignation (Action 11.1.2) is due to be completed by 2023 and the adoption of management plans for national parks and/or other protected areas (Action 11.4.2) is also planned to be completed by 2023; this would be problematic, as the preparation and adoption of management plans for areas reproclaimed as late as in 2023 would hardly be possible in the same year.

Advisory bodies

Pursuant to the Law on Nature Protection, each protected area is required to have two advisory bodies: a scientific council (with the exception of protected areas smaller than 100 ha, and of category VI protected areas), and a council of stakeholders. The latter allows for the involvement of the local communities, for example in consultations on draft protected area management plans. Either very few or no councils of stakeholders for protected areas have been established so far.

11.5 Trends in development and management of ecological networks

Plans for the extension of the national protected area network

The 2004 Spatial Plan stipulated the further development of the national protected area network. Based on scientific assessments, as many as 265 sites would become legally protected by 2020, under different categories, as best correspond to their natural values and features. As for the ultimate composition of the network, the Plan specified “5 national parks covering a total area of 188,196 ha, 8 strictly protected natural reserves with an area of 13,682 ha, 38 scientific and research natural reserves – 11,836 ha, 6 areas with special natural properties – 13,966 ha, 1 specific landscape of 200 ha, 26 specific natural reserves – 5,155 ha, 14 individual flora and fauna species – 2,645 ha and 167 monuments of nature covering an area of 62,886 ha”. Among its priorities, the Plan emphasized the need for the designation of two new national parks: Jakupica with a proposed area of 28,000 ha, and Šar Planina of 51,858 ha.

Should the Plan be fully implemented, in 2020, the national network of protected areas would extend over 298,566 ha, then accounting for 11.61 per cent of the country’s territory, which would still be less than the 17 per cent minimum threshold value stipulated by the CBD Aichi Biodiversity Target 11.

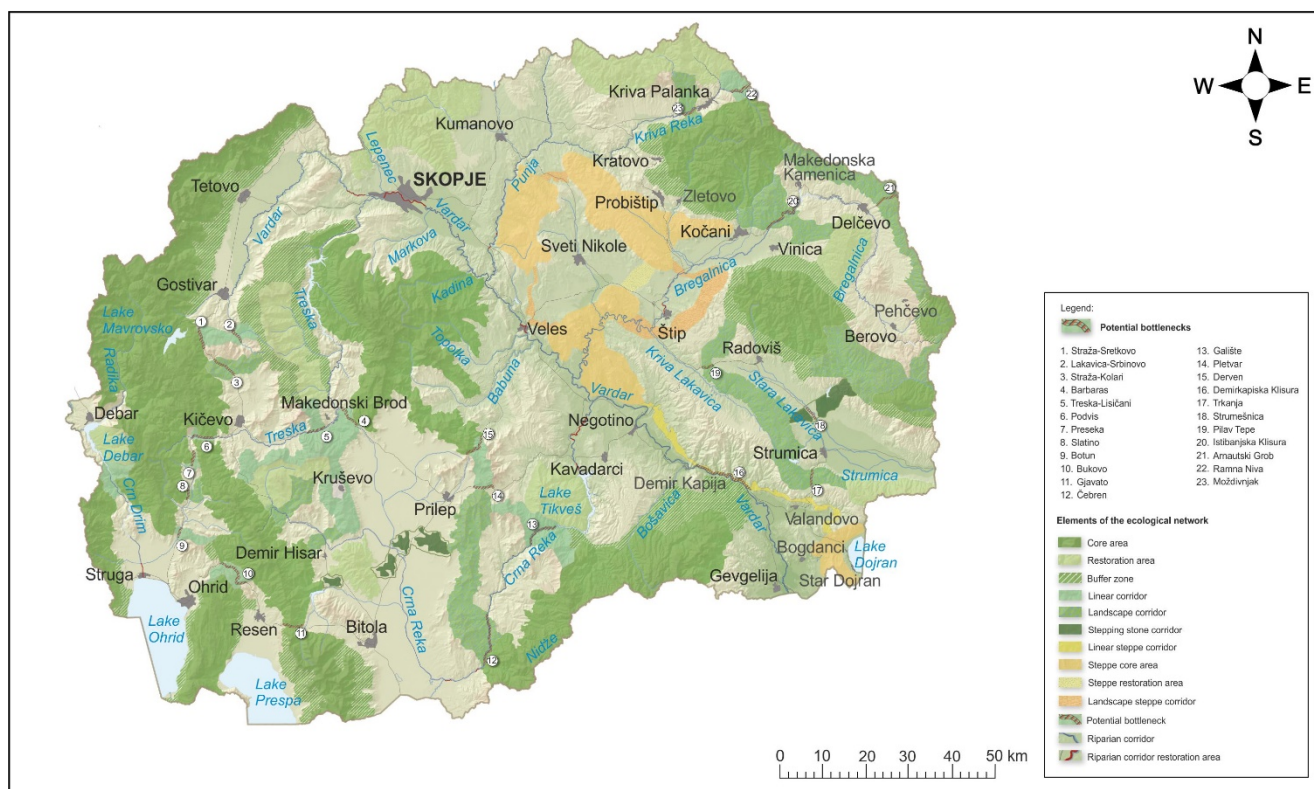
According to the 2014 Fifth National Report, another proposal for the establishment of an ecologically

representative and more spatially coherent national network of protected areas was developed in 2010–2011 by the Macedonian Ecological Society, according to which the National Ecological Network (MAK-NEN) is proposed to include 99 protected areas (34 areas existing at that time, 42 new areas proposed for protection by the 2004 Spatial Plan and 23 newly identified areas). Moreover, an additional 91 localities were proposed for proclamation as “natural rarities”.

The concept was based on the outcomes of expert studies undertaken by the Macedonian Ecological Society, concerning the distribution of CORINE Land Cover key habitat types, modelling of the suitability of habitats to support the populations of large carnivores, and the distribution of key carnivore species in the country. The brown bear (*Ursus arctos*) was taken as a model and flagship species for the identification of 13 core areas of the network (capable of maintaining viable brown bear populations, including areas already protected either at the national level or by various international instruments), 26 ecological corridors (including 12 linear, 11 landscape corridors and 3 stepping stone areas), buffer zones and restoration areas. A map of the proposed National Ecological Network was drafted (map 11.2). In addition, guidelines for the protection and maintenance of identified migration corridors for the brown bear (consisting of larger uninterrupted tracts of well-preserved forest habitats or a mosaic of smaller natural and semi-natural habitats) were provided under the Brown Bear Corridors Management Plan.

The proposed MAK-NEN was expected to encompass some 20 per cent of the country’s territory (which would then meet the requirements of the CBD Aichi Biodiversity Target 11) and facilitate the implementation of the Law on Nature Protection, requiring the establishment of a national ecological network of interconnected or spatially close ecologically important areas, linked by ecological corridors. Moreover, the MAK-NEN concept stipulated the proclamation of several new, larger areas in the still less-protected north-eastern part of the country.

The MAK-NEN proposal, submitted in 2013 to the Government, is still in the process of consultation with other sectors. Presumably, the decision on the ultimate size and composition of the national network of protected areas was planned to be taken upon the prior completion of assessments towards the identification of areas most suitable for their possible future designation as Natura 2000 sites (Sites of Community Importance and Special Protected Areas) which, pursuant to the Law on Nature Protection, shall become part of the national ecological network.

Map 11.2. Proposed scope of the National Ecological Network

Source: Ministry of Environment and Physical Planning.

Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

Note: The map was produced in the framework of the Project for Development of the National Ecological Network (MAK-NEN), implemented in the period 2008–2011 by the Macedonian Ecological Society and ECNC–European Centre for Nature Conservation in cooperation with the Ministry of Environment and Physical Planning. The Project was supported by the BBI Matra Fund of the Netherlands Ministry of Economic Affairs, Agriculture and Innovation and the Ministry of Foreign Affairs.

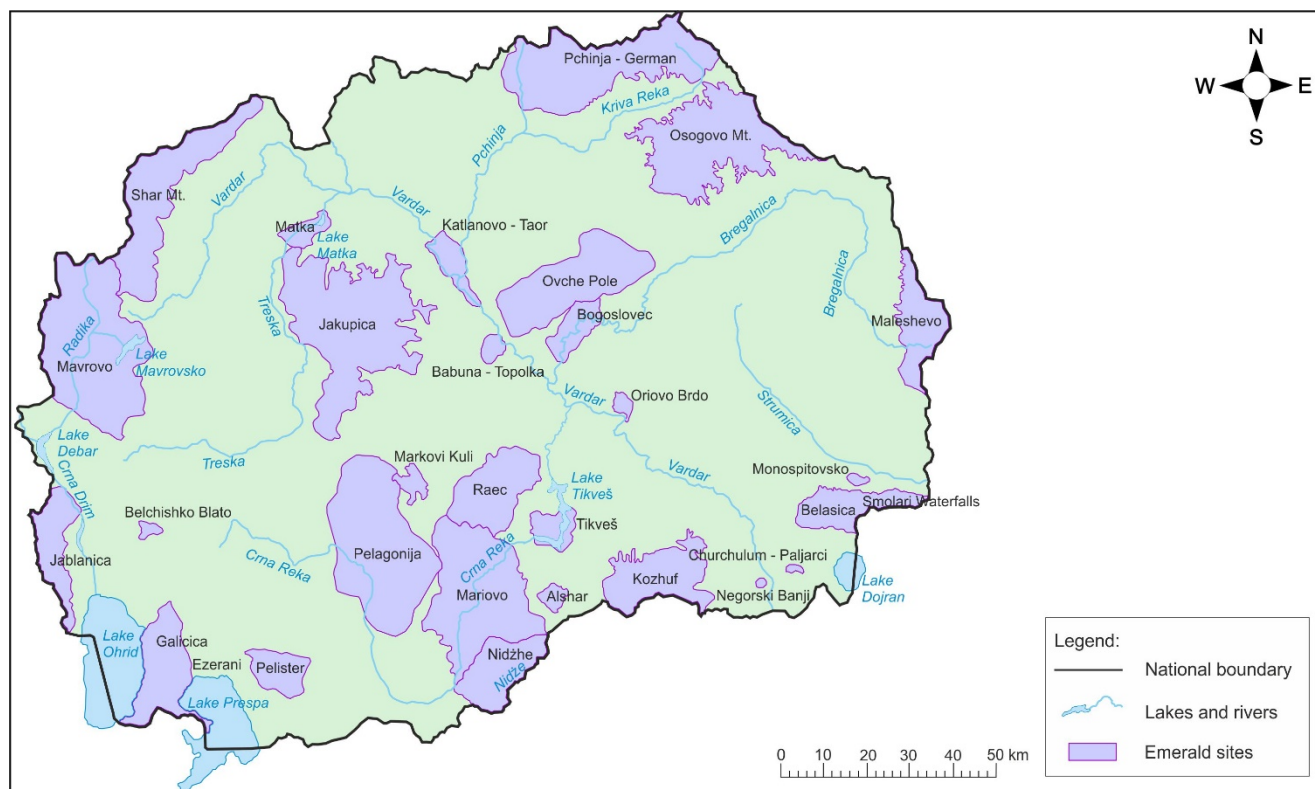
However, according to the 2018 NBSAP for the period 2018–2023, the adoption of MAK-NEN and its incorporation into planning documents was expected in 2018 (Action 10.5), while the identification of potential Natura 2000 sites is due to be completed by 2022 (Action 11.2).

National Emerald Network

According to the 2012 Action Plan for Implementing the Programme of Work on Protected Areas of the Convention on Biological Diversity (2012 PoWPA), 35 areas of special interest for conservation of biological diversity were included in 2008 in the national Emerald Network, covering 29 per cent of the country (map 11.3). Almost one third (12 of 35) of the areas of special interest for conservation were areas protected at that time, namely, a strict nature reserve (Tikvesh), three national parks (Galičica, Mavrovo and Pelister), seven monuments of nature (Lake

Dojran, Markovi Kuli, Matka Canyon, Lake Ohrid, Orlovo Brdo, Lake Prespa and Smolari Waterfalls) and a nature reserve (Ezerani). Identification of areas of special interest for conservation was prepared in accordance with the provisions of the 1979 Convention on the Conservation of European Wildlife and Natural Habitats, based on the criteria given in the 1989 Recommendation No. 16 and on the habitats and species listed in the 1996 Resolution No. 4 and 1998 Resolution No. 6 of the Convention. Of the 187 endangered habitats requiring specific conservation measures listed in Resolution No. 4, 32 have been identified in North Macedonia.

According to Resolution No. 6, which lists 927 European species requiring specific habitat conservation measures, as many as 167 species are present in the country: 7 invertebrates, 13 fish, 3 amphibian, 7 reptile, 115 bird, 17 mammal and 5 plant species.

Map 11.3: National Emerald Network

Source: Ministry of Environment and Physical Planning.

Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

Important Bird Area network

The Important Bird Area network in the country comprised 24 areas in 2010. In 2011, an inventory of Important Bird Areas was published. According to the BirdLife International Data Zone, as at December 2018, the country harbours 22 Important Bird Areas with a total area of 681,388 ha (which accounts for 26.5 per cent of the country's territory). Identification of Important Bird Areas can largely facilitate the selection of potential Sites of Community Importance under the Birds Directive. The Ministry of Environment and Physical Planning was not involved in activities on Important Bird Areas. The EU IPA project "Strengthening the capacities for the implementation of Natura 2000" recommended revising the Important Bird Areas network in the country.

Important Plant Area network

According to the Fifth National Report, 42 Important Plant Areas were identified in the country in the framework of a project implemented by the Macedonian Ecological Society and Plantlife International in 2002–2003. Between 2007 and 2009, species and habitats were identified for each area, while activities aimed at their protection were undertaken in several pilot areas (e.g., Šar Planina,

Pelister, Ilinska, Plakenska, Judovi Livadi, Pehchevo and the Osogovo Mountains). The designation of Important Plant Areas is one of the tools for the implementation of the CBD Global Strategy for Plant Conservation 2011–2020. The Ministry of Environment and Physical Planning was not involved in activities on Important Plant Areas.

World Heritage sites

As at December 2018, one site has been inscribed on the World Heritage List under the Convention concerning the Protection of the World Cultural and Natural Heritage. The Natural and Cultural Heritage of the Ohrid Region World Heritage "mixed criteria" property was inscribed in 1979 for its natural values, then extended and inscribed additionally under the cultural criterion in 1980. The area of this property extends to 83,350 ha. Activities are ongoing to extend the World Heritage status to the remaining third of Lake Ohrid, which is located in Albania, and to strengthen the governance of the transboundary natural and cultural heritage of the Lake Ohrid Region. The country is considering the nomination of three areas to the World Heritage List, including two properties selected under the natural criterion: Slatinski Izvor Cave and the Markovi Kuli massif, both of which were inscribed on the Tentative List in 2004.

According to the 2018 NBSAP for the period 2018–2023, intensified cooperation with UNESCO with regard to areas on the Tentative List (Action 11.3.2) is planned for 2018–2020, as well as on the possible inclusion of the old beech forests in the “Ancient and Primeval Beech Forests of the Carpathians and Other Regions of Europe” transboundary World Heritage property (which already involves 12 other countries).

World Network of Biosphere Reserves

In 2014, the bilateral (Albania and North Macedonia) Ohrid-Prespa Transboundary Biosphere Reserve was nominated under the UNESCO Man and Biosphere (MAB) Programme. The Reserve encompasses a total area of 446,244.52 ha (386,915.21 ha terrestrial, 59,329.31 ha aquatic), divided into three functional zones: the core area of 14,339.25 ha (13,457.81 ha terrestrial, 881.44 ha aquatic), buffer zone of 140,479.27 ha (82,124.45 ha terrestrial, 57,506.51 ha aquatic) and transition area of 291,426.01 ha (291,332.96 ha terrestrial, 941.36 ha aquatic). The identification of other areas suitable for nomination as MAB biosphere reserves is planned until 2020, according to the 2018 NBSAP for the period 2018–2023 (Action 11.3.3).

Ramsar sites

As at 2018, the country harbours two sites designated as Wetlands of International Importance (Ramsar sites) and included in the Ramsar List under the Convention on Wetlands of International Importance especially as Waterfowl Habitat, with a total surface of 21,616 ha. The Lake Prespa site (18,920 ha), designated in 1995, provides important feeding areas for large numbers of the Dalmatian pelican (*Pelecanus crispus*, NT) breeding in nearby Greece; while Lake Dojran (2,696 ha), a shallow eutrophic lake shared with Greece and surrounded by swamps, hosts many protected bird species and is the wintering area for more than 100 Dalmatian pelicans. Nomination of Lake Ohrid as a wetland of international importance in accordance with the criteria of the Ramsar Convention was planned for 2018, according to the 2018 NBSAP for the period 2018–2023 (Action 11.3.1).

Balkan Green Belt network

The Balkan Green Belt, coordinated by EuroNatur in partnership with IUCN and other organizations, is part of the European Green Belt initiative, a grassroots movement for nature conservation and sustainable development along the former East–West (Iron Curtain) divide, carried out under the patronage of IUCN. Activities under the Balkan Green Belt initiative include campaigns and preparation of

feasibility studies for the designation of transboundary protected areas, wildlife migration ecological corridors linking protected areas, training courses aimed at the protection of large carnivore species, capacity-building for local partner CSOs and implementation of transboundary nature conservation projects. The Balkan Green Belt partnership involves the German Federal Agency for Nature Conservation, Friends of the Earth Germany, IUCN and numerous local partner organizations. Balkan Green Belt projects receive financial support from, for example, the MAVA Foundation, the German Federal Agency for Nature Conservation and Lufthansa.

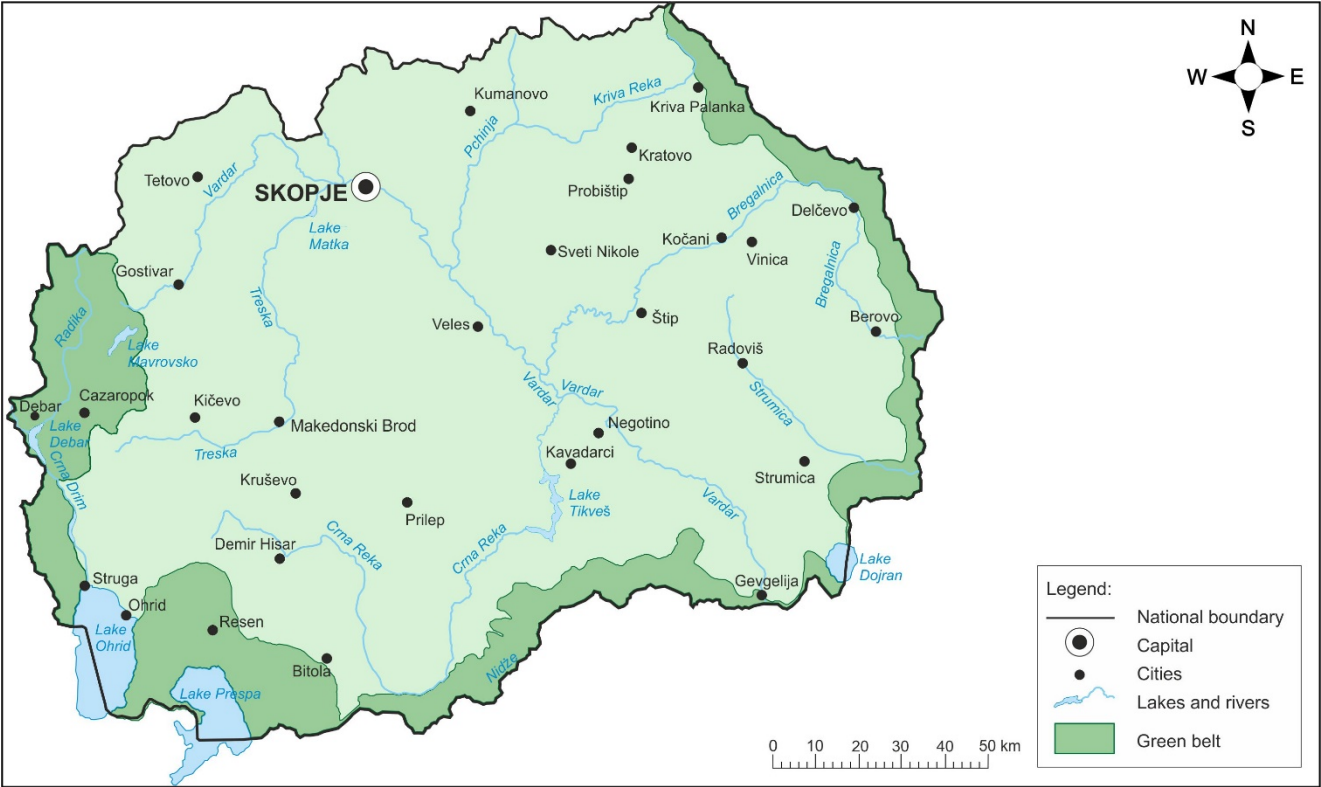
In North Macedonia, the Balkan Green Belt includes 11 already protected areas (three national parks, three natural lakes and other lower category protected areas) as well as several areas currently proposed for protection, including the mountain ranges of Šar Planina, Jablanica, Nidze, Kozhuf, Belasica and Osogovo (map 11.4).

Natura 2000

The main objectives of the IPA project “Strengthening the capacities for implementation of Natura 2000” (2016–2017) were achieved through strengthening the administrative capacities at the central and local levels for implementation of the legislation on nature protection, with a particular focus on the requirements of the Birds and Habitats Directives. Within the project, a draft law on nature was prepared, which transposes the provisions of both Directives. The project outcomes include the Natura 2000 national website (www.natura2000.gov.mk), five thematic brochures on Natura 2000, draft reference lists of birds, species and habitats, a plan for the implementation of the Birds and Habitats Directives, a public information and consultation programme, a study for the development of a geographic information system for protected natural areas in accordance with the Natura 2000 requirements and the certification of 20 trainers for Natura 2000 purposes.

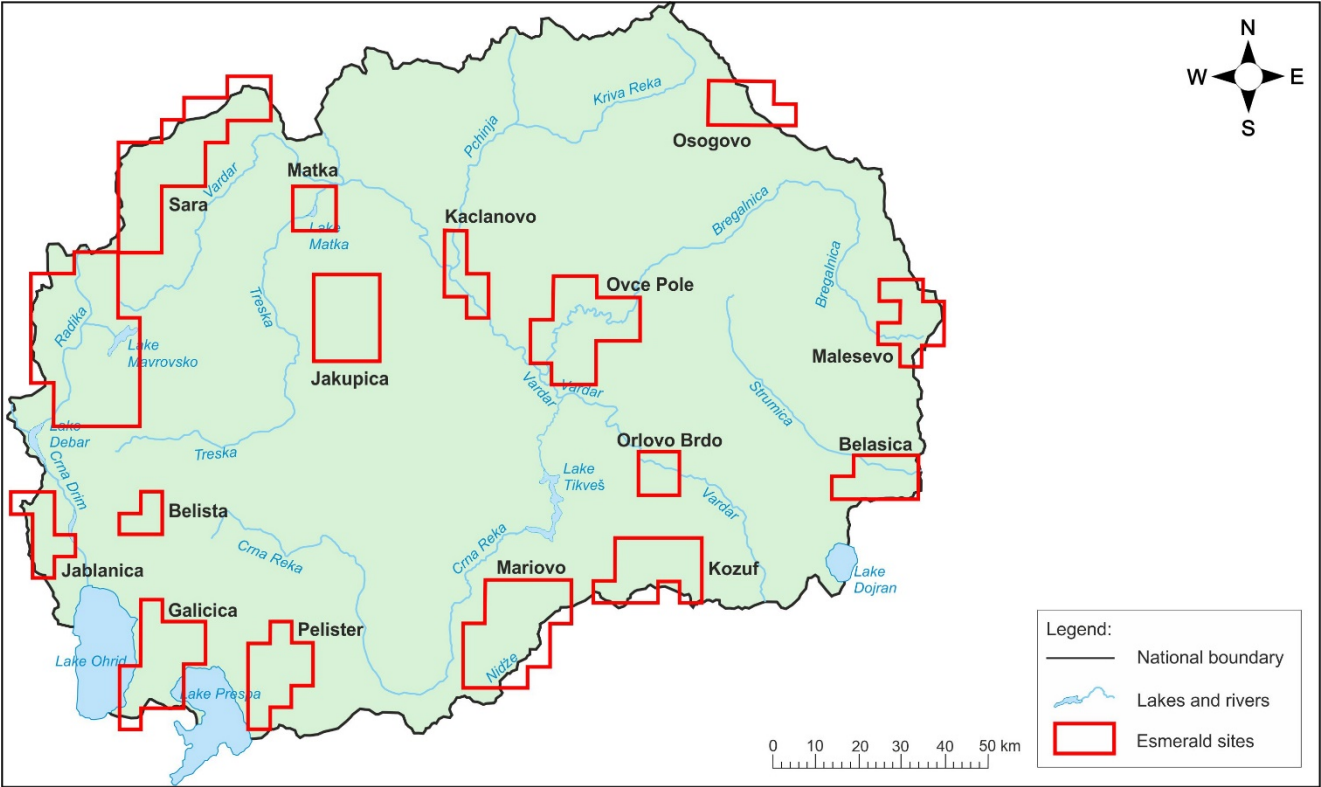
Moreover, an important result of the project was the identification of the first 11 areas with high potential for future designation as Natura 2000 sites, including eight potential Sites of Community Importance under the Habitats Directive (Galičica, Jakupica Mountains, Mariovo and Kozuf, Mavrovo, Ovce Pole, Pelister, Šar Planina, Ubavica Cave) and three potential Special Protection Areas under the Birds Directive (Lake Dojran, Lake Ohrid, Lake Prespa) (map 11.5). The plan for necessary field research work was prepared. In addition, work is ongoing to identify three new potential Natura 2000 sites in the eastern part of the country.

Map 11.4: Part of the Balkan Green Belt in North Macedonia



Source: Ministry of Environment and Physical Planning.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

Map 11.5: Areas with high potential for designation as Natura 2000 sites



Source: Ministry of Environment and Physical Planning.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

The IPA twinning project “Strengthening the capacities for effective implementation of the acquis in the field of nature protection” is being implemented from November 2017 until November 2019, in partnership with the Finnish Institute for Environment and the State Service for Protected Areas of Lithuania. The project aims to strengthen the administrative capacities of the Ministry of Environment and Physical Planning for the implementation of legislation in the area of nature protection. Project activities include preparing draft management plans and valorization studies for two protected pilot areas and potential future Natura 2000 sites (National Park Pelister and Lake Prespa Monument of Nature). Moreover, a draft national methodology and protocols for monitoring a minimum of 20 habitats, 20 species and 20 birds of EU interest, with assessment of their conservation status. A draft five-year national biodiversity monitoring programme and at least four draft by-laws to the Law on Nature Protection, taking into account the Habitats and Birds Directives, would be prepared, as would a plan for engaging stakeholders in the implementation of Natura 2000.

According to the 2018 NBSAP for the period 2018–2023, the identification of potential Natura 2000 sites is due to be completed by 2022 (Action 11.2).

11.6 Legal, policy and institutional framework

Legal framework

The 2004 Law on Nature Protection regulates the protection of natural, biological and landscape diversity, inside and outside protected areas, also as “natural rarities”. It determines the competences of authorities, general measures to be undertaken (including restrictions and prohibitions on, e.g., land use, use of the natural environment, exploitation of natural resources). It contains provisions on: the protection and conservation of wild species of plants, fungi and fauna (including provisions on the Red List and Red Book of threatened species); introduction and reintroduction of species; control of alien species; CITES-related provisions on trade in endangered species; breeding of animal species; lists of protected species and measures for their protection; and the protection of habitats and ecosystems and monitoring of their status.

The Law provides for the establishment of the national ecological network, including ecological corridors; defines the categories of protected areas; provides a legal basis for mutual agreements on harmonized management plans for transboundary protected areas; determines the legal protective regime in protected areas of all management categories and the procedure

for their proclamation; indicates the possible functional zoning pattern, including an outer buffer zone, of protected areas; defines procedures related to protected area management planning; and determines the competences of the guard service. The Law contains provisions on the proclamation, protection and management of “natural rarities”, i.e. rare, endangered and endemic species, plant communities, relief forms, or speleological objects, which are not a protected area category. It also contains provisions on the protection of landscape diversity, valuation of landscapes and monitoring of their state, with a view to their possible proclamation as protected areas.

The Law provides the legal basis for the establishment of Public Institution – National Park and its bodies, the establishment of cadastres of protected areas and of natural heritage, keeping records on protected species, establishment of the national biodiversity information system, and monitoring of the state of nature, including monitoring of species, habitats, ecosystems and landscapes. It also requires the adoption and implementation of a national strategy for nature protection, indicates possible funding sources for implementation of the Law, including various fees and other payments for ecosystem services, and determines the misdemeanour sanctions for the infringement of provisions of the Law.

However, several provisions of the Law are not enough clearly formulated. For example, provisions related to granting temporary protection for species being evaluated for their proclamation as strictly protected or protected, and for areas proposed for protection that undergo the procedures of valorization and proclamation as protected areas, are neither precise enough nor sufficient to be effective. The term “temporary protection” is not further defined; the Law neither determines bodies responsible for its enforcement nor indicates possible administrative measures that could ensure this protection (e.g., by preventing natural resource exploitation or construction in sites concerned, for instance, by including temporary restrictions on spatial development and land use plans), other than including such temporarily protected species or areas into the records for the protection of nature and the cadastre of protected areas. Moreover, the Law contains a misleading formulation, which defines the period of temporary protection of species and areas as either “until the proclamation”, which ensures protection, or for a specified length of time (a maximum period of six months from the day of adoption of the act for placing species under temporary protection, and one year from the decision on granting temporary protection for areas). The Law does not mandate the competent body issuing a decision on temporary

protection to decide which of these two optional lengths of the temporary protection period applies in a particular case. Due to this, the “temporary protection” term does not imply any legal obligations.

When adopting the Law in 2004, the common expectations were that procedures for the designation of species as protected would not last longer than six months, and no longer than one year in the case of areas proclamation, which did not prove to be realistic. Due to the above, the interpretation of the provisions as limiting the temporary protective periods to either six months (for species) or one year (for areas) are legitimate, with all possible adverse effects for species and areas concerned. For instance, areas with high natural and/or landscape values (in particular, those situated inside protected areas) are extremely attractive for tourism and recreational infrastructure development, which can immediately decrease these values. In the legal situation described above, the decision to place an area under temporary protection for its future proclamation as a protected area can mean a specific “death sentence” for its natural and landscape values, effective one year later.

The above statement is even better justified in the light of the challenges that resulted from the formulation of some of the transitional provisions of the Law, determining the deadline for the implementation of the provisions requiring the revalorization of all protected areas existing in the country (in order to justify their “reproclamation” as protected areas under the new Law), within six years from its entry into force (therefore, by the end of 2010). The deadline has not been kept; as at December 2018, the protected area revalorization and reproclamation process has not yet been completed. Revalorization studies have not yet been prepared for all protected areas designated before 2005, and progress is very slow (within the reporting period, since 2011, only six areas have successfully been reproclaimed). Furthermore, the delay in reproclamation is an obstacle for the development and adoption of long-term management plans for all protected areas not yet reproclaimed.

The completion of the revalorization and reproclamation procedures for protected areas designated before 2005 is probably a much more urgent priority than launching the valorization and proclamation procedures for any newly proposed area. Hence, the valorization and official proclamation of new protected areas might not be feasible within the temporary protection period (of 12 months validity), which exposes all newly proposed areas to unsustainable natural resources use and unplanned infrastructure development.

Similarly, other deadlines set up by the Law have not been kept, in particular, concerning the adoption of the list of endangered species and of the red book of species (by the end of 2007) and the adoption of the national strategy for nature protection (by the end of 2009). As at December 2018, the list of endangered species has not yet been adopted (in consequence, the corresponding red book cannot be published), while the National Strategy for Nature Protection was adopted as late as 2018.

Another challenge is that the full implementation of the Law requires the adoption and implementation of by-laws, while not all of them have so far been prepared and adopted. According to the Gap Assessment Report of September 2016, only 22 (approximately one third) of more than 60 required by-laws were in force at that time, while the 2018 NBSAP mentions around 50 by-laws prescribed but only 17 (approximately one third) adopted.

The Law has been amended several times (no less than 17 times since 2011), the objective also being to provide for its approximation with the EU legislation on nature (in particular with the provisions of the Habitats and Birds Directives). A draft law concerning the protection of nature is under preparation, which is expected to ensure the transposition of the EU nature-related *acquis* and planned to be adopted in 2019.

Other legal acts relevant for the protection and sustainable use of the natural environment include the 1996 Criminal Code, 1998 Law on Pastures, 2005 Law on Environment, 2007 Law on Agricultural Land, 2008 Law on Waters, 2008 Law on Fishery and Aquaculture, 2009 Law on Forests, 2009 Law on Hunting, 2009 Law on Organic Production, 2010 Law on Agriculture and Rural Development, 2012 Law on Tourism Development Zones, 2012 Law on Mineral Resources, 2014 Law on Spatial and Urban Planning and 2014 Law on Mountain Trails. As at December 2018, the process of adoption of a new law on nature was ongoing, including with a view to harmonizing the national legislation on nature protection with the Birds and Habitats Directives.

Policy framework

The 2006 Strategy for Sustainable Development of Forestry, valid until 2026, includes numerous objectives and measures, the implementation of which could strengthen the conservation of biodiversity, e.g., increase the forest land cover, improve the health status and other qualities of forests, and protect the natural forest genetic resources. Furthermore, the Strategy stipulates the improvement of the status of game species, the reintroduction of native game

species no longer present in the forests and introduction of other game species, as well as the setting up and updating of the game species database (by region and hunting area), thereby strengthening the capacities of the State Inspectorate for Forestry and Hunting and the Forestry Police. The Strategy also assumes the establishment of the national forest inventory and monitoring systems on forestry resources, completion of the forest cadastre, and a number of measures for the conservation and restoration of the biological and landscape diversity, e.g., by incorporating conservation objectives into forestry practices, analysing the state and development of the protected forest networks, promoting the restoration of forest biodiversity in degraded forests, applying natural methods of forest regeneration, using native tree species for reforestation and afforestation works, inventorying protected areas of management categories III and IV, and increasing state funding for activities related to biodiversity conservation measures implemented in protected areas.

No reports on progress in the implementation of the 2006 Strategy to date are available. However, since 2011, the intensity of afforestation activities decreased significantly, from 2,081 ha in 2011 to 553 ha in 2017, no national forest inventory has been carried out, and the forest monitoring practices can hardly be perceived as an operational and effective “system” in the common understanding of the term. The 2012 PoWPA for a period of five years (valid until June 2017) referred to the national targets concerning protected areas set up by the 2004 NBSAP for the period 2003–2013 and the 2004 Spatial Plan, which were:

- Strengthening administrative capacities at all levels for conservation and management of protected areas;
- Establishing a strategic approach to protected areas financing;
- Improving the national legislation for conservation and management of protected areas;
- Increasing the involvement of indigenous and local communities and other stakeholders in the management of protected areas;
- Establishing a national representative network of protected areas;
- Expanding the system of protected areas;
- Increasing scientific research and monitoring activities in the protected areas;
- Incorporating climate change aspects into protected areas management;
- Improving communication, education and public awareness.

The 2012 PoWPA analysed the progress achieved and defined the next steps to be undertaken to ensure the satisfactory implementation of the CBD’s global PoWPA in the country, also indicating responsible bodies, institutions and organizations, timelines for implementation of particular measures and their indicative budget. The planned next steps included:

- Establishing a national representative network of protected areas (by 2014);
- Extending the system of protected areas (by 2015);
- Establishing a coherent ecological network in accordance with Natura 2000 criteria (by 2016);
- Preparing the management plans for protected areas (by 2017);
- Strengthening capacity for the planning and management of protected areas (by 2015);
- Assessing the level of ecosystem fragmentation in the country (by 2013);
- Defining possible migration routes (“bio-corridors”) of plant and animal species threatened by climate change (by 2014);
- Proclaiming protected areas of the management categories V and VI on the previously defined corridors (by 2015).

The Fifth National Report did not provide any assessment of progress in the implementation of the 2012 PoWPA. However, none of the planned activities has been finalized within the timeline originally set, and no considerable progress in achievement of these plans to date can be noted. The possible reasons for this could be:

- Lack of human, technical and financial capacities for biodiversity monitoring and nature conservation measures, as well as for planning, establishment and management of protected areas, at both the central and local levels;
- Unsatisfactory effectiveness of protected area management;
- Insufficient involvement of indigenous and local communities and other relevant stakeholders in the management of protected areas;
- Overlapping competences concerning the management of forests and pastures in protected areas of the Ministry of Environment and Physical Planning and Ministry of Agriculture, Forestry and Water Economy;
- Lack of public awareness of ecosystem services provided by protected areas.

The Strategic Plan of the Ministry of Environment and Physical Planning for 2016–2018 contains several objectives and measures of particular importance for

the conservation of biodiversity, concerning, for example:

- Valorization and revalorization of protected areas, and the protected area proclamation process;
- Increased levels of protection of national parks, and increased percentage of categorization of natural rarities;
- Strengthening the Ministry of Environment and Physical Planning capacities for development of the monitoring and information system;
- Improvement of the monitoring system and establishing the national information system on the environment;
- Biodiversity monitoring;
- Improvement of the spatial information system;
- Regular preparation of reports on the state of the environment, environmental indicators, statistics, annual reports and topical reports.

As at December 2018, no reports on progress in implementation of the Ministry of Environment and Physical Planning Strategic Plan are available.

The 2018 National Strategy for Nature Protection for the period 2017–2027 determines seven national strategic objectives related to the protection of geodiversity, heritage, and biological and landscape diversity, including their protection and conservation, monitoring, research and inventory, incorporation of the nature conservation policy into strategies, programmes and plans of other sectors, improvement of the legislative framework in line with EU legislation and relevant international treaties, provision of an appropriate institutional framework and strengthening administrative capacities, as well as continuous and ever-increasing funding.

The Action Plan accompanying the Strategy details numerous actions (19 actions concerning geology, geomorphology and hydrology, 29 concerning biological diversity, 5 concerning landscape diversity and 6 for development of the geographic information system) and indicates the responsible body and timeline for implementation of each. For instance, the development of management plans for the most important types of landscapes shall be completed by 2027, preparation of red lists and red books of species by 2023, development and implementation of red species conservation plans between 2024 and 2027, establishment of a state monitoring system for the Balkan lynx by 2027 and the identification of potential Natura 2000 sites by 2022.

The process of revision of the first 2004 NBSAP for the period 2003–2013 started in January 2013. For the definition of national targets, consultations with

relevant stakeholders were carried out. The goals of the first NBSAP, status and trends of biological diversity in the country, threats to biological diversity and guidelines for the implementation of the CBD Aichi Biodiversity Targets were reviewed. Evaluation of the implementation of the 2004 NBSAP shows that 64 actions (less than 30 per cent of the total) were fully implemented, 56 (26 per cent) partially implemented and 96 (over 44 per cent) were pending, mostly due to the limited capacities and lack of financial resources, insufficient coordination and cooperation within the Ministry of Environment and Physical Planning and with other sectoral ministries, and the generally low positioning of biodiversity conservation among the most urgent political priorities.

The 2018 NBSAP for the period 2018–2023 defines 19 national strategic targets, corresponding to the CBD Aichi Biodiversity Targets. Among these 19 national strategic targets, most relevant for this chapter are those directly related to biodiversity conservation and the development of protected area networks, e.g., national strategic target No. 10 concerning habitats, No. 11 concerning protected areas, No. 12 concerning protected species and No. 15 concerning the protection of species and ecosystems in a cross-border context (in cooperation with neighbouring countries). The Action Plan part of the 2018 NBSAP details the extensive set of planned actions related to each of the 19 national targets, also indicating the responsible bodies and timeline for implementation of each. For example, the designation of new protected areas, stipulated by the 2004 Spatial Plan, other strategic documents and relevant studies, is planned for the period 2018–2023.

The same timeline has been set for finalization of the process of protected areas redesignation and for the adoption of management plans for national parks and other protected areas (which could be problematic, as the preparation and adoption of management plans for areas reproclaimed as late as 2023 would hardly be possible in the same year). Similarly to the 2018 National Strategy for Nature Protection, the identification of potential Natura 2000 sites is expected to be completed by 2022, while the red lists are to be completed and adopted and red books published by 2023.

Since the current NBSAP planning horizon (2018–2023) is shorter than that of the 2018 National Strategy for Nature Protection for the period 2017–2027, the timelines or deadlines for the completion of several 2018 NBSAP actions, which overlap those listed under the 2018 National Strategy, are not always harmonized, as deadlines set by the 2018 NBSAP are sometimes shorter.

Photo 11d: Nature Protected Area Kuklica

For example, the preparation and implementation of action plans for conservation of threatened species identified in red lists (2018 NBSAP Action 12.4) is to be completed by 2023, while, according to the 2018 National Strategy, this activity (No. 1.3.4) is planned to be implemented much later, between 2024 and 2027.

Even though the 2018 NBSAP national target No. 11 stipulates the increase of the share of protected areas in the total territory of the country from the current (2017 data) 8.82 per cent to 15 per cent by 2023 (through implementing Action 11.1.4), the corresponding CBD Aichi Biodiversity Target 11 would not yet be met, as it requires including at least 17 per cent (not 15 per cent) of terrestrial and inland water areas in protected areas by 2020 (not by 2023). For obvious reasons, progress in the implementation of the 2018 NBSAP could not be assessed in December 2018.

Several species conservation action plans have already been adopted (and possibly also implemented), e.g., Action Plan for the Prespa trout adopted in 2008 and Action Plans for the brown bear, mountain tea, stinking juniper (*Juniperus foetidissima*), Prespa barbell (*Barbus prespensis*), reed beds, and caves with

a focus on bats, all adopted in 2012. Several other plans have already been drafted under different projects, e.g., draft action plan for the protection of the Balkan lynx.

The national wetlands policy, or programme for wetlands conservation (which is obligatory for the parties to the Ramsar Convention) has not yet been developed and no measures for their protection and sustainable use have been included in the national spatial plans (however, such provisions are sometimes present in protected area management plans, e.g., for the Nature Reserve Ezerani). According to the 2018 NBSAP for the period 2018–2023, the identification of the most-affected lowland and mountain swamps and wetlands, development of a plan and implementation of action plans for their conservation (Actions 10.4.1, 10.4.2 and 10.4.3) are due to be achieved by 2023.

Sustainable Development Goals and targets relevant to this chapter

The current status of the country vis-à-vis targets 2.5, 6.6 and selected targets under Goal 15 of the 2030 Agenda for Sustainable Development is described in box 11.1.



**Box 11.1: Targets 2.5, 6.6, and selected targets under Goal 15
of the 2030 Agenda for Sustainable Development**

Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture

Target 2.5: By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed

In 2013, the Gene Bank of the Institute of Agriculture, which functions as a national gene bank, secured the collection of 2,666 samples of 89 species (28 vegetable, 21 forage crop, 13 fruit crop, 11 medicinal and aromatic plant, 8 cereal, 5 leguminous plant and 3 industrial plant species). Works on the programme for native varieties protection in accordance with the Regulation (EC) No. 870/2004 of 24 April 2004 establishing a Community programme on the conservation, characterisation, collection and utilisation of genetic resources in agriculture were ongoing. Moreover, the genetic material (in seed doses, embryos and egg cells) of the two native domestic animal species (Ovchepolska sheep and the local Balkan goat) was conserved.

Hence the value against indicator 2.5.1 (Number of plant and animal genetic resources for food and agriculture secured in either medium or long-term conservation facilities) was 91 in 2013. The country data in the FAO Global Databank for Animal Genetic Resources give the value of zero, for both the number of local breeds classified as being at risk of extinction and those not at risk of extinction, and the value of 7 for the number of local breeds classified as being at unknown level of risk of extinction.

Indicator 2.5.2 (Proportion of local breeds classified as being at risk, not at risk or at unknown level of risk of extinction) cannot be produced because of missing data on the population of local breeds. Moreover, breed-related information remains far from complete, with the risk status of many of the reported breeds not known.

Goal 6: Ensure availability and sustainable management of water and sanitation for all

Target 6.6: By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

Not enough data are available to properly assess the value of indicator 6.6.1 (Change in the extent of water-related ecosystems over time). However, negative trends in the extent of the lake and wetland ecosystems have been observed, due to global climate changes and the ongoing land uptake, threatening the remains of the marsh ecosystems in the lowland regions of the country. As at 2018, a national wetlands policy or a programme for wetlands conservation has neither been adopted nor implemented.

Target 15.1: By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements

Within the reporting period, the value of indicator 15.1.1 (Forest area as a proportion of total land area) increased from 38.18 per cent (as at 31 December 2011) to 38.95 per cent (as at 31 December 2017).

As at 2018, some 86 per cent of the freshwater key biodiversity areas in the country were covered by protected areas, but only 21 per cent of terrestrial ones were covered. These values remain almost unchanged since 2000, which leads to the conclusion that more effort is necessary to achieve the target, which is measured by indicator 15.1.2 (Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type).

Target 15.2: By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally

The implementation of the 2006 Strategy for Sustainable Development of Forestry is ongoing; however, there are no reports assessing the progress made. The progress towards sustainable forest management (indicator 15.2.1) cannot be assessed, due to the general lack of data on forest resources, given that the national forest inventory has not yet been carried out and the national forest monitoring system is not operational. However, in 2018, the national forest certification system was, for the first time, endorsed within the Programme for the Endorsement of Forest Certification.

Even though afforestation and reforestation work slowed down in recent years, the area of forests is still increasing. However, even if most of the protected areas are covered by forests, reporting on the proportion of forest area within legally established protection areas is not undertaken. This is because of the lack of a forest inventory and use of too general a forest classification system (for economic and social purposes), which leads to the conclusion that more effort is required to advance the conservation of forest biodiversity. The country reports that around 92 per cent of the forest area is covered by a long-term

management plan, since about 90 per cent of the forest area is state property managed by PEMF. Overall, the country is progressing towards achieving target 15.2.

Target 15.3: By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world

As at 2018, the value against indicator 15.3.1 (Proportion of land that is degraded over total land area) has been calculated only for the land covered by forests, where degraded forests account for over 4 per cent of the total forest area.

Target 15.4: By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development

The value against indicator 15.4.1 (Coverage by protected areas of important sites for mountain biodiversity) accounts for some 23 per cent of Mountain Key Biodiversity Areas and remains unchanged since 2006.

As at 2017, North Macedonia's value on the Mountain Green Cover Index (indicator 15.4.2) was 96.5 per cent.

Target 15.5: Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity, and, by 2020, protect and prevent the extinction of threatened species

The IUCN Red List Index (indicator 15.5.1), aggregating change in extinction risk across groups of species, cannot be calculated for North Macedonia as it would require the production of at least two editions of national red lists with the use of IUCN criteria, while no national red lists have been adopted to date.

Target 15.6: Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed

North Macedonia is not yet a party to the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity nor to the International Treaty on Plant Genetic Resources for Food and Agriculture.

The country should consider acceding to both these instruments.

Target 15.7: Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products

There are no data and adequate monitoring in place to assess the proportion of wildlife that was poached or illicitly trafficked, as reliable data on the game species populations are not available. The country has been party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) since 2000, although it has never been represented in the meetings of the Convention.

Target 15.8: By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive species on land and water ecosystems and control or eradicate the priority species

The 2004 Law on Nature Protection contains provisions related to the prevention of the introduction of allochthonous species, control of their populations or their eradication. Furthermore, the 2018 NBSAP for the period 2018–2023 includes national target No. 8 "Develop and establish appropriate policy for recording, control and protection of non-native and invasive species" and defines several actions to be undertaken.

First steps in implementation of this target include the identification of alien species, in particular invasive ones, and assessment of possible threats; these are due to be completed by 2021, followed by the preparation and adoption of a national list of invasive species, which is planned for 2021–2022. As at 2018, not much data on invasive alien species are available, no related national monitoring system is in place and no measures have been implemented.

The country should implement state monitoring and research programmes on these species as an indispensable next step towards achieving target 15.8.

Target 15.9: By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts

As at 2018, no positive examples of such integration of biodiversity values can be cited. However, the 2018 NBSAP for the period 2018–2023 includes national target No. 2 concerning the gradual integration of biological diversity values into the policies of economic development on the national and local levels (including poverty reduction, environmental accounting, national and local development plans).

The country should implement the 2018 NBSAP for the period 2018–2023, which will facilitate the achievement of target 15.9, provided that national target No. 2 is implemented by 2020.

Institutional framework

Ministry of Environment and Physical Planning

The Ministry of Environment and Physical Planning develops and implements national policies on nature protection, protection of biological and landscape diversity, and protection of natural heritage, as well as conducting control and supervision over the enforcement of the provisions of the 2004 Law on Nature Protection. The main responsibility for protected areas and biodiversity conservation issues is delegated to the Department for Nature under the Administration for the Environment. The Department for Nature has 16 employees (including the Head of Department) and is divided into three units:

- Unit for Protection of Natural Heritage and Natura 2000;
- Unit for Biodiversity and GMOs;
- Unit for Spatial Planning in Protected Areas and Geodiversity.

The competences of the Unit for Protection of Natural Heritage and Natura 2000 (eight employees) include the: coordination of activities for preparation of strategies, programmes and plans for nature protection, as well as activities related to Natura 2000; issuance of permits for conducting scientific research in the natural environment; conduct of procedures for protected area proclamation, for the adoption of management plans for protected areas; provision of expert support for entities responsible for the management of protected areas; and maintenance of the Register of Protected Areas.

Among other matters, the Unit for Biodiversity and GMOs (four employees) is responsible for the: coordination of research relevant to the scientific valorization of areas and sites harbouring endemic, relict, rare and endangered wild species; coordination of projects for restoration and revitalization of degraded natural habitats; reintroduction of endangered wild species into their natural habitats; implementation of other measures for biodiversity conservation; and coordination of activities related to GMOs.

The competences of the Unit for Spatial Planning in Protected Areas and Geodiversity (three employees) includes: issues related to planning and management in protected areas; issuance of consents for the adoption of local spatial development plans (where such plans concern the territory of a protected area); and identification, valorization and protection of geological and geomorphological heritage.

Other relevant parts of the Ministry include the Department for Physical Planning, Department for Water, Department for Environment, MEIC and Office for Spatial Information System.

Ministry of Agriculture, Forestry and Water Economy

The competences of the Ministry of Agriculture, Forestry and Water Economy include the development and implementation of other important policies for biodiversity conservation, concerning, for example, agricultural land management, rural development, forestry (including the management, protection and use of forests, afforestation, reforestation), hunting and fishing, and melioration (which has great influence on wetland ecosystem protection issues).

The Unit for Regulation and Use of Forests, Unit for Afforestation and Cultivation of Forests, Unit for Forest Protection from Biotic and Abiotic Factors, and Unit for Hunting, Regulation of Hunting Grounds and Game Concessions are relevant for biodiversity management. The State Inspectorate for Forestry and Hunting (a separate legal entity within the Ministry structure) controls the implementation of laws concerning forests and hunting. It employs one hunting inspector and some 13–14 forestry inspectors. Other important partners for biodiversity protection within the Ministry's structure are the Unit for Livestock Breeding and the Administration of Seeds and Seeding Material, which are responsible for the protection of agrobiological diversity.

Public institutions – National parks

National parks function as separate public institutions supervised by the Ministry of Environment and Physical Planning, with duly mandated administrative bodies that are responsible for the management and monitoring of the park area and natural resources, law enforcement, facilitation of scientific research and implementation of protective measures prescribed in national park management plans. Forests and land classified as forest land within the borders of protected areas are entirely managed by the entities responsible for the management of the particular protected area. Such entities are required to include certain elements of forest management planning practice into their protected area management plans.

The national park administrations are mainly self-financed. As, generally, they do not receive funding from the state or LSGU budget, their operational capacities depend to a great extent on revenues from economic activities, including income from the use of natural resources, in particular, forests (revenues from

timber harvesting in the course of sanitary cutting), which is supplemented or superseded by growing incomes from the tourism services sector. Therefore, the vast majority of nature research and conservation projects in protected areas depend mainly on external funding sources (e.g., EU funds, foreign donors), while funding from the state or LSGU budget remains limited.

Another common challenge for national park management is the lack of competent and skilled personnel capable of carrying out nature research and monitoring activities. In 2016, the Public Institution Mavrovo National Park had 70 employees, Public Institution Pelister National Park had 21 employees and Public Institution Galičica National Park had 20 employees.

The Government also established the Public Enterprise responsible for the management and protection of the Multipurpose Area “Jasen” (category VI).

Public Enterprise “Macedonian Forests”

As at 31 December 2017, 88.88 per cent of forest areas were in state ownership, while privately owned forests accounted for 11.12 per cent. State-owned forests are managed by PEMF in accordance with forest management plans approved by the Ministry of Agriculture, Forestry and Water Economy. Some 90 per cent of the state forests are used for economic purposes, while the remaining 10 per cent are included in protected areas. PEMF issues permits for forestry activities conducted in privately owned forests, which do not have management plans. It is practically self-financing from revenues from sales of timber and primary wood-processing.

Public Enterprise “Macedonian Pastures”

The Public Enterprise “Macedonian Pastures” and its 17 regional offices manage most of the pasture land, which is state property. It coordinates its activities with the Ministry of Agriculture, Forestry and Water Economy. Management objectives of the Public Enterprise “Macedonian Pastures” include encouraging and providing support for the cultivation (or reintroduction) of traditional agricultural and land use practices in meadows and pastures (e.g., haymaking, sheep grazing), which largely enhances the protection of biodiversity and the natural environment and prevents the natural succession of shrub and forest vegetation over the abandoned, previously grazed and mown meadows situated in remote rural areas (e.g., high mountain regions), which are rapidly depopulating due to the extensive

migration from villages to urban settlements. Pastures are available to users through separate agreements signed for a five-year period.

Local self-government units

LSGUs can be involved in the management of protected areas (of categories other than national park and multipurpose area), on the basis of consent granted by the Ministry of Environment and Physical Planning. For example, the Municipality of Resen has been mandated by the Ministry of Environment and Physical Planning as the management body for two protected areas, Nature Reserve Ezerani and Monument of Nature Lake Prespa. For this purpose, the Municipality established within its administrative structure a special Department of Environment (including the ranger service, employing four environmental rangers), as the special unit for management and implementation of environmental monitoring and protection programmes prescribed in the management plans of these two areas.

There are also other municipalities that have been mandated the right to manage a protected area but have not yet established a special authority or ranger service within their structures, e.g., the Municipality of Vevchani (which manages the Monument of Nature “Vevchani Springs”), Municipality of Novo Selo (Monument of Nature “Smolare Waterfall”) and Municipality of Dojran (Monument of Nature Lake Dojran). Some other municipalities, which lack the capacities that would allow the establishment within their administrative structure of a special authority or service for the management of protected areas, decided to delegate the management rights and duties to CSOs. Some examples are the Municipality of Makedonski Brod (which concluded agreement with the Speleological Society “Ursus Speleos” for the management of the Monument of Nature “Slatino Springs”) and Municipality of Kratovo (which transferred the management rights for the Monument of Nature “Kuklica” to the CSO Izvor-Kratovo). Numerous other protected areas (in particular, the smaller ones) do not have their own management bodies.

Furthermore, the legislation includes many optional competences of LGSUs, including the establishment of local monitoring networks, or the preparation of local reports on the state of environment. However, there are no examples of such activities.

National Council for Nature Protection

Pursuant to the 2004 Law on Nature Protection, a national council for nature protection shall be

established as an advisory body to the Minister of Environment and Physical Planning.

The competences of the council include the review and issuance of opinions on the implementation and further development of the 2004 Law, proclamation of protected areas, adoption of the list of endangered species (red list) and protective measures to be implemented for improving the status of endangered species populations (prescribed in the red book), and the adoption of strategic documents related to nature protection and the establishment of the national ecological network.

As at 2018, a national council for nature protection has not been established.

Academic and scientific research institutions

Given that the national biodiversity monitoring system is not operational at present, the most valuable source of data and expertise on nature conservation issues are the academic and scientific research institutions, which gather biodiversity data acquired through field research and inventory work on selected priority natural species and ecosystems. The most important academic and/or research institutions include the Macedonian Academy of Sciences and Arts, University “Ss Cyril and Methodius” in Skopje (in particular, its Institute of Biology in the Faculty of Natural Sciences and Mathematics, Faculty of Forestry and Institute for Agriculture), Hydrobiological Institute in Ohrid and Macedonian Museum of Natural History in Skopje (established and funded by the Ministry of Culture), which is also involved in research on species taxonomy.

Civil society organizations

The whole multitude of crucially important biodiversity monitoring and nature protection projects is implemented by several environmental CSOs, among which the most skilled, experienced and prominent is the Macedonian Ecological Society. Other CSOs that participate in various nature protection projects include the Society for Research and Protection of Biodiversity and the Sustainable Development of Natural Ecosystems (BIOECO), Society for Study and Protection of Birds in Macedonia, Macedonian Mycological Society, Speleological Society “Peoni”, Ecologists’ Movement of Macedonia and Society for Protection of Nature in Macedonia.

Regulatory, economic, fiscal and information measures

Regulatory measures

The 2008 Order prohibiting the collection for use and trade in native wild fungi – morels of the genus *Morchella*, *Verpa* and *Pitchoverpa* for a five-year period was issued to protect the natural habitats of these fungi and protect deciduous tree plantations from deliberately lit forest fires. Prohibition for collection refers to burnt or degraded areas and applies during the summer period (from 1 June to 30 August) (Amendment of Order Nos. 56/2009 and 53/2010). Amendments to the prohibited period of morel collection were introduced in 2012 (Amendment of Order No. 108/2012), by which prohibition covered the period from 1 June to 30 September.

Information measures

Biodiversity-related data is almost absent in the Statistical Yearbook published by SSO. The “Environment and Geography” chapter lists the natural sites of importance, which include strict nature reserves, national parks and some sites of natural significance, while the “Agriculture” chapter provides more complex information on forests, forestry management and afforestation issues, and includes data on the number of hunted game species. The regular publication “Environmental Statistics” presents biodiversity data accompanied by short descriptions for the reference year. MEIC publishes information on initiatives and projects related to nature conservation, which is available in the annual reports entitled (until now) “Environment Quality in Republic of Macedonia”.

The website of the Ministry provides access to environmental information and includes a link to the National Biodiversity Information System developed under a GEF/UNDP/Ministry of Environment and Physical Planning project; however, the link is not active because the system is not operational as at December 2018 (mostly for technical reasons). Hence, neither the quantity and quality of data nor the functionality of access to the database (described in detail in the 2014 Fifth National Report to the CBD) can be evaluated. According to that Report, the reasons for the above malfunction include the outdated hardware and software, lack of skilled personnel and absence of the by-laws required for the system to be put into operation. Moreover, the biodiversity information and statistical data officially published quite often differs considerably from one source to another, which means that the information flow among different authorities (e.g., sectoral ministries and their

agencies, scientific research institutes, other institutions and SSO) is not yet fully efficient.

According to the 2018 NBSAP for the period 2018–2023, the development of national registers of natural heritage and a cadastre of protected areas (Action 18.4) is still pending, planned to be achieved by 2020.

Activities related to ecosystem services are carried out within the ongoing project “Nature Conservation Programme in Macedonia” – Phase II, financed by the Swiss Agency for Development and Cooperation. Identification and mapping of ecosystems have been carried out. Currently, the status of ecosystems and relevant indicators are being determined and it is planned to develop a pilot mechanism for implementing payment for ecosystem services. A draft version of the ecosystem services brochure has been prepared and initial activities have been launched to develop a long-term capacity-building plan for all stakeholders in the provision of ecosystem services.

Red books

As at 2018, the national red list of species threatened by extinction has not been adopted; consequently, the red book for the country cannot be developed and published, despite the fact that the 2004 Law on Nature Protection provides for the adoption of both the red list and red (data) book by the end of 2007. Furthermore, the National Council for Nature Protection cannot support the process of adoption, as it has not yet been activated.

However, several draft red lists for some groups of species do exist, e.g., the draft red list of fungi (213 species) developed with the application of IUCN criteria, and the draft red list of butterflies (69 species), both of which had already been proposed by scientists in 2012. In 2014, the draft red list of Orthoptera (17 species) was proposed.

The ongoing project “Achieving Biodiversity Conservation through Creation and Effective Management of Protected Areas and Mainstreaming Biodiversity into Land Use Planning” (2016–2020), funded by GEF, will support the preparation of the first complete national red lists and red book for 46 reptiles and amphibians and 14 national plant species.

According to the National Strategy for Nature Protection and the 2018 NBSAP for the period 2018–2023, the red lists are to be completed and adopted, and red books published, by 2023 (2018 NBSAP Action 12.1 Elaboration of red lists and red books).

11.7 Participation in international agreements and processes

Multilateral environmental agreements

North Macedonia is party to several global environmental agreements that are relevant for the conservation and sustainable use of natural heritage and biological diversity, such as the: Convention on Wetlands of International Importance especially as Waterfowl Habitat (since 1995); Convention on Biological Diversity (CBD) (since 1997); Convention concerning the Protection of the World Cultural and Natural Heritage (since 1997); Convention on the Conservation of European Wildlife and Natural Habitats (since 1998); United Nations Framework Convention on Climate Change (UNFCCC) (since 1998); Convention on the Conservation of Migratory Species of Wild Animals (CMS) and Agreement on the Conservation of Populations of European Bats under CMS (since 1999); Agreement on the Conservation of African-Eurasian Migratory Waterbirds under CMS (since 2000); Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (since 2000); United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (UNCCD) (since 2002); and Cartagena Protocol on Biosafety to the CBD (since 2005) (chapter 6).

Bilateral and trilateral transboundary cooperation on biodiversity conservation

The country is a party to bilateral and trilateral environmental agreements signed between 1996 and 2010 (chapter 6), is involved in several transboundary biodiversity conservation programmes and initiatives and actively cooperates with neighbouring countries on the conservation and harmonized management of shared natural ecosystems. Best known are the initiatives taken for the protection and sustainable development of regions that include large transboundary natural lakes, i.e. Lake Prespa (shared with Albania and Greece), Lake Ohrid (shared with Albania) and Lake Dojran (shared with Greece).

However, there are also other areas that are situated in shared border regions and are important for the conservation of their ecosystems, habitats and species, but their conservation cannot be achieved by one country alone and thus requires cooperation with the neighbouring countries. Examples of such areas are the mountain ranges of Šar Planina, Jablanica and Osogovo.

Cross-border cooperation for nature protection among North Macedonia, Albania and Greece has been promoted within the establishment of Prespa-Ohrid Nature Trust (PONT), supported by KfW Development Bank and the MAVA Foundation. PONT's mission is to provide long-term financing for the conservation and sustainable management of biological diversity, natural processes and ecosystem services in Lake Prespa and its wider area for the benefit of the natural environment and people in the region.

North Macedonia is participating in the IUCN Biodiversity Task Force of South East Europe – an intergovernmental technical and advisory body of the IUCN Regional Working Group on Environment – that coordinates regional activities, facilitates the implementation of the South East Europe (SEE) 2020 Strategy, supports progress towards international biodiversity commitments and creates a framework for more efficient implementation of biodiversity policies in the framework of accession to the EU.

International projects

The country has benefited from international projects, or projects supported by external funding sources, related to biodiversity conservation and protected area management.

Currently ongoing international projects, or projects supported by external funding sources, related to biodiversity conservation and protected area management and implemented in North Macedonia include:

- Ministry of Environment and Physical Planning IPA twinning project “Strengthening the capacities for effective implementation of the acquis in the field of nature protection” (2017–2019), in partnership with the Finnish Environment Institute, Metsähallitus, Parks and Wildlife Finland and the State Service for Protected Areas (Lithuania), financed from the EU IPA;
- Ministry of Environment and Physical Planning IPA project “Strengthening the capacities for implementation of Natura 2000” (2016–2017), financed from the EU IPA;
- Ministry of Environment and Physical Planning IPA project “Improving the management of protected areas” (2017–2019), financed from the EU IPA and implemented by UNDP;
- Ministry of Environment and Physical Planning/Ministry of Agriculture, Forestry and Water Economy/Macedonian Ecological Society project “Nature Conservation Programme in

Macedonia – Phase I” (2015–2017), funded by the Swiss Agency for Development and Cooperation;

- Ministry of Environment and Physical Planning/Ministry of Agriculture, Forestry and Water Economy/Macedonian Ecological Society project “Nature Conservation Programme in Macedonia – Phase II” (2017–2020), funded by the Swiss Agency for Development and Cooperation;
- Ministry of Environment and Physical Planning project “Achieving Biodiversity Conservation through Creation and Effective Management of Protected Areas and Mainstreaming Biodiversity into Land Use Planning” (2017–2020), financed by GEF;
- Ministry of Environment and Physical Planning project “Restoration of the Prespa Lake Ecosystem” (2012–2018), funded by the Swiss Agency for Development and Cooperation and implemented by UNDP;
- Ministry of Environment and Physical Planning regional project in the greater Drin River Basin “Conservation and Sustainable Use of Biodiversity at Lakes Prespa, Ohrid and Shkodra/Skadar (CSBL)” (2012–2017), supported and coordinated by GIZ;
- Macedonian Ecological Society project “Adriatic Flyways 4 – Macedonia” (2018–2022), funded by the MAVA Foundation;
- Macedonian Ecological Society “Balkan Anti-poisoning Project” (2018–2020), funded by the MAVA Foundation and the Vulture Conservation Foundation.

11.8 Assessment, conclusions and recommendations

Assessment

North Macedonia has successfully preserved the abundance of wild native species of fauna, fungi and flora, including numerous species categorized by IUCN as globally threatened by extinction and species included in the European Red List, as well as many endemic species (on either a regional South-Eastern European or local scale), including small but still viable populations of the rare flagship species such as the Balkan lynx and Balkan chamois. The country can be proud of harbouring areas considered to be the European centres of endemism. Furthermore, efforts and resources were invested in the approximation of the national legislation on nature protection with the EU nature legislation (e.g., Habitats and Birds Directives), as well as preparations for the implementation of Natura 2000.

However, natural ecosystems are seriously threatened by climate change, resulting in habitat degradation and the increasing threat of forest fires. The last remaining patches of wetland habitats, seriously affected during previously undertaken drainage works, are currently the most threatened, together with their flora and fauna. Populations of several rare species are declining in size at an alarming pace, while some other species have already become extinct. Biodiversity loss is progressing on a global scale, and North Macedonia is not an exception. A good example is the decline in the few small local populations of regionally endemic Balkan chamois, which is not only threatened by poaching but also remains among the legally hunted game species.

The level of threat to wildlife species occurring in the country cannot be assessed properly because the national biodiversity monitoring system is not operational at present. Consequently, data on the size of and trends in populations of both the rare and widespread (e.g., game) species are either not available or not reliable. In the absence of regularly updated nature inventories, the 2011 lists of strictly protected and protected wild species could only be based on assumptions and historical data. No national red list of threatened species has been adopted, and no corresponding red book has been published to date. Preparation of the list of alien invasive species is planned for the near future, while the control or eradication of already present invasive species may already be impossible in practice.

Moreover, other tasks remain pending, despite the fact that the Law on Nature Protection stipulated their accomplishment within the first three to six years of its entry into force. For example, the process of revalorization and reproclamation of existing protected areas has not yet been completed, which impeded the preparation and adoption of all required management plans for protected areas. Another obstacle for the development of management plans is the absence of a land cadastre, which would allow the determination of land use and land ownership. Similarly, the country has not yet prepared the national inventory of forest resources, which is required by the 2009 Law on Forests. The National Biodiversity Information System, established in 2011, is not operational at present.

In 2017, protected areas covered 8.93 per cent of the country's territory, which is well below the minimum value of at least 17 per cent indicated in the CBD Aichi Biodiversity Target 11. The area of three national parks constitutes almost half of all protected areas in the country, while strict nature reserves currently account for only 3 per cent of the total protected area.

Moreover, the current national protected area network does not ensure ecological continuity and connectivity, as linking ecological corridors (both in-country and across national boundaries) are still lacking. In respect of international designations, in 2018, the country had only two Ramsar sites, one UNESCO MAB Biosphere Reserve and one site inscribed on the World Heritage List, while two other sites with high potential for nomination under the World Heritage "natural" criterion have remained on the Tentative List since 2004.

In 2018, the country adopted the National Strategy for Nature Protection and Action Plan for the period 2017–2027 and the NBSAP for the period 2018–2023. The two documents are ambitious, but they are not fully harmonized, as timelines set for the same activities sometimes differ between the documents. A national wetlands policy, which is mandatory for the parties to the Ramsar Convention, or a programme for wetlands conservation, has not yet been developed, and no measures for the protection and sustainable use of wetland areas have so far been included in the national spatial plans.

The capacities to implement the Law on Nature Protection and other relevant laws, and the recently adopted strategic documents, are limited; e.g., in the absence of funding by the state or LSGUs, the operations of national parks (including research, monitoring and implementation of protective measures in the field) largely depend on own revenues deriving from the use of natural resources, or external (foreign) financial support, while the vast majority of protected areas of other categories have neither a budget nor a management body. Another example of limited capacities is the Department for Nature of the Ministry of Environment and Physical Planning, where the three Units have only 16 employees in total.

Conclusions and recommendations

Biodiversity monitoring, inventories and research programmes

The availability of reliable, comprehensive and up-to-date information on biodiversity is a prerequisite for proper formulation of national policies, strategies, species conservation action plans and protected area management plans, and for the proper setting of hunting quota. The National Biodiversity Information System, once in operation, will not be able to perform its planned policy support tool functions unless it is continuously provided with reliable and continuously updated information derived from biodiversity monitoring, field inventory work and scientific research. The lack of access to high quality data on

biodiversity is an obvious impediment to progress in achieving targets 15.1, 15.2 and 15.5 of the 2030 Agenda for Sustainable Development.

Recommendation 11.1:

The Ministry of Environment and Physical Planning should:

- (a) *Implement the national biodiversity monitoring programme, with a special focus on rare and threatened flora, fungi and fauna species, plant communities and ecosystems, and invasive alien species;*
- (b) *Mobilize adequate financial resources to ensure the continuation of state programmes related to biodiversity monitoring and research in the long run;*
- (c) *Complete the inventory and assessment of the status of threatened species, in cooperation with relevant academic and scientific research institutions and environmental civil society organizations;*
- (d) *Adopt the Red List and corresponding Red Book(s), paying due account to the globally applied International Union for Conservation of Nature (IUCN) methodology and criteria, and update the 2011 lists of strictly protected and protected species accordingly.*

Recommendation 11.2:

The Ministry of Agriculture, Forestry and Water Economy, in cooperation with the Ministry of Environment and Physical Planning, should:

- (a) *Implement research on forest ecosystems and habitats, in cooperation with relevant academic and scientific research institutions and environmental civil society organizations;*
- (b) *Carry out a national inventory of forest resources, including scientific studies on the status of game species populations, for setting appropriate hunting quotas.*

Development and implementation of policies, strategies and conservation action plans

The integrity of almost all natural ecosystems in the country is currently threatened, due partly to ongoing climatic changes but also to growing anthropogenic pressures. The biodiversity loss continues, and populations of several rare species continue to decline in size. This means that the currently applied management approaches and strategies do not provide for effective biodiversity conservation. For instance, a national policy or programme on wetlands protection is still lacking, even though its development and implementation is mandatory. Similarly, only a few

rare and potentially threatened species are currently covered by the existing species conservation plans, as the threats to species have not yet been adequately researched and assessed. Putting in place new national policies, strategies and ecosystem or species conservation action plans, and monitoring and evaluating progress in their implementation, will facilitate the achievement of targets 15.1 and 15.5 of the 2030 Agenda for Sustainable Development.

Recommendation 11.3:

The Ministry of Environment and Physical Planning should:

- (a) *Develop a national policy or a programme for wetlands conservation;*
- (b) *Develop relevant action plans/programmes for ecosystems and species conservation;*
- (c) *Mobilize adequate resources to ensure the implementation of the national policy or programme for wetlands conservation, as well as action plans/programmes for ecosystems and species conservation in the long run.*

Strengthening the national protected area network

In 2017, the national protected area network encompasses only 8.93 per cent of the country's territory, which is below the CBD Aichi Biodiversity Target 11 (at least 17 per cent to be conserved by 2020). Simultaneously, this network is currently in a transitional phase of development, given that not all existing protected areas have been firmly enshrined in the network, due to the fact that the procedures for their revalorization and reproclamation have not been finalized, while the expected accession to the EU would then require the designation of the Natura 2000 network (probably overlapping to some extent with the currently existing protected areas). Last, but not least, the existing network does not provide for the expected ecological continuity and spatial connectivity. Hence, to achieve targets 15.1 and 15.4 of the 2030 Agenda for Sustainable Development requires additional effort.

Recommendation 11.4:

The Ministry of Environment and Physical Planning should:

- (a) *Complete the revaluation and reproclamation of existing protected areas;*
- (b) *Proceed with the identification and valorization of areas with high potential for their future designation as Natura 2000 sites, and areas of key importance for the spatial*

coherence of the future national ecological network;

- (c) *Designate new protected areas, and, where deemed necessary, extend the territories of existing protected areas, with a focus on providing for adequate coverage of all main ecosystem types representative of the country, as well as the sufficient inclusion of habitats of all rare and threatened wildlife species.*

Establishing a strong institutional framework for nature protection

The Ministry of Environment and Physical Planning develops and implements national policies on nature protection, protection of biological and landscape diversity and protection of natural heritage, as well as undertaking control and supervision over the enforcement of the provisions of the 2004 Law on Nature Protection. The competences of the Ministry of Agriculture, Forestry and Water Economy include the development and implementation of other important policies for biodiversity conservation, concerning, for example, agricultural land management, rural development, protection and use of forests, forestry (including afforestation and reforestation), hunting and fishing, and melioration. Various other institutions and organizations are involved in activities for biodiversity conservation and nature protection. Concerted efforts to coordinate activities are lacking.

Nature protection is a multisectoral issue that requires a high level of coordination and collaboration between the responsible ministry for environmental affairs and many different sectors, such as forestry, agriculture, transport, energy and tourism. Insufficient intersectoral coordination and cooperation, as well as overlapping responsibilities, weak communication, lack of capacities at the national and local levels and lack of financial resources have been identified as the

main obstacles for implementation of the Convention on Biological Diversity at the national level. Usually, the benefits acquired from biodiversity and ecosystem services are overlooked and undervalued by decision-makers, which not only leads to loss of biological diversity but has also adversely affected human health.

Through the mapping and assessment of ecosystems and ecosystem services (measures under the EU 2020 Biodiversity Strategy and Convention on Biological Diversity), the country's role in implementing legislation and policy for the delivery of ecosystem services could be evaluated (e.g., the contribution of the Natura 2000 network to the delivery of ecosystem services, and the mapping, indexing and implementing of payment for ecosystem services).

Recommendation 11.5:

The Ministry of Environment and Physical Planning, in collaboration with the Ministry of Agriculture, Forestry and Water Economy and other relevant stakeholders, should:

- (a) *Establish effective coordination mechanisms with the involvement of all relevant actors for the coherent development and implementation of policies on biodiversity conservation and nature protection;*
- (b) *Establish an effective coordination mechanism for issues related to payment for ecosystem services;*
- (c) *Set up and ensure the operation of a national council for nature protection;*
- (d) *Conduct regular training to develop the capacity of civil servants involved in biodiversity conservation and nature protection activities.*

See also Recommendation 6.1 (a).

ANNEXES

Annex I: Implementation of the recommendations in the second Environmental Performance Review

Annex II: Participation of North Macedonia in multilateral environmental agreements

Annex III: List of major environment-related legislation

Annex IV: Sources

Annex I

IMPLEMENTATION OF THE RECOMMENDATIONS IN THE SECOND ENVIRONMENTAL PERFORMANCE REVIEW⁸

Chapter 1: Policymaking framework for environmental protection and sustainable development

Recommendation 1.1:

The Government should:

- (a) *Place high priority in implementing the National Strategy for Sustainable Development and develop a related action plan*
- (b) *Establish the Secretariat of the National Council for Sustainable Development.*
- (c) *Periodically review the validity of the strategy and if necessary amend the document should circumstances or priorities change in the coming years.*

Implementation of the recommendation is ongoing.

- (a) The Government is implementing the NSSD. However, as at September 2018, the 2010 NSSD still lacks an action plan to implement it. The drafting of an action plan took place in 2015 but the draft was not adopted.
- (b) A technical working group was established in 2012 to act as a secretariat of the National Council for Sustainable Development.
- (c) An implementation report for the NSSD was prepared in 2015 but it is not available to the government ministries and the public.

Recommendation 1.2:

The Government should consider merging the Administration for the Environment, State Inspectorate and Office of Spatial Information system in an Environmental Protection Agency, which roles should focus on monitoring state of environment in the country, ensuring implementation of the legislation, providing expert support to the Government and liaising with the European Environment Agency in preparing State of the Environment reports or other environmental assessments.

The recommendation was not implemented.

Recommendation 1.3:

Municipalities, which have not yet developed a local environmental action plan should do so as soon as possible taking into account the National Strategies and any other relevant document.

Municipalities, which already have a local environmental action plan should consider updating it in order to make it more in line with the current priorities of the country.

The recommendation has been partially implemented.

Before 2012, some local environmental action plans (LEAPs) were developed and some others were updated. However, no LEAP has been adopted after 2013. The Ministry of Environment and Physical Planning does not have data on valid and updated LEAPs.

⁸ The second review of North Macedonia was carried out in 2011.

Recommendation 1.4:

The Ministry of Environment and Physical Planning should consider strengthening the Department for Communication with Local Self-government both in terms of number and knowledge of human capacities to be assigned.

The recommendation was not implemented.

Recommendation 1.5:

The Government through the Ministry of Environment and Physical Planning and other responsible institutions should place high priority on Chapter 27 – Environment by:

- (a) *Strengthening capacity, with an emphasis on providing sufficient financial resources for realization of the National Plan on Adoption of the Acquis Communautaire and the National Environmental Investment Strategy.*
- (b) *Establishing a coordination body chaired by the Minister for Environment and Physical Planning for the environmental issues, that will be responsible for coordination of the EU integration, implementation of the National Plan on Adoption of the Acquis Communautaire, and cooperation with international donors towards the preparation for accession negotiation process.*

The recommendation has been partially implemented.

- (a) Not implemented.
- (b) Implemented. In 2014 the Sector Working Group for Environment and Climate Action under the chairmanship of the Deputy Prime Minister in charge of European Affairs was established. The Group includes representatives of ministries, two CSOs and some donors and it discusses programme documents for the IPA and policy documents.

Recommendation 1.6:

The Ministry for Environment and Physical Planning should strengthen the Department for European Union (EU) and other departments responsible for specific areas within the Ministry in the process of approximation of EU acquis and fulfilling the obligation, which derives from EU Acquis.

The recommendation was not implemented.

Formally, the recommendation was implemented when the number of staff in the Department for the European Union was enlarged after the IPA Department (previously separate) was brought into this Department. However, the number of people working on EU integration issues and harmonization of legislation decreased.

Chapter 2: Compliance and enforcement mechanisms

Recommendation 2.1:

The Ministry of Environment and Physical Planning and other relevant environmental authorities should:

- (a) *Implement the proper steps of the strategic environmental assessment and environmental impact assessment procedures and contribute to better quality of the strategic environmental assessment and environmental impact assessment documentation*
- (b) *Validate different software models to estimate emissions, waste generation and other impacts based on proposed technological processes.*
- (c) *Strengthen the capacity at the local level with regard to the environmental impact assessment procedure*

The recommendation was partially implemented:

- (a) Implemented. The Ministry of Environment and Physical Planning is responsible for implementing EIA and SEA. The Department for Physical Planning is responsible for the implementation of SEA in a transboundary context. In the period 2013–2016, two SEA procedures in a transboundary context were started (SEA on nature protected areas management plans). The Unit for Environmental Impact Assessment and Soil Protection is responsible for EIA implementation. The staff of the Unit (three

people) is coordinating each EIA case to ensure a qualitative procedure on EIA. All steps of the EIA procedure are followed, especially the involvement of the public (public announcement of the public hearing, access to the EIA documentation, taking records of the public hearing).

- (b) Partially implemented. Air quality dispersion models have been implemented in the Ministry of Environment and Physical Planning, as well as a regional air quality forecast model. Dispersion models are used to estimate the impact of specific emission sources and source categories on air quality. However, poor availability of good quality input data has limited the use of dispersion models. Dispersion modelling studies have been made to estimate the air quality impact of energy production and industrial installations and traffic in the City of Skopje.
- (c) Partly implemented. LSGUs are not responsible for carrying out EIA procedures but they have to approve environmental elaborates. They take part in EIA procedures where the project would be implemented. However, LSGUs lack training and methodological support for the EIA process.

Recommendation 2.2:

The Ministry of Environment and Physical Planning should elaborate a mechanism and create a system for consecutive control of implementation of and compliance with the conditions, recommendations and measures set in the final documents under procedures of strategic environmental assessment and environmental impact assessment.

The recommendation was not implemented.

Recommendation 2.3:

The Ministry of Environment and Physical Planning should elaborate and propose to the Government for approval to:

- (a) *Increase the human and financial capacity of the State Environmental Inspectorate*
- (b) *Develop a network on information exchange and coordination between environmental inspectors of central and local level.*

The recommendation was not implemented.

Recommendation 2.2 from the 1st EPR:

The MoEPP should give the highest priority to strengthening its implementation bodies - the Environment Office and the State Environment Inspectorate:

- (a) *The Administration for the Environment should be reorganized into an Executive Environmental Agency for the implementation and enforcement of environmental legislation and fully oriented to the requirements of environmental management. In this regard, the Agency should, as a minimum, consist of an environmental monitoring centre (providing monitoring of all environmental media), an SEA, EIA and permit issuing division (dealing with single permits: water, waste, chemicals, as well as with integrated permits).*
- (b) *The State Environment Inspectorate should be strengthened at local levels with small units of two or three specialists and appropriate equipment. Coordination among the different inspectorates, especially where they share responsibilities in environmental protection, should be streamlined through a better exchange of information and joint site visits or inspections.*

The recommendation was partially implemented:

- (a) Not implemented.
- (b) Implemented. Since May 2014, SEI is an independent legal person at central level. The authorized inspectors for environment at local level are not subordinated to SEI. Their number and equipment depend on the budget of the municipality. There is informal communication among the environmental inspectors at central and local levels on a daily basis (by phone). Joint inspections are carried out case by case, especially when an installation with an A-type permit is the subject of inspection.

Chapter 3: Monitoring, information, public participation and education

Recommendation 3.1:

The Ministry of Environment and Physical Planning should speed up the process of interministerial consultations on the draft decree to establish a national environmental monitoring programme and to submit to the Government for approval. The programme should identify the responsible institutions, regulatory and technical requirements, budgets and performance indicators, to establish reliable and sustainable monitoring systems for all media.

The recommendation was not implemented.

Recommendation 3.2:

The Ministry of Environment and Physical Planning should continue, in cooperation with other relevant public authorities and other stakeholders, work towards the establishment of an environmental information system that should provide relevant comprehensive, accurate and publicly accessible information on the state of the environment. Future steps should include:

- *Establishment of environmental data and metadata standard;*
- *Establishment of standards to regulate methodologies and procedures in the creation, access, protection and uniformity of environmental information in the related institutions and the country as a whole;*
- *Preparation of appropriate secondary legislation on different environmental areas related to the data acquisition and sharing between the Ministry of Environment and Physical Planning and other stakeholders;*
- *Further development of the web interface that will allow data access via internet in real time that includes import of spatial data that enables geographical information system integration;*
- *Development of web applicative solutions that will integrate the central database with digital vector geographical information system data;*
- *Further development of the National Environmental Database under the Ministry of Environment and Physical Planning, with appropriate application modules, that will enable automated and standardized data gathering and automated data validation according to the Law on Environment.*

The recommendation was not implemented.

Recommendation 3.3:

The Ministry of Environment and Physical Planning should:

- (a) *Complete the Rulebook on the Content of the State of Environment Report, supplementing it, in particular, by recommendations from the Guidelines for the Preparation of Indicator-based Environmental Assessment Reports endorsed by the Belgrade Ministerial Conference "Environment for Europe"*
- (b) *Proceed with the preparation of the national environmental assessment report. Furthermore, the MoEPP should start providing methodological guidance and training to municipalities and the City of Skopje to help them publishing local environmental assessment reports.*

The recommendation has been partially implemented.

- (a) *Implemented. The Rulebook was adopted in 2017.*
- (b) *Partially implemented. The Rulebook is not widely applied at the local level and it remains up to the LSGU to take the opportunity to work and develop a local assessment report.*

Recommendation 3.4:

The Ministry of Education and Science, in cooperation with the Ministry of Environment and Physical Planning, media representatives, other relevant public authorities, and stakeholders, should coordinate the development of a national strategy for education for sustainable development.

The recommendation was not implemented.

Chapter 4: Implementation of international agreements and commitments

Recommendation 4.1:

(a) The Government should establish an interministerial task force to strengthen coordination and to streamline investment activities in the environment sector;

(b) The Ministry of Environment and Physical Planning should strengthen:

- *Its internal coordination mechanism for the preparation and selection of project proposals and strengthen its capacities in the responsible departments for monitoring and evaluation of the planned projects and investments.*
- *Its capacity in regard to forthcoming EU negotiations, especially in line sectors responsible for preparation of implementation plans for investment heavy directives.*

The recommendation has not been implemented.

Recommendation 4.2:

In line with the introduction of the programme-based approach concept for donor coordination and the principles of the Paris Declaration on Aid Effectiveness, the Ministry of Environment and Physical Planning should establish an up-to-date system for implementation, monitoring and evaluation of environment related projects supported by foreign assistance.

The recommendation has not been implemented.

Recommendation 4.3:

The Government should proceed with preparatory work to assess the possibility and feasibility of accession to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes and its Protocol on Water and Health.

The recommendation has been partially implemented. The country acceded to the Water Convention in 2015. The country has not yet become party to the Protocol on Water and Health.

Recommendation 4.4:

The Ministry of Environment and Physical Planning should:

- (a) Strengthen its internal capacity, elaborate action plans or strategies to implement the multilateral environmental agreements and continue to attract international assistance for this purpose in order to ensure the proper implementation of the multilateral environmental agreements which have been recently ratified – i.e. Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, Protocols to Convention on Long-range Transboundary Air Pollution;*
- (b) Comply with the reporting obligations under those agreements to which the country is already a Party, specifically the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal.*

The recommendation has been partially implemented.

- (a) Partially implemented. The mandate of environmental authorities to ensure the implementation of and compliance with obligations deriving from global and regional agreements has not been matched by increased capacity and financial resources. Currently, in addition, no efficient coordination structure between relevant state institutions charged with the implementation of those obligations is established. Furthermore, there are difficulties with the harmonization of obligations under the high number of ratified MEAs. Also, there is no harmonization of activities with other sectors that have or may have impact on biological diversity.*
- (b) Not implemented. National reporting under the Basel Convention has not been undertaken in recent years, with the last report being submitted in 2002. The recommendation is partially implemented.*

Recommendation 4.5:

The Government should:

- (a) *Comply with its reporting obligations and commitments under the United Nations Commission on Sustainable Development;*
- (b) *Establish the Office for Sustainable Development and provide adequate resources for its activities to support the implementation of the Sustainable Development Strategy;*
Until the establishment of the Office for Sustainable Development, the Ministry of Environment and Physical Planning should ensure that the National Council on Sustainable Development meets at regular intervals and establishes a work plan.

The implementation is ongoing. A stand-alone SDG implementation plan for the period 2016–2030 is currently under development. The SDG implementation plan, as well as a five-year action plan are being developed under the overall responsibility of the Cabinet of the Vice Prime Minister to mainstream the 2030 Agenda for Sustainable Development at the national level.

Chapter 5: Economic instruments and expenditure for environmental protection

Recommendation 5.1:

The Ministry of Environment and Physical Planning, in cooperation with other ministries, should, when further developing the current system, clarify the objectives and goals of environmental policies and use economic instruments to attain these goals by

- (a) *Defining the pollution, emissions or natural use taxes, fees and charges in such a way that they provide an incentive for the polluters and resource users to change their behaviour.*
- (b) *Full cost recovery is applied wherever possible taking into account the needs of deprived groups of society*

The recommendation has been partially implemented.

- (a) Partially implemented. The polluter pays principle has not effectively been applied.
- (b) Partially implemented. Tariff reform in the water sector entered into effect at the beginning of 2018 to ensure the transition to cost-reflective tariffs for water supply, sewerage and wastewater treatment services. There has also been progress with the application of cost-reflective tariffs in the electricity sector. A major unresolved issue is the application of cost-reflective tariffs in the municipal waste sector. The application of targeted affordability provisions remains a challenge.

Recommendation 5.2:

The Ministry of Environment and Physical Planning should render the existing laws operational by finalizing the missing rulebooks on air and water emission.

The recommendation has been implemented. Emissions of air pollutants from stationary sources and the discharge of water polluting substances are subject to permits and payment of permit fees.

Recommendation 5.3:

To find effective economic instruments, streamline their use, make the fees and charges effective and maintaining the effectiveness the Government should:

- (a) *Conduct studies and analyses on the effects of environmental economic instruments*
- (b) *Use the existing instruments more efficiently and give the correct environmental incentives by using appropriate base or unit on which the charges are levied on*
- (c) *Strengthen the effect of selected economic instruments by raising the levels of charges*
- (d) *Maintain the effectiveness of the charges by applying the inflation corrections to the charge levels*
- (e) *Use the proceeds from levies and charges to the benefit of protecting the environment, e.g., via Environment Investment Programme.*

The recommendation has been partially implemented.

- (a) Not implemented.

- (b) Partially implemented. See implementation of Recommendations 5.1 and 5.2.
- (c) Partially implemented. Excise duty rates on petrol and diesel as well as on the other energy products were raised to be better aligned with EU minimum rates. Excise duty rates on motor vehicles and vehicle registration fees remain to be reformed to take into account environmental parameters such as emission standards and age of vehicles.
- (d) Not implemented; but the overall inflation was moderate.
- (e) Implemented. Revenues collected from water abstraction charges are earmarked for financing water sector management; revenues collected from vehicle registration fees are earmarked for financing environmental projects.

Recommendation 5.4:

To strengthen its capacity and competence to develop, apply and analyse economic instruments used for environmental protection, the Ministry of Environment and Physical Planning, should:

- (a) *Enable the respective staff to have access to training in environmental economics and the principles of the use economic instruments and their implementation*
- (b) *Conduct studies and analyses on the effects of environmental economic instruments*
- (c) *Compile a centralized database on the national environmental revenues and expenditures*
- (d) *Consider establishing an Environmental Investment Agency*

The recommendation has been partially implemented.

- (a) Not implemented.
- (b) Implemented. There is general access to national and international studies on these issue©(c) Implemented. SSO maintains a database on environmental expenditures and environmental tax revenues.
- (c) Not implemented.
- (d) Not implemented.

Recommendation 5.5:

The Government should develop guidelines to assist municipalities with tariff calculation and provide training to this end.

The recommendation has been partially implemented. The Ministry of Environment and Physical Planning has issued guidelines for the setting of cost-reflective waste tariffs in 2013. However, municipalities have not implanted them due to the lack of training. Based on a water tariff study on a basic methodology for full-cost-recovery tariffs, ERC has adopted a corresponding tariff methodology for setting water supply, sewerage and wastewater treatment tariffs as of 2018. The Commission has also adopted cost-reflective tariff rules for the electricity sector.

Chapter 6: Prevention and control of environmental pollution

Recommendation 6.1:

The Ministry of Environment and Physical Planning in cooperation with the Ministry of Economy (Standards Commission) should update environmental standards to comply with the EU legislation

The recommendation has been implemented. All European and international standards relating to the environment are adopted as national standards.

Recommendation 6.2:

The Ministry of Environment and Physical Planning should develop the National Programme for Emission Reduction and promote its adoption.

The recommendation has been implemented. The National Emission Reduction Plan covering all large combustion plants in the country was adopted in 2017.

Recommendation 6.3:

The Ministry of Environment and Physical Planning, in cooperation with the Ministry of Local Self-governance and municipalities should:

- (a) *Reinforce capacity-building for the IPPC Unit staff on technical aspects;*
- (b) *Carry out a survey of existing installations that need a permit (A or B);*
- (c) *Provide technical assistance to assess IPPC applications.*

The recommendation has been partially implemented.

- (a) Partially implemented. The capacity of the Ministry dealing with integrated environmental permits (IEPs) remains stagnant. However, the Association of LSGUs (ZELS) has created a network comprised of LSGUs to train the staff of the municipalities and the City of Skopje, e.g., on elaborates for environmental protection, support for the issuance of IEPs.
- (b) Implemented. The lists of the installations for which an A-type or B-type permit is required are provided in Annex I and Annex II of the Decree on the determination of the activities of the installations for which environmental permit with adjustment plan and timetable for submission of application for permit with adjustment plan is issued.
- (c) Implemented. In the period 2015–2017, the twinning project MK 11/IB/EN/01/R “Strengthening the administrative capacities on central and local level for transposition and implementing new Industrial Emission Directive 2010/75/EU (IED)” has been implemented. The project has developed drafts of primary and secondary legislation in accordance with the IED, has provided training on the central and local levels, and has undertaken assessment of the economic impact of implementation of the IED.

Recommendation 6.4:

The Government should:

- (a) *Create incentives, such as low interest loans, tax exemptions, or specific funds and other financial mechanisms (awards, etc) to encourage the application of better practices and introduction of clean and modern technologies to enable enterprises to be compliant with requirements of the environmental legislation;*
- (b) *Consider establishing a revolving fund to which companies would apply for low interest loans.*

The recommendation has been partially implemented.

- (a) Implemented. The business sector can benefit from profit tax exemptions for investments in machinery and equipment, including green technologies.
- (b) Not implemented. There is a possibility for domestic commercial banks to on-lend funds received from foreign donors for the financing of energy efficiency measures in the business sector and the household sector. This facilitates access to loans, notably in rural areas.

Chapter 7: Sustainable management of water resources

Recommendation 7.1:

The Government should consider establishing an Environmental Protection Agency with the responsibilities according to the Law on Waters.

The recommendation has not been implemented.

Recommendation 7.2:

The Government should:

- (a) *Ensure construction of municipal sewage treatment plants with and sewage collection systems for cities over 100,000 equivalents as a first priority and for municipalities over 10,000 equivalents as a secondary priority. Sewage collection systems should emphasize on separating wastewater from storm water, while the storm water should be returned to the hydrological circle by infiltration. Deteriorating drinking water supply systems and sewage collection systems should be repaired or renewed;*

- (b) *Consider establishing of decentralised sewage treatment systems in rural areas.*
- (c) *Ensure that industry apply appropriate wastewater treatment prior to discharge according to national standards.*
- (d) *Close and remediate all landfills along river banks exposed to flooding and infiltration. (e) Ensure special regime of protection of areas of drinking water supply.*

The recommendation has been partially implemented.

- (a) Partially implemented. There are currently 24 WWTPs reported to be in operation with a total capacity of 525,000 pop. eq. (24.5 per cent of the required capacity). Since 2011, a treatment capacity for approximately 258,000 inhabitants has been constructed.
- (b) Partially implemented. WWTPs are not strictly required under the terms of the Directive as they are serving agglomerations of less than 2,000 pop. eq.
- (c) Not implemented.
- (d) Not implemented.

Recommendation 7.3:

The Government should:

- (a) *Ensure rehabilitation of irrigations systems with high water losses and expansion the percentage of closed pipe systems in relation to open systems.*
- (b) *Provide measure devices at irrigation systems for water quantity intake and water consumption from farmers.*
- (c) *Improve data collection on water consumption by different users.*
- (d) *Apply the water-user and water-discharge-pay-principle for all water users and dischargers according to law on waters. The fees must be transparent and related to expenses of provider.*
- (e) *Raise awareness of saving water measures and provide water saving technical devices.*

The recommendation has been partially implemented.

- (a) Partially implemented. The Ministry of Agriculture, Forestry and Water Economy developed programmes that are not implemented.
- (b) Not implemented.
- (c) Not implemented.
- (d) Not implemented.
- (e) Not implemented.

Recommendation 7.4:

The Government should ensure that:

- (a) *The flood plains are left open from further buildings and constructions and intensive agriculture.*
- (b) *Agricultural lands exposed to erosion have a sufficient buffer strip to rivers and lakes and cultivation is changed into a manner to protect from erosion.*
- (c) *Flood protection includes precise flood predictions and hydrological forecasts.*
- (d) *Ecological improvements on dams like fish ladders and fish ways are taken into account and the environmental flow below dams is in place and inspected.*

The recommendation has not been implemented.

Recommendation 7.5:

The Government should:

- (a) *Twin arrangements with countries having experience in implementation of WFD and river basin management should be sought, together with their administrative, financial and political support to assist the country in its task.*

- (b) *Implement measures according to Water Framework Directive as transposed in the national legislation as well as improvements in water quality for example new sewage treatment plant should be investigated before and after in hydro chemical and especially hydro biological controls of success.*

The recommendation has been partially implemented.

- (a) Implemented. Studies and projects with the EU or other countries are carried out. The IPA twinning project “Strengthening the capacities for effective implementation of the acquis in the field of water quality” is in its final stage of implementation.
- (b) Not implemented.

Chapter 8: Waste management

Recommendation 8.1:

The Ministry of Environment and Physical Planning should:

- (a) *Ensure adequate staffing for the Waste Management Department*
- (b) *Strengthen compliance to reporting requirements from municipal authorities*
- (c) *Streamline data collection and sharing and related procedures in order to achieve higher efficiency in the use of budget and donor resources in cooperation with the State Statistical Office.*

The recommendation has been partially implemented.

- (a) Partially implemented. The number of staff of the Department for Waste Management seems to be sufficient; however, the division and organization of work within the Department is not fully adapted to the needs of the Department. More employees are working on permitting, while there are capacities lacking in dealing with strategic and legislative tasks and issues related to collective schemes.
- (b) Not implemented. A significant proportion of municipalities are not reporting regularly on waste, despite their legal obligation to do so.
- (c) Partially implemented. Data collection is operational and regularly provides data on different aspects of waste generation, but evidence-based data collection will only be operational once the dumpsites are replaced by landfills with adequate measurement gates. The waste management information system and its online reporting tool is not operational.

Recommendation 8.2:

The Ministry of Environment and Physical Planning should:

- (a) *Ensure that all municipal disposal sites satisfy licensing requirements for their operation,*
- (b) *Expand the mandate of the state inspectorate to clearly include inspections of municipal disposal sites and organise regular inspections of them.*

The recommendation has not been implemented.

Recommendation 8.3:

The Ministry of Environment and Physical Planning should assess the effectiveness and impact of grants by the Ministry of Environment and Physical Planning to municipalities for the closure and/or remediation of illegal dumpsites and municipal disposal sites.

The recommendation is not relevant. The grant scheme has been discontinued since 2002. The closure and remediation of illegal dumpsites and municipal disposal sites are planned to be financed from the projects aiming at establishing regional landfills and regional waste management systems.

Recommendation 8.4:

To ensure the successful transition from municipal to regional landfills, the Government should ensure that:

The recommendation has been partially implemented.

- (a) Ongoing. The legal framework is adapted to adequately cover developments on the ground.
- (b) Not implemented.
- (c) Partially implemented. Monitoring and penalizing of illegal waste disposal is not at a satisfactory level.

Recommendation 8.5:

The Government, in cooperation with local authorities, NGOs and other relevant stakeholders, should:

- (a) *Develop and implement a national policy on recycling, reuse and reduction of waste,*
- (b) *Promote public awareness campaigns on Reduce Reuse Recycle (RRR) practices.*

The recommendation has been partially implemented.

- (a) Partially implemented. No national policy for reducing, recycling and reusing waste exists or has even been prepared. The Strategy for Waste Management for the period 2008–2020 sets the overall goals and basic principles for reduction reuse and recycling of waste.
- (b) Implemented. Collective scheme operating companies carried out public awareness campaigns. It is also in their interest to raise the amount of separately collected waste to fulfil the national targets. In addition to these campaigns targeting the public, there were also campaigns for pupils run by the Ministry of Education and Science.

Recommendation 8.6:

The Government should ensure that an adequate system for medical waste management is in place.

The recommendation has been partially implemented. A medical waste management system is operational and compliant with relevant international and EU regulations. However, the incinerator for medicinal waste operating at Drisla landfill is not upgraded and does not ensure adequate capacity and compliance with related regulations in the long run.

Chapter 9: Forestry, biodiversity and protected areas

Recommendation 9.1:

The Government should complete a land cadastre.

The recommendation has not been implemented. The Government has not started the development of a land cadastre, which hinders both the process of protected areas' reproclamation and the preparation and adoption of protected area management plans.

Recommendation 9.2:

The Ministry of Agriculture, Forestry and Water Economy, the Ministry of Environment and Physical Planning and other relevant stakeholders should:

- (a) *Begin conducting a national inventory of all forests.*
- (b) *Design and conduct an inventory of all ecosystems and their land cover that would support a comprehensive assessment of the representativeness of the protected areas network.*
- (c) *Add environmental indicators that address sustainable forest management including wildfire control system and adaptation to climate change.*

The recommendation has not been implemented. The national forest inventory and monitoring systems on forestry resources, stipulated by the 2006 Strategy for Sustainable Development of Forestry (valid until 2026), remain to be established. A national inventory of ecosystems is not yet available. The identification, mapping and assessment of the status of the basic types of ecosystems is planned for 2019–2022 (2018 NBSAP, Actions 16.1.1, 16.1.2, and 16.1.3). Environmental indicators related to forestry include fire damage, but do not address sustainable forest management issues, e.g., wildfire control or climate adaptation measures.

Recommendation 9.3:

The Government, in collaboration with the scientific community, should:

- (a) *Complete the inventory and assessment of threatened species;*
- (b) *Adopt a Red List of threatened species and commensurate Red Books for protecting and conserving these species.*

The recommendation has not been implemented. The Government has not completed the inventory and assessment of the status of threatened species populations. Consequently, a national red list of threatened species and a corresponding red book have not been adopted and published. Completion of the above tasks is planned for 2023 (2018 NBSAP, Action 12.1).

Recommendation 9.4:

The Ministry of Environment and Physical Planning in cooperation with the relevant bodies should:

- (a) *Complete the reevaluation and re-proclamation of all protected areas in accordance with the Law on Nature Protection.*
- (b) *Continue expanding the system of protected areas in a manner that represents the key habitats important for biodiversity conservation and is supported by local rural communities.*
- (c) *Adopt a management plan for each protected area.*
- (d) *Encourage the implementation of the Emerald Network in line with Natura 2000 guidelines and establish the National Ecological Network, which would include the Emerald Network, other important ecological areas, system of ecological corridors, and proposed areas of conservation.*

The recommendation has been partially implemented.

- (a) Partially implemented. The revalorization and reproclamation of protected areas has not been completed. Between 2011 and 2015, six protected areas have successfully been reproclaimed. The completion of the protected area revalorization and reproclamation is planned for 2023 (2018 NBSAP, Action 11.1.2).
- (b) Partially implemented. Since 2011, the national protected area network decreased in size by 4,575.95 ha, despite the increase in number of protected areas (from 81 in 2011 to 86 in 2014). Ten new monuments of nature were designated, but within the same period the number of strict nature reserves, nature parks, and protected landscapes decreased.
- (c) Partially implemented. The Ministry of Environment and Physical Planning has not adopted management plans for each protected area. At December 2018, management plans are in force for three sites: two national parks (Galičica, Pelister) and one nature reserve (Ezerani). Draft management plans were prepared for one national park (Mavrovo), five monuments of nature (Lake Prespa, Matka Canyon, Tikvesh, Smolare, Koleshino Waterfalls) and one multipurpose area ("Jasen"), but cannot be adopted prior to the completion of the reproclamation procedure for the area concerned. The adoption of management plans for national parks and/or other protected areas is planned to be completed by 2023 (2018 NBSAP, Action 11.4.2), hence, simultaneously with the finalization of the revalorization and reproclamation process.
- (d) Ongoing. The preparatory works for the establishment of the National Ecological Network (including ASCIs identified under the national Emerald Network and taking into account the Natura 2000 guidelines) are ongoing. However, the establishment of the National Ecological Network, through the adoption of MAK-NEN and its incorporation into planning documents, is delayed (it was expected in 2018 according to the 2018 NBSAP, Action 10.5), while the identification of potential Natura 2000 sites (SCIs and SPAs) is currently planned to be completed by 2022 (2018 NBSAP, Action 11.2).

Recommendation 9.5:

The Government should strive to increase funding for management of protected areas according to the Law on Nature Protection and also continue developing the legal and economic framework to diversify funding options for national parks and other protected areas.

The recommendation has not been implemented. Even though the 2004 Law on Nature Protection indicates the state budget as a possible source of funding for protected area management (also for Public Institutions – National Parks), protected areas most often operate on a self-financing basis and depend on the revenues from either visits or the use of their natural resources, supplemented by external funding sources (e.g., EU funds, foreign donors).

Chapter 10: Human health and the environment

Recommendation 10.1:

The Government should:

- (a) *Strengthen the central environment and health function and coordination within the Ministry of Health;*
- (b) *Allocate appropriate human and financial resources to environmental health;*
- (c) *Promote research and systematic sharing of data and information with the aim of contributing to an integrated environment and health information system.*

The recommendation has been partially implemented.

- (a) Not implemented.
- (b) Not implemented.
- (c) Implemented. An intersectoral group on air quality meets when there is a spike in pollution and provides the Government with recommendations on actions and measures to be taken.

Recommendation 10.2:

The Government should:

- (a) *Update the national environmental health action plan 2 in line with current legislation and circumstances and/or develop a children's environmental health action plan developed, in line with the adoption of the declaration on environment and health at the Parma Ministerial Conference;*
- (b) *Revise urban plans and processes (e.g., transport, construction, urban planning etc), with the aim to improve respiratory health and reduce noise disturbance;*
- (c) *Strengthen the application, control and financial obligations of employers in implementing occupational health measures.*

The recommendation has been partially implemented.

- (a) Not implemented.
- (b) Not implemented.
- (c) Partially implemented. The legislation is in place, but few companies have implemented occupational health measures.

Recommendation 10.3:

The Ministry of Health should:

- (a) *Manage hospital waste and promote the implementation of hazardous waste management practices according to EU regulations;*
- (b) *Ensure drinking water quality control, in particular in rural areas.*

The recommendation has been partially implemented.

- (a) See the implementation of Recommendation 8.6.
- (b) Implemented. Drinking water quality monitoring is conducted for public water supply systems by regional centres of public health. Control monitoring of municipal public water supply systems is conducted by the Institute of Public Health periodically. The estimates of access to safe drinking water in rural areas show an increase from 80.9 per cent in 2000 to 98.1 per cent in 2015.

*Annex II****PARTICIPATION OF NORTH MACEDONIA IN
MULTILATERAL ENVIRONMENTAL AGREEMENTS***

Worldwide agreements		North Macedonia	
Year		Year	Status
1958	(GENEVA) Convention on the Continental Shelf		
1958	(GENEVA) Convention on Fishing and Conservation of the Living Resources of the High Seas		
1958	(GENEVA) Convention on the Territorial Sea and the Contiguous Zone		
1958	(GENEVA) Convention on the High Seas		
1960	(GENEVA) Convention concerning the Protection of Workers against Ionising Radiations (ILO)		
1961	(PARIS) International Convention for the Protection of New Varieties of Plants	2011	Ac
1963	(VIENNA) Convention on Civil Liability for Nuclear Damage	1994	Su
	1997 (VIENNA) Protocol to Amend the 1963 Vienna Convention on Civil Liability for Nuclear Damage		
1968	(LONDON, MOSCOW, WASHINGTON) Treaty on the Non-Proliferation of Nuclear Weapons (NPT)	1995	Su
1971	(RAMSAR) Convention on Wetlands of International Importance Especially as Waterfowl	1995	Su
1971	(GENEVA) Convention on Protection against Hazards from Benzene (ILO 136)	1991	Ra
1971	(BRUSSELS) Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage		
	1992 Fund Protocol		
1972	(PARIS) Convention concerning the Protection of the World Cultural and Natural Heritage	1997	Su
1972	(LONDON, MOSCOW, WASHINGTON) Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons, and on their Destruction	1997	Su
1972	(GENEVA) International Convention for Safe Containers		
1973	(WASHINGTON) Convention on International Trade in Endangered Species of Wild Fauna and Flora	2000	Ac
	1979 (BONN) Amendment	2000	At
	1983 (GABORONE) Amendment		
1973	(LONDON) Convention for the Prevention of Pollution from Ships (MARPOL)		
	1978 (LONDON) Protocol relating to the International Convention for the Prevention of Pollution from Ships		
	1997 (LONDON) Protocol to Amend the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto		
1974	(GENEVA) Convention concerning Prevention and Control of Occupational Hazards caused by Carcinogenic Substances and Agents (ILO 139)	1991	Ra
1977	(GENEVA) Convention on Protection of Workers against Occupational Hazards from Air Pollution, Noise and Vibration (ILO 148)	1991	Ra
1979	(BONN) Convention on the Conservation of Migratory Species of Wild Animals	1999	Ac
	1991 (LONDON) Agreement on the Conservation of Populations of European Bats	1999	Ac
	1992 (NEW YORK) Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (ASCOBANS)		
	1995 (THE HAGUE) Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA)	2000	Ac
	1996 (MONACO) Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS)		
1980	(NEW YORK, VIENNA) Convention on the Physical Protection of Nuclear Material	1996	Su
1981	(GENEVA) Convention Concerning Occupational Safety and Health and the Working Environment (ILO 155)	1991	Ra

Ac = Accession; Ad = Adherence; Ap = Approval; At = Acceptance; De = Denounced; Si = Signature; Su = Succession; Ra = Ratification.

Worldwide agreements		North Macedonia	
1982	(MONTEGO BAY) Convention on the Law of the Sea	1994	Su
	1994 (NEW YORK) Agreement related to the Implementation of Part XI of the Convention	1994	Ra
	1995 (NEW YORK) Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks		
1985	(GENEVA) Convention Concerning Occupational Health Services (ILO 161)	1991	Ra
1985	(VIENNA) Convention for the Protection of the Ozone Layer	1994	Su
	1987 (MONTREAL) Protocol on Substances that Deplete the Ozone Layer	1994	Su
	1990 (LONDON) Amendment to Protocol	1998	Ra
	1992 (COPENHAGEN) Amendment to Protocol	1998	Ra
	1997 (MONTREAL) Amendment to Protocol	1999	Ac
	1999 (BEIJING) Amendment to Protocol	2002	Ac
	2016 (KIGALI) Amendment to Protocol		
1986	(GENEVA) Convention Concerning Safety in the Use of Asbestos (ILO 162)	1991	Ra
1986	(VIENNA) Convention on Early Notification of a Nuclear Accident	1996	Su
1986	(VIENNA) Convention on Assistance in the Case of a Nuclear Accident or Radiological	1996	Su
1989	(BASEL) Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	1997	Ac
	1995 Ban Amendment	2004	Ra
	1999 (BASEL) Protocol on Liability and Compensation	2000	Si
1990	(GENEVA) Convention concerning Safety in the use of Chemicals at Work (ILO 170)		
1990	(LONDON) Convention on Oil Pollution Preparedness, Response and Cooperation		
1992	(RIO DE JANEIRO) Convention on Biological Diversity	1997	Ac
	2000 (MONTREAL) Cartagena Protocol on Biosafety	2005	Ra
	2010 (NAGOYA) Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization		
	2010 (NAGOYA - KUALA LUMPUR) Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety		
1992	(NEW YORK) United Nations Framework Convention on Climate Change	1998	Ac
	1997 (KYOTO) Kyoto Protocol	2004	Ac
	2012 (DOHA) Doha Amendment to the Kyoto Protocol		
	2015 (PARIS) Paris Agreement	2018	Ra
1993	(ROME) Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas		
1993	(PARIS) Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction	1997	Ac
1994	(VIENNA) Convention on Nuclear Safety	2006	Ac
1994	(PARIS) United Nations Convention to Combat Desertification	2002	Ac
1997	(VIENNA) Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	2010	Ac
1997	(NEW YORK) Convention on the Law of Non-navigational Uses of International Watercourses		
1997	(VIENNA) Convention on Supplementary Compensation for Nuclear Damage		
1998	(ROTTERDAM) Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	2010	Ac
2001	(STOCKHOLM) Convention on Persistent Organic Pollutants	2004	Ra
2001	(LONDON) Convention on Civil Liability for Bunker Oil Pollution Damage		
2003	(GENEVA) WHO Framework Convention on Tobacco Control	2006	Ac
2004	(LONDON) Convention for the Control and Management of Ships' Ballast Water and Sediments		
2013	(KUMAMOTO) Minamata Convention on Mercury	2014	Si

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Regional and subregional agreements		North Macedonia	
Year		Year	Status
1957	(GENEVA) European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)	1997	Su
1958	(GENEVA) Agreement - Adoption of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts	1998	Su
1968	(PARIS) European Convention - Protection of Animals during International Transport (revised in 2003)		
1969	(LONDON) European Convention on the Protection of the Archaeological Heritage (revised in 1992, Valletta Convention)	2006	Ra
1976	(STRASBOURG) European Convention for the Protection of Animals Kept for Farming	1994	Su
1979	(BERN) Convention on the Conservation of European Wildlife and Natural Habitats	1998	Ra
1979	(GENEVA) Convention on Long-range Trans-boundary Air Pollution	1997	Su
	1984 (GENEVA) Protocol - Financing of Co-operative Programme (EMEP)	2010	Ac
	1985 (HELSINKI) Protocol - Reduction of Sulphur Emissions by 30%	2010	Ac
	1988 (SOFIA) Protocol - Control of Emissions of Nitrogen Oxides	2010	Ac
	1991 (GENEVA) Protocol - Volatile Organic Compounds	2010	Ac
	1994 (OSLO) Protocol - Further Reduction of Sulphur Emissions	2014	Ac
	1998 (AARHUS) Protocol on Heavy Metals	2010	Ac
	1998 (AARHUS) Protocol on Persistent Organic Pollutants	2010	Ac
	1999 (GOTHENBURG) Protocol to Abate Acidification, Eutrophication and Ground-level	2014	Ac
	2009 (GENEVA) Amendments to the Text and to Annexes I, II, III, IV, VI and VIII to the 1998 Protocol on Persistent Organic Pollutants		
	2009 (GENEVA) Amendments to Annexes I and II to the 1998 Protocol on Persistent Organic Pollutants		
	2012 (GENEVA) Amendment of the text and annexes II to IX to the Protocol to the 1979 Convention on Long-range Transboundary Air Pollution to Abate Acidification, Eutrophication and Ground-level Ozone and the addition of new annexes X and XI		
	2012 (GENEVA) Amendments to the Text of and Annexes Other than III and VII to the 1998 Protocol on Heavy Metals		
1991	(ESPOO) Convention on Environmental Impact Assessment in a Transboundary Context	1999	Ac
	2001 (SOFIA) First Amendment		
	2003 (KIEV) Protocol on Strategic Environmental Assessment	2013	Ra
	2004 (CAVTAT) Second Amendment		
1992	(HELSINKI) Convention on the Protection and Use of Transboundary Watercourses and International Lakes	2015	Ac
	1999 (LONDON) Protocol on Water and Health		
	2003 (MADRID) Amendments to Articles 25 and 26	2015	Ac
1992	(HELSINKI) Convention on the Transboundary Effects of Industrial Accidents	2010	Ac
	2003 (KIEV) Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters		
1993	(OSLO and LUGANO) Convention - Civil Liability for Damage from Activities Dangerous for the Environment		
1994	(LISBON) Energy Charter Treaty	1998	Ra
	1994 (LISBON) Protocol on Energy Efficiency and Related Environmental Aspects	1998	Ra
	1998 Amendment to the Trade-Related Provisions of the Energy Charter Treaty		
1998	(AARHUS) Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters	1999	Ac
	2003 (KIEV) Protocol on Pollutant Release and Transfer Registers	2010	Ra
	2005 (ALMATY) Amendment on GMOs		
1998	(STRASBOURG) Convention on the Protection of Environment through Criminal Law		
2000	(FLORENCE) European Landscape Convention	2003	Ra

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*Annex III****LIST OF MAJOR ENVIRONMENT-RELATED
LEGISLATION***

The Constitution adopted on 17 November 1991

Laws**1995**

Law on Protection Against Smoking (No. 36/1995, 70/2003, 29/2004, 37/2005, 103/2008, 140/2008, 35/2010, 100/2011, 157/2013, 51/2018)

Law on Secondary Education (No. 44/1995, 24/1996, 34/1996, 35/1997, 82/1999, 29/2002, 40/2003, 42/2003, 67/2004, 55/2005, 113/2005, 35/2006, 30/2007, 49/2007, 81/2008, 92/2008, 33/2010, 116/2010, 156/2010, 18/2011, 42/2011, 51/2011, 6/2012, 100/2012, 24/2013, 41/2014, 116/2014, 135/2014, 10/2015, 98/2015, 145/2015, 30/2016, 127/2016, 67/2017, 64/2018)

1996

Criminal Code (No. 37/1996, 80/1999, 4/2002, 43/2003, 19/2004, 81/2005, 60/2006, 73/2006, 7/2008, 139/2008, 114/2009, 51/2011, 135/2011, 185/2011, 142/2012, 166/2012, 55/2013, 82/2013, 14/2014, 27/2014, 28/2014, 41/2014, 115/2014, 132/2014, 160/2014, 199/2014, 196/2015, 226/2015, 97/2017)

1997

Law on Communal Activities (No. 45/1997, 5/1999, 23/1999, 52/2001, 45/2002, 16/2004, 5/2009)

1998

Law on Pastures (No. 3/1998, 101/2000, 89/2008, 105/2009, 42/2010, 116/2010, 164/2013, 193/2015, 215/2015)

2001

Law on Excise Duties (No. 32/2001, 50/2001, 52/2001, 45/2002, 98/2002, 24/2003, 96/2004, 38/2005, 88/2008, 105/2009, 34/2010, 24/2011, 55/2011, 135/2011, 82/2013, 98/2013, 43/2014, 167/2014, 188/2014, 129/2015, 154/2015, 192/2015, 23/2016, 31/2016, 171/2017, 120/2018)

2002

Law on Protection Against Ionizing Radiation and Radiation Safety (No. 48/2002, 135/2007, 53/2011, 164/2013, 43/2014, 149/2015, 37/2016, 83/2018)

Law on Local Self-Government (No. 5/2002)

2004

Law on Implementation of Spatial Plan (No. 39/2004)

Law on Property Taxes (No. 61/2004, 92/2007, 102/2008, 35/2011, 53/2011, 84/2012, 188/2013, 154/2015, 192/2015, 23/2016)

Law on Hospitality Activities (No. 62/2004, 89/2008, 115/2010, 53/2011, 141/2012, 164/2013, 187/2013, 166/2014, 199/2014, 129/2015, 192/2015, 39/2016, 53/2016, 71/2016)

Law on Tourism Activity (No. 62/2004, 89/2008, 12/2009, 17/2011, 47/2011, 53/2011, 123/2012, 164/2013, 27/2014, 116/2015, 192/2015, 53/2016)

Law on Ambient Air Quality (No. 67/2004, 92/2007, 35/2010, 47/2011, 59/2012, 163/2013, 10/2015, 146/2015)

Law on Nature Protection (No. 67/2004, 14/2006, 84/2007, 35/2010, 47/2011, 148/2011, 59/2012, 13/2013, 163/2013, 41/2014, 146/2015, 39/2016, 63/2016, 113/2018)

Law on Drinking Water Supply and Urban Wastewater Drainage (No. 68/2004, 28/2006, 103/2008, 17/2011, 54/2011, 163/2013, 10/2015, 147/2015, 31/2016)

Law on Waste Management (No. 68/2004, 71/2004, 107/2007, 102/2008, 143/2008, 124/2010, 51/2011, 123/2012, 147/2013, 163/2013, 51/2015, 146/2015, 156/2015, 192/2015, 39/2016, 63/2016)

Law on the City of Skopje (55/2004, 158/2011)

Law on Financing of Local Self-Government Units (No. 61/2004, 96/2004, 67/2007, 156/2009, 47/2011, 192/2015, 209/2018)

Law on Classified Information (No. 9/2004, 113/2007, 145/2010, 80/2012, 41/2014, 21/2018, 83/2018)

Law on Consumer Protection (No. 38/2004, 77/2007, 103/2008, 24/2011, 164/2013, 97/2015, 152/2015, 140/2018)

2005

Law on Crisis Management (No. 29/2005, 36/2011, 41/2014, 104/2015, 39/2016, 83/2018)

Law on Environment (No. 53/2005, 81/2005, 24/2007, 159/2008, 83/2009, 48/2010, 124/2010, 51/2011, 123/2012, 93/2013, 187/2013, 42/2014, 44/2015, 129/2015, 192/2015, 39/2016, 99/2018)

Law on Budgets (No. 64/2005, 4/2008, 103/2008, 156/2009, 95/2010, 180/2011, 171/2012, 192/2015, 167/2016)

2006

Law on Product Safety (No. 33/2006, 63/2007, 24/2011, 51/2011, 148/2011, 164/2013, 152/2015, 53/2016, 140/2018)

Law on Sanitary and Health Inspection (No. 71/2006, 139/2008, 88/2010, 18/2011, 53/2011, 164/2013, 43/2014, 144/2014, 51/2015, 150/2015, 37/2016, 83/2018)

Law on Vocational Education and Training (No. 71/2006, 117/2008, 148/2009, 17/2011, 24/2013, 137/2013, 41/2014, 145/2015, 55/2016, 64/2018)

Law on Free Access to Public Information (13/2006, 86/2008, 6/2010, 42/2014, 148/2015, 55/2016, 64/2018)

2007

Law on Protection from Noise in the Environment (No. 79/2007, 124/2010, 47/2011, 163/2013, 146/2015)

Law on Plant Protection Products (No. 110/2007, 20/2009, 17/2011, 53/2011, 69/2013, 10/2015, 129/2015, 39/2016)

Law on Medicinal Products and Medical Devices (No. 106/2007, 88/2010, 36/2011, 53/2011, 136/2011, 11/2012, 147/2013, 164/2013, 27/2014, 43/2014, 88/2015, 154/2015, 228/2015, 7/2016, 53/2016, 83/2018, 113/2018)

Law on Public Procurement (No. 136/2007, 130/2008, 97/2010, 53/2011, 185/2011, 15/2013, 148/2013, 160/2013, 28/2014, 43/2014, 130/2014, 180/2014, 78/2015, 192/2015, 27/2016, 120/2016, 165/2017, 83/2018)

Law on Safety of Cosmetic Products (No. 55/2007, 47/2011, 150/2015)

Law on Agricultural Land (No. 135/2007, 17/2008, 18/2011, 42/2011, 148/2011, 95/2012, 79/2013, 87/2013, 106/2013, 164/2013, 39/2014, 130/2014, 166/2014, 72/2015, 98/2015, 154/2015, 215/2015, 7/2016, 39/2016)

2008

Law on Fishery and Aquaculture (No. 7/2008, 67/2010, 47/2011, 53/2011, 95/2012, 164/2013, 116/2014, 154/2015, 193/2015, 39/2016, 83/2018)

Law on Genetically Modified Organisms (No. 35/2008, 163/2013, 146/2015)

Law on the Forestry and Hunting Inspection (No. 88/2008, 6/2010, 36/2011, 74/2012, 164/2013, 43/2014, 33/2015, 149/2015, 53/2016, 83/2018)

Law on the Technical Inspection (No. 88/2008, 119/2010, 36/2011, 136/2011, 164/2013, 41/2014, 33/2015, 61/2015, 154/2015, 53/2016)

Law on Waters (No. 87/2008, 6/2009, 161/2009, 83/2010, 51/2011, 44/2012, 23/2013, 163/2013, 180/2014, 146/2015, 52/2016)

Law on Public Roads (No. 84/2008, 52/2009, 114/2009, 124/2010, 23/2011, 53/2011, 44/2012, 168/2012, 163/2013, 187/2013, 39/2014, 42/2014, 166/2014, 44/2015, 116/2015, 150/2015, 31/2016, 71/2016, 163/2016)

Law on Vehicles (No. 140/2008, 53/2011, 123/2012, 70/2013, 164/2013, 138/2014, 154/2015, 192/2015, 39/2016)

Law on Primary Education (No. 103/2008, 33/2010, 116/2010, 156/2010, 18/2011, 42/2011, 51/2011, 6/2012, 100/2012, 24/2013, 41/2014, 116/2014, 135/2014, 10/2015, 98/2015, 145/2015, 30/2016, 127/2016, 67/2017, 64/2018)

Law on Adult Education (No. 7/2008, 17/2011, 51/2011, 74/2012, 41/2014, 144/2014, 146/2015, 30/2016, 64/2018)

Law on Hydrometeorological Activity (No. 103/2008, 53/2011, 51/2015, 149/2015)

2009

Law on Forests (No. 64/2009, 24/2011, 53/2011, 25/2013, 79/2013, 147/2013, 43/2014, 160/2014, 33/2015, 44/2015, 147/2015, 7/2016, 39/2016)

Law on Intermunicipal Cooperation (No. 79/2009)

Law on Organic Production (No. 146/2009, 53/2011, 149/2015, 39/2016, 132/2016)

Law on Management of Packaging and Packaging Waste (No. 161/2009, 17/2011, 47/2011, 136/2011, 6/2012, 39/2012, 163/2013, 146/2015)

Law on the State Agriculture Inspectorate (No. 20/2009, 53/2011, 164/2013, 43/2014, 33/2015, 88/2015, 149/2015, 39/2016, 172/2016, 83/2018)

Law on Hunting (No. 26/2009, 82/2009, 136/2011, 1/2012, 69/2013, 164/2013, 187/2013)

Law on Free Legal Aid (No. 161/2009, 185/2011, 27/2014, 104/2015)

2010

Law on Agriculture and Rural Development (No. 49/2010, 53/2011, 126/2012, 15/2013)

Law on Inspection Supervision (No. 50/2010, 162/2010, 157/2011, 147/2013, 41/2014, 33/2015, 193/2015, 53/2016, 11/2018, 83/2018, 120/2018)

Law on Management of Batteries and Accumulators and Waste Batteries and Accumulators (No. 140/2010, 47/2011, 148/2011, 39/2012, 163/2013, 146/2015, 39/2016)

Law on Chemicals (No. 145/2010, 53/2011, 164/2013, 116/2015, 149/2015, 37/2016)

Law on Food Safety (157/2010, 53/2011, 1/2012, 164/2013, 187/2013, 43/2014, 72/2015, 84/2015, 129/2015, 213/2015, 39/2016, 64/2018)

Law on the State Inspectorate for Local Self-Government (No. 158/2010, 187/2013, 43/2014, 64/2018)

Law on Associations and Foundations (No. 52/2010, 135/2011, 55/2016)

Law on the Management of the World Natural and Cultural Heritage in the Ohrid Region (No. 75/2010)

Law on Public Health (No. 22/2010, 136/2011)

Law on Prevention and Protection Against Discrimination (No. 50/2010, 44/2014, 150/2015, 31/2016, 21/2018)

2011

Law on Designation of Slatinski Izvor Cave as a Monument of Nature (No. 23/2011)

Law on Designation of Lake Dojran as a Monument of Nature (No. 51/2011)

Law on Designation of Lake Prespa as a Monument of Nature (No. 51/2011, 79/2013)

2012

Law on Management of Electrical and Electronic Equipment and Waste Electrical and Electronic Equipment (No. 6/2012, 163/2013, 146/2015, 39/2016)

Law on Concessions and Public–Private Partnership (No. 6/2012, 144/2014, 33/2015, 104/2015, 215/2015)

Law on Designation of the Site of Ezerani at Lake Prespa as a Nature Reserve (No. 24/2012)

Law on Designation of Vevchani Springs as a Monument of Nature (No. 39/2012)

Law on Health Protection (No. 43/2012, 145/2012, 87/2013, 164/2013, 39/2014, 43/2014, 132/2014, 188/2014, 10/2015, 61/2015, 154/2015, 192/2015, 17/2016, 37/2016)

Law on Cessation of the Law on Proclamation of the Site Alshar as a Monument of Nature (No. 59/2012)

Law on Mineral Resources (No. 136/2012, 25/2013, 93/2013, 44/2014, 160/2014, 129/2015, 192/2015, 39/2016, 53/2016, 120/2016, 189/2016)

Law on Equal Opportunities for Women and Men (No. 6/2012, 30/2013, 166/2014, 150/2015)

Law on Tourism Development Zones (No. 141/2012)

2013

Law on Ratification of the Protocol for Strategic Environmental Assessment (No. 120/2013)

Law on Child Protection (No. 23/2013, 12/2014, 44/2014, 144/2014, 10/2015, 25/2015, 150/2015, 192/2015, 27/2016, 163/2017, 21/2018)

2014

Law on Amendments to the Criminal Code (No. 27/2014)

Law on Mountain Trails (No. 38/2014, 146/2015)

Law on Control of Emissions of Volatile Organic Compounds Due to the Use of Petrol (No. 38/2014, 146/2015, 39/2016)

Law on National Spatial Data Infrastructure (No. 38/2014)

Law on Interior Affairs (No. 42/2014, 116/2014, 33/2015, 5/2016, 120/2016, 127/2016, 142/2016, 190/2016, 21/2018, 135/2018)

Law on Profit Tax (No. 112/2014, 129/2015, 23/2016, 190/2016, 248/2018)

Law on Spatial and Urban Planning (No. 199/2014, 44/2015, 193/2015, 31/2016, 163/2016, 64/2018)

2015

Law on Proclamation of Gazi Baba Forest Park as a Natural Park (No. 44/2015)

Law on Water Economy (No. 51/2015, 193/2015, 189/2016)

Law on Ratification of the Convention for the Protection and Use of Transboundary Waters and International Lakes (No. 117/2015)

Law on Road Traffic Safety (No. 169/2015, 226/2015, 55/2016, 11/2018, 83/2018)

Law on Teachers in Primary and Secondary Schools (No. 10/2015, 145/2015, 30/2016, 127/2016, 67/2017)

Law on the Academy for Teachers (No. 10/2015, 192/2015, 30/2016, 127/2016)

2016

Law on Water Services Pricing (No. 7/2016)

2018

Law on Energy (No. 96/2018)

Law on Higher Education (No. 82/2018)

Decisions**2009**

Decision on the amount and method of charging the special fee for use of public roads (toll) (No. 89/2009, 103/2014)

Decision on the amount and method of payment of the fee for use of public roads by motor vehicles and their trailers (No. 118/2009, 103/2014)

2011

Decision on establishing the State Monitoring Network (No. 122/2011)

Decision on establishing the Commission for Management of Packaging Waste (No. 112/2011)

2012

Decision on the determination of the boundaries of river basin areas (No. 107/2012)

2018

Decision to perform working duties (No. 02-1758/1)

Decrees or Ordinances (Uredba)**2005**

Decree on limit and target values for levels and types of pollutants in ambient air, alert and information thresholds, deadlines for achieving limit and target values, margins of tolerance for limit and target values and long-term objectives (No. 50/2005, 4/2013, 183/2017)

Ordinance on determining projects and criteria on the basis of which screening for environmental impact assessment shall be carried out (No. 74/2005, 109/2009, 164/2012)

Decree on the determination of the activities of the installations for which an environmental permit with adjustment plan and timetable for submission of application for permit with adjustment plan is issued (No. 89/2005)

2007

Decree on the strategies, plans and programmes, including changes to those strategies, plans and programmes, for which the procedure for assessment of their impact on the environment and on the life and health of people is mandatory (No. 153/2007, 45/2011)

Decree on the criteria on the basis of which the decision as to whether a given planning document is likely to have a significant effect on the environment and human health shall be issued (No. 144/2007)

2008

Decree on public participation during the preparation of regulations and other acts, as well as plans and programmes in the field of environment (No. 147/2008, 45/2011)

Ordinance on the pollution limits of noise levels in the environment (No. 147/2008)

2009

Decree on the activities and actions for which an elaborate must be developed and which is approved by the competent authority to perform professional activities in the environment (No. 80/2009)

Ordinance on the business activities and activities for which preparation of an elaborate is mandatory and such elaborate is approved by Local Self-Government Units (No. 80/2009, 32/2012)

Ordinance on the business activities and activities for which preparation of an elaborate is mandatory and such elaborate is approved by the Ministry of Environment and Physical Planning (No. 80/2009, 36/2012)

2010

Decree on the level of charges payable by operators of installations with an A-type permit (No. 64/2010)

Decree on the level of charges payable by operators of installations with a B-type permit (No. 117/2007, 64/2010)

2011

Ordinance determining agglomerations, major roads, major railways and major airports for which Strategic Noise Maps are to be drafted (No. 15/2011)

Decree on determination of the combustion capacities that should take measures for protection of ambient air from pollution, by reducing the emissions of certain pollutants into the air (No. 112/2011)

Ordinance on the manner, procedure and necessary documentation for the payment of compensation for exported quantity of batteries and accumulators (No. 112/2011)

Ordinance on the manner, procedure and necessary documentation for the payment of compensation for export or destruction of packaging and for export or destruction of carrier bags (No. 112/2011)

Decree on the manner of acting on trade in affected and protected wild species of plants, fungi, animals and their parts by the customs authorities, other competent authorities and services at the border crossing points and by the scientific and professional institutions, as well as by authorized depositories of items confiscated during illegal trade (No. 177/2011)

2012

Decree on amendments to the Decree on limit values for levels and types of pollutants in ambient air, alert and information thresholds, deadlines for achieving limit and target values for specific substances, margins of tolerance for limit values and target values and long-term objectives (No. 4/2012)

Ordinance on the content, scope and methodology for environmental risk assessment appropriate to the character of a GMO introduced into the environment (No. 22/2012)

2013

Ordinance on the structure, manner of membership and nominating representatives of the River Basin Management Councils and River Basin Management Councils for parts of river basins as well as manner of operating of River Basin Management Councils (No. 106/2013)

2016

Decree on the classification of surface waters (No. 120/2016)

Rulebooks (Pravilnik)

Instructions (Uputstvo)

Orders (Naredba)

2004

Rulebook on drinking water safety (No. 57/2004)

2005

Rulebook on the form and content of the eco-label, the manner, the conditions, as well as the composition and the manner of establishment and operation of the Commission on Eco-labelling (No.109/2005)

2006

Rulebook on the procedure for issuing an A-type integrated environmental permit (No. 4/2006, 116/2014)

Rulebook on the format and content of the journal for record-keeping on waste handling, the format and content of the forms for waste identification and transport, and the format and content of the form for the annual report on waste handling (No. 07/2006, 68/2014)

Rulebook on the content of the State of the Environment Report (No. 33/2006)

Rulebook on handling asbestos waste and waste of asbestos-containing products (No. 89/2006)

Rulebook on the criteria, methods and procedures for assessment of ambient air quality introducing upper and lower assessment thresholds (No. 82/2006)

2007

Rulebook on the manner and conditions for handling polychlorinated biphenyls (PCBs), the manner and conditions which must be met by installations and objects for the disposal and decontamination of used PCBs, and the manner of labelling of equipment that contains PCBs (No. 48/2007, 130/2009, 52/2013, 78/2014)

Rulebook on the form and content of the permit, request and register of issued permits for trade in non-hazardous waste, the manner and procedure of issuing the permit, the manner of keeping records and the conditions for performing the activity of trade in non-hazardous waste (No. 115/2007, 55/2012, 41/2013)

Rulebook on the form and content of the application for establishment of a landfill for non-hazardous and inert waste (No. 133/2007, 184/2014)

Rulebook on the form and content of the application for obtaining a permit, as well as the form and content of the permit for a landfill operator (No. 140/2007, 68/2014)

Rulebook on the procedures and method of collection, transportation, processing, storage, treatment and disposal of waste oils, the manner of keeping records and submitting the data (No. 156/2007, 109/2014)

2008

Rulebook on the safety of water for human consumption (No. 46/2008)

Order prohibiting the collection for use and trade in native wild fungi – morels of the genus *Morchella*, *Verpa* and *Pitchoverpa* (No. 161/2008)

2009

Rulebook on the form and content of the request for obtaining a permit, as well as the form and content of the request for performing the activity of operator of an installation for waste incineration or combustion (No. 108/2009, 68/2014)

Rulebook on the environmental protection measures that shall be undertaken by the producers, owners and entities that are handling end-of-life vehicles, their components and materials, the targets and time limits for their achievement and the manner and conditions of storage, the form and content of the certificate for taking over the vehicle for destruction, the form and content of the notification form as well as the manner of record-keeping (No. 108/2009, 164/2010, 114/2014)

Rulebook on emission limit values for burning and combustion of waste and the conditions and method of operation of installations for burning and combustion (No. 123/2009)

2010

Rulebook on the emission ceilings for polluting substances for the purpose of setting projections for a certain period concerning annual polluting substances emissions reduction (No. 2/2010, 156/2011, 111/2014)

Rulebook on the manner of carrying out transboundary consultations (No. 110/2010)

Rulebook on the form and content of the form of the annual report on the type and quantities of packaging placed on the market or imported in the previous calendar year and for handling packaging waste, the form and the content of the form of production specification, the form and content of the form for keeping records for the total packaging placed on the market or imported as well as the manner of keeping records (No. 117/2010, 184/2011, 114/2014)

Rulebook on the limit values of permissible levels of emissions and types of pollutants in waste gases and vapours emitted from stationary sources into the air (No. 141/2010)

Rulebook on the scope of genetic reserves, and the manner and procedure of securing and maintaining reserves (No. 151/2010) (legal basis: Law on Livestock (No. 7/2008, 116/2010, 23/2013))

Rulebook on the form and content of the forms for reports on quantities of collected waste batteries and accumulators and the quantities of collected, treated or recycled waste batteries and accumulators, as well as the manner of their preparation and submission (No. 167/2010, 68/2014)

Rulebook on the form and content of the form of the annual report on handling waste batteries and accumulators and the manner of its delivery as well as the form and content of the form for keeping records of quantities and types of batteries and accumulators placed on the market (No. 167/2010, 109/2014)

2011

Rulebook on contained use of GMOs (No. 8/2011)

Lists of threatened and protected wild species of plants, fungi, animals and their parts (No. 15/2012)

Rulebook on the content of information on safety measures, as well as the actions of persons who may be affected by a major accident caused by system failure (No. 22/2011)

Rulebook on the form, content, methodology and manner of maintaining the pollutant release and transfer register (No. 27/2011, 97/2017)

Rulebook on the measures for remediation of environmental damage (No. 31/2011)

Rulebook on professional activities the performance of which can cause environmental damage liability as well as the criteria for determination of the existence of environmental damage, as well as the cases when liability for environmental damage will not apply (No. 31/2011)

Rulebook on the form and content of the request for non-issuance of a marketing authorization or certificate for import and/or export and/or transit and/or re-export, i.e. for failure to submit a decision for refusal of an application for issuing a marketing authorization or certificate for import and/or export and/or transit and/or re-export (No. 31/2012)

Rulebook on the form and content of the request for non-issuance of a permit for exploration of mineral deposits and fossils, i.e. for failure to submit a decision for refusal of an application for issuing a permit for exploration of mineral deposits and fossils (No. 31/2012)

Rulebook on the form, content and manner of delivery of the application for registration of producers that place on the market or import batteries and accumulators, the manner of introducing a registration number as well as the form, content and manner of keeping the register of producers that place batteries and accumulators on the market (No. 36/2011, 111/2014)

Rulebook on the manner of labelling of batteries and accumulators and packaging of batteries, the form and content of the symbol for separate collection as well as the form and content of the chemical symbol for metals (No. 52/2011)

List of prohibitions and restrictions on the use of chemicals (No. 57/2011)

Rulebook on the form and content of the application and the permit for reuse of treated wastewater including the manner for issuing the permit (No. 60/2011)

Rulebook on the form and content of the application of request and of the licence for use of sludge, and the manner of issuing the licence for use of sludge (No. 60/2011)

- Rulebook on the form, content and manner of submitting data including type of information on the use of sludge resulting from urban wastewater treatment according to sludge use, treatment, composition and place of use (No. 60/2011)
- Rulebook on the form and content of the certificate for registration of an individual handler of waste batteries and accumulators (No. 61/2011)
- Rulebook on the form and the content of the form for the confirmation of fee payment for management of waste batteries and accumulators (No. 61/2011)
- Rulebook on the form and content of the certificate for exemption from the obligation for payment of the contribution for management of waste batteries and accumulators (No. 61/2011, 12/2012, 109/2014)
- Rulebook on the methodology for the manner of monitoring and calculation of the realization of the rates for collection of waste batteries and accumulators as well as the form and content of the monitoring and calculation form (No. 67/2011)
- Rulebook on the detailed conditions for performing certain types of expert work with regard to the equipment, devices, instruments and the appropriate business premises that need to be fulfilled by the entities performing certain expert work for monitoring ambient air quality (No. 69/2011)
- Rulebook on detailed conditions for the collection, transport and treatment, methods and conditions for design, construction and operation of systems and plants for treatment of urban wastewater, technical standards, parameters, emission standards, and norms for quality of pre-treatment, removal and treatment of wastewater taking into account load and methods of treatment of urban wastewater that is to be disposed of in sensitive areas (No. 73/2011)
- Rulebook on the detailed conditions, manner and maximum permitted values and concentrations of the parameters of treated wastewater for reuse (No. 73/2011)
- Rulebook on the methodology and procedures for the use of sludge, maximum concentration of heavy metals in soil in which the sludge was used, concentration of heavy metals in sludge, in accordance with its use and maximum annual quantity of heavy metals that can be deposited in soil (No. 73/2011)
- Rulebook on the methods for determining biodegradability of surface-active substances in detergents, as well as reference methods for detergent testing and analysis (No. 74/2011)
- Rulebook on detailed conditions that need to be fulfilled by the legal entities that perform expert training, the programme for conducting training, as well as the form and the content of the certificate of training participation for expert training for waste management and/or waste handling (No. 74/2011)
- Rulebook on the manner of keeping the register as well as the form and the content of the forms intended to fill in the register with data on reuse and recycling of end-of-life vehicles and achieving the targets (No. 74/2011)
- Rulebook on the manner and conditions for exceeding the level of content of heavy metals in packaging, the manner of storing packaging and the contents of the records and report on the handling of packaging waste (No. 78/2011)
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- Rulebook on conditions, methods and emission limit values for discharging treated wastewater, methods of calculation taking into account special requirements related to protected areas (No. 81/2011)
- List of dangerous chemicals and products the export of which is prohibited (No. 82/2011)
- Rulebook on cases in which a prior informed consent procedure is performed, cases in which further performance of a prior informed consent procedure is not required, content of the export notification and documents submitted for the performance of a prior informed consent procedure (No. 82/2011)
- List of the parties to the Rotterdam Convention requesting notification on the transit of chemicals and content of such notification (No. 82/2011)
- Rulebook on the manner of assessing chemical safety and the content of the report on chemical safety (No. 82/2011)
- Rulebook on cases in which PIC procedure is conducted and the content of the application for conducting PIC procedure (No. 82/2011)
- Rulebook on the list of data on the content of detergents (No. 84/2011)
- Rulebook on the data on the content of detergents that should be stated on packaging, as well as general and specific rules on the labelling of detergent packaging (No. 84/2011)
- Rulebook on dangerous and harmful matter and substances and their emission standards that can be discharged into sewerage or drainage systems, into surface and groundwater bodies and into the environment and water ecosystems (No. 108/2011)
- Rulebook on the methodology, reference methods, manner and parameters for wastewater monitoring, including monitoring of sludge resulting from wastewater treatment (No. 108/2011)
- Rulebook on procedures for transfer of information from monitoring of discharged wastewaters, the format and content of the form for distribution of information (No. 108/2011)
- Rulebook on the form and content of the invitation for education, the conduct of education, and the manner of the single record of training conducted in accordance with the Law on Management of Packaging and Packaging Waste (No. 118/2011)

List of pollutants and polluting substances (No. 122/2011)

Rulebook on the format, content and form of the decision for application or non-application of strategic environmental assessment (No. 122/2011)

Rulebook on technical and other requirements as to the installation and operation of plants using dangerous substances and the manner of testing plants by experts before commissioning and at regular intervals during operation (No. 123/2011)

Rulebook on the methods of chemical testing (No. 127/2011)

Rulebook on the form and content of the request for non-issuance of a licence, i.e. not adopting a decision refusing the request for issuing a licence for water use, i.e. a permit for extraction of sand, gravel and stone from the riverbeds and banks of surface water bodies (No. 129/2011)

Rulebook on the form and content of the request for failure to submit a decision by which a water management consent application is accepted or rejected (No. 129/2011)

Rulebook on the form and content of the request for non-issuance of a licence, non-issuance of a decision to reject the request for issuing a licence for discharge (No. 129/2011)

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Rulebook on the form and content of the request for not adopting a decision granting consent or rejecting a request for implementation of a project (No. 130/2011)

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Rulebook on the criteria for determining the areas sensitive to urban wastewater discharge (No. 130/2011)

Rulebook on the criteria for designation of nitrate-vulnerable zones (No. 131/2011)

Rulebook on the form and content of the request for not adopting a decision to issue or refuse an application for issuance of a B-type integrated environmental permit (No. 131/2011)

Lists determining the strictly protected wild species and protected wild species (No. 139/2011)

List of high-risk substances (giving rise to concern) (No. 156/2011)

Rulebook on the application form for performing trade in extremely hazardous chemicals, the application form for issuing a permit for use of extremely hazardous chemicals, the form of the permit for conducting trade in extremely hazardous chemicals and the form of the permit for use of extremely hazardous chemicals (No. 156/2011)

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Rulebook on the methodology, manners, procedures, methods and means for measuring emissions from stationary sources (No. 11/2012)

Rulebook on the content of the study of protected areas valorization or revalorization (No. 26/2012)

Rulebook on the content of protected areas management plans and annual programmes for nature protection (No. 26/2012)

Rulebook on the form and content of the instruction to pay a fine in a mandatory procedure (No. 33/2012)

Rulebook on the form and content of the request for non-issuance of a licence, i.e. failure to submit a decision refusing an application for issuing a licence for treatment of waste equipment (No. 38/2012)

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Rulebook on the manner and procedure for keeping, updating and saving records for the calculated and paid contribution for management of waste batteries and accumulators and the form and content of the form for calculation of the paid contribution for management of waste batteries and accumulators (No. 110/2012)

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Regulation on the procedure for evaluation of dossiers on biocide products (No. 120/2012)

Rulebook amending the Rulebook on data maintained for each chemical in the Register of Chemicals (No. 120/2012)

List amending the List of high-risk substances (giving rise to concern) (No. 120/2012)

Rulebook on the minimum technical requirements for performing the activity of storage, treatment and/or processing of waste, the form and content of the application for acquiring, amending and renewal of a permit for storage, treatment and/or processing of waste as well as the form and content of the permit (No. 126/2012, 9/2013, 197/2014, 97/2017)

Rulebook on the format and content of the application for registration of producers that place on the market or import electrical or electronic equipment as end users, the format and the content of the register of producers that place on the market or import electrical or electronic equipment as end users, the manner of its keeping and maintenance, as well as the format and content of the certificate for entry in the register (No. 133/2012, 77/2014)

List of types of products that belong to categories of electrical and electronic equipment (No. 133/2012)

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2013

List of equipment excluded from the requirements for prohibition and restrictions on placing on the market electrical and electronic equipment, the maximum concentration of dangerous substances, deadlines for the permitted presence of certain dangerous substances in electrical and electronic equipment, their parts and materials (No. 2/2013)

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Rulebook on the information and data submitted in the notification for export of GMOs or GMO products and their characteristics (No. 18/2013)

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Rulebook on the contents of a Regional Waste Management Plan (No. 63/2013)

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2014

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2017

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Annex IV

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<http://air.moepp.gov.mk/?lang=en>
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<https://www.akademika.com.mk/>
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<http://www.bro.gov.mk>
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www.csoo.edu.mk/
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<http://komspi.mk>
- Cyril and Methodius University Skopje, Faculty of Forestry
www.sf.ukim.edu.mk
- Cyril and Methodius University Skopje, Faculty of Mathematics
www.pmf.ukim.edu.mk/
- Cyril and Methodius University Skopje, Faculty of Pedagogy
www.pfsko.ukim.edu.mk/
- Decisions on approval of elaborates for environmental protection
www.moepp.gov.mk
- Drisla landfill
www.drisla.mk /or http://drisla.mk/news_detail_en.asp?ID=76&IID=7 /
- Elementary School Pestalotsi Skopje
www.pestaloci.com
- Environment and Climate Regional Accession Network
www.ecranetwork.org
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Institute of Biology
<http://ib.pmf.ukim.edu.mk>

Institute of Geology
www.igeografija.mk

Institute of Public Health
<http://www.iph.mk>

Judicial portal
www.vsrn.mk

Lifelong Learning
www.lifelonglearning.mk/

List of licensed EIA experts
www.moepp.gov.mk

Macedonian Civic Education Center
www.mcgo.org.mk

Macedonian Ecological Society
<http://mes.org.mk>

Ministry of Education and Science
<http://www.mon.gov.mk/>

Ministry of Environmental Protection and Physical Planning: Air quality portal
<http://air.moepp.gov.mk/>

Ministry of Environmental Protection and Physical Planning
www.moepp.gov.mk

Ministry of Environmental Protection and Physical Planning, Bathing water quality
http://www.moepp.gov.mk/?page_id=4884&lang=en

Ministry of Environmental Protection and Physical Planning, Drinking water quality
http://www.moepp.gov.mk/?page_id=4900&lang=en

Ministry of Environmental Protection and Physical Planning, Irrigated land
http://www.moepp.gov.mk/?page_id=4419&lang=en

Ministry of Environmental Protection and Physical Planning, Nutrients in freshwater
http://www.moepp.gov.mk/?page_id=2785&lang=en

Ministry of Environmental Protection and Physical Planning, Oxygen consuming substances in rivers
http://www.moepp.gov.mk/?page_id=4436&lang=en

Ministry of Environmental Protection and Physical Planning, Urban waste water treatment
http://www.moepp.gov.mk/?page_id=4990&lang=en

Ministry of Environmental Protection and Physical Planning, Use of freshwater resources
http://www.moepp.gov.mk/?page_id=4955&lang=en

Ministry of Justice
www.pravda.gov.mk

Ministry of Labour and Social Policy
www.mtsp.gov.mk

MIT University
www.mit.edu.mk/mk/Home/Faculty/7

National Agency for European Educational Programs and Mobility
www.na.org.mk

National portal administered by MOEPP dedicated to climate change
www.klimatskipromeni.mk and www.unfccc.org.mk

Official Gazette
<http://www.slvesnik.com.mk/>

Program for reducing the air pollution in the Republic of Macedonia
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REC FYROM
www.mk.rec.org/index-eng.php

Register of authorizations/permits for practice with ionizing radiation sources
www.dzr.gov.mk

Register of issued authorizations/licenses for preparation of geological documentation
www.economy.gov.mk

Register of issued licenses for exploitation of mineral resources
www.economy.gov.mk

Skopje environment
<https://zivotnasredina.skopje.gov.mk>

State Education Inspectorate
<http://dpi.mon.gov.mk/>

State Environmental Inspectorate
www.sei.gov.mk

State Statistical Office
www.stat.gov.mk

Water Information System
<http://wis.moepp.gov.mk/>

Website “Skopje is heating”
<https://www.skopjesezagreva.mk/>

North Macedonia Environmental Performance Reviews

The United Nations Economic Commission for Europe Environmental Performance Review Programme assesses progress made by individual countries in reconciling their economic and social development with environmental protection, as well as in meeting international commitments on environment and sustainable development.

The Programme assists countries to improve their environmental policies by making concrete recommendations for better policy design and implementation. Environmental Performance Reviews help to integrate environmental policies into sector-specific policies such as those in agriculture, energy, transport and health. Through the peer review process, the reviews promote dialogue among Governments about the effectiveness of environmental policies as well as the exchange of practical experience in implementing sustainable development and green economy initiatives. They also promote greater Government accountability to the public.

The third EPR of North Macedonia examines the progress made by the country in the management of its environment since it was reviewed for the second time in 2011 and assesses the implementation of the recommendations made in the second review. The third review covers legal and policy frameworks, greening the economy, environmental monitoring, public participation and education for sustainable development. Furthermore, it addresses issues of specific importance to the country related to air protection, biodiversity and protected areas, as well as water, waste and chemicals management. The review further provides a substantive and policy analysis of the country's climate change adaptation and mitigation measures and its participation in international mechanisms. The review has an additional thematic angle on the Sustainable Development Goals: it includes an assessment of relevant targets and recommendations related to the achievement of Sustainable Development Goals.

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