



UNITED NATIONS ENVIRONMENT PROGRAMME
MEDITERRANEAN ACTION PLAN

STATE OF THE ART OF SUSTAINABLE PRODUCTION
IN THE MEDITERRANEAN

ETAT DE LA PRODUCTION DURABLE
EN MEDITERRANEE

ESTADO DE LA PRODUCCION SOSTENIBLE
EN EL MEDITERRANEO

MAP Technical Report Series # **165**

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ISSN 1011-7148 1810-6218 (Online)

RAC/CP has prepared this document with the collaboration of its National Focal Points (NFP) and the technical support of the environmental services company, LA VOLA. Though the study and its conclusions have been drawn from the data available from official sources, in some cases, they may not conform to the real situation. This is due to the information not always being sufficiently accurate, or because the national representatives may have interpreted the information provided in different ways.

Le CAR/PP a élaboré ce document en collaboration avec ses points focaux nationaux (PFN) ainsi qu'avec l'assistance technique de l'entreprise de services environnementaux LA VOLA. Soulignons que bien que l'étude et ses conclusions soient le résultat de données disponibles sur des sources officielles, il se peut qu'elles diffèrent de la situation réelle. Ceci est dû au fait que les informations fournies ne sont pas toujours correctes ou que les représentants nationaux ne les ont pas interprétées de la même façon.

El CAR/PL ha elaborado este documento con la colaboración de sus Puntos Focales Nacionales (PFN) y el apoyo técnico de la empresa de servicios ambientales LA VOLA. Cabe señalar que el estudio y sus conclusiones se han elaborado a partir de datos disponibles en fuentes oficiales, aunque en algunos casos pueden no coincidir con la situación real. Ello se debe a que la información no siempre es lo suficientemente precisa o a que los representantes nacionales han podido interpretar la información aportada de modos distintos.

For bibliographic purposes this volume may be cited as:

UNEP/MAP/CP RAC: State of the art of sustainable production in the Mediterranean. MAP Technical Reports Series No. 165, UNEP/MAP, Athens, 2006.

Pour des fins bibliographiques, citer le présent volume comme suit:

PNUE/PAM/CAR PP: État de la production durable en Méditerranée. No. 165 de la Série des rapports techniques du PAM, PNUE/PAM, Athènes, 2006.

Para su uso como bibliografía, este volumen puede ser citado como:

PNUMA/PAM/CAR PL: Estado de la producción sostenible en el Mediterráneo. Colección de Informes Técnicos del PAM, No. 165, PNUMA/PAM, Atenas, 2006.

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IN THE MEDITERRANEAN**

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Background

According to the Johannesburg Plan of Implementation¹, fundamental changes in the way societies produce and consume are indispensable for achieving sustainable global development. Therefore, it calls on all countries to promote sustainable consumption and production patterns, and sets a range of actions for them to work in that way. Out of those actions, the Plan calls for the development of a 10-year framework of programmes in support of regional and national initiatives to accelerate the shift towards sustainable consumption and production. This has been the so-called “Marrakech process”, within which global and regional expert meetings are being held to discuss and identify needs and priorities for sustainable consumption and production and to set up strategies for tackling them. So far, meetings have been held in Africa, Asia and Pacific, Europe and Latin America and Caribbean.

In the Mediterranean region, the need to decouple development from environmental depletion is especially relevant due to the pressure that the economic development of the 21 neighbouring countries is exerting on the region's environment (scarcity of water, demographic explosion and rapid urbanisation in coastal areas, waste generation, climate change, etc). This has been endorsed by the Mediterranean Strategy for Sustainable Development, adopted by the Contracting Parties to the Barcelona Convention, which establishes the change of unsustainable consumption and production patterns as one of the major objectives to attain sustainable development in the region.

Of the three pillars for sustainable development², as far as the economic sector is concerned, industry is one of the main driving forces of the economic development of most Mediterranean countries, while still a major source of land-based pollution affecting the region, especially as far as the hazardousness and persistence of pollutant emissions is concerned. Therefore, the control and progressive reduction of the environmental impacts associated to the industrial activities is a primary objective to be achieved in the process towards sustainable development in the Mediterranean region.

The Johannesburg Plan highlights cleaner production (CP) and eco-efficiency as the most adequate management strategies by which the industrial sector can shift to sustainable patterns of production, as they involve:

- the integration of environmental management within the general company management
- the soundness in the management of energy, water, materials, waste and pollution flows becoming an asset for increasing company competitiveness

In the framework of the Mediterranean Action Plan (MAP), the Regional Activity Centre for Cleaner Production (RAC/CP) works as unit for the promotion and dissemination of CP and other related mechanisms (i.e. best available techniques, best environmental practices, energy–efficiency options, etc) through which the industrial sector can progressively reduce their contribution to the degradation of the environment. In the performance of this task, the centre develops various actions, including training activities, technical studies, news and publications, promotion of experts and technology transfer, and cooperation in programmes for pollution prevention and reduction (MED POL, EU-Life, AZAHAR, etc).

In addition to its activities as a CP promoter, with the *State of the art of sustainable production in the Mediterranean*, the RAC/CP aims to periodically review the progress made by Mediterranean countries in the development of measures promoting the reduction of

1 Plan of Implementation adopted by the World Summit on Sustainable Development held in Johannesburg in 2002.

2 Economy, society and environment.

environmental depletion associated with industrial and economic activities, focusing especially on those promoting the shift to production patterns which apply CP and other pollution prevention mechanisms.

With the present document, RAC/CP provides a source of information that may guide Mediterranean countries in identifying common priorities and actions to be tackled in the region, as far as the industry sector is concerned, when participating in any regional or global process for addressing sustainable production, (e.g., the Marrakech Process).

Executive Summary

Contents

This study reviews the progress that is being made in Mediterranean countries concerning the development of measures for controlling and reducing pollution from the industry sector and promoting the application of CP and other related mechanisms leading the sector to sustainable patterns of production. The document updates and provides additional elements to the *Study on the State of Cleaner Production in the Mediterranean Action Plan countries*³, adding new elements to the information available that remains valid. Therefore, it contains information on the main changes in the Mediterranean countries⁴ with regard to:

- the countries' industrial development, its main environmental impacts and areas of special concern
- new laws and regulations for controlling and preventing pollution
- voluntary agreements with industry to facilitate pollution reduction
- key agents and institutions and tools and activities in the field of pollution prevention, with special attention to CP
- programmes, action plans and projects linked to CP and eco-efficiency.
- economic instruments, voluntary instruments (EMS, eco-labelling) and environmental awards

Objectives

To provide a periodical review of the main trends, assets and challenges in Mediterranean countries with regard to the development and implementation of measures and actions promoting the reduction of the industrial pollution and the adoption of CP and other related mechanisms by the sector.

The study is a source of information through which Mediterranean countries can better identify the main issues to be tackled at regional level to effectively encourage industries to shift to sustainable production patterns.

Conclusions summary

The main conclusions of the present edition can be summarised as follows:

- The positive effects of the remediation and mitigation of pollution in some hot spots and areas of concern are counteracted by the appearance of new ones accompanying the process of industrial development in many Mediterranean countries.
- General progress is being made in the consolidation of the legal frameworks for preventing and controlling pollution. Nevertheless, it is hampered by problems in the implementation and enforcement of regulations and the weak development of government-industry partnerships in most eastern and southern countries.

3 Second edition of the Study on the State of Cleaner Production in the Mediterranean Action Plan countries, published by RAC/CP in 2004.

4 These countries are Albania, Algeria, Bosnia and Herzegovina, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Malta, Monaco, Morocco, Montenegro (recently declared an independent State), Slovenia, Spain, Syria, Tunisia and Turkey. No information is available for Lebanon and Libya as the RAC/CP did not receive information from the corresponding National Focal Points. For information on those countries, kindly refer to the second edition of this study, though data is two years old.

- CP is included in the national planning for environmental protection of most countries, but many CP projects and activities that are developed rely only on multilateral or bilateral support from other countries, and with no national planning for their coordination.
- National CP centres are extending to most eastern and southern Mediterranean countries.
- Application of environmental taxes is not well balanced with economic instruments facilitating investment in CP by industries.
- Voluntary instruments promoting an environmental culture in industry (EMS, eco-labelling, environmental awards) are still barely developed in some countries.

Methodology

RAC/CP has prepared this document with the collaboration of its National Focal Points (NFP) and the technical support of the environmental services company, LA VOLA.

As in the first and second editions of *The State of Cleaner Production in the MAP Countries*, in the preparation of the present document a questionnaire was sent to all RAC/CP NFP. Complementing the input provided by the NFP, additional information has been obtained from official reports and web-sites of ministries and national institutions, as well as from several international and regional organisations and programmes, such as the United Nations Environment Programme (UNEP), Mediterranean Action Plan (UNEP/MAP), United Nations Industrial Development Organisation (UNIDO), EC Delegations, World Bank, EUROPEAID, European Bank for Reconstruction and Development, European Investment Bank, Organisation for Economic Co-operation and Development (OECD), Regional Environmental Centre for Central and Eastern Europe (REC), United Nations Economic Commission for Europe (UNECE), World Business Council for Sustainable Development, European LIFE Programme, Intelligent Energy Europe Programme, European Environment Agency, MEDA-SMAP Programme, etc.

Before publishing the study, the information on the countries was submitted to RAC/CP NFPs for their review and approval. In those cases where the NFP did not corroborate the information, a footnote stressing this fact has been added at the beginning of the chapter concerning the specific country.

It should be pointed out that the study and its conclusions have been drawn from the data available from official sources referred to above, and that, in some cases, they may not conform to the real situation. This is due to the information not always being sufficiently accurate, or because the national representatives may have interpreted the information provided in different ways.

0. Structure

Each country chapter presents the following structure of contents reviewing the information provided by the second edition of the *Study on the State of Cleaner Production in the Mediterranean Action Plan countries*.

Introduction

The introduction provides an overview of the socio-economic situation of the country, together with a table including a set of social and economic indicators. This information is intended to place the reader in the country-specific context and help to understand the circumstances that affect the implementation of CP.

Industry and environment

This section describes specific aspects of the country's industry and the main environmental impacts associated with its industrial activity.

When available, geographical and sectorial reference is made of those areas identified as being more relevant to the pollution of continental waters or discharging directly into the Mediterranean Sea, and of the areas which cause more air pollution and produce important quantities of hazardous waste which are mismanaged.

Whenever available, a particular reference is made to the environmental impacts associated with the services sector (mainly with tourism).

Legal and policy framework

In this section, a revision has been made (with reference to the second edition of the *Study on the State of Cleaner Production in the Mediterranean Action Plan countries*) of the main laws and regulations passed in the country to prevent pollution, focusing more specifically on regulations that, when implemented, support the adoption of CP in the different sectors of activity, and promote it, directly or indirectly, as a more competitive option than end-of-pipe treatment.

In addition, when available, a review of the following has been included:

- *Main challenges encountered in the country to enforce legislation* and the initiatives launched to overcome them.
- *The permitting system*, regulating the start up of production activities and periodic permit renewal, using either the application of environmental impact assessments (EIA) at the origin of any project, or by applying the Integrated Pollution Prevention and Control (IPPC) system as a tool for monitoring the environmental performance of the activities;
- *Voluntary agreements* achieved through a negotiation process between public authorities and companies to help enforce legislation, taking into account the level and nature of environmental improvements that are achievable in any specific sector;
- Overview on *international and Mediterranean conventions and protocols to prevent pollution from land-based activities* signed/ratified by the country, showing its level of international commitment on the matter.

Agents involved in promoting CP

This section reviews the latest changes in the country's institutional framework supporting CP, focusing mainly on the CP centres, bodies, organisations, as well as academic and research institutions, with activities directly promoting and implementing it.

A description of the main activities undertaken by these agents since the second edition of the *Study on the State of Cleaner Production in the Mediterranean Action Plan countries* is also included if available.

Programmes, action plans and projects to promote CP

This section describes some of the objectives, components, and priorities included in the programmes and national action plans addressing environmental protection, directly influencing the promotion of CP in different activity sectors.

In some cases, some of the main sectorial plans such as the ones for waste management, developed within the national plans or strategies framework, have also been referred to as they outline measures for waste minimisation.

Furthermore, this section covers projects implemented in the country by means of co-operation provided by international institutions, such as the European Union (through agencies and programmes such as EuropeAid, LIFE, METAP, Intelligent Energy Europe), international development organisations (UNEP, UNIDO, etc.), and bilateral co-operation with other governments (GTZ, Azahar Programme, AFD, etc.), addressed at the specific objective of promoting CP and eco-efficiency in specific industrial sectors of the recipient country.

Tools and activities to promote CP

This section provides information on the tools used by the different parties involved in promoting and implementing CP in industries such as the following:

- *Economic instruments* foreseen in the regulations to prevent pollution and promote eco-efficiency, either as taxes, charges and fees imposed on polluters and on the use of natural resources, or as subsidies and financial assistance promoting measures of environmental protection by pollution prevention.
- *Voluntary instruments* adopted by individual enterprises as a guarantee of environmental performance. Such instruments include environmental management systems, eco-audits, or an eco-label scheme to identify officially approved green products, allowing manufacturers to show and communicate to third parties that their manufacturing systems and products are environmentally friendly.
- Other instruments to promote pollution prevention, such as awards recognising the environmental performance of firms on a social level.

Conclusions

This section is aimed at identifying and pointing out some characteristics specific to the environmental performance of each country, which make it possible to judge the level of implementation of CP as a component in the environmental performance of production activities as well as the challenges ahead.

References

This last section specifies the main sources of information that have been used to compile the information relevant to each country.

1. Albania⁵

1.1. Introduction

Albania is making the difficult transition to a more modern open-market economy. The government has taken measures to spur economic activity and trade.

The economy is bolstered by annual remittances from abroad, mostly from Greece and Italy; this helps offset the towering trade deficit.

The planned construction of a new thermal power plant near Vlore and improved transmission and distribution facilities will help relieve the energy shortages. Also, the government is moving slowly to improve the poor national road and rail network, a long-standing barrier to a sustained economic growth.

Growth was strong in 2003 and 2004, the nation has important oil and gas reserves, and inflation is not a problem.

During the last few years, most of the inherited state-owned industrial plants, which had obsolete technologies and posed negative impact into environment, have been closed.

Albanian industry is oriented towards private SMEs in the food industry, tanning, textile confections, tourism and services. The number of enterprises in other sectors such as the dairy industry, olive oil production, meat processing, etc. have also increased.

Metallurgical industry: There is an iron foundry and two ferrochrome foundries in the metallurgical complex in Elbasan, which are now private. There are also a lot of small enterprises for collection and partial treatment of scrap. About 34 enterprises are registered.

Mechanical industry: This sector is now more reduced and limited. There are about 60 medium-sized enterprises. Including the micro-enterprises (with 2-5 employees), there are about 700 enterprises with a total number of 3 000 workers.

Wood industry: There is an increase of private SMEs, working partly in secondary wood treatment and partly in furniture assembling, as well as production of cardboard. There are about 700 enterprises with 5 000 employees. This sector covers 80 % of the interior market needs and 15 % is being exported.

Chemical industry: The following sectors have been developed during the last few years:

- Production of paints - There are more than 10 medium-sized enterprises that produce water paints and adhesives.
- Detergent production - There are 10 medium-sized enterprises that produce detergents, washing liquids, soaps and cosmetics.
- There are 8 enterprises producing inorganic chemicals (CO₂, NaCl, O₂, N₂, polystyrene) and 14 enterprises producing organic chemicals (foam, lubricant oils)

Textile industry: it is focused mainly in processing and finishing. There are some SMEs in every city, producing clothes, carpets, towels, etc.

Glass and ceramic industry: there are 12 SMEs producing several kinds of products.

⁵ The information of this chapter has not been corroborated by the National Focal Point for Cleaner Production in Albania.

Rubber and plastic industry: mainly SMEs dealing with recoating used tyres, PET bottles, packaging, flexible tubes, etc.

Tanning industry: has developed quickly in recent years. More than 30 enterprises produce leather and 35 are dedicated to the shoe industry to export.

Construction industry: has undergone a great expansion over the past few years.

Surface area	10 ³ sq km	28.75
Population	Millions	3.56 (July 2005 est.)
Population growth rate	%	0.52 (2005 est.)
Life expectancy	Years	77.24 (2005 est.)
Literacy total	% age > 9	86.5 (2003 est.)
Literacy female	% age > 9	79.5 (2003 est.)
Unemployment rate	%	14.8 (2001 est.)
Inflation rate (consumer prices)	%	2.3 (2004 est.)
Public debt	% of GDP	NA
GDP growth	% annual	5.6 (2004 est.)
GDP PPP estimated	\$10 ⁹	17.46 (2004 est.)
GDP PPP per capita	\$10 ³	4.9 (2004 est.)
GDP composition by sector - Agriculture	%	46.2 (2004 est.)
GDP composition by sector – Industry	%	25.4 (2004 est.)
GDP composition by sector – Services	%	28.4 (2004 est.)
Industrial production growth rate	%	3.1 (2004 est.)
Exports	\$10 ⁶ FOB	552.4 (2004 est.)
Imports	\$10 ⁹ FOB	2.08 (2004 est.)
Telephones – main lines in use	10 ³	255 (2003)
Telephones – mobile cellular	10 ⁶	1.1 (2003)
Internet hosts	Units	455 (2004)

1.2. Industry and environment

Industrial development and environmental impact

The main contamination problems along the Albanian coast are stockpiles of obsolete chemicals, untreated urban wastewater and solid wastes. Discharge of untreated urban effluents, beach erosion and illegal construction on the coastline can be seen at Vlora Bay, Porto Romano Bay, Durres Bay, Saranda Bay, Kune-Vaini lagoon, Drini river mouth, the Fieri district (on the Semani river), Karabasta lagoon and Divjaka Beach.

Most land-based sources of pollution are located in the Durres and Vlora districts.

Regarding the services sectors, mainly tourism and health care services, the most important environmental problems are the following:

Tourism - sewage discharges into the sea or lakes, without any preliminary treatment; problems in all the cycle of waste management, such as deposition in uncontrolled and illegal everywhere, etc.

Health care - hospital waste is not generally separated according to category (infectious...) and it is deposited together with urban waste; Tirana Hospital has an incinerator, but it does not work regularly, and sometimes it is closed due to air emissions, causing pollution in a living area; expired medicines are usually disposed of in urban landfills.

Areas of special concern

The present industrial development is giving rise to several types of environmental impact, and the hot spots identified in the second edition of the *State of Cleaner Production in the Mediterranean Action Plan countries* continue to cause serious threats to the environment.

Regarding air emissions, a lot of problems exist in some industrial sectors:

- Based on actual industrial development, the major environmental impacts in the air are posed by metallurgical plants in Elbasan (iron foundry and ferrochromium foundry). There have been a lot of technological improvements in these plants but the emissions into air of CO, SO₂, and NO_x are still exceeding air limits. The same problems exist at the cement production and brick production enterprises.
- The construction sector it is also potential polluter into the air.
- Oil extraction and refinery activities cause hydrocarbons and H₂S emissions into the air.

Regarding the wastewater discharges:

- Oil extraction and refinery activities discharge large quantities of wastewater (as a result of insufficient treatment or the lack of it treatment) in the Gjanica River. The pollution of this river is a big and urgent problem.
- A lot of enterprises from the tanning, food and detergent production industry discharge the wastewater without treatment or with only the decantation process.

Regarding the industrial waste management:

- The biggest problem is the presence of several industrial dumpsites, where slag from treatment containing heavy metals is deposited. The dumpsites are situated near the enrichment plants in Pogradec, Rubik, Lac, Elbasan. They may cause contamination of surface water.
- The generation of hazardous waste and contaminated soil in the oil field in Patos-Marinza and the oil refinery in Ballsh. These are deposited in inappropriate dump sites.
- The construction industry generates large quantities of waste, which are deposited mostly together with urban waste. Currently there is a lack of policies or regulations for their treatment, reuse or recycling.
- The management of industrial waste is a problem for all enterprises until a landfill for this kind of waste is constructed.

At present, the most polluted areas are:

- The Patos Marinza oil field, which causes major pollution of surface water in the Gjanica River, air pollution and large quantities of hazardous waste and soil contaminated with oil.
- The oil refinery in Ballsh with air emissions of hydrocarbons, unsound waste management, and insufficient wastewater treatment.
- The Metallurgical Complex in Elbasan, which generates the air emissions that exceed air standard levels by several times.

- Several enterprises situated in the industrial area of Tirana, which discharge their wastewater without treatment and pollute the Ishem River.

During the last few years several projects have been developed to remediate and mitigate the environmental impacts of these areas:

- Removal, storing, treatment and final disposal of hazardous arsenic waste solution from old tanks and cleaning of the polluted site at the nitrate fertiliser plant in Fier, EU-funded Project to be awarded.
- Bio-remediation of the oil field in Patos- Marinza environmental hot spot in Fier, UNDP/ UNDP Czech Trust Fund project to be awarded.
- Pollution remediation at Ballshi oil refinery, EU-funded project to be awarded.
- Disposal of pesticides waste, EU-funded project awarded in 2004.
- Municipality equipment for solid waste collection and disposal in Vlora, EU-funded project awarded in 2000.
- Vlora wastewater treatment plant, EU-funded Project to be awarded.
- Project for rehabilitation of Sharra urban dumpsite in Tirana with a fund of 6.5 million €.
- Integrated Coastal Zone Management and Clean-up programme Project, which aims to restrain soil and groundwater contamination at Porto Romano. For further details on this project see Point 4.

1.3. Legal and policy framework

Laws and regulations

Several new pieces of legislation dealing with pollution prevention have been enacted since the second edition. They complete the new Framework Law on Environmental Protection No 8934 dated 2002, which is mentioned in the second edition of the *State of Cleaner Production in the Mediterranean Action Plan countries*.

The following pieces of legislation have been enacted:

- Decisions and regulations to complete the Law 9010 dated 23/02/2003 on the Environmental Management of Solid Waste (mentioned in the second edition):
 - Decision of the Council of Ministers No 99 dated 18/2/2005 Albanian Catalogue of Waste, in total conforming EU Catalogue of Waste,
 - Decision of the Council of Ministers No 806 dated 4/12/2003 concerning procedures to import waste, intensive recycling, reuse and treatment.
 - Regulation of the Minister of Environment No 4 dated 15/10/2002 concerning procedures for export and transit of waste
 - Decision No. 776 dated 8/12/1998 concerning obligatory collection and deposit of abandoned vehicles.
- Law No 8897 dated 15/5/2002 on air protection and the following decisions:
 - Decision No 435 dated 12/9/2002 concerning endorsement of discharges into the air in Albania ---this decision applies to new industrial establishments
 - Decision No 248 dated 24/4/2003 concerning the approval of temporary regulations for air emissions and the implementation of these regulations -this decision applies for industrial plants that are inherited from the past and face difficulties in implementing the new air regulations.

- Law No 9115 dated 24/7/2003 on environmental treatment of polluted water and Decision No 177 dated 31/3/2005 concerning regulations for wastewater discharges.
- Law No 9108 dated 17/7/2003 on chemical substances and preparations
- Law No 9103 dated 10/7/2003 on protection of trans-boundary Lakes;
- Decision No 1 dated 09/01/2003 concerning the extraction of gravel from riverbeds.

It should be also noted that the Government of Albania has approved the National Plan for Harmonisation with the European Union *acquis*, which goes up to 2014 in the long run. This will be a further opportunity to introduce in the environmental legislation the concepts of cleaner production and eco-efficiency. Great efforts will be made in the forthcoming years to enact and implement this legislation.

Enforcement

New pieces of legislation have been enacted but these have to be properly implemented and enforced. In this respect, the following difficulties should be highlighted:

- Absence of a law, which should give definition of CP, and define duties and obligations of institutions and industrial operators, monitoring institutions, researching centres etc.
- Absence of numbers of supporting sub-laws, in order to facilitate their implementation.
- Weak enforcement procedures.
- Weak partnership with businesses;
- Lack of institutional and administrative capacity.
- Financial problems, limited budget.
- Lack of demonstration projects.
- Overlapping and non-clear share of competencies among ministries.
- Ministry of Environment is not in charge of resource management. Competencies are assigned to other ministries or institutions, which are focused more on resource use rather than on resource protection.
- Shortcomings in the legal and institutional framework.
- Low levels of environmental awareness among the public and institutions.
- Currently there is only one NGO (Industrial Ecology Association- established from a few professors in Department of Chemical Technology in University of Tirana), linked with CP issues.
- Absence of voluntary incentives from industrialists.

To overcome these difficulties, the Environmental Inspectorate was established in February 2003, with the Chief Inspector and three other inspectors at the central level and environmental inspectors in 12 regional environmental agencies. However, the inspectorate still lacks power, knowledge and financial and human resources to cope with the enforcement of the legislation. In these conditions, several memorandums of understanding have been issued within the Environmental Inspectorate and other similar inspectorates in the country, such as the Order Inspectorate, Health Inspectorate, Fisheries Inspectorate, Food Inspectorate, Forestry Policy, etc. This policy looks to help the improvement of the situation regarding environmental protection.

Up to now, no voluntary agreements have been signed in Albania between the environmental authorities and the industry to facilitate enforcement of legislation or reduce their environmental impact.

Permit system

The Framework Law on Environmental Impact Assessment (Law No. 8990 mentioned in the second edition) is the base for the permitting system for each activity. Every industrial activity (listed in the law's annexes) should apply for an environmental permit to the Ministry of Environment, before it takes the other permits (the Ministry of Economy, Trade and Industry issues respective permissions). The environmental permit should be awarded based on an EIA report. Up until now, the application of measures linked to cleaner production has not been a pre-requisite for obtaining the permit.

The EIA law has been completed with several decisions and regulations to facilitate its enforcement.

- Decision No 249 dated 24/4/2003 concerning the endorsement of application for environmental permit and information items in the environmental permit.
- Decision No.268 dated 24/4/2003 concerning the certification of environmental specialists on environmental impact assessment and environmental auditing.
- Decision No. 805 dated 4/12/ 2003 concerning the list of activities with environmental impact that require environmental permits.
- Regulation No 1 dated 17/8/2004 on public participation in EIA process.
- Guide No 3 dated 17/8/2004 concerning list of activities and procedures for issue of environmental authorisation (consent) from regional environmental agencies.
- Guide No 137 dated 17/8/ 2004 concerning the documents necessary to apply for environmental permission

The procedure is the following: the 12 Regional Environmental Agencies take the first information from natural or juridical persons, who are interested to establish any new activity, do the necessary inspections, and then they refer the completed file to the Ministry of Environment (MoE). This file incorporates several juridical documents (the permission from local government, land permission,) the opinion of community and the EIA report. The EIA Directorate of the MoE prepares the draft of environmental permit and the other directorates in of the MoE give their opinion suggest changes and additions. The MoE notifies the applicant for required fulfilments. In the case of full compliance, the file goes for discussion to the Permits Commission established in the MoE, headed by the minister.

After the environmental permit, the applicant should take the other permissions in Ministry of Economy and Industry.

The Inspectorate of Environment includes the central office in the Ministry of Environment with 4 persons and one inspector in each region.

The duties:

- Organization and management of impact environmental activities inspection.
- Promoting environmental compliance and enforcement of requirements of environmental laws.
- Attending to the implementation of conditions in a permit for activities with environmental impact.
- Attending to the implementation of duties from regional environment agencies
- Coordination of activities with other inspectorates, with local government and other structures.

International conventions and protocols

In the international framework for the protection of the environment through pollution prevention, Albania signed the Kyoto Protocol on April 1st 2005.

Albania also ratified the Stockholm Convention on Persistent Organic Pollutants on October 4th 2004.

Albania signed the Protocol on Strategic Environmental Assessment on May 21st 2003.

1.4. Agents involved in promoting CP

Since 2003, different activities related to cleaner production such as the following, have been implemented by the agents mentioned in the second edition:

- There has been a seminar (in two sessions) organised by the MoE and the Environmental Centre for Administration of Technology (ECAT)-Tirana in June 2005 regarding the options, methods and required legislation for the treatment of used oils;
- June 2003 – seminar on “ Current Development of the Detergent Industry and Environmental Impacts”, organised by the MoE and the Institute of Environment. The Chemical Technology Institute of Research that was under the Ministry of Industry became the Institute of the Environment under the MoE in December 2002.
- September 2004 - The meeting of a cluster of tanning industries “The Tanning Industry in Albania, trends and environmental problems” organised by the Albanian Centre for International Trade (ACIT) with representatives from tanning enterprises, Ministry of Environment and Institute of Environment.
- In December 2003, in corporation with REC Country Office in Albania, a training programme was organised regarding the IPPC Directive and the level of its implementation in Albania.
- The Industrial Ecology Association participated in the Project “Evaluation of the agricultural, industrial and urban pollution sources in the watershed area of the Ohrid and Prespa Lakes”, funded by GEF/SGP Programme, 2002-2003 and the Project “Monitoring of the environmental situation of the oil refining plant in Ballsh (Albania).
- The REC Country Office in Albania is also an agent worth mentioning. It has implemented, among others, projects related to the raising of environmental consciousness through environmental education and information programmes with the support of the Royal Netherlands Embassy, and projects on the raising of awareness on environmental legislation with the support of the Open Society Foundation for Albania- SOROS Foundation.

It should be noted that in September 2005, the Ministry of Environment became the Ministry of Environment, Forestry and Water Management (MoEFWM).

The Albanian Centre for Cleaner Production (ACCP)

Further to the information provided in the second edition, it should be noted that in mid 2004 the ACCP was established. A committee for the centre has been nominated, as well as an executive director. The centre will co-ordinate and facilitate all cleaner production and waste management activities within the country. The programme of action endorsed by the ACCP is in line with the objectives set by the Ministry of the Environment as part of the governmental programme for achieving sustainable development and environmental protection.

The priorities of the ACCP are in compliance with the objectives of National Environmental Action Plan approved by the Albanian Government in 2002.

The ACCP is now in the phase of building up a national programme and an action plan. This action plan has to be focused on CP assessment in all relevant industrial enterprises and on the reviewing of the following: the overall flow sheet of the processes, including mass and energy balances; the main financial losses due to the pollution; and existing technologies, with the aim of improving them in both economic and environmental terms.

Priority will be given both to implementation of direct intervention of financial instruments, and to the strengthening of environmental institutions, in order to adequately enforce environmental legislation. Identification of CP potentials in Albania has been initiated. Some of the medium sized enterprises in the most polluting sectors of industry, such as the cement industry, mining, copper smelting and oil refining, could be selected for CP demonstration projects.

1.5. Programmes, action plans and projects to promote CP

Programmes and action plans

Further to the National Environmental Action Plan and the Local Environmental Action Plans mentioned in the second edition, a National Strategy for the Development of Non-Food Industry was approved by the Decision of the Council of Ministers No. 269 dated 23/4/2004. The latter includes the principles of cleaner production, environment- friendly technologies and possibilities for reduction of waste at source, or their reuse or recycling. An Action Plan to support the Strategy is expected to be drafted very soon.

Inter alia, the following plans and strategies have also been approved since the second edition:

- The National Water Strategy by the Decision of the Council of Ministers dated 4/7/2004.
- The Management of Coastal Areas Plan, approved by Decision No 364 dated 18/7/2002.
- The National Energy Strategy, approved by the Government in June 2004.

A Draft National Action Plan to reduce sea pollution from land-based activities should also be approved.

Projects

With regard to projects, as mentioned above, during the last few years several projects have been developed to remediate and mitigate the environmental impact of these areas. In addition to these, the following projects should be highlighted.

The Integrated Coastal Zone Management and Clean-up Programme

The proposed Integrated Coastal Zone Management and Clean-up Programme is designed as an adaptable programme lending mechanism to be implemented over 7 years. The total programme is expected to cost US\$54.3 million.

Phase 1 (from Sep-2005 to Aug-2009) will concentrate on the operational strategies, normative and institutional capacity strengthening, basic environmental infrastructure and rehabilitation as well as remediation works in Porto Romano.

Phase 2 (Jan-2009 to Aug-2012) will build upon the initial results of Phase 1 via support to the developed initiatives and specific investments.

The World Bank will finance part of the programme through an adaptable programme of Lending (credit) provided in two phases. Phase 1 will be co-financed by the Government of Albania, the Government of Netherlands for the Porto Romano clean-up activities, the GEF, a co-financing grant and beneficiaries. Other donors are still to be identified. Phase 2 is expected to be co-financed by an IDA credit, the Government of Albania, the GEF, and other donors.

The overall objective of the APL-supported Integrated Coastal Zone Management and Clean-up Programme is to protect the Albanian coastal ecosystems, resources and cultural assets and promote their sustainable development and management.

The programme objective will be achieved through:

- Establishing an integrated coastal zone management institutional and policy framework.
- Strengthening the broader regulatory and enforcement capacity at central, regional and local levels for the protection of coastal and marine natural resources.
- Increasing access to basic services associated with improvement of the quality of life and attractiveness of the coastal areas.
- Implementing sub-projects aiming at promoting the sustainable development of the tourism sector.

Environmental Legislation and Planning Project

This EU-funded project awarded in 2004 has the following objectives:

- Assess the country's environmental status and prepare the new national strategy on the environment.
- Assist the Ministry of Environment in drafting regional or local environmental action plans in selected areas.
- Improve and demonstrate the process of territorial planning through the implementation of a pilot project located in one significant tourist centre in south Albania.
- Complete the necessary legislation regarding the environmental impact assessment and strategic environmental assessment as well as review and draft the appropriate legislation related to the accomplishment of the project.
- Improve the information and communication system within the Ministry of Environment and ensure wider public access to high quality information.
- Increase awareness on environmental issues through the active participation of the layers specialized in dealing with environmental problems.

Furthermore, when it comes to introducing cleaner production in the industry, it should be noted that the new operator in field of oil extraction "Anglo Albanian Petroleum" has introduced several pollution prevention measures.

1.6. Tools and activities to promote CP

Further to the information provided in the second edition, it should be noted that the Government envisages the establishment of an environmental fund as a priority.

In addition, the Law on Environmental Protection foresees the exclusion of the service fee (the fee that applicants pay for environmental permits) for projects or activities performed in the field of environmental protection and the Law on Environmental Management of Solid Waste defines the exclusion of service fees for waste recycling activities.

Up until now, there have been no environmental awards to recognise and promote companies that make an outstanding contribution to the environment in Albania.

As regards voluntary instruments, the situation remains the same as in the second edition (labelling schemes are not implemented and environmental management schemes are still very weakly introduced).

1.7. Conclusions

Albania has benefited from the aid of the international community to improve the environmental situation of industry through projects to mitigate the environmental impact caused by the industrial sites which pose risks to human health and the environment.

On one hand, even though further efforts have been made to improve the environmental legal and policy framework, measures linked to pollution prevention have not yet been included into the permit system for activities. There is a low level of enforcement of the environmental legislation within the country due to the lack of skilled structures, lack of funds, and lack of awareness among the business community.

Furthermore, complementary mechanisms to help to enforce legislation and promote cleaner production, such as economic and voluntary instruments are still poorly developed.

On the other hand, new opportunities arise given that the government has already approved the National Plan for Harmonization of the Legislation with the EU one, which runs up to 2014 in the long term, and which will influence the environmental legal and policy framework in Albania considerably over the coming years. This will be an opportunity to introduce the concepts of cleaner production and eco-efficiency into the environmental legislation. Thus, huge efforts are expected to apply the new legislation.

Furthermore, the setting up of the new Albanian Cleaner Production Centre will further improve this situation and introduce the cleaner production culture in the industrial sector of Albania.

1.8. References

- Protocols and conventions referenced from the following websites:
United Nations Economic Commission for Europe, <http://www.unece.org/>
Mediterranean Action Plan of the United Nations Environment Programme, <http://www.unepmap.org>
- CIA, *The World Factbook*, <http://www.cia.gov>
- MEDPOL, *Pollution issues country per country*, (not published).
- EU Life programme projects database, <http://europa.eu.int/comm/environment/life/project/>
- Albania – The integrated coastal zone management and clean-up programme, World Bank, Office Albania, 2005.
- Summary of Activities carried out in Albania for promoting the implementation of cleaner production and eco-efficiency during the biennium 2004 – 2005.
- Bioremediation of oil field Patos Marinza – Environmental Host Spot in Fier, Albania. United Nations Development Programme Albania, 2005.
- Questionnaire submitted by the RAC/CP National Focal Point for Albania.
- EuropeAid Cooperation Office, http://europa.eu.int/comm/europeaid/index_en.htm
- General information of the Albanian Association of industrial Ecology, 2005.
- REC Country Office Albania, <http://www.rec.org/REC/Introduction/CountryOffices/Albania.html>

2. Algeria

2.1. Introduction

As mentioned in the second edition, the hydrocarbons sector is the backbone of the Algerian economy, accounting for roughly 60% of budget revenues, 30% of GDP, and over 95% of export earnings. Algeria has the seventh-largest reserves of natural gas in the world and is the second-largest gas exporter; it ranks 14th in oil reserves.

Sustained high oil prices in recent years, along with macroeconomic policy reforms supported by the IMF, have helped improve Algeria's financial and macroeconomic indicators. Algeria is running substantial trade surpluses and building up record foreign exchange reserves. Real GDP has risen due to higher oil output and increased government spending. Structural reform within the economy moves slowly ahead.

The private industrial sector in Algeria is essentially composed by SMIs and SMEs. The public industrial sector covers the whole manufacturing industry. The industries included in the public industrial sector are:

- Basic industry: mechanical, steelwork, metallurgy.
- Electric and electronic industry.
- Agrofood industry.
- Textile and leather industry.
- Construction materials (cement and brick manufacturers).
- Timber processing industry.
- Chemical, pharmaceutical and fertilizers manufacturers.

Surface area	10 ⁶ sq km	2.38
Population	Millions	33.2 (1 January 2006 est.)
Population growth rate	%	1.22 (2005 est.)
Life expectancy	Years	73 (2005 est.)
Literacy total	% age > 15	70 (2003 est.)
Literacy female	% age > 15	61 (2003 est.)
Unemployment rate	%	15.3 (2005 est.)
Inflation rate (consumer prices)	%	3.1 (2004 est.)
Public debt	% of GDP	37.4 (2004 est.)
GDP growth	% annual	6.1 (2004 est.)
GDP PPP estimated	\$10 ⁹	212.3
GDP PPP per capita	\$10 ³	6.6 (2004 est.)
GDP composition by sector - Agriculture	%	10.3 (2004 est.)
GDP composition by sector – Industry	%	57.4 (2004 est.)
GDP composition by sector – Services	%	32.3 (2004 est.)
Industrial production growth rate	%	6 (2004 est.)
Exports	\$10 ⁹ FOB	32.16 (2004 est.)
Imports	\$10 ⁹ FOB	15.25 (2004 est.)
Telephones – main lines in use	10 ⁶	7 (2005 est.)
Telephones – mobile cellular	10 ⁶	14 (December 2005 est.)
Internet hosts	Units	1,500,000 (2005)
Internet server centres	Units	897 (2004)

2.2. Industry and environment

Industrial development and environmental impact

Algeria has been implementing an industry renewal program as part of its preparations for its inclusion in the Euro-Mediterranean free trade area (under the Association Agreement which took effect on 1st September 2005) and its membership of the World Trade Organization (WTO).

The program is part of a wider strategy designed to make Algerian industry more competitive. Its purpose is to recruit the involvement of Algerian companies in the search for better performance at all levels – though with a special emphasis on environmental issues – and to create within the country's industrial sector a competitive dynamic which is geared to the demands imposed by a new global market.

The principal actions implemented as part of the industry renewal program are:

- an environmental and quality improvement program with the introduction of ISO 9000 and ISO 14000 certifications

- an innovation and research program designed to underpin research and development activity
- introduction of IT (e-commerce and Internet) in enterprises and companies
- creation of agreements and incentives to boost exports.

The Algerian government has also introduced a number of industrial zone rehabilitation programs.

From the environmental point of view, the most important industrial sectors are:

- inorganic chemicals
- organic chemicals
- oil refining
- iron and steel
- mining

Hospitals are another major source of environmental pollution as they generate significant amounts of waste requiring adequate management.

Areas of special concern

The national hazardous waste register, compiled from the national hazardous waste survey carried out by Algeria's ministry for planning and the environment, identifies the country's principal producers – and holders – of waste.

The 12 principal waste producers alone account for 87% of the total waste produced in Algeria, and for 95% of the waste in storage. They are predominantly located in central, eastern and western Algeria, in the provinces or *wilayas* of Alger, Bejaia, Skikda, Annaba, Tlemcen and Oran.

In eastern Algeria, the leading producers of waste are the Azzaba mercury plant, petrochemicals, fuel transport and the iron and steel industry (ISPAT ANNABA).

Leading producer of waste in western Algeria is the Arzew industrial zone with its refinery, which generates 65,760 tonnes of waste per year, and Alzinc in Ghazaouet, which is responsible for 18,500 tonnes of waste per year.

Other industry produces waste which is far more toxic, although in smaller quantities – examples being factories whose by-products include mercury and cyanide salts.

Algeria's hazardous waste register draws special attention to the following aspects:

- the absence of waste disposal provisions in companies,
- the existence of large waste dumps outside industrial plants, in unsuitable and/or illegal conditions,
- the existence within industrial plants of waste repositories in which the waste is stored in confined conditions, either loose or in metal drums in extremely poor condition,
- the absence of facilities for processing hazardous waste,
- the absence of equipment for collecting and transporting hazardous waste.

Algeria's ministry for planning and the environment has prepared a national plan for the management of hazardous waste (PNAGDES), based on the data contained in the national hazardous waste register.

Despite the industrial pollution problems considered above, Algeria has nevertheless made significant progress in the prevention and reduction of industrial pollution over the last three years. The success of this endeavour is due to concerted action by the environment ministry and the industrial sector, and this cooperation has increased industry's awareness of the environmental problem issue.

Several of the most polluting industrial plants and complexes now integrate environmental protection aspects into their development projects, and have made investments designed to reduce industrial pollution.

The zinc electrolysis plant in Ghazaouet has renewed its acid roasting and tail gas treatment facilities, installed a neutralization plant, built a seawater desalination plant, created a landfill for receiving leaching waste, and installed a second power line to supply the complex with electricity and avoid power outages, which cause atmospheric emissions. The necessary investment was put up by the company itself. All these actions have contributed to a significant reduction in sulphur dioxide emissions, and the inhabitants of Ghazaouet are now much more comfortable with the presence of an industrial complex on their doorstep.

The ASMIDAL fertilizer production plant at Annaba has decommissioned its two pollution-causing units. The sulphuric acid unit has been dismantled, with 1,267 tonnes of scrap recovered from this operation. The phosphoric acid unit has been converted into a single superphosphate production unit, which uses a process which generates less pollution.

The ASMIDAL plant has also improved its nitric acid units to reduce their nitrogen emissions to $<250 \text{ mg/Nm}^3$, installed dust removal equipment in its NPK unit (keeping dust $<50 \text{ mg/Nm}^3$) and a catalyzer in its ammonium nitrate unit, which has achieved a substantial reduction in the nitrogen content of emissions. This unit now produces liquids only in place of ammonium nitrates, whose manufacturing process generates highly pollutant dust.

As part of its anti-pollution precautions the ASMIDAL plant has installed detectors for the analysis of gas and dust emissions at the mouth of the chimneys in the different shops. At present, gas emissions are within the limits required by the quality management system.

The ISPAT steel plant at Annaba has installed dust removal systems and has retrofitted its electrostatic precipitators, gravel filters and bag filters. It has also built stations for purifying liquid waste and recycling wash water. 94% of the by-products generated by the plant is recovered on site (22% is recycled internally and 72% is sold). The complex has also endowed itself with an environmental monitoring equipped with apparatus for sampling and analyzing liquid waste and atmospheric emissions. Thanks to all these measures, atmospheric pollution in the city of Annaba has been reduced tenfold.

The plastics production plant at Skikda formerly produced sodium carbonate and chlorine by mercury cathode electrolysis, a process which has now been replaced by the ion-exchanging membrane process, a cleaner technology that has enabled the plant to totally eliminate mercury waste and to make energy savings too. This project was largely funded by a loan from the European Investment Bank.

The paint factory at Oued Smar (Algiers) has made investments designed to bring conditions at the plant into line with environmental protection requirements. 3 dust removal units and an automatic mobile vat washing line have been installed, and this closed-circuit wash cycle means the plant can recycle wash solvents to avoid the production of liquid waste. It has also installed a pipe rack resin and solvent distribution system, a move designed to reduce the risk of product spillage.

The glyceride plant at Maghnia (Tlemcen) has made significant efforts towards the recovery and recycling of its by-products. Over 4.5 tonnes of glycerine are recovered every day and are later exported. The plant has also installed a grease trap enabling total retention of all grease contained in liquid waste, and a soap-stock processing station.

The malting plant at Maghnia (Tlemcen) and the TAMEG hide processing plant at Rouiba (Algiers) have installed, at their own expense, purification stations specially equipped to process the type of waste they produce.

The cement works at Meftah (Blida), Zahana (Mascara) and Hamma Bouziane (Constantine) have made significant investment in the modernization and renovation of their anti-pollution equipment, with the performance of their electrostatic filters monitored more closely.

As part of its environmental strategy, Sonatrach has launched several projects designed to reduce the pollution caused by its oil- and gas-related activities. The company has undertaken an extensive program for the renovation of its liquefied natural gas (LNG) installations, and the construction of new units for the processing and recuperation/reinjection of torch gas. This program will be of considerable benefit to the environment and will also allow the company to make some substantial savings.

Many deoiling stations are already in operation, while others are under construction. The water recovered from this process is reinjected into the production cycle (which means water savings), while the oil recovered is also recycled.

Purification plants have been installed for processing liquid waste, and the water recovered by these plants is to be used for irrigation purposes.

To limit the risk of pollution of soil, ground water and water courses, Sonatrach has also implemented a program for the rehabilitation of its pipe transport system for liquid hydrocarbons.

In its attempts to reduce greenhouse gas emissions, the company has developed a major program for reducing torch gas and has decided to pursue the recuperation and underground storage of CO₂. It has also installed gas treatment units.

The new “hot spots” in Algeria are mainly found in industrial plants with the largest accumulations of hazardous waste. These plants include:

- The ENOF mercury plant in Azzaba in the *wilaya* of Skikda. Around a million tonnes of mercury waste is stored at this plant.
- The zinc electrolysis plant at Ghazaouet in the *wilaya* of Tlemcen, whose accumulations of leaching sludge are approaching 400,000 tonnes.
- The asbestos and cement units at Gué de Constantine (Alger), Meftah (Blida), Bordj Bou Arréridj and Zahana (Mascara), which have stocks of over 82,000 tonnes of asbestos waste.

2.3. Legal and policy framework

Laws and regulations

Since the second issue, a number of legislative and regulatory instruments have been enacted, implemented or are in the process of implementation. These instruments are:

- Law 03-10 of 19 July 2003 on the protection of the environment within a framework of sustainable development.

This new law replaces law 83-03 of 5 February 1983, cited in the second issue. Its principal objectives are: introduction of mechanisms designed to ensure efficient intersectorial coordination, improved reconciliation of the imperatives of environmental protection and sustainable development, introduction of the principles of preventive action, precaution and making the polluter pay, the creation of economic and financial instruments, incentives for public information and participation, implementation of better impact assessment procedures, and safeguards for integrated pollution control.

This law states that protection of the environment is principally based on the promotion and rational and ecological use of available natural resources, and on the use of the best available technology at economically acceptable costs.

It requires the operators of classified installations to appoint an environmental officer and to introduce internal monitoring and surveillance mechanisms. It also introduces risk assessments, and environmental impact notices, in the place of impact assessment studies for projects with limited environmental impact.

- Law 04-04 of 23 June 2004 on standard certification.
- Law 04-09 of 14 August 2004 on the promotion of renewable energy sources within the framework of sustainable development.
- Law 04-20 of 25 December 2004 on the prevention of major risks and catastrophe management within the framework of sustainable development.
- Executive decree 03-451 of 1 December 2003, which defines the safety regulations applicable to activities related to dangerous chemical substances and products, and to pressurized gas containers.
- Executive decree 03-452 of 1 December 2003, which establishes special conditions for the road transport of hazardous substances.
- Executive decree 03-477 of 9 December 2003, which establishes modes and procedures for the compilation, publication and review of the national plan for the disposal of hazardous waste.
- Executive decree 03-478 of 9 December 2003, which defines procedures for the disposal of waste produced by the healthcare sector.
- Executive decree 04-88 of 22 March 2004, which regulates the processing and regeneration of recycled oils.
- Executive decree 04-149 of 19 May 2004, which establishes the procedure for compilation of the national energy efficiency plan (PNME).
- Executive decree 04-199 of 19 July 2004, which establishes the structure for the creation, organization, operation and funding of the public packaging waste processing system.
- Executive decree 04-210 of 28 July 2004, which defines the procedure for determining the technical characteristics of packaging used in direct contact with foodstuffs and objects handled by children.
- Executive decree 04-409 of 14 December 2004, which establishes procedures for the transport of hazardous and dangerous waste.
- Executive decree 04-410 of 14 December 2004, which establishes general rules for the location and operation of waste treatment installations and the conditions for admission of waste by these installations.
- Executive decree 05-240 of 28 June 2005, which establishes the conditions for the appointment of environmental officers.
- Executive decree 05-314 of 10 September 2005, which establishes the conditions for the certification of groupings of generators and/or holders of hazardous waste.

- Executive decree 05-315 of 10 September 2005, which establishes the conditions under which waste is to be declared hazardous or dangerous.
- Executive decree 06-02 of 7 January 2006, which sets maximum limits, alarm thresholds and air quality targets for atmospheric pollution.
- An executive decree establishing a classification of waste, including hazardous and dangerous waste (passed but not yet published).
- A draft executive decree establishing maximum values for industrial effluents (passed but not yet published). This decree includes provisions on the internal monitoring of liquid waste and the internal surveillance of anti-pollution equipment.
- A draft executive decree regulating the emission into the atmosphere of gas, smoke, vapour, and liquid and solid particles, and establishing conditions for the inspection of classified installations (passed but not yet published). This decree includes provisions on the internal monitoring of liquid waste and the internal surveillance of anti-pollution equipment.
- A draft executive decree establishing the regulatory framework applicable to classified establishments for the protection of the environment (currently going through parliament).
- A draft executive decree establishing a classification system for classified establishments (currently going through parliament).
- A draft interministerial order determining the characteristics of the movement document used in the transport of hazardous and dangerous waste (currently going through parliament).

Enforcement

The main problem that Algeria is facing in its attempts to introduce legislative and regulatory controls, is the lack of human and financial resources at the disposal of the government authorities in charge of applying them.

Permit system

As we saw in the second issue, classified establishments are subject to the authority (according to their importance and the dangers or inconveniences their operation creates) of:

- the minister for the environment and the minister concerned, where authorization is required by applicable legislation (category 1)
- the wali (category 2)
- the president of the local people's assembly (category 3).

Classified establishments whose installation requires neither an impact assessment study nor an impact notice must file a declaration with the president of the appropriate local people's assembly.

The issue of an operational permit is subject to an impact assessment study or an environmental impact notice, a public inquiry and a survey of the dangers posed by the project in terms of health, hygiene, safety, agriculture, ecosystems, natural resources, sites, monuments, areas which attract tourism and sites of convenience to the local community.

Operational classified establishments are subject to an environmental audit in place of the environmental impact assessment.

With regard to regulations on environmental impact assessments, the government office in charge of the environment has the duty of making sure industrial operators always select the cleanest production techniques.

Application of the procedure and conditions for requests for permits obliges enterprises to comply with environmental standard requirements and thus to submit industrial establishments to risk and impact assessments, and to install, whenever possible, the best available technology for cleaner production.

Voluntary agreements

The aim of the environmental performance contracts mentioned in the second issue is to encourage the adoption of voluntary measures for combating pollution and protecting the environment as a part of a partnership agreement between the ministry for the environment and industry.

These agreements are permanent instruments which allow enterprises voluntarily to define their own commitments in terms of environmental protection. They also clear the way for the phased application of environmental regulations and add to the prestige of environmental performance.

The ministry defines what support and assistance is available to companies in the pursuit of their strategic objectives for cleaner production and the implementation of environmental action plans.

Over the last three years, 38 environmental performance agreements have been signed, and a further dozen agreements are now ready to be signed.

The principal commitments undertaken by companies signing an environmental performance agreement are:

- Appointment of an environmental officer
- Implementation of an internal waste management monitoring system and an anti-pollution equipment surveillance mechanism
- Implementation of an environmental management system
- Definition of ecology objectives such as reduction at source of the quantity and toxicity of waste, improved waste management, recycling of waste and industrial by-products, recycling of process water, reduction of water and energy consumption etc.

Companies which have signed an environmental performance agreement also undertake to make their own investment in anti-pollution measures – a good example of how environmental costs can be taken on board by the companies themselves.

International conventions and protocols

In addition to the international conventions and protocols on pollution prevention mentioned in the previous issue and to which Algeria is a signatory, we should also mention:

- the UN framework convention on climate change, which Algeria ratified with presidential decree 93-99 of 10 April 1993.
- The Kyoto protocol, which Algeria has ratified with presidential decree 04-144 of 28 April 2004.

2.4. Agents involved in promoting CP

Ministry of Planning and the Environment (MPE)

As we saw in the second issue, this ministry must appoint a subdivision in charge of clean technology and the recycling of waste and by-products as part of the ministry's cleaner production remit.

This subdivision is also represented on the environmental policy for industry division, which further comprises:

- the subdivision for hazardous products and waste
- the subdivision for classified installations
- the subdivision for industrial depollution programs and major technology risks.

Since the second edition, the principal actions related with cleaner production and eco-efficiency pursued by the ministry have been:

- Creation of a national inventory of recycled or recovered industrial waste.
- Creation of the national plan for the management of hazardous waste (PNAGDES), which is intended to serve as a planning tool and decision-making aid. Its principal objectives are the prevention and reduction at source of waste and waste toxicity, and the recycling and recovery of industrial waste and by-products.
- Implementation of the Stockholm convention on persistent organic pollutants (POP).
- Energy recovery from waste (with the launch of a pilot project for the installation of a used oil co-incineration unit in a cement factory).
- Introduction of regulatory, organizational and financial instruments designed to encourage the recovery and recuperation of used tyres.

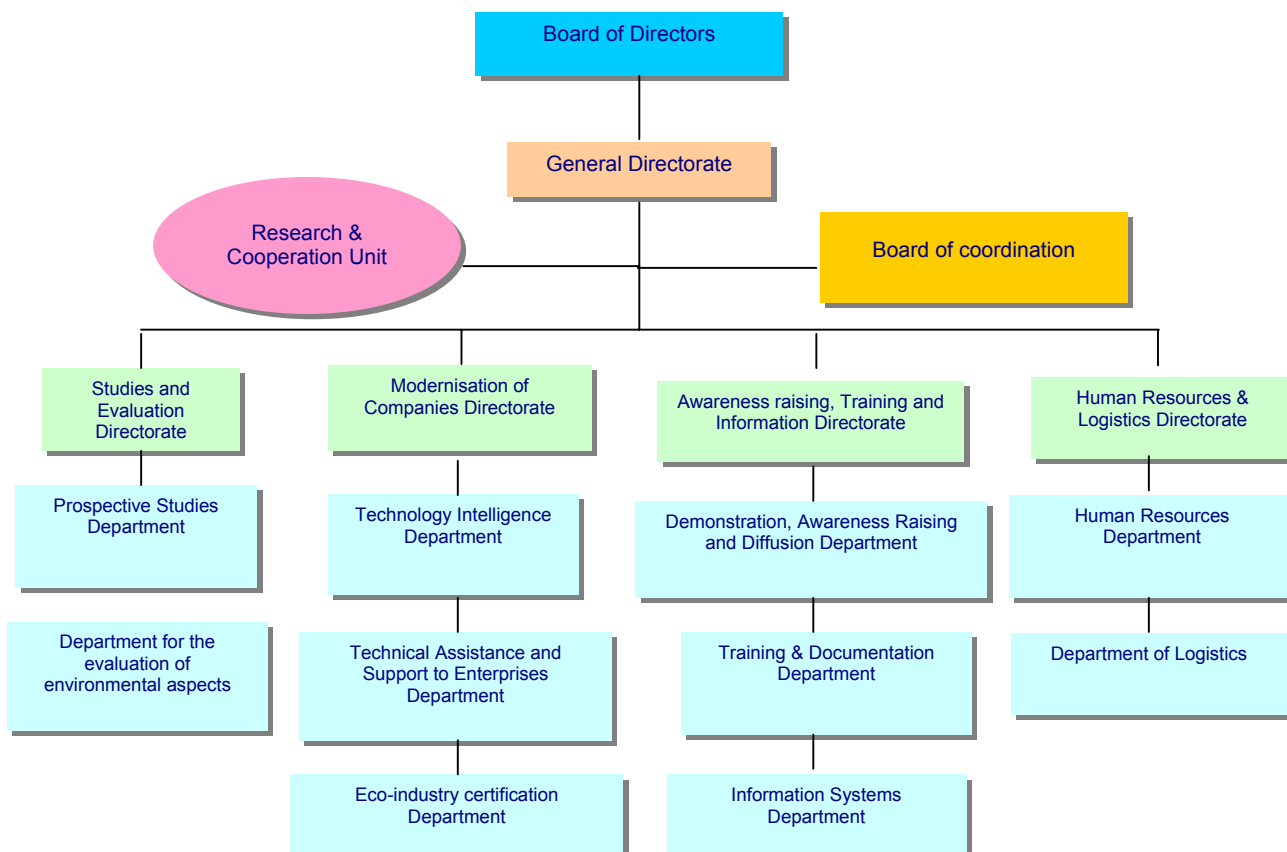
The National Centre for Cleaner Production Technologies (CNTPP)

This centre, which we mentioned in the second issue, is the official platform for promoting wider use of cleaner production technologies in the different sectors of the economy.

The centre is in charge of evaluating the environmental liabilities of the industrial sector, and as part of this work it has contributed to environmental audits carried out by certain industrial companies.

As part of the implementation of the PNAGDES plan, the centre will contribute to the development of waste reduction and recovery techniques and will be responsible for providing industrial companies with the necessary technical support.

The CNTPP is organised as follows:



Association for the Promotion of Eco-efficiency and Quality in Companies (APEQUE)

In an attempt to promote eco-efficiency, the leaders of public and private companies have teamed up with NGO officers to form the Association for the Promotion of Eco-efficiency and Quality in Companies (APEQUE).

APEQUE offers Algerian industry a forum where it can develop the synergies necessary for the promotion of quality and economic/environmental efficiency.

The association is a member of the international DELTA network, whose mission is to mobilize enterprise leaders of North Africa and the Middle East into forming networks of “enterprises for the environment”.

2.5. Programmes, action plans and projects to promote CP

Programmes and action plans

National plan for the environment and sustainable development (PNAE-DD)

As the second issue mentioned, national environmental strategy objectives have been defined in the national plan for the environment and sustainable development (PNAE-DD); these objectives cover the medium and long terms, and where the industrial sector is concerned they can be summarized as follows:

- Reduction of waste production and introduction of integrated waste management.
- Improvement of air quality in cities and the areas around industrial zones.
- The frontline fight against industrial pollution via the introduction of environmental performance agreements.

- Reduction of economic loss and improvement of competitiveness (via rationalization of use of resources such as water and energy, waste recycling, cost efficiency, reduction of greenhouse gas emissions, elimination of substances which threaten the ozone layer, and the use of the best available techniques for cleaner production).
- Implementation of the FEDEP and its transformation into an autonomous financial institution capable of intervening in environmental investment and securing initial operations with small and medium enterprises and industries (SME/SMI).
- Widespread introduction of environmental training in areas such as waste, water, rehabilitation and pollution by industry and by SME/SMIs.

Projects

A number of projects have been launched thanks to international cooperation and the technical assistance and funding that made it feasible.

- The World Bank has awarded Algeria a loan for the control of industrial pollution (CIP).
- The World Environment Fund (WEF) has financed several projects: formulation of the national strategy on climate change, a project for labelling the refrigerators produced by Algeria's national appliances manufacturer (ENIEM), and a project for the formulation of the action plan for the implementation of the Stockholm convention on persistent organic pollutants (POP). Algeria has also requested assistance from the WEF for funding a project designed to increase energy efficiency in industry.
- The multilateral fund for application of the Montreal protocol has provided technical and financial assistance to around 40 Algerian companies in their efforts to eliminate the use of substances which are harmful to the ozone layer and to replace them with alternative substances and technologies.
- The United Nations Development Program has also provided Algeria with technical and financial assistance, essentially as part of the country's attempts to reinforce its environmental education capacities and to support the implementation of international conventions in the domain of the environment. This program also offers the country assistance for the prevention of major risks.
- The EU is also funding a number of projects in Algeria via the MEDA and LIFE programs:
- 2005-2007: reinforcement of economic mechanisms for environmental sustainability in the METAP countries.
- 2002-2004: phase III DELTA: modernization of the environmental policy of enterprises of the Maghreb and the Mashreq.
- With regard to bilateral cooperation (France, Japan, Belgium etc.), the ministry for planning and the environment has participated in short, medium and long-term internal training courses on environmental issues.
- GTZ (Germany) has funded the following projects:
 - Integrated water management program (2003-2011).
 - Germano-Algerian program for environmental management (2001-2010).
 - Environmental network of Maghrebi enterprises (2005-2011).
 - Network for environmental competitiveness in the Maghreb region (2005-2011).

2.6. Tools and activities for promoting CP

Economic instruments

Economic instruments for promoting cleaner production and eco-efficiency measures adopted by Algeria since 2003 are:

- The additional tax on industrial waste water, introduced by legislation passed in 2003. This tax is calculated on the basis of volumes of waste water and the pollution load generated in excess of the established thresholds. 50% of the proceeds of this tax revert to the national fund for the environment and pollution control (FEDEP).
- A tax on plastic bags, introduced by a law passed in 2004. This tax is fixed at 10.50 DA per kg of plastic bags imported or produced locally. All proceeds from this tax revert to the FEDEP.
- A tax on oils, lubricants and lubricant compounds, set at 12,500 DA per tonne and covering oils and lubricants which are either imported or produced within Algeria, and whose use generates waste oil. This tax was introduced by the finance act for 2006. 50% of the proceeds from this tax go to the FEDEP.
- A tax on new tyres imported or locally produced has been introduced by the finance act for 2006. This tax is set at 10 DA per tyre for heavy vehicles, and 5 DA per tyre for light vehicles. 50% of the proceeds from this tax go to the FEDEP.
- As for the application of the destockpiling tax, under the finance act for 2005 a 2-year moratorium was granted to the generators or holders of special and hazardous waste, giving them time to process or have processed their waste in conditions in keeping with applicable legislation.
- Enterprises implementing projects addressing environmental protection and pollution control receive interest rate reductions on their bank loans (as established by the finance act for 2005).
- It is planned to introduce incentives to encourage the development of waste collection, sorting, transport, recovery and disposal (as stipulated by law no. 01-19 of 12 December 2001 on the management, control and disposal of waste).
- Industrial enterprises which import equipment for the elimination or reduction of greenhouse gases from their processes or products, or for the reduction of other types of pollution, are entitled with financial and customs duty incentives. Physical and moral persons undertaking actions for the promotion of the environment qualify for deductions to their taxable income (as stipulated by law no. 03-10 of 19 July 2003 on the protection of the environment within the framework of sustainable development).

Since the second issue, the FEDEP has funded 100 research projects, addressing a diversity of environmental issues and pursued in liaison with researchers from all Algerian universities:

- 17 projects on solid waste;
- 12 projects on atmospheric pollution;
- 7 projects on the preservation of water resources;
- 5 projects on coastal development;
- 49 projects on biodiversity;
- 10 projects on environmental education.

The FEDEP has also funded the export of 500 transformers containing PCB for their elimination in special incinerators.

Voluntary instruments

These environmental management instruments are:

- The environmental management system (EMS). A number of industrial plants are currently implementing measures for ISO 14001 certification. So far, around twenty enterprises have obtained this certification.
- Profitable environmental management (PREMA). As part of the Germano-Algerian cooperation agreement, a pilot project for the introduction of profitable environmental management, covering 8 industrial enterprises, has been a resounding success. PREMA has allowed these enterprises to reduce their production costs, improve environmental performance, and optimize their organizational capacities.
- Enterprise charter. This charter has been collectively signed by enterprises which are signatories to the new environmental policy for industry. The enterprises which have signed the charter firmly believe their survival depends upon the adoption of a sustainable development policy combining economic growth, environmental protection and social equity, and are committed to including environmental management among their priorities.

Awards

In 2005, the ministry for planning and the environment for the first time introduced an annual national environment award designed to reward individuals, associations, or public/private industrial enterprises making significant contributions to the safeguarding of the environment.

Other activities and instruments

A number of actions connected with cleaner production have been developed within the framework of implementation of Algeria's national information, awareness and training program:

- The environment train: a travelling, interactive exhibition featuring one wagon dedicated to cleaner production. The train has so far visited 23 towns and cities in northern Algeria and the uplands, and has attracted over a million visitors, including industrialists and manufacturers. The aim of the initiative is to make enterprise leaders aware of the need to take environmental issues on board in the everyday management of their enterprises.
- Organization of a training course for environmental officers, addressing topics such as control of atmospheric emissions, operation and maintenance of pollution control installations, management of solid industrial waste, environmental impact assessments, profitable environmental management, environmental audits, recovery and recycling of solid industrial waste, and elements of environmental law.
- Organization of seminars on industrial risks, the duties of environmental officers, and industrial pollution control.

2.7. Conclusions

Algeria has made enormous progress towards cleaner production. The efforts to reduce the environmental impact of their activity made by some industrial plants and complexes previously responsible for high levels of pollution effectively illustrate this progress. A considerable number of industrial enterprises have signed environmental performance agreements, and a national environment prize has been created.

The new law on environmental protection within a wider framework of sustainable development constitutes the legislative basis for the promotion of cleaner production. The

formulation of a national plan for hazardous waste which identifies those responsible for generating hazardous waste is another positive development, and looks sure to bring about improvements in the environmental performance of the industrial sector.

However, we should bear in mind the economic development elements involved in the agreement with the European Union; and membership of the World Trade Organization necessarily implies bringing Algerian enterprise up to scratch in terms of their environmental performance – which means they must imperatively introduce eco-efficient measures, adopt sustainable reduction and consumption, and install more technology which is more environmentally friendly.

Getting this message across to the country's SME population has to be a priority, and the CNTPP should play a major role in this direction.

2.8. References

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Mediterranean Action Plan of the United Nations Environment Programme,
<http://www.unepme.org>
- MEDPOL, Pollution issues country per country, (not published).
- EU Life programme projects database,
<http://europa.eu.int/comm/environment/life/project/>
- Europe Aid Cooperation office, <http://europa.eu.int/comm/europeaid/index-en.htm>
- Questionnaire submitted by the RAC/CP National Focal Point for Algeria.
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- GTZ, Environment and Infrastructure. Division, 2004
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3. Bosnia and Herzegovina

3.1. Introduction

A sizeable current account deficit and a high unemployment rate remain the two most serious economic problems in Bosnia and Herzegovina.

The B&H industrial sector is currently characterised by low productivity and poor competitiveness. Major problems lie in the domain of infrastructure, but financial markets are also underdeveloped and inadequately efficient.

The trend towards low productivity and competitiveness is reflected in the high national current account deficit due to the situation with exports which cover only around 30 per cent of imports. The trends of growth of industrial output are encouraging (5 % in both entities).

The present difficult situation of industry in B&H has certainly been caused by the war devastation and the loss of pre-war markets, but the consequences of the earlier model of development should not be overlooked.

The most important activities aimed at enhancing the competitiveness of industry in B&H are as follows:

- improvement of business and investment environment.
- acceleration of privatisation.
- strengthening of the financial sector.
- accelerated reform of labour market.
- fiscal system reform (introduction of VAT).
- energy sector reform.
- infrastructure sector reform.

Through the work of the B&H Medium-Term Development Strategy – PRSP (2003) it was recognised that the following branches of industry should be considered as strategic, and their development should consequently be stimulated:

- wood-processing
- food-processing
- textiles
- leather goods and footwear
- metalworking
- tourism
- energy
- information and communication technologies (ICT)

Surface area	sq km	51 129
Population		4 025 476 (July 2005 est.)
Population growth rate	%	0.44 % (2005)
Life expectancy	Years	77.83
Literacy total	% > 15	94.6 (2004 est.)
Literacy female	% > 15	91.1 (2004 est.)
Unemployment rate	%	44 officially, however the grey economy may reduce actual unemployment to near 20 % (2004 est.)
Inflation rate (consumer prices)	%	1.1(2004 est.)
Debt (external)	\$10 ⁹	3 (2004 est.)
GDP- Real growth rate	%	5 (2004 est.)
GDP PPP	\$10 ⁹	26.21 (2004 est.)
GDP PPP per capita	\$10 ³	6 5 (2004 est.)
GDP composition by sector - Agriculture	%	14.2 (2002)
GDP composition by sector – Industry	%	30.8 (2002)
GDP composition by sector – Services	%	55 (2002)
Industrial production growth rate	%	5.5 (2003 est.)
Exports	\$10 ⁹ FOB	1.7 (2004 est.)
Imports	\$10 ⁹ FOB	5.2 (2004 est.)
Telephones – main lines in use		938 000 (2003)
Telephones – mobile cellular		1.05 million (2002)
Internet hosts	Units	6 994 (2004)

3.2. Industry and environment

Industrial development and environmental impact

When it comes to the environmental impact due to the industry sector, it should be noted little has changed since the second edition.

Currently, in the meat processing and slaughterhouse industry the situation is getting worse. The number of small and medium-sized slaughterhouses has continued to grow since 2003. Again, a large number of them use only septic tanks to treat their wastewater, and dispose of slaughter waste in landfills with no sanitary measures. From the environmental point of view the main problem is the non-existence of facilities for slaughter waste disposal and treatment.

Medical waste that is generated in health care facilities (clinical centres, hospitals, health centres, etc.) is not divided to dangerous and harmless medical (municipal) waste. Based on estimates, total healthcare waste arising from the main healthcare establishments within B&H is likely to be ~ 76 000 m³/year.

Few functioning landfills are sanitary and the country has no hazardous waste handling, management or disposal system. The approximately 1 000 tons of expired pharmaceuticals scattered on over 90 locations countrywide left over from wartime donations (1991-1996) are a particular waste problem. One part of it has been encapsulated in 1 600 barrels at six different locations, according to the guidelines by the World Health Organisation. The rest of it has been taken for incineration abroad.

There is virtually no recycling of industrial waste, and there are no separation and treatment facilities for industrial non-hazardous and hazardous waste. An exception is ash generated at the Tuzla power plant, some of which is used in the cement industry.

Although relatively underdeveloped, the tourism industry has the following major impacts on the environment:

- Production of solid waste to be adequately disposed of in sanitary landfills.
- Production of wastewater to be adequately treated before discharging into water bodies.
- Visual impact of new buildings on nature.
- Impact of increased traffic in newly created tourist areas.

Areas of special concern

As regards the areas of special concern mentioned in the second edition, there are no evident improvements regarding their environmental situation. The major pollution problems are insufficient coverage by the sewage system network as well as poor solid waste management, especially in the areas of Mostar and Neum.

Within the MAP's Strategic Action Program (SAP) - pollution reduction or elimination of "hot-spots" in the Mediterranean region, Bosnia and Herzegovina gain a grant for the elaboration of a pre-financing study for waste water and solid waste management in the Municipality of Neum. This study is enforcing cooperation between two bordering countries (B&H and Croatia) on solving common problems related to sewerage and solid waste along that part of the Adriatic coast. Study was completed at the end of 2005.

Important progress toward improving waste management is expected after implementation of the Strategy of the solid waste management in B&H (adopted in August 2002), the National Action Plan for environmental protection of B&H (adopted in March 2003), as well as projects mentioned in the section concerning "Programmes, action plans and projects to promote cleaner production".

3.3. Legal and policy framework

Laws and regulations

The government has taken an important step towards broader implementation of cleaner production by adopting a set of new environmental laws based on the EU directive on Integrated Pollution Prevention and Control. Both the Federal Ministry for Physical Planning and Environment and Ministry for Urbanism, Civil Engineering and Ecology of the Republic of Srpska have been taking steps toward preparation of executive regulations that will enable full implementation of framework Law on Environment protection and other relevant environmental laws that create a basis for implementation of cleaner production.

In that sense, the Federal Ministry has prepared, adopted and enforced a *Rulebook for the industrial plants and installations which require environmental impact assessment and*

installations which can be built and put into operation only when the environmental license is obtained (Official Gazette FB&H 19/04).

In December 2005, the Federal Ministry also adopted several executive regulations of Law on Environmental Protection published in Official Gazette of FB&H 68/05:

- Rulebook on conditions and criteria that are to be fulfilled by consultants for environmental impact statements (EIS) and methods for calculation and collection of fees and taxes.
- Rulebook on activities of environmental inspection, program of inspectorate work and report on program realisation
- Rulebook on conditions for requesting environmental license for polluters having licences issued before the Law on Environmental Protection came into force
- Rulebook on deadlines for requesting environmental license for polluters having licences issued before the Law on Environmental Protection came into force
- Rulebook on content of safety report, information on safety measures and internal and external intervention plans

The Republic Ministry has prepared, adopted and enforced a *Rulebook on conditions and criteria for legal persons to perform activities in the field of environmental protection* (Official Gazette RS 02/03, amended in Official Gazette RS 62/03). In December 2005, amendments to the Law on Environmental Protection have been adopted, eliminating the lack of clarity and inconsistency of the chapter regarding procedures on EIA and environmental permitting (Articles 56-63, and 64 of LEP). The Ministry has also adopted a decree on projects that are subject to EIA and criteria for decision-making on the necessity and scope of EIA (Official Gazette RS 7/06).

The Republic Ministry has also drafted, but not yet adopted the following regulations:

- Guidelines on the content of EIS
- Rulebook on deadlines to submit requests for environmental permits for installations that had permits issued before the Law on Environmental Protection was adopted

Both ministries have adopted seven executive regulations of the Law on Air Protection (Official Gazette of FB&H, No. 12/05 and Official Gazette of RS, No 39/05):

1. *Rulebook on monitoring of air quality.*
2. *Rulebook on monitoring of air pollution emission.*
3. *Rulebook on limited value of air quality.*
4. *Rulebook on emission of volatile organic compounds.*
5. *Rulebook on conditions for operation of the incineration plants.*
6. *Rulebook on air emission limit values from incineration installations.*
7. *Rulebook on limit values of pollution emission in the air.*

Moreover, the following executive regulations of the Law on Waste have been proclaimed and published in Official Gazette of FB&H, No. 9/05 and Official Gazette of RS, No 39/05:

1. *Rulebook on the transfer of obligations for waste management from the producers and sellers to the operators of the system for waste collection.*
2. *Rulebook on issuing the permit for the activities of the small business in waste management.*
3. *Rulebook on the categories of waste with the lists.*

4. *Rulebook on handling the waste which is not considered hazardous but its ingredients are not known.*
5. *Rulebook on the contents of the plan of adjusting the waste for the existing installations for treatment or disposal of waste and activities undertaken by the competent body.*

Enforcement

The main problems related to application of the environmental legislation are lack of secondary legislation and guidelines for BAT, emission limit values, lack of human and financial resources.

Still, new initiatives been launched to overcome these problems since the second edition: there are 11 ongoing EU-financed CARDS projects aimed at improving environmental sector in B&H. They concern capacity building in environmental management, environmental public awareness, development of a national monitoring system, support to air monitoring, support for improved waste management, waste recycling, support to environmental field inspection, technical assistance for compliance with EIA Directive, river basin management, water quality management at the river basin level and the establishment of an environmental fund.

A progress regarding BAT development is expected to be achieved through the Life Third Countries Project "Capacity Building in Integrated Pollution Prevention and Control in Bosnia and Herzegovina" The project will focus on best available techniques (BAT) for the food and beverage industry in Bosnia and Herzegovina.

Permit system

The new set of environmental laws previously mentioned envisage issuing of integrated environmental permit which prescribes prevention measures as well as control of emissions into air, water, soil, waste and noise. Integrated concept is still not implemented institutionally, so sectors of water and environment are still divided in two ministries in B&H (Ministry of Physical planning and Environment and Ministry of Agriculture, Forestry and Water Management).

In this respect, a consensus has been reached that problems concerning water protection are to be treated within the framework of the integral permit, so that the Ministry of Environment and the Ministry of Water Management collaborate and both give opinions and make suggestions. In practice, this demands a high level of coordination between ministries which differs from case to case. In this regard, the complete reform should follow.

Administrative agencies involved in the permit system are as follows:

- Entity level: Ministry of Physical Planning and Environment of the Federation of B&H and Ministry of Physical Planning, Civil Engineering and Ecology of the Republic of Srpska
- In FB&H: Cantonal Ministries of environment

Voluntary agreements

So far there have been no voluntary agreements between environmental authorities and industry concerning facilitation of legislation enforcement, although they are included in the Laws on environmental protection of the Federation of B&H and the Republic of Srpska.

International conventions and protocols

In the international framework for the protection of the environment through pollution prevention, during the Fifth Ministerial Conference "Environment for Europe", (held in May 2003 Kiev, Ukraine) Bosnia and Herzegovina signed three Protocols to Conventions of the United Nations Economic Commission for Europe as follows: Protocol on Strategic Environmental Assessment (Espoo Convention); Protocol on Pollutant Release and Transfer Register (Aarhus Convention); and Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters (Helsinki Convention). Bosnia and Herzegovina has not ratified them yet.

Furthermore, Bosnia and Herzegovina ratified the Convention on cooperation for the protection and sustainable use of the Danube River in January 2005 (Official Gazette Bosnia and Herzegovina, No 1/05).

3.4. Agents involved in promoting CP

The second edition made reference to the following situation: under the terms of the B&H Constitution, environment is the responsibility of the following ministries: the FB&H Ministry of Regional Planning and the Environment and the RS Ministry of Regional Planning, Construction and the Environment.

In the FB&H, the responsibility for the environment is shared with the cantons, while in the RS it is centralised.

In order to coordinate and harmonise environment entity policies at the level of B&H, an inter-entity body, the Coordinating Board for the Environment, was formed in 1998 and a State-level steering committee for the environment and sustainable development in B&H (Upravni komitet za okoliš i održivi razvoj – UKOOR) was established in 2002, however neither entity has decision-making authority.

Within the framework of coordination for environmental issues at state level, it should be highlighted that there are plans to establish a state environmental agency, and many activities have been undertaken to achieve this purpose.

Centre for Environmentally Sustainable Development (CESD)

The CESD has undertaken a number of projects and activities since the second edition. Some of them are described below.

- Training course "Options for prevention of waste generation and reduction in slaughterhouse industry" (2004). CESD, in cooperation with RAC/CP from Barcelona, prepared the course for slaughterhouse representatives entitled "Options for prevention of waste generation and reduction in the slaughterhouse industry". The course was held 15-17 December 2004 in Sarajevo. The participants were given specific advice on how to recognise places where solid waste and wastewater have been generated, what the environmental impacts of the emissions are, as well as how to identify parts of the production process with the largest consumption of natural resources. The measures for solving these problems were also recommended.
- Implementation of the Project on Capacity Building for the implementation of Environmental Management System (EMS) according to ISO 14001 in B&H (for further information, see the next section).
- Implementation of the EU-CARDS Environmental Public Awareness Project, which started in February 2005.

- Implementation of the Project for the Raising of public awareness of farmers and agriculturists on the application of fertilisers and good agricultural practice aimed at the prevention of diffuse pollution of water, REC B&H& Austrian Cooperation (2004-2005).
- Series of 5 workshops on environmental impact assessment (EIA) for 125 representatives of municipal bodies responsible for licensing and environmental NGOs from all over B&H, USAID/WL project, March-May 2004.

Other agents

Further to the CESD there are other agents worth mentioning:

- Ros-kar Centre for Development and Quality, which was established in 2002. The centre has been working on education in the area of environmental protection and ISO 14000.
- Centre for environmental technological development (CETEOR), which is private consulting company established in Sarajevo 1992. Its fields of activity include sustainable development, air quality management, solid waste management, chemical safety and energy efficiency.

Unfortunately, there is no co-ordinated action between the agents that promote cleaner production and eco-efficiency in Bosnia and Herzegovina.

3.5. Programmes, action plans and projects to promote CP

Programmes and action plans

The National Environmental Action Plan (NEAP)

It should be highlighted that the NEAP, mentioned in the second edition, makes reference to the need to prioritise pollution prevention measures over end-of-pipe corrective actions. For example, one of the priority fields under the NEAP is sustainable economic development, and one of the measures required to achieve is the need to support cleaner production technologies through fiscal and customs subsidies.

Within the waste management priority actions the NEAP identifies a need for implementation measures such as those relating to the prevention or reduction of waste generation at source, recycling or reuse.

The actual situation of the implementation of the NEAP is displayed in the following table.

Urgency category	Done	Ongoing	To be started
Priority action	0	0	1
Short-term	3	16	28
Mid-term	0	12	16
Long-term	0	4	5
All categories	3	32	50
% of tasks	3.6 %	37.6 %	58.8 %

(Source: Functional Review of the Environmental Sector in B&H – Final Report, Agriconsulting S.p.A. April 2005.)

The table indicates that of the actions required by NEAP 3.6 % have been executed two years after the adoption of the NEAP document, 37.6 % of the measures are "ongoing" and 58.8 % have not yet been started.

Bosnia and Herzegovina National Action Plan

According to the "Protocol for the Protection of the Mediterranean Sea against Pollution from Land-based Sources and Activities" (LBS protocol) of the Barcelona Convention, during the 11th Ordinary Meeting of the Contracting Parties to the Barcelona Convention, held in Tunis in 1997, the Strategic Action Programme (SAP) was adopted - this supplies guidelines to the Contracting parties of Barcelona Convention for the elaboration of National Action Plans (NAPs) for the prevention of pollution from land-based activities.

The National Action Plan for Mediterranean Region in Bosnia and Herzegovina (NAP B&H) was drawn up through a GEF/SAP MED project, which lasted from 1 January 2001 until 30 September 2005, with the coordination of Mediterranean Action Plan (MAP) Athens, Greece, and with financial support of Global Environment Facility (GEF), Mediterranean Fund METAP, French Environmental Fund, and ICS-UNIDO.

B&H National Action Plan deals with the southern part of Bosnia and Herzegovina, i.e. Adriatic Sea catchment area (Neretva, Trebišnjica and Cetina river basins) and a narrow coastal area of Neum.

The objective of B&H National Action Plan was to give guidelines for achieving sustainable development of Mediterranean region, by defining proposal of actions. The document gives an insight into the problem of the complexity of coastal protection in B&H, providing information, basis and guidelines for preparation and implementation of necessary projects in the Mediterranean region of B&H.

Projects

The EU LIFE Third Countries Project "Capacity Building in Cleaner Production in Bosnia and Herzegovina" (2002 – 2005) implemented by Centre for Environmentally Sustainable Development.

The implementation and results of this project, which was mentioned in the second edition, contributed to the improvement of environmental situation in Bosnia and Herzegovina in terms of reduction of natural resource consumption and emissions. This has been achieved through the implementation of nine demonstration projects in industrial companies with results shown in the next table.

Table: Results of nine demonstration projects

	Water savings (m3/year)	Energy savings (kW/year)	Fuel	Raw material	Waste (t/year)	Total savings	Investments	Pay-back period (months)
Živinoprodukt	25 543.1	0				62 911.0	37 165.0	6
TDS	20 925.0	5 850.0		85 %		703 800.0	21 000.0	1
Sinalco	0	11 100.0			12	5 907.4	471.0	1
Krajina Klas	0	7 568.0		0	1.8	7 075.0	1 379.0	2.5
Pivara	64 000.0	119 454.0			470	114 620.0	26 290.0	3
Fana	3 836.0	0			30	11 359.0	53 200.0	52
Žica	13 647.0		18 649 Sm ³ gas	49 %	0	51 481.0	1 000.0	0
Meboš	0	400.0	400 l naphtha	2 %		12 000.0	36 000.0	36
Vegafruit	0	0			585	20 000.0	19 487.0	12
Total	127 951.1	144 372.0			1098.8	989 153.4	195 992	

The water savings and therefore the reduction in the amount of wastewater discharged varies from 24 to 81 %, being in average 60 % that is 50 % greater than anticipated (10 %). Total annual energy saving is 144,372 KW, while waste is reduced for 1098.8 t/year.

Production costs are reduced by 989 153.4 KM/year (505,746.1 euro/year). Most of implemented cleaner production measures (78 %) had payback period less than 12 months.

The achieved significant results confirmed that a reduction of 20 % or more in wastes and emissions, with nil investments is possible to achieve in Bosnia and Herzegovina. A further 10-20 % reduction is possible with minor investments, which have a payback period of less than 12 months. Most enterprises should therefore be able to reduce pollution and waste by 30-40 % by using CP procedures, and without requiring loans for investments. At the same time, CP measures served to raise the profitability of the enterprise.

Two capacity-building components of the project: i) Task 1-Dissemination of information and rising awareness on cleaner production (CP), ii) Task 2- Training the trainers, has been designed with aim of improving the capacities of local stakeholders in cleaner production.

The innovative methodology used in the LIFE project, which has a strong dissemination component prior to training and demonstration projects, has proved to be a successful approach in capacity building. All the results obtained prove the fact that the project achieved its objectives and can be considered as success story that can be replicated in other regions. Strong emphasis in this project has been given to assuring the sustainability of managerial and operational structure. Meetings, information dissemination programmes, and training programmes were all designed to provide knowledge and educate the professionals who will ensure the sustainability of the project after co-financing ends.

As a result of the capacity building program, the Government initially committed itself to the project and later selected the issue of pollution prevention/cleaner production as one of priority activities in the national environmental policy document.

The four companies participating in the LIFE project Sarajevo brewery, Vegafruit from Mala Brijesnica, Žica from Sarajevo and Meboš from Šamac, continued their activities by becoming part of the project on "Capacity Building for Implementation of Environmental Management System (EMS) based on ISO 140001 – POEMS-B&H" (mentioned below). The companies themselves recognised the opportunity to continue their activities on cleaner production through the "POEMS-B&H" project and therefore officially validate their efforts to prevent pollution and protect the environment.

"Capacity Building for implementation of Environmental Management System (EMS) according to ISO 14001 in B&H" Project (2004-2005)

This project was financed by the Czech Environmental Management Centre (CEMC) and the Government of the Czech Republic through the Department for International Support. This project was simultaneously implemented in Ukraine, Bosnia and Herzegovina, Serbia and Montenegro and Macedonia.

POEMS is a pilot project that will create an integrated and simultaneous approach to waste minimisation, cleaner production, pollution prevention and the introduction of environmental management systems, particularly for small and medium-sized enterprises. The final goal is to carry out an internal audit to obtain the verification of environmental management system (EMS) according to ISO 14001. Four out of six companies that have been trained within interactive training program are practically introducing EMS.

LIFE project Capacity Building in Integrated Pollution Prevention and Control in Bosnia and Herzegovina

This recently awarded project is aimed at the implementation of an Integrated Environmental Permitting (IEP) procedure, which is the equivalent of the EU's Integrated Pollution Prevention and Control (IPPC) Directive (96/61/EC). The project will focus on best available techniques (BAT) for the food and beverage industry in Bosnia-Herzegovina. Key planned actions include a comparison of environmental permitting practices in the EU and Bosnia-

Herzegovina, the establishment of a pollution register database, the demonstration of the use of BAT in the selected industry, and the demonstration of BAT use in the IEP process via case studies and training programmes.

Other examples of Projects and related activities

- EuropeAid Project Support for improved waste management in Bosnia & Herzegovina (awarded 2003)
- EuropeAid Project Support to the development of a comprehensive environmental regulatory framework in Bosnia & Herzegovina (awarded 2003)
- EuropeAid Waste Recycling Pilot Project (awarded in 2003)
- EuropeAid Project Technical Assistance for the establishment of an Environmental Fund in Bosnia and Herzegovina (to start soon)
- EuropeAid Project Functional Review of the Environmental Sector in Bosnia and Herzegovina (awarded in 2003)
- EuropeAid Project Technical Assistance for compliance with EIA Directives (awarded in 2004)
- EuropeAid Project Support to Environmental Field Inspection (awarded in 2004)
- In 2000 the World Bank gave a credit for the Mostar Water Supply and Sanitation Project. The elaboration of a Mostar basin sewerage study is underway.
- In the framework of the GEF Project "Determination of priority actions for the further elaboration and implementation of the Strategic Action Programme for the Mediterranean Sea" the preparation of a "Pre-investment study for the pollution abatement in the area of town of Neum" is still underway.
- IPPC Directive, October 2004 and April 2005, Training for industry, government and NGOs on the concept of IPPC, CARDS Capacity Building for Environmental Management, implemented by PM Consultants, Ireland. This series of training initiatives, in which 160 representatives of government, consultant companies, industry and NGOs participated, aimed to introduce the IPPC concept and to increase the capacity of the target groups for its implementation. The industry representatives were mainly those needing to obtain a new IPPC licence until 2008.

3.6. Tools and activities to promote CP

Entities in Bosnia and Herzegovina (Federation Bosnia and Herzegovina and Republic of Srpska) adopted the set of environmental laws in 2002 and 2003. The "polluter pays" and "user pays" principles have been incorporated into these laws, with recognition that the prices should influence the reduction in the use of natural resources and reduction of pollution. The laws are related to a) environmental protection, b) air protection, c) water protection, d) waste management, e) nature protection f) establishment of an environmental protection fund.

Use of economic instruments is envisaged by the laws, in order to provide income for the Environmental Protection Fund, which are primarily aimed at financing of projects and programmes related to the protection of air and water, waste management and protection of nature. Furthermore, this use of economic instruments has to be flexible enough to provide changes in technology, scarcity of resources and market conditions.

However, even though the environmental laws have officially entered into force, the economic instruments stated in them cannot be implemented, as the government entities and the ministries have not adopted the necessary regulations, rulebooks and guidelines by which the amounts of fees and fines to be paid by polluters and users of environment would be defined, as well as the manner of their collection.

As has already been defined in the set of environmental laws, the Environmental Protection Fund in Federation Bosnia and Herzegovina and Republic of Srpska has been established due to the need for one stable, sufficient and long-term financial source for the environment. According to the Law on Environmental Protection Fund of Federation Bosnia and Herzegovina and Republic of Srpska (Official Gazette FB&H, no. 33/03; Official Gazette RS, no. 53/02), the established Environmental Protection Fund should present the basic mechanism for collection and distribution of financial resources for environmental protection, which has not been realised to date, due to the lack of secondary legislation.

However, the state of Bosnia and Herzegovina and entity budgets do receive a certain amount of income from EIs. Among the types of economic instruments used for environmental protection in B&H, the ones that are used most often are “charges” or “taxes.

Economic instruments currently used in Bosnia and Herzegovina for water management, wastewater management and solid waste management are listed below:

1) Water management

- water extraction charges
- water user charges
- water protection charges
- charges for exploitation of material from water streams

2) Wastewater management

- sewer user charges
- charges for wastewater discharge into the sewers
- wastewater treatment charges

3) Solid waste management

- user charges for municipal waste collection and disposal
- deposit refund for beverage containers

Furthermore, it is interesting to note that specific economic instruments are foreseen to be in place by 2007 for investments in pollution prevention and control.

Voluntary instruments

Seven industrial enterprises possess ISO 14001 certificates and several others are under certification process (source: Foreign Trade Chamber of B&H).

It should be noted that there are no environmental awards in B&H.

3.7. Conclusions

Despite the fact that there are no major improvements in the environmental situation of the industrial areas of special concern and that there is a lack of key basic infrastructures for solid and hazardous waste management and wastewater treatment, improvements are expected in Bosnia and Herzegovina with the execution of several related strategies, action plans and projects.

The adoption of new pieces of legislation based on IPPC is a positive step towards the integration of cleaner production measures in the industrial sector of the country. Proper enforcement should be guaranteed and the consensus of establishing an integrated permit for activities needs to be put in practice.

This poses an important institutional challenge, since collaboration between ministries should be reinforced.

This institutional challenge is also reflected at national level, whereby coordination on environmental issues at national level should be guaranteed. In this sense, there is a proposal to create a state environment agency.

Factors such as the lack of secondary legislation and guidelines for BAT, emission limit values and human and financial resources hinder the promotion of cleaner production in the country. Agents such as the CESD have an important role to play in this sense, since with the necessary support they may facilitate enforcement of legislation and provide support to the industrial sector of the country.

3.8. References

- Protocols and conventions referenced from the following websites:
United Nations Economic Commission for Europe, <http://www.unece.org/>
- Mediterranean Action Plan of the United Nations Environment Programme, <http://www.unepmap.org>
- National Action Plan for Mediterranean Region of B&H for Prevention of Pollution from Land-based Activities B&H, 2004
- CIA, *The World Factbook*, <http://www.cia.gov>
- MEDPOL, *Pollution Issues Country by Country*, (unpublished).
- EU Life programme projects database, <http://europa.eu.int/comm/environment/life/project/>
- Paper on the Promotion of the Implementation of CP and Eco-efficiency in B&H 2004-2005 (RAC/CP).
- Questionnaire submitted by the RAC/CP National Focal Point for Bosnia and Herzegovina.
- EuropeAid Cooperation Office, http://europa.eu.int/comm/europeaid/index_en.htm
- 2004 International Monetary Fund. IMF Country Report No. 04/114. Bosnia and Herzegovina: Poverty Reduction Strategy Paper— Mid-Term Development Strategy, April 2004.
- Regional Strategy for Hazardous Waste Management - Status of Hazardous Waste Management in Bosnia and Herzegovina, 2003.
- B&H Medium-Term Development Strategy – PRSP (2003)
- Functional Review of the Environmental Sector in B&H – Final Report, Agriconsulting S.p.A. April 2005.)
- Center for Environmentally Sustainable Development web page <http://www.coor.ba/en/onama.html>
- Economic Commission for Europe, Committee on Environmental Policy Environmental performance reviews. Bosnia and Herzegovina, UNITED NATIONS New York and Geneva, 2004. Environmental Performance Reviews Series No.20.
- Background paper European Stakeholder Meeting on Sustainable Consumption and Production. Ostend, Belgium, November 25-26, 2004. UNEP http://europa.eu.int/comm/environment/wssd/documents/ostend_background.pdf

4. Croatia

4.1. Introduction

Before the dissolution of Yugoslavia, the Republic of Croatia, after Slovenia, was the most prosperous and industrialised area, with a per capita output perhaps one-third above the Yugoslav average. The economy emerged from a mild recession in 2000 with tourism, banking, and public investments leading the way.

Unemployment remains high, at about 14 %, with structural factors slowing its decline.

While macroeconomic stabilisation has largely been achieved, structural reforms lag. Growth, while impressively about 4 % for the last several years, has been achieved through high fiscal and current account deficits. The EU accession process should accelerate fiscal and structural reform.

The manufacturing sector consists of about 8 500 enterprises, most of which are privately owned. Employment in industry is at a level of approximately 300 000 persons. Small firms account for more than 90 % of all industrial firms, but medium-sized and large firms provide for 84 % of industrial employment. The most important sectors are:

- The agro-food industry, one of the most important and dynamic sectors of Croatian industry.
- The chemical industry, an important industrial sector in Croatia. The chemical industry's share of GDP was 8.11 % in 2004, i.e. ranked second in the manufacturing industry, following the food industry. The processing of plastics and rubber participated with 2.47 % in GDP. The share of employees in chemical industry amounts to 5.1 % and in the processing of plastics and rubber to 2.9 % of the total number of employees in Croatian manufacturing industry. The sector consists mainly of privately owned SMEs, with two thirds of the companies in the rubber and plastic sector.
- The textiles and clothing sectors, which provide a relatively large contribution to the Croatian economy. The Croatian textile and clothing industry recorded 31 900 employees in December 2004. The textile and clothing industry participates in total Croatian exports with 9.22 %, having registered a foreign trade deficit of USD 75.1 million in 2004. The industrial structure is characterised by private ownership and predominance of small-scale enterprises. Further structural adjustments are needed to increase competitiveness in this sector.
- The shipbuilding industry, which amounts to one percent of world output. The sector has not undergone privatisation to any significant effect with five out of the six mayor yards still government-owned.

Surface area	sq km	56 542
Population		4 495 904 (July 2005 est.)
Population growth rate	%	- 0.02 (2005 est.)
Life expectancy	Years	74.45 (2005 est.)
Literacy total	% age > 15	98.5 (2003 est.)
Literacy female	% age > 15	97.8 (2003 est.)
Unemployment rate	%	13.8 (2004 est.)
Inflation rate (consumer prices)	%	2.5 (2004 est.)
Public debt	% of GDP	41.7 (2004 est.)
GDP growth	% annual	3.7 (2004 est.)
GDP PPP estimated	\$10 ⁹	50.33 (2004 est.)
GDP PPP per capita	\$10 ³	11.2 (2004 est.)
GDP composition by sector - Agriculture	%	8.2 (2004 est.)
GDP composition by sector – Industry	%	30.1 (2004 est.)
GDP composition by sector – Services	%	61.7 (2004 est.)
Industrial production growth rate	%	2.7 (2004 est.)
Exports	\$10 ⁹ FOB	7 845 (2004 est.)
Imports	\$10 ⁹ FOB	16.7 (2004 est.)
Telephones – main lines in use	Million	1.825 (2002)
Telephones – mobile cellular	Million	2.553 (2003)
Internet hosts	Units	29 644 (2004)

4.2. Industry and environment

Industrial development and environmental impact

Generally, industrial sectors which are contributing the most to the environmental pollution in Croatia are energy production and oil refineries, mineral industry (cement and lime production), chemical industry, paper and pulp industry, and textile.

Energy production and oil refineries: the Croatian energy sector is characterised by majority state ownership, except for natural gas distribution and retail sale of petroleum products, which, together with the distribution of LPG, are partially in private hands. The extraction of crude oil and natural gas, production of petroleum products, and electricity, natural gas, steam and hot water supply accounted for 16.6 % of the industrial gross domestic product in 2003. In terms of employment figures, these activities accounted for 9.7 % of the industrial workforce.

Omislj oil terminal is located in Primorsko-Goranska County, where the Adriatic pipeline system is located and international oil transport is undertaken from the oil terminal to local and foreign refineries in the eastern and central Europe. The design capacity of the pipeline is 34 million tonnes of oil per year, and the already installed capacity is 20 million tonnes/year. Although no major pollution has occurred so far, there is concern about future

crude oil leakages as well as the possible introduction of alien species by the fouling/ballast dumped by tankers, if the terminal is used for loading crude oil from Russia.

Wastewater generation, usage of fresh water, municipal and medical waste generation, consumption of energy are the major pollution problems that service industries face in Croatia.

Areas of special concern

The environmental situation in the following areas of special concern (which were mentioned in the second edition) has improved: in Kaštela Bay, thanks to improvement in the water supply and sewage system and in Zadar, thanks to the remediation of the existing landfill.

New areas of special concern, seven “black spots” of high risk, were identified in the year 2004 by the Ministry of Environmental Protection, Physical Planning and Construction. For some of them Remediation programs are being developed for some of them: Obrovac, Salonit Vranjic and TPP Plomin.

For the other locations: Sovjak near Rijeka, Botovo, Kutina, Bakar, Lemić Brdo-Karlovac, Dugi Rat the process of identification of pollution and cost estimation of remediation is underway.

4.3. Legal and policy framework

Laws and regulations

There is an overall plan of the Ministry for Environmental Protection, Physical Planning and Construction (MEPC) related to approximation and implementation of the EU environmental *acquis*.

- The 1994 Environmental Protection Act as amended in 1999 (OG No 82/94, 128/99) provides the legal framework for environmental protection.
- As regards Integrated Product Policy, Article 45 of the Environmental Protection Act requires manufacturers to provide warnings against pollution that might be caused by their products, raw materials or packaging, as well as information regarding handling of packaging after use, before marketing products. Article 43 promotes life cycle thinking by developing an environmental label awarded to manufacturers for environmentally friendly products.
- The Waste Management Strategy of Republic of Croatia (Official Gazette No 130/05) is published this year. The prevention principle in waste management is highlighted therein.

This is an important step, since waste management is the single biggest problem in the environment sector in Croatia. Not only does the legislative framework need to be aligned with EU requirements and standards, existing Croatian regulations are not yet being implemented. Most waste is disposed of in landfills and unauthorised sites outnumber official sites by at least eight to one, while many official sites do not even operate in line with legislation on waste. There are no hazardous waste disposal sites. This sector poses a major challenge for Croatia and will require major efforts to come into line with the European *acquis*.

- Regarding industrial pollution and risk management there is no system of integrated pollution prevention and control (IPPC).

Enforcement

The main problems in Croatia in enforcing legislation on the environment are due to the fact that the preconditions for implementation of some environmental legislation are not fulfilled:

- the collection of the municipal waste is organised for only 80% of the population,
- the lack of hazardous waste disposal sites in Croatia.

Industry and tourism located on the coast and the islands face more difficulties in enforcing environmental legislation.

Permit system

The IPPC policy framework has not been established in the Republic of Croatia yet. Some activities have been initiated to increase capacity within industry and authorities for future application of IPPC directive requirements. These activities will encourage IPPC introduction and promotion. The national authority for IPPC has not been determined yet.

Croatia has a long history of issuing permits for a wide range of activities that can affect the environment and this is undertaken by a range of institutions from local to national level. This is the fundamental strength of the permit system in Croatia. The types of permit that are issued reflect the sectoral nature of environmental protection legislation and concentrate on setting limits for discharges and some operating conditions.

Permits for industrial activities are issued by different authorities on a media-specific basis. Thus discharges to water are permitted either by Croatian Waters or local authorities depending upon the nature of the receiving waters, while permits to air are largely issued by local authorities. Routine regulation (inspection) is undertaken by the Directorate for Inspection of the MEPC or by the local authorities or Croatian Waters for water discharges.

The Commission for Environmental Impact Assessment, which decides on the application documents presented for the EIA, is formed on the basis of the specific requirements of each case. Generally it can be said that the representatives of the MEPC and the State Water Directorate are present. Additionally, the representatives responsible for health issues and urban planning are present and, depending on the subject, additional experts are involved.

So far the emission limit values have been determined based on experience from the other countries. BAT principle was not considered during these activities. It is expected that within next few years Croatia will define emission limit values based on the BAT recommendations.

It should be noted that the environmental authorities in Croatia do not sign voluntary agreements with the industry to facilitate enforcement of legislation or reduce their environmental impact.

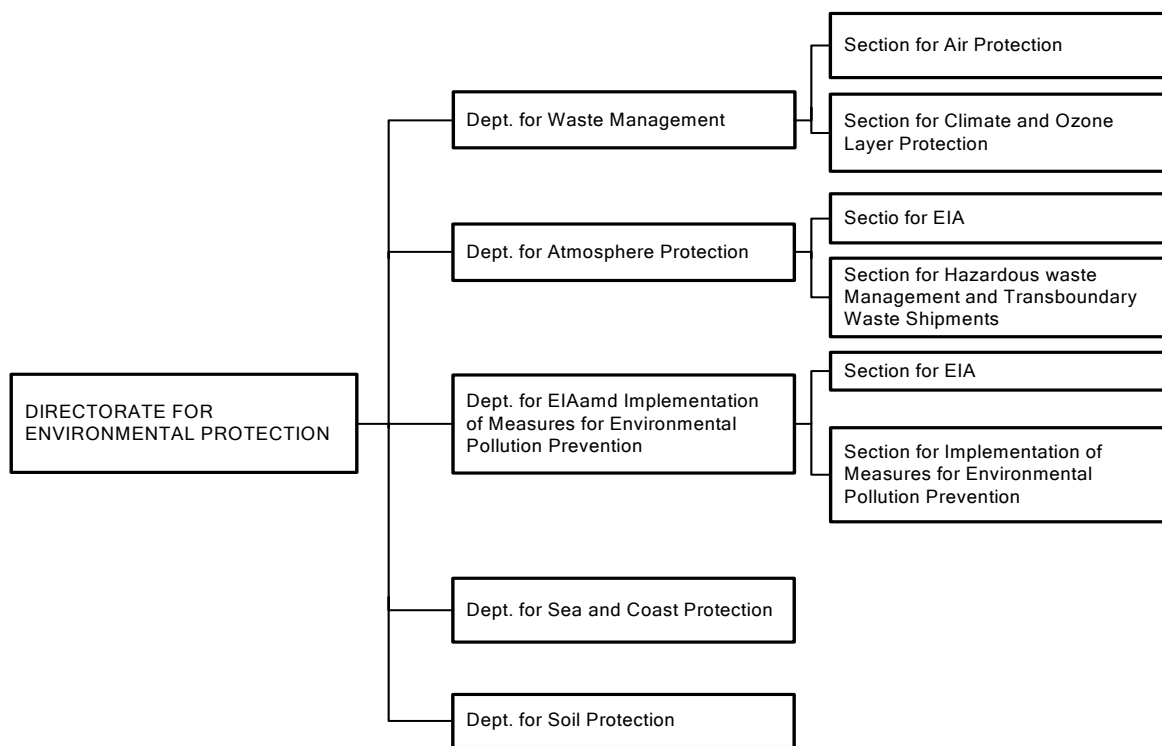
4.4. Agents involved in promoting CP

Ministry for Environmental Protection, Physical Planning and Construction (MEPC)

The main tasks of the MEPC in the field of environmental protection are, inter alia, the following: preparing regulations and performing administrative checks and other administrative and expert duties in the field of environmental protection, referring to general environmental policy in providing conditions for sustainable development; protection of air, soil, climate change and ozone layer protection, sea and coastal zone protection and interactions between all of these.

Within the present internal organization of the MEPC, the Directorate for Environmental Protection performs administrative and other tasks relating to waste management, air protection, climate change and ozone layer protection, environmental impact assessment, environmental protection contingency plans related to sea pollution, sea and coastal zone protection, soil protection and other related tasks. It is divided into five departments.

Organisation chart of the Directorate for Environmental Protection:



We should also note that, as mentioned in the second edition, the Croatian Environment Agency, an independent public institution established by a decision of the government of the Republic of Croatia in June 2002 collects, integrates, and processes environmental data to help implement the environmental policy in an efficient way in the state administration, the Government and the Parliament.

Croatian Cleaner Production Centre (CRO-CPC)

The Croatian Cleaner Production Centre, also mentioned in the second edition, employs 4 full-time employees and has undertaken activities related to cleaner production and eco-efficiency such as the following:

- One-day awareness raising and dissemination seminars for county chambers of economy and enterprises - a total of 8 seminars were held covering the topics: Cleaner production assessment, environmental management system, environmental management accounting, IPPC Directive.
- “Cleaner Production a New Industrial Approach in Environmental Protection” – 1st International Symposium on Environmental Management, Zagreb- 2004.
- “Environmental Management Accounting” – 1st International Symposium on Environmental Management, Zagreb- 2004.
- Introduction of Cleaner Production Strategy in Petrokemija Fertiliser Industry – International Symposium of Chemical Engineers, 2004

- “Integrated Approach in Environmental Protection” – UNIDO TEST Program – Transfer of Environmentally Sound Technologies - VIII International Symposium on Waste Management, Zagreb -2004
- “Croatian POPs Inventory”, - VIII International Symposium on Waste Management, Zagreb -2004

The Croatian Business Council for Sustainable Development

This organisation, which was founded in 1997 by leading businesses, aims at promoting Environmentally responsible management, eco-efficiency, social corporate responsibility and stakeholders’ dialogue.

The organisation actively shares information on good practices, experience, guidelines, and innovative approaches among the business community, and maintains a close collaboration with other sectors.

The Regional Environmental Centre for Central and Eastern Europe (REC) Country Office Croatia

This office has continued to promote environmental culture in industry. Over the last few years it has developed, for example, the following projects:

- Energy Efficiency in Croatian Small and Medium Size Enterprises (2003-2004).
- Capacity Building and Project development in Croatian Industry (2004).
- DISCUS (Developing Institutional and Social Capacities for Sustainable Development) was a fieldwork project on local sustainable development, encompassing 40 Europe-wide local communities (2003–2004).

Unfortunately, there is no co-ordinated action between the agents that promote cleaner production and eco-efficiency in Croatia.

4.5. Programmes, action plans and projects to promote CP

Programmes and action plans

We should note that the following strategies have been adopted or are under development in Croatia:

- National Environmental Strategy- adopted by the Croatian Parliament in 2002; this is based on the principles of sustainable development and discusses the existing situation (state of the environment and obligations), obstacles (existing and future environmental loads and essential requirements) and directions (response to environmental loads).
- National Environmental Action Plan- also adopted in 2002 as the implementation document of the National Strategy. Since the second edition, activities which have been accomplished are oriented towards:
 - promotion of environmental protection.
 - increasing of control within industry.
 - introduction of economic instruments.
 - adjustment of existing and adoption of new environmental legislation.
- State Water Protection Plan- adopted in 1999, it contains measures for the protection of water and the sea from pollution from the land and from islands. Of particular importance

is the monitoring of water quality and its classification, the necessary research for that purpose and all other necessary measures for cases of contingent and unexpected pollution of waters.

- The National Strategy for Sustainable Development- This has not yet been developed although the National Committee for Drafting of the Sustainable Development Strategy was founded in January 2003.
- As mentioned in the section dealing with legislation, the Waste Management Strategy of Republic of Croatia (Official Gazette No 130/05) has been published this year.
- A multi-stakeholder process to prepare a Strategy of Sustainable consumption and production is being initiated and involves the Ministry of Environmental Protection, Physical Planning and Construction, Ministry of Agriculture, Forestry and Water Management, Ministry of the Economy, Labour and Entrepreneurship, Ministry of Health and Social Welfare, Croatian Chambers of Economy, Consumer society, Agricultural Institute, Croatian Food Agency and non-governmental organisations.

Projects

Relevant projects implemented by the Cro CPC are the following:

Teknologiske Institutt-Oslo and CRO CPC; Project: "Implementation of CP Strategy in the National Economy of Croatia" (2002 – 2004)- project mentioned in the second edition.

During 2004 and 2005, within the project, several activities have been carried out:

Training on Cleaner production Assessment for 7 hotels.

Introduction of Environmental Management System for 4 selected companies. The companies were prepared for environmental certification.

Training on Financial engineering (preparation of bank loan application and business plans) for cleaner production projects.

Presentation of the overall results and barriers encountered during the implementation of the Project - Zagreb, December 2004.

UNIDO "Enabling Activities to Facilitate Early Action on the Implementation of the Stockholm Convention on Persistent Organic Pollutants - POPs"- project mentioned in the second edition.

Development of National POPs inventory (PCBs, POPs pesticides, PCDD/PCDF)

Defining national priorities and objective regarding POPs chemicals

Development of action plans and strategies for POPs chemicals

National Implementation Plan for Stockholm Convention with technical, administrative and legislative measures.

Project: "Capacity Building for Implementation of the IPPC Directive in Croatia" (2005)

Main activities of the Project will cover:

List of companies according to requirements of Annex I of the Directive

Suggestion of the institutional framework for the implementation of the Directive

Development of the Guidelines for the selection of the appropriate BAT.

Preparation of application for the IPPC permit – pilot project for the two companies

Project : “Inventory of Industrial Sources of Water Pollution in Croatia“ (2005)

Assessment of pollution and identification of industry with respect to Regional and European legislation

Project: “Development of Corporate Social Responsibility (CSR) in Croatia” (being executed)

In particular, the project will pursue the following objectives:

By disseminating good practices and experiences on CSR, and by making practical demonstrations, it will generate the evidence for the Croatian stakeholders in CSR that the concept can have a positive impact on business, especially SMEs, as well as on society as a whole.

It will build the necessary CSR-related capacity in Croatia so that industry support institutions can assist the business sector, especially export-oriented SMEs, to use a practical methodology and related tools that will enable them to cost-effectively comply with CSR requirements of global buyers and supply chains.

It will prepare a Croatian business agenda for CSR, and more generally establish a national implementation scheme for CSR, in partnership with public and private sector institutions and enterprises, so as to promote the sustainable development of an export-oriented SME sector in Croatia.

The Project will develop two outputs: a conceptual framework for a Croatian CSR policy and a practical methodology (triple bottom line – TBL – methodology) with supporting tools that SMEs in Croatia can use to implement CSR concepts in a cost-effective manner.

UNIDO; “Cooperation between Croatian and Hungarian NCPs to Build Capacity in CP in Croatia” (2003 – 2004)- mentioned in the second edition.

Project: “Implementation of CP in Klara bakery industry”, (being executed).

The following EU-funded projects should also be highlighted:

Guidelines Development for starting implementation of Waste Management Plan in the Republic of Croatia (2004-2006)

The objective of the project is to establish all the necessary capacities for the implementation of the National Waste Management Strategy in Croatia. Specifically, the project will prepare a detailed and systematic database in order to help start the remediation, recovery, and/or closure of existing landfills.

Capacity building for Implementation of the United Nations Framework Convention on Climate Change and the Kyoto Protocol in the Republic of Croatia (2004-2007)

The project will identify and establish all necessary capacities the UNFCCC and the Kyoto Protocol through the following tasks:

- Analysis and assessment of capacity building needs.
- Preparation of a National Implementation Strategy and Action Plan.
- Drafting of relevant legislation.
- Preparation of technical guidelines for sectoral operational programmes.
- Establish monitoring systems.
- Implementation of Kyoto Protocol flexibility mechanisms.
- Carrying out educational and public awareness activities related to climate change.

Sustainable development of Croatian capacity in CHP (combined heat and power) sector (2002-2004)

The first objective of the project is to contribute to the sustainability of Croatian development, particularly in line with EU priorities, the objectives of the UNFCCC, and global sustainability, by establishing the local capacity for development and implementation of guidelines for the local co-generation sector. Secondly, the project seeks to contribute to strengthening the co-operation, deepening the exchange of experiences, and transferring the expertise and knowledge between Portugal, Greece, the EU, and Croatia, in order to provide technical assistance to promote sustainable development strategies.

The project aims to:

Identify and gather the necessary data.

Identify measures for improving the energy efficiency of the CHP system.

Evaluate environmental and social impacts and policies.

Undertake a sustainability assessment.

Define a framework for the national CHP strategy.

Establish generalised guidelines for the CHP sector.

Increase the capacity of Croatian institutions.

Disseminate the project results to the public and key stakeholders, both national and regional.

Strategy for EU Environmental Law Approximation Croatia

Within this project, awarded in 2003, a proposal for institutional set-up and an action plan for transposition of the IPPC Directive will be prepared.

This project will support the Ministry of Environmental Protection and Physical Planning in the designing and development of a master plan for the approximation of EU environmental legislation, identifying the regulatory and institutional actions, costs estimates and investment needs, timetable and responsibilities. The project will further support the implementation of the master plan in the sectors of waste management, air quality and industrial pollution and risk management, focusing on the transposition and implementation of selected EU Directives.

Capacity strengthening measures for the Croatian Environment Agency Croatia

This project, awarded in 2004, is aimed at strengthening the work of the Croatian Environment Agency. The project activities include:

- Support the drafting of strategic documents and operational plans for the development of the Agency and for the development and integration of the Environmental Information System in order to enable the provision of timely, accurate and reliable environmental data.
- Capacity building in environmental reporting and monitoring in accordance with EU standards and requirements for the Agency's staff and other bodies responsible for monitoring and data collection.
- Improvement of the monitoring and reporting in the fields of waste management and air pollution and support the establishment of a Reference Centre, according to EU standards and the practices of the European Environment Agency.

Environmental Impact Assessment (EIA) - Guidelines and Training Croatia

The project, awarded in 2005, aims at strengthening the legal, administrative, and institutional framework for the implementation of EIA procedures according to EU standards

and practices. Technical assistance will be delivered to the Ministry of Environmental protection, Physical Planning and Construction, for legal review, further harmonisation with EU requirements and development of EIA guidelines. Activities also include the development and implementation of a training programme at a national and local level for permitting authorities and EIA developers and consultants. The improvement of transparency and public participation in the EIA processes will be an important objective during the implementation of the entire project.

Environmental Assessment of Development Strategies Croatia

The project, still to be awarded, aims at strengthening the legal, administrative, and institutional framework for the introduction and implementation of Strategic Environmental Assessment according to EU *acquis*.

4.6. Tools and activities to promote CP

Economic instruments

The Environmental Protection and Energy Efficiency Fund, established by the Act on Environmental Protection and Energy Efficiency Fund of 2003 which entered into force on 01/01/2004, was established to ensure additional resources for financing projects, programmes and similar undertakings in the field of the preservation, sustainable use, protection and improvement of the environment. The Fund is helping companies and local communities in co-financing their environmental projects (i.e. waste management, cleaner production, energy efficiency, etc.). It was established as an extra-budgetary fund with the status of legal person and vested with public authority.

Charges Fees, which represent revenues for the Fund, at the moment are as follows:

- fees for environmental emissions of SO² and NO²
- non-hazardous industrial waste fee
- hazardous waste fee
- special environmental fees for motor vehicles

The Environmental Protection and Energy Efficiency Fund Law prescribe three more fees, which are not yet in force. Those charges are:

- fee for environmental emissions of CO₂
- municipal waste fee
- environment user fee

In the Fund's financial plan for 2004, €30 950 890 was allocated for environmental protection and energy efficiency programmes. For the Fund's financial plan for 2005, €39 977 346 were allocated for the same purpose.

Furthermore, some green loans from the Croatian Bank for Reconstruction and Development in cooperation with commercial bank are available in Croatia.

Voluntary instruments

Eco-label: the environmental label is regulated by the Law on Environmental Protection, Article 43; and by a special Rule Book on Environmental Labels (Official Gazette 46/1996). The "Commission for the award of the Environmental Label", consisting of five members who

are representatives of the Ministry of Environmental Protection, Physical Planning and Construction, the State Bureau for Standardisation and Metrology, a non-governmental organisation for environment, consumers and of trade and industry, is in charge of decisions.

Environmental Management and Auditing Scheme ('EMAS'): the Republic of Croatia adopted the international ISO standards regulating environmental auditing (General principles, Auditing procedures, Qualifications standards) that public and private enterprises accept on a voluntary basis. These are Croatian standards HREN EN ISO 14010 – Guidelines for environmental auditing – general principles, HRN EN ISO 14011 – Auditing procedures – Assessment of the environment management system, HRN EN ISO 14012 – Guidelines for environmental auditing – Qualification standards for environmental auditors. The State Office for Standardisation and Metrology adopts these through technical committees in which the representatives of interested parties from public and private enterprises and representatives of state administration bodies take part.

The number of companies with the EMS system according to ISO 14001 has increased since the second edition. Today there are 112 companies with the EMS system.

Awards

The Ministry of Environmental Protection, Physical Planning and Construction has awarded, the Annual environmental protection award for individuals, companies and institutions for their contribution in environmental protection field since 1993.

In 2004, the Croatian Cleaner Production Centre has received this Award in the “general contribution to environmental protection” category.

4.7. Conclusions

Croatia has undertaken positive steps to diminish the environmental impact of the industrial sector. There have been improvements in some industrial areas of special concern and a new waste management strategy with pollution prevention principles has been developed.

Furthermore, voluntary instruments, such as environmental management systems, are being promoted and there is the Environmental Protection and Energy Efficiency Fund, which is aimed at ensuring additional resources for financing projects and programmes related to the environment.

Despite these positive steps, there is insufficient interest from industry for the implementation of cleaner production. Industry is not recognising the financial benefits linked to cleaner production projects.

This is an important challenge to face given that Croatia is a candidate country for admission to the European Union and will therefore have to harmonise its legislation with the EU environmental acquis. It will have to implement a system for IPPC, which will require important efforts from the administration and the industries involved.

The CRO-CPC will play a key role in this sense over the next years to promote cleaner production measures such as BATs and BEPs, not only amongst the facilities that will fall under the IPPC system, but also amongst smaller enterprises which will also face increasing environmental requirements.

4.8. References

- Protocols and conventions referenced from the following websites:
United Nations Economic Commission for Europe, <http://www.unece.org/>
Mediterranean Action Plan of the United Nations Environment Programme, <http://www.unepmap.org>
- CIA, *The World Factbook*, <http://www.cia.gov>
- REC Country Office Croatia, <http://www.rec.org/REC/Introduction/CountryOffices/Croatia.html>
- MEDPOL, *Pollution issues country per country*, (not published).
- EU Life programme projects database, <http://europa.eu.int/comm/environment/life/project/>
- Paper on the Promotion of the implementation of CP and eco-efficiency in Croatia 2004-2005 (RAC/CP).
- Questionnaire submitted by the RAC/CP National Focal Point for Croatia
- Croatian Cleaner Production Centre <http://www.cro-cpc.hr/>
- Ministry of Environmental Protection, Physical Planning and Construction <http://www.mzopu.hr/>
- Croatian Environmental Agency <http://www.azo.hr/default.asp?jezik=2>
- Croatian Environmental Protection and Energy Efficiency Fund <http://www.fzoeu.hr/hrv/index.asp>
- The Croatian Business Council for Sustainable Development <http://www.hrpsor.hr/eng/wwwa.html>
- EuropeAid Cooperation Office, http://europa.eu.int/comm/europeaid/index_en.htm
- Commission of the European Communities. Brussels, 20 April 2004 COM(2004) 257 final. Communication from the Commission. Opinion on Croatia's Application for Membership of the European Union.
- ECOLAS/IEEP/Elektroprojekt. Implementation and Enforcement Capacities in Croatia for the environmental acquis. Final report. The European Commission, DG Environment 04/08853/AL. May 2005.
- Backgroundpaper European Stakeholder Meeting on Sustainable Consumption and Production. Ostend, Belgium, November 25-26, 2004. UNEP http://europa.eu.int/comm/environment/wssd/documents/ostend_background.pdf
- Croatian Chamber of Economy, Industry and Technology Department. Zagreb, June 2005. Papers concerning the following: energy; manufacture of pulp, paper and cardboard, paper products, publishing, printing and reproduction of recorded material; manufacture of non-metallic mineral products and building materials; manufacture of textiles and apparel; manufacture of chemicals, chemical products and rubber and plastics products.

5. Cyprus

5.1. Introduction

Cyprus is classified among the high-income countries, with a per capita income of CY£ 9,477 in 2004. It has a standard of living that is even higher than some European Union member-states, and the performance of the economy compares favourably with that of most EU countries. Cyprus holds the 16th place worldwide in terms of per capita income. The average annual rate of growth in the past five years was about 3.8 %, while inflation stood at 2.9 % and unemployment at 3.4 % over that period.

The success of Cyprus in the economic sphere is attributed, inter alia, to the adoption of a market-oriented economic system, the pursuance of sound macroeconomic policies by the government as well as the existence of a dynamic and flexible entrepreneurship and a highly educated labour force. Moreover, the economy benefited from the close cooperation between the public sector and the social partners.

During the last decade, Cyprus has intensified its relations with the European Union, its largest trading partner. On 1st of May 2004, Cyprus became a member of the EU.

The service sector, mainly tourism and financial services, dominates the economy.

The Government has set amongst its priorities the following basic goals:

- Attraction and development of new high-tech industries.
- Assistance and reconstruction of traditional Cypriot industry.
- Productivity improvement.
- Attraction of capital-intensive foreign investment.

Surface area	sq km	9 250
Population		780 133 (July 2005 est.)
Population growth rate	%	0.54 (2005 est.)
Life expectancy	Years	77.65
Literacy total	% age > 15	97.6 (2003 est.)
Literacy female	% age > 15	96.3 (2003 est.)
Unemployment rate	%	3.2 (2004 est.)
Inflation rate (consumer prices)	%	2.4 (2003 est.)
Public debt	% of GDP	74.9 (2004 est.)
GDP- Real growth rate	%	3.2 (2004 est.)
GDP PPP	\$10 ⁹	15.71 (2004 est.)
GDP PPP per capita	\$	20 300 (2004 est.)
GDP composition by sector - Agriculture	%	4.1 (2004)
GDP composition by sector – Industry	%	19.9 (2004)
GDP composition by sector – Services	%	76 (2004)
Industrial production growth rate	%	0.4 (2002)
Exports	\$10 ⁹ FOB	1 094 (2004 est.)
Imports	\$10 ⁹ FOB	5 258 (2004 est.)
Telephones – main lines in use		427 400 (2002)
Telephones – mobile cellular		417 900 (2002)
Internet hosts	Units	5 901 (2004)

Note: all data refer to the Republic of Cyprus except the surface area and population (which refer to the whole island).

5.2. Industry and environment

Industrial development and environmental impact

Since the second edition, the main concerns as regards the environmental impacts of economic activities to be highlighted are the following:

- Proposals for offshore electricity production for supplying the Cyprus market and its, not yet evaluated, environmental impacts.
- The continuous interest for the development of tuna farms (tuna ranching) and the stress such activities would place on the coastal areas.
- The strong interest in the development of golf courses, leading to the loss of agricultural land, use of scarce water resources and pressure on eco-systems.

New focuses of concern are the impacts of electromagnetic fields (mobile telephone antennas, land-based satellite dishes) and the impact of incineration plants to be installed for the disposal of animal waste, hazardous and clinical waste, as well as sanitary landfills.

The main concern from the service industry, which is mainly tourism, is waste and wastewater generation. Tourism has significant implications on land use, with the pressure

mainly concentrated on the coastal areas, as well as natural resources such as water. Indirect consequences of the development of tourism are the increase of problems due to transport, i.e. air and marine pollution and waste production.

Areas of special concern

The major environmental problems in Cyprus are coastline alteration, industrial-mining activities and urban effluents. Urban and untreated industrial effluents are especially relevant in the Bay of Limassol, nitrogen leaching from intense agricultural and over-fertilisation in the Bay of Liopetri and Ayia Napa and mining activity in the Bay of Vassilikos.

The areas of special concern, as identified in the second edition, are the electricity power stations, the petroleum refinery, the two cement factories, and the wineries and distilleries.

- As regards electricity production, the government policy is to replace, by the year 2009, the use of diesel for electricity production with natural gas. The petroleum refinery has ceased to operate and all fuel is now imported.
- Regarding the wineries and distilleries, according to the relevant legislation, these have been issued with discharge permits. The largest brewery/winery/distillery has already installed a wastewater treatment plant.

5.3. Legal and policy framework

Laws and regulations

Due to the accession of Cyprus to the European Union in 2004, the country's legal framework has undergone a deep process of change in order to ensure harmonisation with the European environmental acquis. Since 2003, sixty-eight new laws and regulatory acts have been enacted covering i.a. the following areas:

- Integrated prevention and control of pollution, e.g. Eco-label, EMAS and IPPC.
- Water protection, e.g. nitrate pollution, sea pollution, potable water quality.
- Waste management, e.g. waste electrical and electronic equipment, packaging waste, batteries and accumulators.
- Air pollution, e.g. transboundary air pollution, atmospheric air quality, control of VOCs.
- Chemicals, e.g. biocides, hazardous chemicals, ozone-depleting substances, GMOs.
- Noise pollution, e.g. environmental noise and noise from outdoor equipment.
- Horizontal issues, e.g. Kyoto Protocol, Aarhus Convention.

The main laws related to these areas which have been enacted, since the previous study, are as follows:

MAIN LEGAL FRAMEWORK FOR ENVIRONMENTAL PROTECTION

Electrical and electronic waste (No 668/2004)
Discharge of incineration residues (No 535/2004)
Environmental noise (No 224(I)/2004)
Eco-label (No 189(I)/2004)
Greenhouse gases emissions trading (No 132(I)/2004)
Environmental Management and Audit (No 122(I)/2004)
Access to information on the environment (No 119(I)/2004)
Ratification of the convention for the prevention of sea pollution from ships (Nos. 46(III)/2004, 38(III)/2003, 11(II)/2001, 57/1989)
Ratification of the convention on Persistent organic pollutants (No 42(III)/2004)
Nitrate vulnerable zones (No 42/2004)
Action plan to protect nitrate-vulnerable zones (No 41/2004)
Ratification of the heavy metals protocol (No 38(III)/2004)
Ratification of the convention on transboundary industrial accidents (No 32(III)/2004)
Ratification of the convention for civil liability for damages related to the marine transport of hazardous substances (No 21(III)/2004)
Protection and management of waters (No 13(I)/2004)
Discharge of urban waste water (No 772/2003)
Port reception facilities (No 771/2003)
Landfill of waste (No 562/2003)
Noise from equipment used outdoors (No 535/2003)
End of life vehicles (No 157(I)/2003)
Oil products specifications (No 148(I)/2003)
Batteries and accumulators (No 82/2003)
VOCs from the use of organic solvents (No 73/2003)
Integrated pollution prevention and control (No 56(I)/2003)
Ratification of the Bio-safety protocol (No 7(III)/2003)
Management of used oils (No 637/2002)
PCBs and PCTs (No 636/2002)
Nitrate pollution of agricultural origin (No 534/2002)
Asbestos discharges (No 515/2002)
Pollution from certain dangerous substances (No 513/2002)
Mercury discharges (Nos. 511/2002, 510/2002)
Cadmium discharges (No 509/2002)
Hexachlorocyclohexane discharges (No 507/2002)
Titanium dioxide discharges (No 505/2002)
Chemical substances and preparations (No 292/2002)
Noise from household equipment (No 192(I)/2002)
Air quality (No 188(I)/2002)
Heavy metals in packaging and packaging waste (No 183/2002)
Ionizing radiation (No 115(I)/2002)

Enforcement

When it comes to enforcing environmental legislation, the main problems encountered in Cyprus are the following:

- Recruitment problems/timescales
- Limited resources in some agencies
- Complex administrative structures
- Poorly defined responsibilities in some sectors
- Inadequate fines/charges
- Few effective economic instruments
- Historical focus on “water” issues
- Poor information flows/communication
- Limited access to outside (grant) finance
- Limited role of local authorities

The economic activities that face more difficulties when enforcing the legislation are the following:

- Animal husbandry (farm waste) treatment and disposal located in specific areas of the island
- Management of the packaging, waste electrical and electronic equipment and household waste on the entire island.

It should be noted that there is no tradition of signing voluntary agreements between the authorities and industry in Cyprus. The industry acts on the requirements of the legislation. When it comes to cleaner production, environmental practices are encouraged on a continuous basis by informing all stakeholders on a number of subsidy schemes and legislative measures which discourage the use of environmentally harmful technologies while promoting sustainable practices.

To improve enforcement of legislation, the Environment Service has been reinforced with additional personnel, and inspections in all areas are more frequent.

Permit system

Significant changes should be highlighted as regards the permit system since the second edition, which relates to the transposition into the national legislation of the European IPPC Directive (96/61/EC).

Competencies to implement the IPPC Directive

The Ministry of Agriculture, Natural Resources and Environment (MANRE) is responsible for implementing the provisions of the IPPC Directive in collaboration with the Department of Labour Inspection, of the Ministry of Labour and Social Insurance (MLSI).

The Environment Service, within MANRE, is the co-ordinating body and is responsible for the implementation and enforcement of the Water Pollution Control Law (including installations which must comply with the IPPC directive). It also issues waste disposal permits in accordance with the IPPC directive requirements.

The MLSI is the body responsible for air emission and air quality, and issues air emission permits for all installations in accordance with the air pollution control law, including installations which must comply with the IPPC DIRECTIVE.

All those installations falling under the IPPC directive have been invited to submit an application for a waste disposal permit (liquid and solid waste) and an air emission permit. The existing permits for IPPC installations are valid until 2007.

After 2006, new permits will be granted to all installations which must comply with the IPPC Directive that will include requirements to use best available techniques. The applications for IPPC permits will be examined at the same time by the Environment Service within MANRE and the Department of Labour Inspection within MLSI.

These departments have an excellent cooperation and together inform the installations about the IPPC requirements by organising presentations, seminars and awareness-rising campaigns in collaboration with the Cyprus Chamber of Commerce and Industry.

Establishment of emission limit values according to the best available techniques

A forum has been established in Cyprus, with all concerned parties, to issue a document with the most appropriate national best available techniques (BAT) for piggeries. In relation to this, MANRE has established a funding scheme so that the owners of piggeries and poultry farms/slaughterhouses can apply for a grant in order to establish a waste management facility.

In addition, there is an ongoing tender process for the selection, by the Environment Service, of an expert consultant in order to prepare documents that contain the national BATs for different industrial installations, taking as a reference both the European Best Available Techniques Reference Documents (BREFS), issued by the European IPPC bureau, and the local Cypriot conditions. These BATs will include emission limit values.

International conventions and protocols

In the international framework for the protection of the environment through pollution prevention, Cyprus signed the Protocol on Strategic Environmental Assessment on 21 May 2003, and ratified the Beijing Amendment to the Montreal Protocol on 2 September 2004.

Cyprus also acceded to the Stockholm Convention on Persistent Organic Pollutants on 7 March 2005.

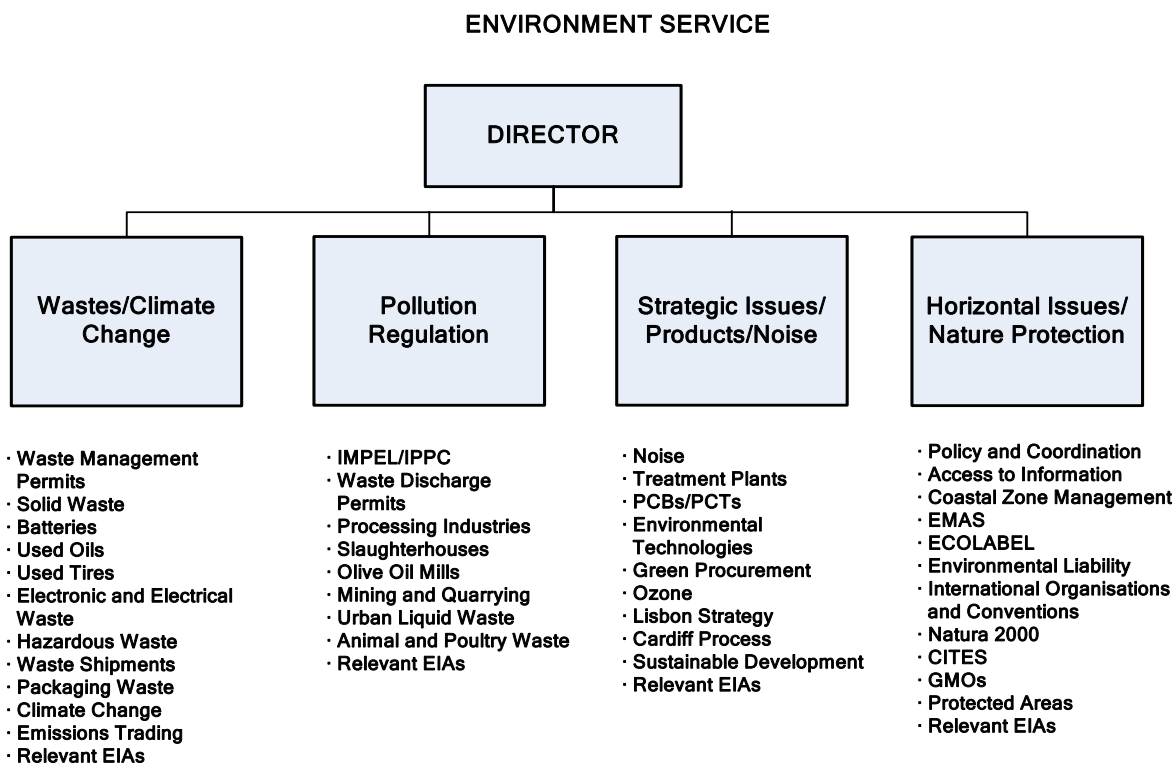
5.4. Agents involved in promoting CP

There is no particular structure in the government dealing specifically with cleaner production and eco-efficiency, but these are promoted through different departments of MANRE and MLSI, as described in the first and second edition.

The Environment Service

The Environment Service within MANRE, which cooperates with the MAP through its Director, the NFP for RAC/CP, is organized as follows.

ORGANISATION CHART OF THE ENVIRONMENT SERVICE



Other agencies in Cyprus that promote environmental practices in Cypriot industry are the Cyprus Institute of Energy, the Cyprus Research Foundation, The Institute of Technology and the Higher Technical Institute.

All agencies are coordinated by the Planning Bureau, a coordinating and policy-making governmental body which, in cooperation with all governmental services, collects and analyses information on the economy and proposes measures for future action.

5.5. Programmes, action plans and projects to promote CP

Programmes and action plans

Further to the adoption of the Action Plan for the Protection of the Environment (1996) and the National Programme for the Adoption of the Environmental Acquis Communautaire of the European Union (2000) mentioned in the second edition, Cyprus revised and extended the National Programme for the Adoption of the Environmental Acquis Communautaire of the European Union in 2002, and adopted the following strategies and plans.

The Strategic Development Plan (2004-2006)

Adopted in 2003, its main objective is to achieve a satisfactory rate of sustainable growth and the utilisation of the opportunities offered through the accession of Cyprus to the EU. Other objectives include, i.a., protecting the environment and improving the quality of life; focusing on policy instruments (fiscal tools, strengthening government services, environmental monitoring), etc. It is a key document for solidifying policies to achieve sustainable development, which is a long-term process.

The Strategy for the Environment (2005-2010)

The Strategy was prepared by MANRE in close cooperation with all sectors of government, civil society, the private sector, etc. Through concrete actions, coupled with timetables and the identification of investment needs and stakeholders/actors, the Strategy aims to achieve a high standard of living in combination with the protection of the environment, and to ensure that the protection of the environment is taken into account when decisions are taken in other sectors such as transport, energy, or tourism.

The main sectors the Strategy covers that are relevant, either directly or indirectly for cleaner production and eco-efficiency are the following:

- Horizontal issues: They refer to measures that cover a wide range of environmental issues, such as research and technology, environmental education, impact assessment, environmental liability, environmental information, integration of the environmental aspect into other policies and voluntary agreements.

Actions already taken include: further enhancement of environmental Education through seminars, leaflets, usage of media; promotion of EMAS and Eco-Label; the adoption of grants schemes for the promotion of usage of environmentally friendly technology; the establishment, in 2004, of the Cyprus International Institute for the Environment and Public Health in association with the Harvard Institute of Public Health; the process initiated to encourage Green Public Procurement; an identification of public awareness needs and preparation of public awareness enhancement programme; the preparation of a policy statement for the countryside and of local land-use plans for the main urban areas; the adoption and implementation of a sustainable tourism action plan; the full implementation since 2001, of a comprehensive environmental impact assessment system; the submission to the House of Representatives of a bill providing for the strategic impact assessment of plans and programmes; the withdrawal of all subsidies that conflict with the European Acquis; grant schemes for the support of renewable energy and pollution prevention from industrial activities.

When it comes to research and technologies development, Cyprus is currently considering its road map on the ETAP, the Environmental Technologies Action Plan which is the main policy for stimulating the development and uptake of environmental technologies of the European Union. The main challenges in this respect are the small size of the country and the structure of the economy, which is primarily based on services, the absence of any significant manufacturing industry and the lack of tradition in research coupled with the small size of the market, which are difficult to overcome.

- Environment and quality of life: The protection of human health and the quality of life is one of the priorities set by the Strategy, which incorporates the necessary measures to safeguard the environment and human health in the sectors of chemicals, pesticides, water protection, atmospheric protection, noise management, improving the quality of the urban environment and radiation protection.

Programmes have in the meantime been initiated for urban sustainability indicators, noise pollution assessment, air quality assessment, water quality protection, urban and rural sanitation, waste water treatment and reuse of tertiary treated effluent. Work has been initiated for a major integrated pollution prevention and control programme covering industrial enterprises and a central industrial wastewater treatment plan has been constructed. Other initiatives include: a study for sustainable mining and quarrying, a plan for water resources assessment and development, sea water desalination plants, assessment of Marine pollution from land-based activities, operation of port waste collection and transfer services.

- Climate Change: The efforts in this very crucial sector, focus on the reduction of the greenhouse gas emissions and follow the actions set by the European Climate Change Programme, targeting: special energy planning and management plans, renewable

energy promotion programmes, climate change plans, and a greenhouse gas emissions trading scheme.

The most important development has been the preparation of the strategic plan for the reduction of greenhouse gas emissions, approved in its general terms, by the Council of Ministers in September, 2003.

The measures included and being gradually put in place, are:

- Electricity generation (plans for the import of natural gas, replacement of old power units, use of RES, such as wind farms); residential & tertiary (improvement of the thermal behaviour of buildings, maintenance and/or replacement of central heating boilers, use of high efficiency air conditioning systems and electric appliances, use of energy-efficient lighting bulbs and automations, use of solar collectors, photovoltaic systems); industry (promotion of co-generation and energy conservation); transport (maintenance of vehicles, encouragement of small vehicles, encouragement for the use of small vehicles, incentive public transportation); waste management (recycling, methane recovery); public (campaigns on public awareness).
- As regards greenhouse gas emissions, it should be noted that Cyprus has no quantified targets, yet as a contracting party to the Kyoto Protocol it is expected that it will have to commit to important reductions in the rates of its greenhouse gas emissions. In response to this, a strategic plan for the reduction in the rate of increase of greenhouse gas emissions is being gradually implemented. This concentrates on the promotion of renewable energy sources, the use of natural gas, energy conservation and efficiency, transport management, changes in agriculture and industry and waste management. Additionally, a greenhouse gas emissions trading system has been prepared and approved by the EU. These measures are expected to reduce greenhouse gas emissions.
- Sustainable management of resources and wastes: The environmental sector with most challenges is undoubtedly waste management. The goals are, as set in the Strategy focus, the reduction of the amount of wastes produced, their reuse and recycling, and the landfilling of non-recyclable wastes in sanitary landfills.

Central to the waste management efforts are the Waste Management Strategy; the tendering of a major initiative to establish packaging waste collection points for recycling; the implementation of a major activity for landfill closure and rehabilitation and the building of a few new ones; and the establishment of a central hazardous waste treatment and disposal plant.

The Waste Management Strategy

The country's Waste Management Strategy, adopted by the Council of Ministers in April 2004, covers all waste streams (i.e., municipal, industrial hazardous or non-hazardous, end-of-life vehicles, used tyres, construction waste, used batteries, electronic waste, PCBs, used oils, agricultural waste, medical waste).

Furthermore, a Strategic Plan for the Management of Solid and Hazardous Waste has been elaborated which provides for the establishment of four regional centres (one per administrative district) for waste management that shall comprise a sorting plant, a composting plant, a sanitary landfill and all the necessary auxiliary services, a Hazardous Waste Management Plan will be prepared in 2006, which will include the Design, Construction and Operation of a Central Treatment Facility for Hazardous Wastes in Cyprus and a system will be established for the collection, transport, separation, recovery and recycling of packaging waste for fifteen municipalities and rural communities in the Districts of Nicosia and Limassol by the beginning of 2006.

Projects

In addition to these plans and strategies, it is worth mentioning that since the treatment and use of pig waste constitutes a serious source of annoyance and environmental pollution in Cyprus, an EU co-funded LIFE project aiming to support the competent Cypriot authorities in the design and implementation of a pig waste management and disposal policy and disseminating information on best practices was approved in 2003.

In addition, another EU co-funded LIFE project was approved in 2003 for the development of the best management systems for high priority waste streams: Electrical and electronic equipment waste, end of life vehicles and construction and demolition waste.

5.6. Tools and activities to promote CP

Amongst the various measures (economic and legislative) that have been implemented in order to promote sustainable practices in Cyprus, the following should be highlighted:

Grant Scheme for environmental protection investments to combat industrial pollution

Through this grant scheme, grants are offered for investment in eligible projects in the industrial sectors of mining and quarrying, manufacturing industry, car maintenance, packaging, the processing or recycling of waste, the washing or dry cleaning of textiles and other processes.

This Scheme is to be maintained until the end of 2006, the maximum grant to be offered to each qualified project being set at CY£150 000 (approximately €255 000). Eligible investment costs include the cost of land, buildings and equipment. The intensity of grant for investment offered is in the range of 15 % to 45 % of the eligible costs, depending on the size of the enterprise, the environmental performance, and some maximum limits on unit land and building costs.

Other schemes indirectly related for improving eco-efficient and environmentally friendly technologies include the Programme for the establishment of new enterprises of high technology and innovation through business incubators and the scheme for the technological improvement of manufacturing industries.

Grant scheme for energy conservation and renewable energy sources

This scheme became operational as from February 2004, with a view to promote energy saving and renewable energy sources utilization. The scheme provides for financial incentives in the form of governmental grants for the encouragement of investments and/or tariff subsidisation in the fields of energy conservation, co-generation of electricity – heating / cooling in existing or recently established enterprises and the promotion of Renewable Energy Sources. The scheme is financed through a special Fund, financed through a levy of 0.13 cent / kWh on the electricity bill.

Subsidy schemes for waste and pollution

The 2006 budget includes the sum of €1.7 million approx. for the implementation of subsidy schemes, which include:

- Recovery and recycling of waste
- Management of used tires
- Management of electrical and electronic waste
- Management of waste batteries

- Management of used oils
- Management of hazardous agricultural wastes (insecticide packaging and waste greenhouse plastic sheeting)
- Management of Ozone Depleting Substances

There are no environmental awards to recognise and promote companies that make an outstanding contribution to the environment in Cyprus.

5.7. Conclusions

On 1 May 2004, Cyprus became a member of the European Union. Due to accession, the country's legal framework has undergone a deep process of change to ensure harmonisation with the European environmental acquis. The conclusion of the harmonisation process has set the environmental coordinates for the future.

The harmonisation process has required an important effort from the Cypriot environmental authorities, which have been reinforced, but further efforts should be made to guarantee proper enforcement of legislation and overcome existing difficulties such as complex administrative structures or the need to recruit additional personnel.

Major improvements have occurred in the IPPC sector since IPPC requirements have been integrated in the Cypriot legal framework, and national BAT reference documents for different industrial installations will be prepared. Furthermore, plans which contemplate cleaner production have been developed over the last few years and new plans are in perspective of being developed, such as the Environmental Technologies Action Plan. The promotion of aspects related to cleaner production or eco-efficiency is mainly carried out by the government.

Nevertheless, the promotion of instruments that help introduce an environmental culture and reinforce cleaner production measures in the enterprises such as environmental management systems is still weak.

It should be mentioned that Cyprus has a service-based economy and the industry is very limited. Therefore, the promotion of cleaner production and eco-efficiency is rather limited and can only apply in very few sectors of the economy.

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6. Egypt

6.1. Introduction

Lack of substantial progress on economic reform since the mid 1990s has limited foreign direct investment in Egypt and kept annual GDP growth in the range of 2 %-3 % in 2001-03. However, in 2004 Egypt implemented several measures to boost foreign direct investment.

In September 2004, Egypt pushed through custom reforms, proposed income and corporate tax reforms, reduced energy subsidies, and privatised several enterprises.

The budget deficit rose to an estimated 8 % of GDP in 2004 compared to 6.1 % of GDP the previous year, in part as a result of these reforms.

Monetary pressures on an overvalued Egyptian pound led the government to float the currency in January 2003, leading to a sharp drop in its value and consequent inflationary pressure. In 2004, the Central Bank implemented measures to improve currency liquidity.

Egypt reached record tourism levels, despite the Taba and Nuweiba bombings in September 2004.

The development of an export market for natural gas is a bright spot for future growth prospects, but improvement in the capital-intensive hydrocarbons sector does little to reduce Egypt's persistent unemployment.

Surface area	10 ³ sq km	1.00
Population	Millions	77.51 (July 2005 est.)
Population growth rate	%	1.78 (2005 est.)
Life expectancy	Years	71
Literacy total	% age > 15	57.7 (2003 est.)
Literacy female	% age > 15	46.9 (2003 est.)
Unemployment rate	%	10.9 (2004 est.)
Inflation rate (consumer prices)	%	9.5 (2004 est.)
Public debt	% of GDP	102.7 (2004 est.)
GDP growth	% annual	4.5 (2004 est.)
GDP PPP estimated	\$10 ⁹	303.5 (2005 est.)
GDP PPP per capita	\$10 ³	3.9 (2005 est.)
GDP composition by sector - Agriculture	%	17.2 (2004 est.)
GDP composition by sector – Industry	%	33 (2004 est.)
GDP composition by sector – Services	%	49.8 (2004 est.)
Industrial production growth rate	%	2.5 (2004 est.)
Exports	\$10 ⁹ FOB	14.33 (2005 est.)
Imports	\$10 ⁹ FOB	24.1 (2005 est.)
Telephones – main lines in use	10 ⁶	9.6 (2005)
Telephones – mobile cellular	10 ⁶	8.58 (2005)
Internet hosts	10 ³	3.40 (2004)

6.2. Industry and environment

Industrial development and environmental impact

Total number of industrial facilities in Egypt has reached about 450 large facilities, 4 500 medium-sized facilities and 21 685 small facilities. The spinning, weaving, dyeing and preparation sector, the leather, metal, engineering, electrical, electronics and food industries are considered some of the largest industrial sectors in Egypt followed by the wood industry and its products and chemical industries.

Statement of industrial development in Egypt registered until 21/12/2004

Sector	Total no. of Factories
Spinning, weaving, clothes and leather	5 811
Food products, beverages and tobacco	5 203
Wood, wood products and upholstery	3 574
Basic chemicals and chemical products	2 616
Building material, pottery, china and ceramics	1 873
Paper and paper products, printing and publishing	1 572
Basic metal industries	2
Metal products, machines, transport equipment	5 443
Other transformational industries	541
Total	26 635

Source: Egypt State of the Environment Report, 2004 (General Organisation for Industrialisation, GOFI).

The geographical distribution of industry is uneven in Egypt. The industrial sector is heavily concentrated in Greater Cairo, the Delta and Alexandria. Currently, 41 % of the industrial production is concentrated in Greater Cairo, 17 % is located in the Delta, 16.8 % in Alexandria, and 14.2 % in Canal Zone. The remaining 11% of the industrial production is in Upper Egypt.

Geographic concentration of industrial activities inside cities and the use of polluting conventional technologies have led to negative impacts on the state of the environment in Egypt during the past decades. Most industrial facilities in Egypt were dependant on petroleum fuel, considered a main source of sulphur dioxide, nitrogen dioxide, carbon monoxide and smoke emissions.

This has prompted Egypt to embark on a new plan to encourage industrial investment in new communities located on non-agricultural land, such as 10th of Ramadan and 6th of October.

Next, the ratio of production change by sector in Egypt for the last three years is shown:

No.	Activity	Average /year
1	Crude petroleum & natural gas	650.7
2	Other mining & quarrying	-12.7
3	Manufacture of food products and beverages	-140
4	Manufacture of tobacco products	-276.2
5	Manufacture of textiles	143.6
6	Manufacture of clothing, dressing & dyeing of fur	-37.3
7	Tanning & dressing of leather , manufacture of luggage, handbags, saddlers	-514.7
8	Manufacture of wood & of products of wood & cork, except furniture	-496.8
9	Manufacture of paper and paper products	131.8
10	Publishing, printing and reproduction of recorded media	-138.1
11	Manufacture of coke & petroleum products	767.3
12	Manufacture of chemicals and chemical products	102.5
13	Manufacture of rubber and plastic products	242
14	Manufacture of other non-metallic mineral products	49.1
15	Manufacture of basic metals	538.3
16	Manufacture of fabricated metal products, except machinery and equipment	-257.3
17	Manufacture of machinery & equipment n.e.c	-128.2
18	Manufacture of office, accounting & computing machinery	-641.8
19	Manufacture of electrical machinery & apparatus n.e.c	43.7
20	Manufacture of radio, television & communication equipment & apparatus	-426.6
21	Manufacture of medical, precision & optical instruments, watches & clocks	-130.7
22	Manufacture of motor vehicles, trailers and semi-trailers	-238.5
23	Manufacture of other transport equipment	4 638.9
24	Manufacture of furniture, manufacturing n.e.c	-383.5
25	Retail trade, except motor vehicles & motor, repair of motors	-65.7

In terms of manufacturing sector output, the food-processing sector constitutes the largest portion, followed by textiles, which together account for 50 % of the manufactured output. In terms of employment, the ranking is reversed, with textiles being the largest employment sector, followed by the food and beverages group. While the manufacturing sector continues to be dominated by these two sectors, establishments manufacturing furniture, ceramics, and pharmaceuticals are gradually increasing their market share.

Industrial pollution sources are classified according to the type of pollutants into air, liquid or solid pollutants and hazardous wastes.

- Air pollutants

The main air pollutants are the gaseous and particulate emissions, such as carbon monoxide, nitrogen and sulphur oxides, dust and particulates containing compounds such as metals, minerals and organic substances. The most important source of such pollutants is the burning of petrol fuel used in most industrial facilities in Egypt. These fuels including mazott, which contains a high percentage of sulphur, thus it is a major source of sulphur dioxide emissions, in addition to industrial processes and raw material and final product storage operations as in the case with the fertilizer and cement industries.

The principal sources of industrial air pollution are found in Greater Cairo and Alexandria due to concentrations of metal and chemical as well as cement industries. 15 % of mills

use the moisture technique (wet process), whereas 85 % of mills use the dry method, producing the environmentally polluting bypass for which no remedy has yet been found.

For instance, there are three cement factories in southern Cairo, each producing roughly 400 tons per day, i.e. they collectively produce 1 200 tons of bypass dust daily. Bypass is one of the main reasons of air pollution when adverse wind blows from the south.

- Liquid pollutants

Industrial liquid pollutants include organic and inorganic compounds, metals and dissolved solid substances, which have harmful and dangerous effects on the quality of the environment, according to their type and concentration.

- Solid and Hazardous Wastes

Industrial activities result in large quantities of solid waste, according to the type of the waste-generating activity (3.5 million tons/year). Waste differs in terms of the harms it causes. Moreover, industry produces approximately 160 000 tons of hazardous waste each year, according to the Mediterranean Action Plan. Greater Cairo and Alexandria are the major sources contributing to this amount. The term "hazardous waste" is used to refer to solid, liquid and gas wastes that can pose a substantial harm to human health or the environment, if not managed wisely. These wastes are classified on the basis of one or more of the following characteristics: toxicity, reactivity, corrosiveness or flammability.

The major pollution problems that the **service industries** cause are:

- Hospitals and health care firms produce about 100 000 tons of non-hazardous wastes and 25 000 tons of hazardous wastes annually. Open dumping and open burning are currently the prevailing methods of disposing the hazardous waste. Using heavy oil and coal as a fuel in the incinerator, and using very old technologies with few precautions for air pollution control, give rise to the release of harmful pollutants into the atmosphere.

Medical waste is often included in the municipal solid waste (MSW) and this may include hazardous items, such as infectious material, pathogen-contaminated tissues, sharp objects, etc.

- The quality of the environment is frequently the primary attraction of tourists. However, their presence in increasing numbers accelerates the problems caused by human recreational activities. This can lead to a considerable pressure on the environment.

The phenomenal coral reef formation is vulnerable to environmental changes, such as climate change. Harmful activities also threaten the existence of coral reefs, such as sewage discharge, spillage and human handling. In addition, the rapid development of tourism in Hurghada, Sharm El-Sheikh and the Gulf of Aqaba has led to building more hotels to accommodate for the increase in number of local and international tourists, which has put more pressure on the fragile eco-systems in these areas. Thus, there is a threat to Egypt's coral reefs, and immediate action is required protect this precious natural gift.

Some areas on the River Nile receive pH, oil and grease load as a result from discharges from some Nile cruises.

Areas of special concern

The sensitive areas and industrial pollution hot spots, according to MEDPOL, are:

- Alexandrian coast - a critical wastewater problem because of high population growth and rapid industrial development.
- Mex Bay and Abu-Qir Bay - total BOD5 load is 219 500 tons/year and 91 700 tons/year respectively from urban and industrial effluents. There is a high concentration of metals in the sediments of the bays.

- Lake Maryut - it receives industrial effluents and shows severe signs of eutrophication (anaerobic conditions, hydrogen sulphide odours) as well as significant accumulation of heavy metals (mercury, cadmium, lead, zinc) in sediment and biota.

Furthermore, MEDPOL defines other hotspots, which are caused by other kinds of pollution (urban, agriculture, etc.).

Greater Cairo includes the major industrial areas of Helwan, Imbaba and Shubra Al Kheima, as well as about 250 industrial plants producing a wide range of products. There are more than 35 plants of heavy engineering and electronic industries. In Helwan City, there are 10 metal plants, which represent 31 % of total number of industries in this area.

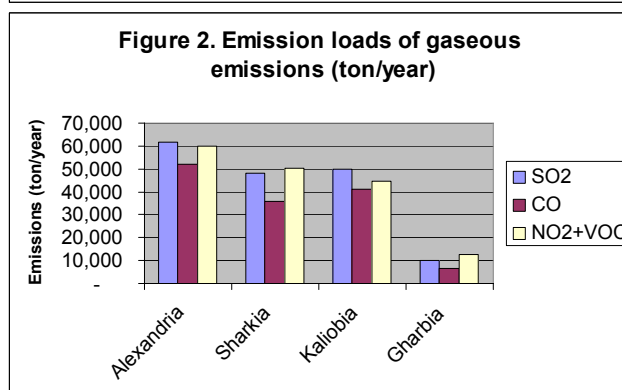
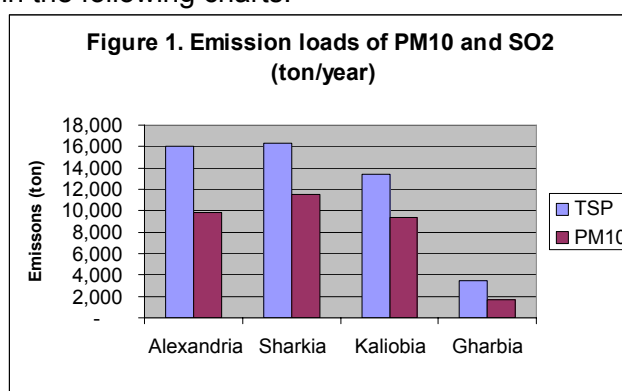
Alexandria is a major industrial area, which includes paper, metal, chemical, plastics, pharmaceutical, food processing and oil and soap. Most of their wastes are discharged to Lake Mariout, which also received the treated effluents from Alexandria wastewater treatment plant.

The emission loads of the main air pollutants have been estimated for the top 6 governorates, which are presented in the table that follows.

Top Governorates in Terms of Air Emission Loads (ton/year)

Governorates	Workers	TSP	PM10	SO2	CO	NO2+VOC
Cairo	303 895	29 532	21 019	122 046	102 929	88 631
Giza	175 081	20 528	14 738	56 506	40 827	56 256
Alexandria	192 213	16 036	9 881	61 771	52 077	59 801
Sharkia	161 963	16 310	11 521	47 919	35 982	50 313
Kaliobia	151 273	13 434	9 421	49 853	40 914	44 450
Gharbia	87 076	3 482	1 721	9 861	6 699	12 587

The upstream Governorates (Alexandria, Sharkiah, Kaliobia and Gharbia) are the main sources for air pollution in Cairo. The industrial air emission loads of these governorates are graphically presented in the following charts.



Some projects and activities undertaken in Egypt have contributed or contributing to the improvement of the state of the hot spots and the areas of special concern mentioned in the second edition:

- There is a plan for the relocation of the old SMEs (foundries, tanneries, brick works, etc.) which are located in greater Cairo to new industrial cities with cleaner technologies.
- 40 big companies which are located in Helwan & Shubra Al Kheima have started to implement their compliance action plans, to be in compliance by the end of 2006 (10 out of these companies have already complied with the Egyptian Environmental law no. 4/1994 on June 2005).
- The Ministry of the Environment is currently working on the preparation of Phase II of the Egyptian Pollution Abatement Project (EPAP II), whose main objective is to develop sustainable financial/technical and institutional mechanisms for pollution abatement and for the decrease of the pollution loads in the hot spots of Greater Cairo especially the Kaliobia and Alexandria areas.
- An incentive mechanism has been proposed to eligible companies in order to achieve the objective of reducing industrial pollution. This is an incentive mechanism which is a financial loan/grant and technical assistance package. This mechanism will also include targeted grants or soft loans to clusters of small industrial activities and environmental services, if necessary.

6.3. Legal and policy framework

Laws and regulations

The most relevant developments of the Egyptian laws and regulations on the environment are:

- Amendments to the Law No. 4 of 1994

As mentioned in the first and second editions, this law was issued in 1994 and its Executive Regulations (ER) were issued by Prime Minister's Decree No 338 of 1995.

During the past ten years, the implementation of the Law and the ER revealed the need for a number of modifications and/or amendments to improve the effectiveness of such regulations in protecting the environment, as the ultimate goal. In addition, the data collected on the real life environmental performance indicated that emissions standards needed to be updated. Hence, the Egyptian Environment Affairs Agency (EEAA), through four technical committees including representatives of the concerned parties and supported by a number of projects mentioned in the second edition, such as EPAP, developed the proposed amendments and modifications. The Prime Minister's decree was issued on October 2005.

The amendments and modifications covered mainly the following areas:

1. Amending the definitions of the discharges to include emission loads, in addition to concentration. The definitions of solid waste and the water environment were also added.
2. The mandate of EEAA in issuing guidelines on emission loads, allowable emission loads were considered in the licensing procedures for new establishments.
3. Inclusion of new governmental establishments among others that should provide an environmental impact assessment.

4. The concept of environmental self-monitoring has been regulated. The role of EEAA in reviewing, approving and following up on self-monitoring plans has been mandated.
5. EEAA to suspend the license of the plant in case of violating the conditions in the approved EIA.
6. The amendment of Provision No 25 explains the role on the Ministry Of Health in licensing the handling of the hospital hazardous wastes.
7. The detailed information requirements for the applicants for licences to handle hazardous wastes have been removed from Provision No 26. Instead, applicants should fulfil the requirements of the concerned authority. This modification provides more simplicity and flexibility in implementing that Provision.
8. Provision No 28 has been amended to meet the practical requirements for establishing hazardous waste treatment and disposal plants. Furthermore, the amendments provide more protection in dealing with the incineration and disposal of the hazardous waste. Reference to EEAA guidelines has been stated.
9. Amendment to Provision No 33 requires the concerned establishments to keep a register for hazardous wastes. A model for the register is included in the amended appendices.
10. The regulations regarding the disposal and handling of the municipal solid wastes, Provision No 38 has been enhanced and a new annex (11) has been added.

Furthermore, it should be noted that, as has already been mentioned, Law No 4 and its executive regulations encourage the industry to find ways to reduce hazardous waste generation through cleaner technology or hazardous material substitution. Currently, six ministries have prepared their list of hazardous wastes. Four of these lists have been authorised and issued as ministerial decrees, namely the Ministries of Agriculture, Industry, Health and Interior. The decrees of the Ministry of Electricity and the Ministry of Petroleum are ongoing. The difference between the lists is that each one is related to the raw materials that are used in the process of each operational sector (each Ministry).

The concept of cleaner production has been included in the new modification of the Executive Regulation. The aspect of emission loads has also been included, in addition to the concentrations, and incurring the industry to implement self-monitoring systems and include the output data in the environmental register.

- The Egyptian Policy on Cleaner Production
It is worth highlighting that the Egyptian Policy on Cleaner Production, drafted by the EEAA, was reviewed by an inter-ministerial committee and there are no major changes. The EEAA is starting to implement some activities of the plan but due to financial issues (there is no budget available to implement the work plan), there is some delay in the implementation.

Enforcement

According to the National Environmental Action Plan (2002 – 2017), one of the main problems in Egypt is the weakness of the Egyptian environmental laws for a variety of reasons, including the lack of human resources to carry out inspections and enforcement and lack of public awareness regarding the magnitude of the environmental problems and their negative effects. Moreover, the regulatory framework is not effective because standards do not always allow the necessary flexibility for the polluter and the regulatory agency to agree on a compliance schedule. However, the flexibility and the enforcement mechanism have been improved through the new amendments of the ER.

Permit system

As mentioned in the second edition, according to Law No 4, any new development project for a new facility (including tourist establishments) is required to formally undergo an EIA process, which will be reviewed by the EEAA. Three categories are recognized, namely, the white, the grey and the black list projects, based on the requirements in the EIA.

Based on the findings of the EIA, the EEAA has the right to make any specific comments on the proposed facility and request any changes to the process, construction or operation process so as to minimise the potential environmental impact. As regards new data, from 2003 to 2005, 9 571 EIAs have been submitted to the EEAA for approval.

One of the main issues in the work plan for cleaner production is to modify the EIA guidelines to include cleaner production. It is important to note that the modifications of the ER of Law No. 4/1994 requested the new establishments to include the emission loads to be emitted. Thus, the EEAA will be able to approve the permitted pollution loads.

Furthermore, during this period the EEAA has issued a simple format for the Compliance Action Plan (CAP), as the industrial establishments have to prepare a CAP for any commissioning license to be approved.

The format for CAP has been distributed to about 250 companies, and the industrial unit within the EEAA is the agent responsible for the follow-up of these companies.

Voluntary agreements

6 Egyptian companies have signed 6 voluntary agreements with the environmental authorities in order to comply with Law No 4/1994. These agreements include the adoption of cleaner production and eco-efficiency measures as companies are looking for applying the new cleaner technologies rather than end-of-pipe treatments due to costs savings.

International conventions and protocols

In the international framework for the protection of the environment through pollution prevention, Egypt ratified the Ban amendment to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal on 27 January 2004. Egypt also ratified the Kyoto Protocol on 12 January 2005.

6.4. Agents involved in promoting CP

The Egyptian Environmental Affairs Agency

An Industrial Unit was established by Decree No. 33/2004 of February 2004 within the Egyptian Environmental Affairs Agency (EEAA), which is attached to the Ministry of State for Environmental Affairs (MSEA), and under the Director of the Environmental Management Sector (EMS).

The mission of the Industrial Unit includes:

- To coordinate with local and international stakeholders on industrial pollution abatement activities and projects.
- To set industrial environmental policies, including different tools aiming at environmental compliance.
- To develop different enforcement procedures such as economic incentives.

- To promote awareness on environmental management systems and cleaner production.

The work team of the Industrial Unit is constituted by a director, 5 industrial specialists and one secretary.

The Egypt National Cleaner Production Centre (ENCPC)

The Egypt National Cleaner Production Centre (ENCPC) was created in October 2004. The ENCPC is a UNIDO initiative supported and financed by the Government of Egypt and granted by the Swiss and Austrian Governments. It is affiliated to the Ministry of Foreign Trade and Industry.

The main objective of the ENCPC is to improve the environmental and economic performance of the Egyptian industry, and to increase its competitiveness. The ENCPC plays an important role in coordinating already existing national cleaner production efforts; it promotes partnership links between public and private institutions and enhances capacity building for a more effective market access.

The Centre's target beneficiaries are small & medium-sized enterprises, regulatory governmental institutions and authorities, financial institutions, industrial research institutes and universities.

The program has a sectoral approach. Six industrial sectors are chosen, which are: textiles, food processing, chemical industries, fertilizers, handicrafts, metal processing.

The main activities undertaken by the ENCPC since its foundation are:

- Signature of 11 cleaner production service contracts with highly reputed Egyptian companies in sectors of iron & steel, chemicals and metal finishing.
- Implementation of the worldwide demonstration project on the new and innovative business model of chemical leasing.
- Development of a new HCl recovery method for pre-treatment facilities in galvanisation.
- Issuing of the national CP newsletter.
- Comprehensive market demand analysis for cleaner production and related services.

The Environmental Compliance Office (ECO)

The Environmental Sector Program (ESP) is a six-year framework project for wide-ranging assistance to national endeavours within Environmental Management. It is a cooperation project between the Egyptian and the Danish governments.

The Achieving Compliance in Industry component (ACI) is a part of the Environmental Sector Program (ESP). The objective of this component is to support the industry in improving compliance with environmental regulations through Cleaner Production.

The Environmental Compliance Office (ECO) was established on the premises of the Federation of Egyptian Industry. It started working in February 2002 and its role is to plan, guide, help, inspire and assist enterprises to draw up a plan for reducing their waste at source and increase their productivity.

Since its creation, the ECO has covered five sectors (metallurgy, engineering, food, textile and chemical), 130 factories have been screened and 33 pre-assessment environmental studies have been finished. Furthermore, 8 implementations have already started and ECO is working in four initiatives (Greater Cairo – 6th of October industrial city – Alexandria – Upper Egypt).

The ECO inputs to the industry cover the following:

- Planning
- Good housekeeping and low cost/no cost options
- Environmental management system
- Staff training
- Full environmental assessment
- Access to soft loan. (Pilot and demonstration projects)
- Workshops
- Possibility for access to larger soft loans

The project has financed 22 projects during (2003-2005) for cleaner production issues with total cost of 18 M L.E.

Association of Enterprises for Environmental Conservation (AEEC)

The Association of Enterprises for Environmental Conservation (AEEC), which is a partner of the World Business Council for Sustainable Development (WBCSD), was founded in 1996 by the Center for Environment and Development for the Arab Region and Europe (CEDARE).

The main goals of the AEEC are:

- To promote the introduction of market mechanisms in order to encourage sustainable business practices.
- To serve as a mediator between the public and private sector.
- To assist members in conducting Environmental Impact Assessments.
- To mobilise financial resources to support environmental management and conservation research.
- To identify, document and disseminate best practices of business actions for sustainable development.
- To organise training and education activities to advance the knowledge on sustainable development issues and to provide concrete examples and tools of sustainable business practices.

6.5. Programmes, action plans and projects to promote CP

Programmes and action plans

National Environmental Action Plan (NEAP)

The first national environmental action plan, which was mentioned in the second edition, was prepared in 1992. A new plan covers the period of 15 years 2002 – 2017, with areas of focus encompassing water quality management, air quality, management of land resources, desertification, and protection of marine environment, solid waste management, biodiversity and biological safety.

The current five-year plan extends from 2002 until 2007 and comprises 14 issue-specific sub programmes according to which reduction of pollution, minimisation of health hazards and improvement of quality of life are Egypt's short term environment objectives, while preservation of the natural resource base, national heritage and biodiversity are regarded as medium-term objectives. Integration of environment considerations into all relevant national policies, plans and programmes is considered as an overall strategic objective of the Egyptian environment policy.

The NEAP makes reference to the need to prioritise pollution prevention measures such as the following over the end-of-pipe corrective actions:

- Promoting cleaner technologies and good housekeeping practices.
- Reducing the hazardousness of wastes.
- Promoting reuse and recycling schemes.

National Strategy for Cleaner Production

The National Strategy for Cleaner Production was issued in May 2004, and it was prepared by the Ministry of the Environment in cooperation with other concerned ministries (Industry, Foreign Trade, Electricity, Petroleum, Finance, etc.), the Federation of Egyptian Industries and the Industrial Modernisation Programme.

The objectives of this strategy are:

- To contrast cleaner production to other measures for achieving environmental compliance.
- To clarify the advantages of cleaner production to the Egyptian industry and other stakeholders.
- To identify those barriers that may hinder the wide application of cleaner production in the Egyptian industry.
- To reduce the use of resources and hazardous material.
- To reduce air pollution and waste generation.
- To promote the production of clean products.
- To support the cleaner production option financially.
- To disseminate information related to cleaner production.

There is a Cleaner Production Plan linked to the Cleaner Production Strategy. The Cleaner Production Plan further is aimed at becoming a practical means of encouraging decision makers to create an effective role for the Egyptian government and the private sector towards cleaner production.

The objectives and missions defined by the Cleaner Production Plan are:

- The MSEA shall start with establishing the cleaner production mechanism and relevant national council and shall continue with protecting the ozone layer through developing industrial processes based on ozone/environment-friendly materials.
- To apply the Persistent Organic Pollutants (POPs) Agreement, limiting the use of organic pollutants and controlling their output.
- To apply management systems for hazardous materials and wastes, particularly in Egyptian industries, while expanding the financing packages of the environment friendly industry with loans facilitating benefit from industry modernisation program to develop environmental management systems.
- To continue with the transfer of the most significant polluting industries, such as tanneries, foundries, bricks factories, crushers, coal, kilns and pottery.
- To expand energy efficiency systems and the use of natural gas.
- To encourage recycling, closed circles, to establish treatment units, to establish linkage with sanitary drainage and industrial networks and to establish the Egyptian industry environmental management program in each of new industrial cities and industrial zones in governorates, free investment zones and small and medium-sized industries.

The Solid Waste Management Programme

The National municipal Solid Waste Strategy aims to design an effective and integrated management system to be implemented on the national level. The system is based on environmental legislation regulations, standards and international guidelines.

The Public Business Sector programme

This programme includes 125 facilities that are environmentally compliant with total environmental compliance investments of L. E. 1 913.69 million until January 2004. Currently, there is a plan for the compliance of 57 facilities requiring investment.

The New Industrial Cities Programme

This programme has been implemented over the last two decades, and its main objective is to concentrate industries in specialised areas allocated for productive activities in new cities so as to restrict their unplanned growth within cities, to capitalise on the latent resources in Egyptian deserts and coasts and to attract people to these areas. A funding of L. E. 1 290 million was allocated until 2004 for environmental compliance of industries in these cities.

The Small and Medium-sized Enterprises Programme (SMEs)

This programme comprises the relocation and upgrading plan for six polluting sectors: brick factories, smelters, tanneries, coal kilns, marble crushers and potteries for 3 861 facilities. Currently, a plan is being developed for compliance in these factories within five years, where the first stage includes the relocation of the polluting smelters and small industries. L. E. 120 million have already been spent and measures have already been implemented to relocate these factories.

Furthermore, there are other programmes linked to cleaner production and eco-efficiency, such as the Free Investment and Private Industrial and Economic Zones Programme and the Governorates Industrial Activity Programme.

Industrial Modernisation Program (IMP) / Industrial Modernization Center (IMC):

The Industrial Modernization Program is a national initiative, with a total budget of 430 million Euros, of which 250 million is funded by the European Union, making it the largest industrial support program the European Union has ever funded in the southern Mediterranean countries. The overall goals of the IMP are:

- Upgrade Egyptian technological skills to International Standards.
- Improve the performance of the workforce at all levels.
- Enhance investment opportunities.
- Develop an appropriate business environment for better efficiency.

Projects

- Demonstration of clean technologies in tanning processes. Project EU Life Programme, 2004 – 2007.
- Strengthening the Economic Tools for Environmental Sustainability in the METAP Countries – Project EU Life Programme, 2005 – 2007.
- Creation / promotion of a centre for the technological transfer in Egypt in the leather and shoe maker sector. Azahar Programme of the Spanish International Cooperation Agency, 2003 – 2005.

- The Support for Environmental Assessment and Management Project (SEAM). As mentioned in the second edition, within the SEAM I, 32 factories were audited and 21 demonstration projects implemented. Within the framework of SEAM II, 25 projects have been financed with a total cost of L. E. 1 133 million. Since the beginning of 2004, the project is preparing the South Sinai GEAP in cooperation with the European Union.
- The Egyptian Pollution Abatement Project (EPAP). This project, which was mentioned in the second edition, is financed by Finnish aid, the World Bank and the European Investment Bank. Through the financial packages of the World Bank and the European Investment Bank, EPAP has managed to help about 20 large-scale industrial companies to implement environmental investments and it has succeeded in financing 24 pollution abatement projects. The Government of Egypt is developing a new project for pollution abatement - the Egyptian Pollution Abatement Project II (2006 – 2010). This project will start in early 2006 and it will be built on the results and lessons learnt from the EPAP I project. The main objective of EPAP II is to develop sustainable financial/technical and institutional mechanisms for pollution abatement and for the decrease of the pollution loads in the hot spots of Cairo and Alexandria in order to improve local environmental conditions. This project will also introduce suitable enforcement approaches, improve the quality and the quantity of inspection activities, develop technical capacity of environmental institutions, as well as participating banks, and improve public information, awareness and activity relating to industrial environmental affairs in Egypt, particularly in Alexandria Governorate and selected areas in Greater Cairo.

The project includes two components (technical assistance component and investment component) and it is financed through a loan from the World Bank, GEF, Carbon Fund, European Investment bank, French Development Agency (AFD) and Japan Bank for International Cooperation (JBIC).

Within the framework of the EPAP, the Industrial Pollution Prevention Gateway has been constituted. It provides service to help industries to find information for pollution abatement and cleaner production, environmental management and funding opportunities.

Support of Environmental Assessment and Management Project (SEAM II). Within this project, which was already mentioned in the second edition, 25 projects have been financed with a total cost of 1.133 M L. E.

The Energy Efficiency Improvement and Green House Reduction project. The main achievements of this project, which was already mentioned in the second edition, are:

- Establishment of the Energy Efficiency Information Centre. Several demonstration projects on efficient lighting systems in different governorates have been implemented.
 - Energy audit programmes for governmental buildings and commercial and industrial establishments.
 - Involvement of NGOs in energy efficiency activities and awareness campaigns.
 - Establishment of public-private partnership between public energy distribution companies and private energy services companies.
 - Development of the energy-related specifications for three electrical appliances completed and supporting legislation issued.
 - Code for energy efficient residential and commercial buildings drafted.
 - An additional US\$300 000 were granted to the project from UNDP Thematic Trust Fund to support the establishment
 - Testing Laboratory at the New and Renewable Energy Authority in the Ministry of Electricity and Energy.
- The Environmental Sector Programme (ESP). This project, which was mentioned in the second edition, financed 22 projects during 2003 – 2005 for cleaner production issues with total cost of 14 M L. E.
 - The Egyptian Environmental Initiatives Fund (EEIF). This project is financed by the Canadian International Development Agency (CIDA). It encourages managing and

protecting natural resources in Egypt, particularly land and water through the private and free sector. This is achieved through strengthening the efficiency of small and medium-sized projects to improve the environmental efficiency of the production process and enhancing the ability and efficiency of NGOs and civil community associations to contain local environmental initiatives and support the private sector in the fields of environment non-polluting works. 1997 – 2004.

- The German cooperation agency KfW has financed 21 projects during 2003 – 2005 for in-plant modification (water saving) and end-of-pipe treatments (waste water treatment plant).

Other activities and tools

Other tools and activities undertaken in Egypt are:

Studies

- Preparation of Emission Inventory for South of Cairo, which included 70 point sources and some area sources (brick kilns and tanneries).
- Introduce the concept of negotiated agreements and prepare the structure of such agreement. The agreement would lead to a step-wise continuous improvement of polluting industries towards compliance – June 2004.
- Preparing two self-monitoring pilot studies. The self-monitoring practices of the pilot companies (Heinz and Goldentex Co.) was documented and improvements were proposed. Cleaner production opportunities were identified. Some monitoring equipment was donated to Goldentex in 2004.

Manuals

- Producing guidelines for calculating emission loads and recommendations for allowable loads were provided for the cement, ceramics, and fertilisers industries. - March 2004
- Preparation of General self-monitoring manual and textile self-monitoring manual for Arab countries in collaboration with Arab League – March 2004
- Preparation of a general inspection manual and a textile inspection manual for Arab countries in collaboration with the Arab League – September 2004
- Cooperation with training institutions
- Self-monitoring manuals were introduced into the curricula of Environmental Research and Studies Institute (Ain Shams University) – Engineering Department including curricula of diplomas, masters and PhDs. This initiative is being implemented, as of the 2004-2005 academic year.

Workshops

- Training on self-monitoring manuals for the food industry and the self-monitoring manuals for hazardous waste, wastewater, and boilers attended by 80 enterprises in March 2004
- Training for piloting the self-monitoring requirements that could be set forth in the environmental register in a textile company (Goldentex company) June 2004.
- Training Workshop on Cleaner Technologies for Sustainable Chemistry with ICS UNIDO attended by 100 industrial enterprises and CP centres from 8 countries - April 2005
- Seminar on advanced methodologies for reducing the environmental impact on Water of agro-food production with ICS UNIDO attended by 70 industrial enterprises and CP centres from 8 countries - April 2005

- Preparation for a workshop on the promotion of cooperation for CP and Environmentally sound technology transfer in the African and Arab Regions in collaboration with UNIDO. The workshop was held in June 2005 Representatives from African and Arab countries participated in the workshop together with CP centres in the region.

Website

Develop a website to provide service to help industry to find information for pollution abatement and cleaner production, environmental management, and funding opportunities.

6.6. Tools and activities to promote CP

Economic instruments

As mentioned in the second edition, currently there are no specific economic instruments for the implementation of cleaner production in Egyptian industries. There are, however, several financial packages available in the Environmental Protection Fund (EPF), within the EEAA. EPF has soft loans and a programme with total amount of 25 M L. E. for pollution abatement project has started, and cleaner production will be included in the scope of finance.

Furthermore, the Commercial International Bank (CIB) and the National Bank of Egypt (NBE) currently offer soft loans for cleaner technology. By means of an agreement between the NBE and the Africa development Bank, 200 millions of US\$ are offered for SMEs projects.

The Ministry of Investment is working with the Ministry of Foreign Trade and industry, the Ministry of and the Ministry of Environment to investigate the feasibility of decreasing the taxes and customs fees for the imported environmental equipment (including the equipment needed for cleaner technology).

Voluntary instruments

One hundred companies were awarded the EMS certificate from the publication of the 2nd edition up to 2005.

6.7. Conclusions

Major achievements have occurred in Egypt since the second edition to promote cleaner production in the economic and industrial sectors in terms of policy, partly due to the fact that Egypt is receiving considerable international assistance to undertake the relevant projects.

The Egyptian National Cleaner Production Centre was created in 2004, and an industrial unit has been established in the Egyptian Environmental Affairs Agency.

Further improvements have been achieved in the legal system with the approved amendments in the Egyptian framework Environmental Law 4/94. Of special relevance as pioneering experience in the southern Mediterranean countries, a National Strategy for Cleaner Production and an associated Action Plan have been launched.

Special attention should be paid in order to monitor the implementation of the Cleaner Production Action Plan and to ensure that it is really put into practice.

6.8. References

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7. France⁶

7.1. Introduction

France is in the midst of transition, from a well-to-do modern economy that has featured extensive government ownership and intervention to one that relies more on market mechanisms. The government has partially or fully privatised many large companies, banks, and insurers. It retains controlling stakes in several leading firms, including Air France, France Telecom, Renault, and Thales, and is dominant in some sectors, particularly power, public transport, and defence industries. The telecommunications sector is gradually being opened to competition.

France's leaders remain committed to a capitalism in which they maintain social equity by means of laws, tax policies, and social spending that reduce income disparity and the impact of free markets on public health and welfare. The government has lowered income taxes and introduced measures to boost employment and reform the pension system. In addition, it is focusing on the problems of the high cost of labour and labour market inflexibility resulting from the 35-hour workweek and restrictions on lay-offs.

The tax burden remains one of the highest in Europe.

The main trends of the French industrial sector are a stagnation of the manufacturing industry and a decrease of people working in the industrial sector (the number of people working in the industrial sector decreased by 2.7 % in 2003 and by 1.9 % in 2004).

When it comes to the Rhône-Méditerranée-Corse basins, industrial activity accounts for 20 % of French activity, and is especially concentrated in 5 departments: Rhône, Isère, Bouches-du-Rhône, Doubs and Haute-Savoie.

The main industrial activities in this area are precision mechanics, petroleum refineries, chemical industries, electrical equipment production, car industry and agrofood industry.

Within this area, the Rhône-Alpes region is the second industrial region in France. Half of the industrial activity in this region is concentrated in three large agglomerations: Lyon, Grenoble and Saint-Étienne. In the Provence-Alpes-Côte d'Azur region (PACA), more than two thirds of the industry is located in the Bouches-du-Rhône and the Alpes-Maritimes.

⁶ The information given in this chapter has not been confirmed by the national focal point for cleaner production in France.

Surface area	10 ³ sq km	547.03
Population	Millions	60.66 (July 2005 est.)
Population growth rate	%	0.37 (2005 est.)
Life expectancy	Years	79.6 (2005 est.)
Literacy total	% age > 15	99
Literacy female	% age > 15	99
Unemployment rate	%	10.11 (2004 est.)
Inflation rate (consumer prices)	%	2.3 (2004 est.)
Public debt	% of GDP	67.7 (2004 est.)
GDP growth	% annual	2.1 (2004 est.)
GDP PPP estimated	\$10 ⁹	1,816 (2005 est.)
GDP PPP per capita	\$10 ³	29.9 (2005 est.)
GDP composition by sector - Agriculture	%	2.70 (2004 est.)
GDP composition by sector – Industry	%	24.30 (2004 est.)
GDP composition by sector – Services	%	73.00 (2004 est.)
Industrial production growth rate	%	1.7 (2004 est.)
Exports	\$10 ⁹ FOB	443.4 (2005 est.)
Imports	\$10 ³ FOB	473.3 (2005 est.)
Telephones – main lines in use	10 ⁶	33.91 (2003)
Telephones – mobile cellular	10 ⁶	41.68 (2003)
Internet hosts	10 ⁶	2.40 (2004)

7.2. Industry and environment

Industrial development and environmental impact

Industrial activities are responsible for a very important part of the water pollution in France. In the Mediterranean region of France, industrial pollution is originated mainly from the chemical industry, winery distilleries and the paper industry.

The pollutants that are generally found in the Rhône-Méditerranée-Corse basin, which discharges water to the Mediterranean, are heavy metals, pesticides, PAHs and PCBs. The Corsican coast does not suffer from pollution coming from industrial installations, as it is not very industrialised, but the eastern Mediterranean coast is highly affected by industrial pollution. As regards to the main kinds of pollution in the PACA (Provence-Alpes-Côte d'Azur) region, these are suspended solids, organic matter, nitrogenous and phosphorous products, toxic (metals, hydrocarbons, chlorinated solvents).

Polluting industrial discharges in the PACA region are shown in the table below (source: Plan d'Action National de réduction de la pollution de la Méditerranée due à des sources de pollution situées à terre 2005 – 2010).

Parameters	Activity
Suspended matter (SM)	Agrofood, wood/paper, textile, extraction industry, chemistry. Example: Esso (Fos sur mer); 90 t/y discharged directly to the sea in 2003
Chemical oxygen demand (COD)	Agrofood, wood/paper, textile, chemistry, petrochemistry, waste treatment. Example: Sollac (Bouches du Rhône); 50 t/y discharged to the sea in 2003.
Nitrogen (N)	Agrofood, chemistry. Example: Esso (Bouches du Rhône); 34 t/y discharged to the sea in 2003.
Phosphorous (P)	Surface treatment, detergent industry. Example: Sollac (Bouches du Rhône), 2.7 t/y discharged to the sea in 2003.
Mercury (Hg)	Chlorine industry, chemistry and petrochemistry. Example: Naphtachimie (Bouches du Rhône); 3.6 kg/y discharged to the sea in 2003.
Cadmium (Cd)	Chemistry. Example: Ascométal (Bouches du Rhône); 3 kg/y discharged to the sea in 2003.
Lead (Pb)	Surface treatment, metal industry, chemistry. Example: Aluminium Pechiney (Bouches du Rhône); 1.7 kg/y discharged to the sea in 2003.
Chromium (Cr)	Surface treatment, metal industry, chemistry. Example: Naphtachimie (Bouches du Rhône); 55 kg/y discharged to the sea in 2003.
Organohalogenated compounds	Metal and glass industry. Example: SNPE (Vaucluse); 4.8 t/y discharged to the Rhône in 2003.
Hydrocarbons	Chemistry. Example: BP (Bouches du Rhône); 9.9 t/y discharged to the sea in 2003.
PAH	Chemical and petrochemical industry.
PCB	Chemistry.
Pesticides	Chemistry.

In the French Mediterranean regions, the production of solid industrial waste is of 3.4 million tonnes:

- 0.50 Mt of organic wastes of agro-food industries.
- 0.40 Mt of metallic wastes.
- 0.40 Mt of wood wastes.
- 0.93 Mt of banal wastes from construction.

This represents about 4 % of the 94 Mt produced at national level, the major part of which (43 Mt) corresponds to waste from the agro-food industries.

It should be noted however that environmental impacts related to industry are decreasing mainly due to:

- The sector's transformation and the manufacturing industry's stagnation.
- The regular renewal of the materials, which is necessary for the industrial production and for the continuous amelioration of the new technologies and the procedures which are available in the market.

As for service industries, the main pollution problem is the development of important economic activities other than the manufacturing industries, such as services, delivery and logistics, which have several environmental impacts (water, energy, wastes, air, etc.) which have to be managed.

Areas of special concern

Pollution from industries is concentrated in Marseille, Toulon, Nice and especially in the middle of the Fos-Berre complex. The other parts of the French Mediterranean coast host less important industrial installations, so industrial pollution is much lower.

The major anthropogenic activities are listed below:

- Marseille and Nice - they are relatively big cities, discharging mostly treated urban effluents into the sea.
- River Rhone - it transports, as well as the rivers Aude and Hérault, significant loads of nutrients and other pollutants (organic matter, metals) from their drainage basins.
- Fos-Étang de Berre - Fos is the biggest French and the second largest European harbour hosting oil and methane terminals, as well as a large industrial complex.
- Rivers Hérault, Gard and Vaucluse - are considered as vectors of industrial pollution (hydroelectric and nuclear plants, petroleum processing, electronic, metal plants and chemicals).
- Harbours of Marseille, Sète, port-la Nouvelle, Port-Vendres, Toulon (French Navy base), Nice, Bastia and Ajaccio - petroleum hydrocarbons' pollution occurs because of deballasting practices and accidental oil spills.

7.3. Legal and policy framework

Laws and regulations

Since the 2nd edition no major pieces of legislation linked to cleaner production have been enacted.

Permit system

The Directorates General of Industry, Research and Environment (DRIRE) are the administrative agencies that control industrial activities within the framework of the IPPC directive and they are in charge of the environmental police unit (more information on the DRIRE is included in the "Agents involved in promoting cleaner production" part of this chapter).

The regulation on classified installations for the environment mentioned in the second edition is based on the evolution of technologies. In this context, limit values for polluting substances are set in accordance with BATs.

It should also be noted that when it comes to measures to promote the use of BATs and BEPs, the objectives of the public administration through the Agency for the Environment and the Energy Management (ADEME) are to promote sustainable development, especially in those enterprises that support innovative or demonstrative operations in order to promote BATs.

In addition, the government and the public agencies, especially those under the responsibility of the Ministry of Ecology and Sustainable Development (ADEME, the Water Agencies) are engaged with its partners (municipalities, consular organisms and professionals) for the promotion of BEPs (waste management, environmental management, eco-design, etc.).

Voluntary agreements

When it comes to voluntary agreements, it should be noted that the environmental authorities have signed voluntary agreements with several industrial federations on the greenhouse effect. These agreements are aimed at improving energy efficiency in order to diminish the greenhouse effect.

International conventions and protocols

In the international framework, France approved the Montreal Amendment to the Montreal Protocol on 25 July 2003.

7.4. Agents involved in promoting CP

The State actions related to environment are developed by the central administration and by the decentralised administration. The institutions whose activities are linked to cleaner production are presented as follows:

Ministry of Ecology and Sustainable Development

This ministry cares for the quality of the environment, nature protection and pollution and nuisances prevention, reduction or disposal.

The ministry comprises:

- The Inter-ministerial Mission to Combat the Greenhouse Effect, MIES.
- The French Institute of the Environment, IFEN.
- The Inspectorate General for Environmental Services.
- The General Secretary.

The ministry is divided into 7 delegations and directorates:

- Delegation on sustainable development.
- The Directorate General of Administration (DGA).
- Directorate of Economic and Environmental Assessment Studies (D4E).
- The Water Directorate (DE).
- The Directorate for the Prevention of Pollution and Risks (DOOR).
- The Directorate of Nature and Landscape (DNP).
- The Directorate General of Nuclear Safety and Radioprotection (DGSNR).

The Water Directorate elaborates, promotes and follows up the policy related to protection of the seawaters against pollution.

The Directorate for the Prevention of Pollution and Risks, which was mentioned in the second edition, is responsible for the prevention of nuisances and industrial risks, the surveillance of the air quality and the fight against air pollution and waste treatment (production, recycling, valorisation, ecological quality).

The Agency for the Environment and the Energy Management (ADEME)

Also mentioned in the second edition, ADEME, a public agency which reports to the Ministries of the Environment, Research and Industry, is actively involved in the implementation of national policies pertaining to the environment and energy issues.

ADEME contributes to the development of the following actions:

- Energy management and raw material saving.
- Promotion of cleaner technologies and renewable energies.
- Limitation of waste production, waste disposal, recuperation and valorisation of the re-usable materials.
- Air pollution prevention and protection of the air quality.
- Fight against soil contamination.
- Fight against noise.

Moreover, it leads research and technological development programmes, in collaboration with the public research organisms or with the industrial research centres. Its main objectives are:

- To have a better knowledge of the industrial waste, whether they are hazardous or not, and of their impacts on the environment, as well as to prepare future regulations or agreements with the public powers.
- To develop waste prevention by means of the research of cleaner technologies and the implementation of the eco-conception.
- To develop efficient paths on the technical, economic and environmental domains with the aim of valorisation the wastes flows or, whenever this is not possible, their correct disposal.
- To develop collective organisational practices aimed at improving waste management.

ADEME gives financial aid and technical support (by means of technical guides, for example) for the carrying out of studies for the enterprises, it helps them optimise their energy management, to diminish their environmental impacts and to integrate in a move towards sustainable development and it works with them to promote best practices and eco-efficiency.

These are some examples of the actions carried out by ADEME since the 2nd edition:

- Waste
 - Launching of the action plan “waste prevention”. The action plan is aimed at stabilising from now to 2008 the waste production (support to the environmental management programmes, to eco-design, launching of a call for the initiative “wastes – 10 %” which aims at creating a network of 100 pilot enterprises that commit to reduce in 2 years at least 10 % of the wastes they generate or do not valorise).
 - Support to the creation of new treatment paths (electric and electronic wastes, tyres, etc.);
 - Favour the geographic approach by the creation of a plant for waste separation, grouping platforms, transit centres, collecting and storing centre.
- Energy
 - Support to research programmes (parts manufacturers, etc.).

- Encouraging voluntary action of the enterprises (studies aimed at facilitating decision-making, support to demo and efficient investments, communication and diffusion of the results, etc.).
- Launching of the “Bilan Carbone”, the first French computer program for the calculation of the greenhouse emissions (further mentioned below).

ADEME is the National Focal Point of France for the RAC/CP.

The Water Agencies

Also under the Ministry of Ecology and Sustainable Development these are administrative public establishments which finance studies and work aimed at fighting against the loss of water quality caused by pollution by fulfilling the objectives of quality of the aquatic environment by reducing the polluting discharges, in particular toxic; improving the knowledge of the sources of industrial pollution, its consequences on the environment and the technologies which can be applied in order to reduce them, restoring those sites having polluted soils which threaten water resources, etc.

The decentralised administration within the regions and the departments

At the regional level, there are two institutions whose missions are also linked to cleaner production and eco-efficiency:

- Directorates General of the Environment (DIREN), which contribute to the information, capacity building and public awareness to all the agents related to environment protection.
- Directorates General of Industry, Research and Environment (DRIRE), which control industrial activities which are likely to have an environmental impact, within the framework of the regulations on the classified installations for the protection of the environment. They coordinate, at the regional level, the inspection of the classified installations for the protection of the environment.

In order to coordinate their work, agents involved in promoting cleaner production at local-regional level meet to discuss on their programmes and establish leading committees or monitoring committees to follow up of the main actions.

Other agents

It should also be noted that the network of the responsible persons for the environment of the Chambers of Commerce and Industry in France continues to develop in order to cover the main part of the territory.

7.5. Programmes, action plans and projects to promote CP

Programmes and action plans

Environment Enterprise Plan (EEP)

Further to the information contained in the second edition, it should be noted that the first phase of the EEP, to make a state-of-the-art action plan, is aimed at raising enterprises' awareness concerning their environmental impacts.

The action plan enables companies to prioritise actions to be implemented according to their environmental impact and their technical and economic feasibility, thus improving waste management (diminishing its impact on the environment and promoting recycling). When the companies need to invest in order to put forward these actions, organisations such as the chambers of commerce and industry, ADEME, DRIRE and the regional council encourage

them to choose the best environmentally performing techniques by offering them economic support.

The main development as regards the implementation of the EEP since the 2nd edition is the fact that more and more enterprises use this plan as a reference to put in place environmental management measures and, for some enterprises, to achieve the ISO 14001 certification.

Further to management measures, enterprises are now launching new actions towards eco-design and the taking into account of sustainable development.

National plan for the reduction of pollution in the Mediterranean caused by land-based sources 2005 - 2010

This national plan is aimed at implementing the strategic action programme, which was adopted in 1997, and at making the application of the Land-Based Sources Protocol.

This plan defines some objectives and a schedule for the reduction of pollution. The objective to be achieved by 2010 is to reduce waste production and to respect the packaging valorisation criteria which are included in the European directive of 11 February 2004, which are, for example, reaching a valorisation rate of 60 % with a recycling tax between 55 and 80 %.

These objectives are:

- To reduce the amount of waste produced, especially by disseminating the results of the operation called "objective waste -10 %".
- To promote eco-design.
- To give a structure to the emerging industrial paths.
- To increase valorisation rate by taking as a reference the network of environmental consulting of the chambers of commerce and industry and by giving support to manufacturers working in the waste domain for the creation of new tools (collective collecting and storing centres, a centre for the waste selection, the establishment of separate waste collection or of biological treatment systems).
- Supporting the phases of the environmental management.

This national plan defines several actions which are directly aimed at preventing pollution in the industrial sector in the Mediterranean.

National programme for water pollution prevention and reduction caused by the discharge of dangerous substances in the aquatic environment and 2004-2009 strategy adapted to the new policy on waste

The national programme for the prevention and reduction of water pollution caused by the discharge of dangerous substances was established in the application of Directive 79/464/EEC on 20 April 2005 aimed at reducing emissions of hazardous substances in the aquatic environment.

This programme makes reference to specific quality norms in the aquatic environment for every substance concerned, the revision of emission limit values in the framework of the legislation related to classified installations and the research and reduction of discharges of dangerous substances into the water by classified installations.

Furthermore, ADEME has launched a strategy for the period 2004-2009 which gives priority to, inter alia, the implementation of the national plan for waste prevention for waste reduction

at source and the elaboration of plans for the departments to adapt the waste disposal capacity to its needs.

Projects

Projects supported under the Intelligent Energy Europe – Europe Scheme

The Intelligent Energy Europe – Europe Scheme is a programme promoting the efficient use of energy and the use of renewable energies.

- Project RECIPE
RECIPE – Reduced Energy Consumption in Plastics Engineering is a collaborative dissemination project involving 8 European research and technology organisations from six of the major plastics processing nations.

The aim of the project is to provide the European plastics processing industry with the knowledge, justification and tools required to reduce energy consumption, through the implementation of best practices and the introduction of new technologies.

One of the objectives of the RECIPE project is to produce a European best practice guide for the plastics processing industry.

- Project BESTFACADE
This project, entitled BESTFACADE (Best practice for double skin façades) is aimed at actively promoting the concept of double skin façades in commercial buildings.

Projects of the EU Life programme

Within the EU Life Programme, the following projects linked to cleaner production and eco-efficiency are being implemented in France:

- Clean alternative technology to chemical milling - demonstration of technical, environmental and economic performance of mechanical milling for the machining of complex shaped panels used in the aeronautical and space industries – GAP (green advanced panels) project. 2005-2007.
- Appropriate clean technology - process of electromagnetic textile ennoblement aiming at to decrease the aqueous pollution. 2005-2007.
- Project of clean technologies setting up the development of green electronics in aeronautical and military communication systems. 2005-2009.
- Airbus corporate answer to disseminate integrated environmental management system. 2004-2007.
- Eco-design interactive tools. 2001-2004.

Other initiatives

The following initiatives developed since the second edition should also be highlighted:

- ECOCONCEPTION (ECO-DESIGN): preparation and distribution of a book with specifications.
- BILAN CARBONE: creation of the “BILAN CARBONE”, the first French accounting tool for greenhouse gases aimed at enterprises and at groups.

As a reference, it should be noted that over the period 1990-2003 France managed to stabilise its greenhouse gas emissions, in particular due to the importance of the nuclear energy production. However, the emissions from the transport sector, which represent the

largest share of total emissions (27 % of the national total in 2002) continue growing. Emissions from the residential and tertiary sectors are growing too.

- SD 21000: AFNOR (the French Association for normalisation) has created a guide to identify the stakes for sustainable development within the enterprise's strategy and management.

7.6. Tools and activities to promote CP

Economic instruments

As for the economic instruments adopted since the second edition, there has been a continuation of the existing programmes related especially to the contracts of State/Region plan 2000-2006.

As for the subsidies aimed at promoting pollution prevention mentioned in the second edition, there is further information below:

- The General Tax on Polluting Activities (TGAP) was instituted by the 1999 Finances Law; it is related to household wastes, industrial wastes, oils, phytosanitary products and the substances emitted to the atmosphere.
- The pollution tax paid to the agencies of water refers to the integration of the purchase price of the cost for eliminating the product in the end of its life (oil motors, phytosanitary products).
- Economic incentives - grants to certain installations of cleaner production or of waste pollution prevention (selection centres for industrial wastes, treatment centres, etc.).

These economic instruments have sometimes been completed (pneumatic wastes, etc.) and new programmes allow to sustain the development of eco-design.

In addition, special measures have been developed to help companies invest in the environment; either with fiscal measures or direct aids for investment to reduce water and air pollution (the water agencies and ADEME intervene).

Voluntary instruments

Besides the aspects related to technology, enterprises are encouraged to adopt environment management programmes, especially within the framework of technical and financial cooperation programmes between ADEME and the regional councils, in which there is also the implication of enterprises' representatives (chamber of commerce and industry).

The first phase of this program consists of a description of the current state of the enterprise followed by an action plan. Those enterprises who wish to do so can implement environment management measures.

Concerning eco-labelling, there are currently 17 EMAS registered organisations in France (last updated 12 July 2005).

Concerning eco-labelling, the trademark NF – Environnement is the French eco-label. The NF – Environnement certifies products that have less impact on the environment with, at least, equivalent performance to similar products.

The eco-labels of the NF – Environnement are relevant for many products such as painting, varnish and related products, rubbish bags – Bags for the collection and the precollection of waste, furniture, coffee filters, etc.

Awards

Further to the information included in the second edition, every year ADEME awards a trophy to those enterprises that have installed an innovative or outstanding process or industrial technology that contributes to the decrease of the primary energy consumption or a decrease in the pollutant emissions.

The procedure is as follows: the enterprises' reports being read, the jury makes awards 6 enterprises, only 3 of which having the category of SME or SMI.

This award is called "The Economic and Clean Technologies Award", and this year it is in its 13th edition. It is open to any industrial or commercial enterprise settled in France.

7.7. Conclusions

The IPPC system in France is in place and there is a good level of coordination between the administrations that control industrial activities at different levels (national, regional, local). This requires a complex organisational structure, which is very well developed.

Furthermore, voluntary agreements are in an advanced level, as the voluntary agreements signed with industrial federations on the greenhouse effect show.

In addition to this, the national agency ADEME, which is present in the whole country, supports enterprises and promotes the introduction of BAT and energy efficiency measures for example by means of the Environment Enterprise Plan. It also creates synergies with the other administrations and other key agents such as the chambers of commerce and industry.

When it comes to the opportunities and disadvantages to promote cleaner production and eco-efficiency in France, it should be noted that the context is favourable to raise awareness of industries on cleaner production (cost of waste management and the energetic products, general awareness on the environmental impacts).

Nevertheless, the multiplication of the approaches of certifications (quality, hygiene, safety, environment, etc.) makes it difficult to mobilise small and medium enterprises.

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8. Greece⁷

8.1. Introduction

The Greek economy has been growing at steady rates above projected EU averages. Services make up the largest and fastest growing sector of the economy. Tourism is a major source of foreign exchange earnings, although the industry has been slow to expand and suffers from poor infrastructures. The food industry is expanding rapidly to support new markets in neighbouring countries. High-technology equipment production, especially for telecommunications, is also a fast-growing sector. Agriculture still employs 15 % of the workforce. Many structural problems persist and the privatization of the telecommunications, banking and energy sectors has not moved at the pace originally proposed. EU funds will continue to finance major public works and economic development projects, upgrade competitiveness and human resources, improve living conditions, and address disparities between poorer and more developed regions of the country.

Surface area	10 ³ sq km	131.94
Population	Millions	10.69 (July 2006 est.)
Population growth rate	%	0.18 (2006 est.)
Life expectancy	Years	79.24 (2006 est.)
Literacy total	% age > 15	97.5 (2003 est.)
Literacy female	% age > 15	96.5 (2003 est.)
Unemployment rate	%	10.8 (2005 est.)
Inflation rate (consumer prices)	%	3.8 (2005 est.)
Public debt	% of GDP	108.9 (2005 est.)
GDP growth	% annual	3.3 (2005 est.)
GDP PPP estimated	\$10 ⁹	236.8 (2005 est.)
GDP PPP per capita	\$10 ³	22.2 (2005 est.)
GDP composition by sector - Agriculture	%	6.2 (2005 est.)
GDP composition by sector – Industry	%	22.1 (2005 est.)
GDP composition by sector – Services	%	71.7 (2005 est.)
Industrial production growth rate	%	1.7 (2005 est.)
Exports	\$10 ⁹ FOB	18.54 (2005 est.)
Imports	\$10 ⁹ FOB	48.2 (2005 est.)
Telephones – main lines in use	10 ⁶	6.35 (2004)
Telephones – mobile cellular	10 ⁶	9.30 (2004)
Internet hosts		414,724 (2005)

⁷ The information in this chapter has not been corroborated by the National Focal Point for Cleaner Production in this country.

8.2. Industry and environment

Industrial development and environmental impact

Some of the most important activities in Greece with environmental impact are the following:

Chemical industry

Over recent years, the chemical industry has followed an upward growth trend. This ascending trend, however, seems to have reached an end, at present. This sector has addressed its intention to create an environmentally sound profile for its companies. It is noteworthy that the Greek chemical industry has attained sufficient compliance with international technological developments towards pollution prevention and control, by giving priority to intervention at source. Areas affected by pollution from the chemical sector (and refineries) are in Athens and the Thessaloniki area. Problems originate mainly in West Attiki (the Athens area).

Paper / Tanneries / Textiles

Most of the paper industry in Greece comes under the IPPC Directive (European Directive concerning integrated pollution prevention and control) and utilizes progressive production techniques, adopting most of the best available techniques (BATs) shortly after their emergence. On occasion, incorrect equipment operation offsets the existence of technology.

Only one tannery (the largest in size and production) comes under the IPPC Directive and it has already adopted a number of BATs. A possible solution would be their relocation to a special Tannery Park with all necessary infrastructure (e.g. treatment plants).

The textile industry is very important to Greece, employing many workers and contributing significantly to the national income as an exporting branch that uses mainly local raw material (cotton). There are about 220 units of different sizes in the textile industry, 75 % of which are of family-size with less than 10 employees. The current tendency is the removal of many of those units to the neighbouring Balkan countries due to the lower labour costs. Many water pollution problems are caused by textile finishing activities. Amongst the larger enterprises, those that keep investing in BATs are showing a continuous improvement, whereas those that stick to the old practice show a steady decline. The main necessity for pollution control is the treatment of liquid effluents and the disposal of sludge.

Cement, ceramic, glass industry

The cement-producing industries have a very high level of implementation of techniques described as BATs. The present state of the lime producing industries, regarding the protection of the environment, is far from satisfactory. The strict emission levels proposed by the BREF document are a problem. Greek asbestos and asbestos products industries seem to implement most of the techniques described as BATs mainly for reasons connected with workers' hygiene and safety. Glass industries currently implement simple measures to prevent pollution. The adoption of BATs will generate the need for high investment in pollution abatement equipment. State participation in such investment costs should be considered as a motive for their adoption. In the Greek ceramic sector, with the exception of a few large companies producing sanitary ware and floor tiles and some large brick and roof tile industries that adopt pollution abatement technology, the rest of the industry is at a rather "primitive" level.

Metal processing industries

Small and medium-sized enterprises have problems implementing modern technological development for economic reasons, but the large facilities of this sector have attained sufficient compliance with the international technological developments for pollution prevention and control, by giving priority to intervention at source. Areas affected by pollution

from the metal processing sector (and refineries) are Athens, Viotia, Thessalia and the Thessaloniki area. Problems arise mainly from West Attiki (Athens area).

Energy Sector

This sector consists of large lignite and petroleum combustion plants. Energy industries include large combustion installations, crude oil and natural gas treatment units, and units producing electricity from lignite or petroleum and four refineries. According to data from 1997, the units using fuel oil or natural gas produce 17.8 % of all electrical energy, and emit, roughly, 21 % of the energy sector's SO₂ emissions and 28.6 % of its NO_x emissions. The petroleum units face only local environmental problems. Emission levels depend on the nature of the fuel ash. Preventive Techniques are suitable for the Greek Electric Lignite Stations. Some problems exist in Southern Greece due to the nature of the lignite.

Food Industry

The food industry is a well-established industrial sector (about 1/3 of the total number of industrial units), and with a high number of installations working on the intensive rearing of poultry and pig industries, processing of agricultural products, oil production, treatment and packaging of consumer products, milk products, beverages etc. Problems of pollution result from seasonal and small units.

Of the entire workforce, SMEs play an important role as they share 86 % of total employment and 70 % of industry employment (41 % corresponding to small industries, with less than 50 employees, and 29 % to medium-sized industries, with 50-250 employees).

Service industries issues

The tourism industry is both an important source of income for the Greek economy and a source of pollution. The main pollution problems, with a strong seasonal component, are increased waste and wastewater generation and noise levels (especially in tourist centres). However, the large tourist enterprises apply wastewater treatment methods, so that adequately treated effluents are discharged into the municipal sewer systems. It must be pointed out that Greece ranks second in the European Union for the Blue Flag Programme, since 99 % of the Greek beaches fulfil the relevant criteria for water quality.

The waste management sector is flourishing and is represented by 80 facilities, which fall under the IPPC Directive. Hazardous waste management constitutes a particularly complicated problem, mainly due to the nature of the waste and the measures that must be taken to protect the environment and public health. Currently, there are some projects for specific facilities for hazardous waste disposal or incineration, and their construction is amongst the priorities of Greek authorities. The problem is at present handled either by temporary storage of the hazardous waste in the place of production, or by exporting limited quantities to other countries.

Areas of special concern

The most polluted areas are the Attiki (Athens area), Thessaloniki (Northern Greece) and Kozani/Ptolemais (only from Energy industries).

The UNEP Strategic Action Programme has identified the following hot spots with both industrial and municipal pollution: Inner Salonic Gulf, Elefsis Bay, Thermaikos Gulf, Patraikos Gulf, Pagasitikos Gulf, Gulf of Heraklio, North-Western Saronic Gulf and Nea Karvali Bay.

8.3. Legal and policy framework

Laws and regulations

Greek policy and legal framework to promote CP is reflected in laws and initiatives, such as:

- Law 3010/2002, Ministerial Decisions, KYA 11014/703 /F 104/2003, and KYA15393/2332/2002, transposing the provisions of Directive 97/11, amending the EIA Directive 85/337, and the IPPC Directive 96/61
- Law 3299/2004 for the promotion of investments
- Ministerial Decision, KYA. 50910/2727/2003, on measures and conditions for solid waste management (National and Regional Management Planning).
- The Operational Programme "Competitiveness" (within the framework of the 3rd Community Support Framework, 2000 - 2006) through which the Ministry of Development supports the implementation and enforcement of EMS schemes (EMAS, ISO 14001), BATs, and Ecolabel.

Permit system

Since 1990, environmental permits are applied systematically within the permitting procedure on activities through the Environmental Impact Assessment procedure, which is currently regulated by Law 3010/2002, transposing the provisions of Directive 97/11, amending the EIA Directive 85/337, and the IPPC 96/61, and the aforementioned Ministerial Decision KYA 11014/703 /F 104/2003, which specifically states that the fulfilment of environmental conditions is a prerequisite for granting the operating permit.

As decentralization of the permits procedure was implemented in January 2003, the 14 regional environmental authorities deal with the main work load concerning both the examination of the Environmental Impact Statements from applicants and the fulfilment of the environmental conditions of the permit, including those for most IPPC activities, while the biggest industrial units fall under the Ministry's decision. Environmental conditions of smaller units are approved by prefectures.

The introduction of BATs as one of the criteria taken into account by the environmental authority when approving the environmental conditions for the permits for IPPC activities supposes a useful tool to promote CP in such activities.

The enforcement of the environmental conditions established in the permits falls on the regional environmental authorities, the protectoral services and an Inspectorate of the Environment. In their task, these entities are technically supported by the newly established National Centre for Environmental and Sustainable Growth.

International Conventions and Protocols

In the international framework for the protection of the environment through pollution prevention, Greece has ratified the Basel Convention on Hazardous Wastes and has signed the Stockholm Convention on Persistent Organic Pollutants. Concerning ozone depletion, it has ratified the Montreal Protocol and its amendments, except those of Montreal and Beijing. Regarding climate change, it has ratified the Kyoto Protocol.

Within the framework of the Mediterranean Action Plan, and with regard to the protocols mainly focusing on land-based activities, Greece ratified the Land-Based-Sources Protocol and has accepted the amendments of 1995. As regards the Hazardous Waste Protocol, the country has signed but not ratified it.

8.4. Agents involved in promoting CP

The **Ministry of Environment, Physical Planning and Public Works** and the **Ministry of Development** make up the institutional framework for promoting CP in Greece, basically through their activities to introduce BATs in Greek industries and the various research and investment promotion programmes.

Besides these two public bodies, the following institutions supervised by the Ministry of Development – either through the General Secretariat of Research and Technology or the General Secretariat for Industry- are involved in CP promotion:

- The **Centre for Renewable Energy Sources (CRES)** is a financially and administratively independent public institute, whose main goal is the promotion of applications of renewable energy sources, the rational use of energy and energy saving at a national and international level, and the support of related activities taking into consideration the environmental impacts, in energy supply and use.

Since it started up, the CRES has participated in about 600 European, national and international projects. These include applied research projects and development, demonstration projects, energy policy studies, development of energy information systems and energy modelling, investment feasibility studies, techno-economic studies, environmental impact assessments, market research, as well as activities for the promotion of renewable energy sources, rational use of energy and energy saving. Through these projects, the CRES has developed co-operation with numerous public and private organisations, at a national, European and international level.

- The **Hellenic Innovation Centre (HIRC)** is a consortium of support for the transfer of technology to SMEs and the demonstration of best practices for the fostering of innovation in companies. The HIRC is co-ordinated by the National Documentation Centre, under the umbrella of the Ministry of Environment, Physical Planning and Public Works, and constituted by the Hellenic Organization for Small and Medium-Sized Enterprises and Handicraft (EOMMEX), Thessaloniki Technology Park/MDC, and five sectorial companies representing Greek industry. HIRC also has the collaboration of the Democritus University of Thrace and the University of Crete.

Within the framework of the Mediterranean Action Plan, the Ministry of Environment, Physical Planning and Public Works (Directorate General for the Environment/Environmental Planning Division) is the National Focal Point (NFP) for Cleaner Production in Greece.

8.5. Programmes, action plans and projects to promote CP

Programmes and action plans

Several programmes and plans have been introduced in Greece by different agents to address pollution prevention and to promote CP in IPPC activities through the introduction of BATs. Some of them are listed below:

- The **3rd Community Support Framework 2000 - 2006 (CSF III)** is a development plan agreed and adopted between the Greek Government and the European Commission to assist sustainable development in Greece. Within the CSF III's framework, the so-called Operational Programme "Competitiveness", implemented by the Ministry of Development and aimed at supporting quality-orientated competitiveness of businesses, offers industries support:
 - to invest in and apply BATs.

- to apply EMAS (obligatory, until 2005, for Athens area A1 category industries, voluntary in smaller industries) and ISO 14000 (obligatory for all other A2 industries in Athens area).
 - to apply Eco-Labels.
- A complete examination of all Greek industry was carried out regarding BATs through the project Examination of pollution prevention and control technologies for Greek industries in Annex I of the IPPC Directive and submission of proposals for the application of best available techniques, implemented by the Ministry of Environment, Physical Planning and Public Works.

The objectives of the project were:

- to be used as Greece's contribution in the negotiations on the determination of BATs at a European level.
- to be used for the reduction of pollution and the improvement of abatement measures by applicants for environmental permits
- to provide information for industries and consultants through Guidebooks on pollution prevention.
- to provide information for permit-granting authorities.
- to formulate general rules for the prevention and control of pollution.

Some of the results obtained through the project are:

- Publication of seven Guidebooks helping the following industrial sectors to apply for permits, by providing information on financial instruments and BATs:
 - Refineries and power plants
 - Metal producing and processing industry
 - Mineral industry
 - Chemical industry
 - Waste management
 - Pulp and paper industry, textile industry and tanneries
 - Food industry
- European Pollutant Emission Register (EPER)
- Identification of the facilities under Directive (about 400, of which 82 have been reported to the European Commission for the EPER).
- Assistance to the regional and prefectural services through guidebooks on pollution abatement techniques and BAT techniques.

Environmental Technology Action Plan

The General Secretariat for Research and Technology of the Greek Ministry of Development, through the Operational Programme "Competitiveness" 2000-2006, supports the research activities of both the country's scientific research institutes and industry, focusing on areas that are important for the national economy and for the improvement of quality of life. Furthermore, it promotes the transfer and dissemination of advanced technologies throughout the country's productive sector and encourages activities aimed at raising awareness among the general public on research and technology issues. In this context the

General Secretariat for Research and Technology completed a study on Environmentally Sound Technologies in Greece: Progress of Research and Technology, Economic and Social Impacts, which will be used as a framework for action on SCP (Sustainable Consumption and Production) in the near future.

Projects

In addition to the activities carried out in the development of the aforementioned programmes, at a level of international collaboration, mention should be made of Greece's participation in the EU-funded project **ESTEEM** (Equipping SMEs with Technology for Environmentally-Friendly Manufacture). Within this project the Prefecture of Athens is in charge of transferring technologies for environmentally-friendly manufacturing to SMEs by using a network of local authorities, business agencies and technical centres.

Furthermore, these are some examples of projects which are being developed within the EU LIFE Programme:

Introduction and Promotion of the ECO-LABEL in the Greek Textile Industry (ECO-TEXTILE)

The overall objective of this project executed from 2002-2006 is the introduction, promotion and implementation of the EU's Integrated Product Policy, especially sustainable production and consumption in the Hellenic fashion industry, which includes key market actors and potential end-users (consumers, retailers, traders). The project entails the wide promotion and introduction of the Green Product concept and Eco-label scheme in the Hellenic textile industry, via the establishment of the necessary partnerships, marketing network, and technical infrastructure. The implementation of five demonstration pilot Eco-label projects and the respective promotional and dissemination actions will support this objective. Other key objectives of the project are:

- Public awareness of quality environmentally-friendly products.
- Motivation of textile enterprises to identify Eco-labelling as a market-based instrument.
- Provision of technical assistance to textile SMEs in assessing the requirements and evaluating the potential of Eco-label implementation in their products.
- Compilation of support material to facilitate Eco-label implementation by SMEs.

Integrated Product Policy in the Telecommunication Sector

The project, executed from 2004-2007 addresses eco-design and end-of-life management of telecommunication devices, with the following key objectives:

Development of an eco-designed telecommunication device with minimal environmental impacts during its entire life cycle;

Demonstration of an eco-efficient way to close the material and component loop, through developing eco-friendly ways of product reuse, disassembly, component reuse and recycling;

Development of a model for eco-design and end-of-life management of other electronic products.

8.6. Tools and activities to promote CP

Economic instruments

Taxes are implemented on the following subjects:

- Direct discharge fee available for common wastewater treatment plants on organized industrial sites
- An additional tax on the price of petrol (fuel consumption). Greece applies a policy of differentiated excise duties on mineral oils, with exemptions for RES and bio-fuels. Around €92 million per year, equal to 5-7 per cent of the total revenue collected from motor fuel taxation (€0.015 per litre) is channelled to the Ministry of Environment for environmental purposes.
- Use of car tax

In addition, economic incentives are under preparation for the energy and industry sector, within the framework of the 3rd Community Support Framework, 2000 - 2006.

Voluntary instruments

Eco-labelling for environmentally-friendly products is regulated in Greece by Ministerial Decision 86644/2482/1993 establishing the Council for Eco-Label Granting (ASAOS). This Council, in cooperation with the Ministry of Environment, has contributed to the information of enterprises and consumers in Eco-Labeling issues, has organized meetings at both national and international level and has undertaken studies for the creation of product groups and the promotion of environmental criteria. For the moment these product groups are tourist services and the bed mattress industry.

A small number of Greek enterprises have registered under EMAS and ISO 14000. These are large enterprises belonging mainly to the food industry. In the near future municipalities and the service sector are expected to start registering under EMAS. The Ministry of Environment has organized information campaigns to this end.

8.7. Conclusions

Greece is launching activities to adapt industry to EU environmental performance standards where the main driving force is the IPPC Directive. Significant improvements have been achieved.

According to the information collected for this study, in Greece CP is mainly associated with BAT references. This might result in a constraint on SMEs since they cannot really benefit from the complex information contained in the BAT Reference Documents (BREFs) due to their limited human and financial resources. Until an institution specifically dealing with CP is established in the country, a possible option may be that institutions such as HIRC and EOMMEX, which assist entrepreneurial development, and in direct contact with SMEs, may act as channels for creating awareness of CP in these companies, by including it as one of the components of their activities.

8.8. References

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9. Israel

9.1. Introduction

Israel has a technologically advanced market economy with substantial government participation. It depends on imports of crude oil, grains, raw materials, and military equipment.

Despite limited natural resources, Israel has intensively developed its agricultural and industrial sectors over the past 20 years. Israel imports substantial quantities of grain, but is largely self-sufficient in other agricultural products.

Cut diamonds, high-technology equipment, and agricultural products (fruits and vegetables) are the leading exports.

Israel usually posts sizable current account deficits, which are covered by large transfer payments from abroad and by foreign loans. Roughly half of the government's external debt is owed to the US, which is its major source of economic and military aid.

The economy grew at 1 % in 2003, with improvements in tourism and foreign direct investment. In 2004, rising business and consumer confidence as well as higher demand for Israeli exports boosted GDP by 3.9 %.

Surface area	10 ³ sq km	20.77
Population	Millions	6.28 (July 2005 est.)
Population growth rate	%	1.2 (2005 est.)
Life expectancy	Years	79.32
Literacy total	% age > 15	95.4 (2003 est.)
Literacy female	% age > 15	93.6 (2003 est.)
Unemployment rate	%	10.7 (2004 est.)
Inflation rate (consumer prices)	%	0 (2004 est.)
Public debt	% of GDP	104.5 (2004 est.)
GDP growth	% annual	3.9 (2004 est.)
GDP PPP estimated	\$10 ⁹	154.5 (2005 est.)
GDP PPP per capita	\$10 ³	24.6 (2005 est.)
GDP composition by sector - Agriculture	%	2.8 (2003 est.)
GDP composition by sector – Industry	%	37.7 (2003 est.)
GDP composition by sector – Services	%	59.5 (2003 est.)
Industrial production growth rate	%	4.5 (2004 est.)
Exports	\$10 ⁹ FOB	40.14 (2005 est.)
Imports	\$10 ⁹ FOB	43.19 (2005 est.)
Telephones – main lines in use	10 ⁶	3.006 (2002)
Telephones – mobile cellular	10 ⁶	6.334 (2002)
Internet hosts	10 ³	437.52 (2004)

9.2. Industry and environment

Industrial development and environmental impact

In the past two decades, industrial output in Israel has made international-level strides in the fields of medical electronics, agro-technology, telecommunications, fine chemicals, computer hardware and software, and diamond cutting and polishing.

The economic slow-down in Israel, coupled with the worldwide crisis in high-tech industries, has affected the local manufacturing industry considerably. Its product fell in 2001 by 5.7 % (as against a 10 % leap in 2000); the number of firms and employees decreased by 2003, at the end of which, however, the trend started changing with industrial products, investments and employee growth ratios all turning positive again, continuing even more so in 2004.

In 2004, The Ministry of Industry, Trade and Labour earmarked several high-priority areas to encourage the expansion of the market:

- Export growth as a leading catalyst of economic expansion.
- Job creation.
- The expansion of the scope of investments in the industry and industrial R&D.
- The development of financing tools for industry, businesses and investors.
- The enforcement of proper trade standards.

The main industrial sectors in Israel and their development are:

- High-tech industries

After a 2-year decline in its product, as well as a decline in the investments and employees, the high-tech industry was the first to shrug off the depression and switch to a positive growth already in 2003. Over 90 % of the annual \$1.4 billion public budgets for R&D are allocated to the high-tech industries, much of which is channelled via joint venture capital funds.

- Diamond industry

Israel's diamond industry exports amounted to \$9 billion in 2003, producing about 80 percent of the world output of small polished stones, which make up most of the gems used in jewellery settings.

- Chemical industry

The Israeli chemical sector consists of 200 industrial plants, which employ more than 26 000 people and are responsible for one of the largest overall productions in Israeli industry. The industry covers a variety of activities, including manufacturing of basic raw materials, use of Israel's natural mineral resources, manufacturing of chemical interim products for various industries, such as agriculture, and manufacturing of consumer products (pharmaceuticals, cosmetics, detergents, etc). Sales of Israeli chemical industry amounted to \$10.12 billion in 2003 and \$11.93 billion in 2004, of which \$5.08 billion in 2003 and \$6.43 billion in 2004 were exported. During the last decade, the export of the Israeli chemical industry continued to grow.

- Pharmaceutical Industry

There are about 30 industrial plants with a total of more than 5 400 workers. Sales of Israeli pharmaceutical industry amounted to \$1.9 billion in 2003, of which \$1.3 billion were exported. In the last few years, the export of pharmaceuticals has shown an impressive increase.

As regards environmental impacts, the Annual Report of the National Marine Environmental Monitoring Program for 2004 reveals that in general, the level of pollution of Israel's Mediterranean coastal waters is not high relative to international marine environmental quality guidelines and criteria. Trends of decreasing pollution identified in previous years continued in 2004. However, the situation is not yet satisfactory. Significant quantities of anthropogenic materials are introduced into the coastal waters both from point sources (marine outfalls and coastal rivers) and from diffuse sources (runoff waters and atmospheric deposition). As a result, a number of local pollution problems exist along the coastline.

Following are some highlights of environmental trends for several environmental indicators:

- Heavy metals in sediments: mercury and lead concentrations decreased over the past decade in Haifa Bay and pollution dropped in the Kishon outlet. Generally, metal concentrations in shallow waters are below risk level. Local pollution problems continue in Haifa Bay, the Dan Region Wastewater Treatment Plant outfall, the Agan Chemicals/Ashdod Refineries outfall and in several ports and marinas.
- Heavy metals in suspended particulate matter: cadmium levels in the southern part of Haifa Bay continued to drop. High concentrations of mercury, cadmium and copper in some river outlets.
- Heavy metals in fish: mercury concentrations have stabilized at a lower level than in the previous decade and fish are fit for consumption. Mercury enrichment in inshore fish from Haifa Bay relative to other areas.
- Heavy metals in benthic organisms: mercury concentrations in bivalves decreased between 1980-1992, increased since 1993 and have decreased again over the past three years.
- Heavy metals in dust: concentrations similar to Europe. Lead concentrations in the atmosphere have decreased.
- Organic pollutants in sediments: no change in concentrations of pesticides, TBT and PCBs in the period 2000 - 2004. High levels of TBT in ports and marinas.
- Organic pollutants in water: concentrations of volatile and semi-volatile organic micro-pollutants below detection limit. High levels of TBT in different ports and marinas.
- Nutrients and acidity in rain water: nitrogen and phosphorus flux into coastal waters remains smaller than in Europe, with no significant changes in nitrogen flux in the last seven years.
- Nutrients in coastal rivers: some reduction in nutrient levels (especially in the Soreq and Kishon Rivers), but levels remain medium to high.
- Nutrient load from point sources: reported decrease in quantities discharged into rivers.
- Nutrients in coastal waters: phosphorus and nitrate enrichment in Haifa Bay, phosphorus enrichment near the Yarkon and Soreq River outlets and nitrate enrichment near the Yarkon and Taninim River outlets.
- Microalgae in coastal waters: high concentrations in Haifa Bay, the Kishon River estuary, and near the Yarkon and Taninim Rivers.

As regards the services industries, the major pollution problems that they have to face are:

- In the healthcare sector, ethylene oxide is used for sterilisation in hospitals and is listed as a carcinogenic material by the International Agency for Research on Cancer. During 2004 measurements were held in the hospital stacks and pollutant levels were measured to exceed the emission standards by a few thousand times in some hospitals. The issue is taken care of by the Ministry of Environment.

- In the tourism sector, environmental threats include severe limitations in terms of land and space resources, damage from construction of roads, pressures on the terrain, flora and fauna, damage to archaeological sites, visual pollution, congestion, and activities which may diminish the value and image of tourist sites.
- As for the transport and communications sector, its importance very much exceeds its mere share in the economy's statistics, as it is an infrastructure industry serving all other branches of the economy as well as households. It is a service sector that - as is the case in all modern economies - is growing faster than production industries. A remarkable growth in the aviation part of this sector has taken place in recent years but the growth of the communications sector has been even faster. The main environmental concern in transport sector is the emission of air pollutants.

Areas of special concern

As mentioned in the second edition, the main hot spots and areas of special concern for environmental pollution in Israel are:

- **Ramat Hovav**, which is an industrial park. It is one of the most contaminated industrial areas in Israel.
 - There are 17 industrial plants, which produce large quantities of wastewater.
 - There is the only hazardous waste treatment site of Israel, which includes an incinerator for hazardous wastes.
 - There is a joint wastewater treatment plant and evaporation pond.

Soil surveys revealed problems of pollutant infiltration to groundwater. In recent years, odour and air pollution have plagued the daily life of the surrounding population. An epidemiological survey, which was released by the Ministry of Health in July 2004, found higher rates of prenatal deaths, respiratory problems and birth defects among communities in the surrounding area.

In November 2004, the Israeli government approved a decision to abate pollution from the Ramat Hovav industrial park, in accordance with an action plan proposed by the Ministry of the Environment. The decision calls for the industrial plants to treat their own wastes, rather than transferring them to joint treatment facilities and ponds, by June 2006. Today, there is a lack of proven, applicable and available wastewater treatment technologies for the industries in the park.

The plants will also be required to treat excessive air pollutant emissions. According to the plan, the Environment Ministry will formulate and operate a plan for preventing excessive hazardous waste emissions into the air from the Ramat Hovav industrial area and complete the remediation of the national site for the treatment of hazardous waste at Ramat Hovav by 2010.

- **Haifa Bay area.** Air pollution is one of the main concerns caused by the petrochemical industries in Haifa.

The Ministry of the Environment aims to upgrade the existing air emission standards, which are based on German TA-Luft 1986 in accordance with TA-Luft 2002. Following the decision of the Ministry of the Environment to upgrade the existing air emission standards and adopting TA-Luft 2002, the BREFs (Best Available Techniques Reference Documents) were applied in 4 petrochemical factories.

- **Naaman and Kishon** rivers. The Kishon River, which empties to sea near Haifa, has long been plagued by heavy pollution from industrial effluents and municipal wastewater. There has been an improvement in its situation in recent years, largely due to the investment of major resources by industrial plants and Haifa's municipal wastewater treatment plant. In-house wastewater treatment plants have been built in the industries.

The MEDPOL study on pollution issues country per country identifies also the following:

- **Ashdod** area - Israel's main industrial harbour and its sediments are contaminated by heavy metals, organochlorine pesticides and TBT.
- **Hadera area** - it receives urban and industrial effluent from the coast, as well as runoff from agricultural land through the Hadera and Taninim streams.
- **Tel Aviv/Jaffa area** - industrial and urban effluents, port facilities. Pollution vectors include the Gush Dan and Yarkon River. The Tel Aviv harbour and the marinas of Tel Aviv and Jaffa are contaminated with PCBs and TBT.

As regards improvement of these areas of special concern and hot spots, in the framework of the Mediterranean Action Plan (MAP), the Strategic Action Programme (SAP) was designated to bring about the gradual elimination of pollution from land-based sources into the Mediterranean Sea by 2025.

To provide quantification of where and how much pollution enters the Mediterranean Sea, Israel has already provided:

- A national report on its pollution hotspots and sensitive areas.
- A national diagnostic analysis (NDA) to assess the quantities and types of pollution to identify priorities for action.
- A national baseline budget of pollution emissions and releases, for the base year 2003 of all pollution sources including types and amounts. This inventory will serve as a reference point for determining reduction targets in the National Action Plan (NAP).
- A progresses report on the NAP for addressing pollution from land-based sources.
- A public hearing in July 2005 to present the process of NAP preparation to all stakeholders, including the general public, in order to obtain feedback from all participants.

9.3. Legal and policy framework

Laws and regulations

Although there is no legislation process concerning cleaner production and eco-efficiency directly, some of the regulations published are related to source reduction of environmental impacts.

- The Protection of the Coastal Environment Law was enacted in August 2004. The stated aims of the law include:
 - Protecting the coastal environment, its natural and heritage assets and to prevent damage to them.
 - Preserving the coastal environment and the coastal sand for the benefit and enjoyment of the public, for this and for the future generations.
 - Establishing principles and limitations for the sustainable management, development and use of the coastal management.

- Regulations for sanitary wastewater sludge treatment, use and disposal, which were published in 2004:
- Regulations for hazardous materials that are ozone-depleting agents, which were published in 2004, in order to apply the Montreal Protocol commands.
- Regulations for brine concentrations in industrial wastewater, which were published in 2003. The purpose of these regulations is to reduce salt concentration in wastewater so as to reduce environmental problems as explained above.
- In the government decision on sustainable development of 14 May 2003:
 - It was decided that the policy of the Government of Israel shall be based on the principles of sustainable development practice, that combine a dynamic economy, wise use of natural resources, protection of ecosystems, and the granting of equality of opportunity to all, in order to respond to the needs of the present and future generations, both as a follow up to Government decision No 2426 of August 4, 2002, and in the spirit of the World Summit on Sustainable Development held in Johannesburg in August-September 2002.
 - Each Ministry of the Government has proposed ways to implement the above decision. Among others, The Ministry of Industry, Trade and Labour has proposed to promote clean manufacturing practices and to support the Cleaner Production Centre.

In addition to those, as mentioned before, currently The Ministry of Environment aims to upgrade the existing air emission standards, which are based on German TA-Luft 1986 in accordance with TA-Luft 2002.

Enforcement

The main problem facing the application and enforcement of the regulations are the inadequate resources, even though the Ministry is allocating its resources. There is need for more skilled manpower.

One of the current issues in the agenda is the implementation of new European directives, Waste Electrical and Electronic Equipment (WEEE) and restrictions of the use of certain hazardous substances in electric and electronic equipment (RoHS). Even though Israel is not an EU member, the electronic sector is affected by the implementation. In order to update the sector on the issue, the Ministry of Infrastructure has published a booklet about the requirements that will result from the implementation of the directives.

It should be noted that the legislation process is usually long and complex, and to simplify this process, “additional conditions” in the Business Licensing Law is used as a tool to implement new requirements from the industries.

In order to enforce laws and regulations, so as to improve the quality of the environment, the Ministry of the Environment uses the “Green Police” as a tool. The Green Police is empowered to undertake investigations under a variety of laws. It is authorized to stop environmental polluters, investigate them, present them with “finable offence orders” (fines in lieu of trial), and transfer investigation files to the Environment Ministry’s Legal Division for the preparation of indictments.

In addition to its routine work, each year the Green Police launches several enforcement campaigns that are directed at different sectors in different parts of the country – including garbage dumps and transfer stations, illegal gas stations, and more. In 2004, the Green Police launched hundreds of investigations, conducted dozens of enforcement campaigns, issued thousands of cleanliness reports and carried out some 10 000 inspections in factories, landfills and sewage treatment sites.

Permit system

As mentioned in the second edition, the business permit is issued by the local authority, which integrates, coordinates between conditions and requirements demanded by different ministries, as well as and preventing contradictions between them. The local authority is the licensing authority in the area of a municipality or local council; otherwise a person empowered by the Minister of the Interior serves in that capacity.

Up to now, the adoption of measures linked to cleaner production and eco-efficiency are not a prerequisite for obtaining the business licence, although it should be noted that in the draft for conditions in business permit it was agreed that the business will be asked to use cleaner production technologies in order to obtain the discharge standards and emission levels. Since it is currently a draft, these conditions have yet to be issued for implementation in industries.

Voluntary agreements

As mentioned in the second edition, on 21 January 1998, the Ministry of the Environment and the Manufacturers Association of Israel signed a Covenant on Implementing Standards on Air Pollutant Emissions. The appendix to the covenant presents the draft regulations on the abatement of nuisances (pollutant emissions into the air) which were proposed by the Ministry of the Environment in 1996 and relate to the following pollutants: gaseous inorganic substances, volatile organic compounds, particulate matter, hazardous inorganic particulate matter, carcinogenic substances, nitrogen oxides, and sulphur dioxide. Since 1998, 160 factories have signed the Covenant.

However, these agreements do not include the adoption of cleaner production and eco-efficiency measures.

International conventions and protocols

In the international framework for the protection of the environment through pollution prevention and reduction, Israel ratified the Kyoto protocol on 15 March 2004. Israel ratified the Beijing Amendment to the Montreal Protocol on 25 April 2004. Israel also ratified the 1995 Barcelona Convention.

9.4. Agents involved in promoting CP

Ministry of the Environment

As mentioned in the second edition, the activities carried out by the Ministry of the Environment related to cleaner production and eco-efficiency issues are done through the Business Licensing Division, which takes part in the organisation of activities of the Israeli Cleaner Production Centre, directly.

The Industry and Business Licensing Division depends of the Deputy General for Industries, which also covers the following divisions and centers:

- Hazardous Substances Division – Emergency, Response, hazardous Waste, Poisons Permits, Information and Response Center.
- Hazardous Substances Study Center.
- Noise and Radiation Abatement Division.
- Industrial Effluents, Fuels and Soil Pollution.

- Air Quality Division, Industry, Transport, Energy, National Air Monitoring Center.
- Asbestos and Service Division.

The Israeli Cleaner Production Centre (ICPC)

It should be noted that by the end of 2003 and during 2004, the full-time employee who is in charge of current issues of the Israeli Cleaner Production Centre (ICPC) was absent and the activities were at a minimum. By the beginning of 2005, the Centre was reactivated.

The main activities undertaken by the ICPC since the 2nd edition are:

- A Minimization Opportunities Environmental Diagnosis (MOED) project in a chemical industry.
- A good housekeeping project in a surface treatment factory was applied.
- Several activities of the ICPC aimed at rising awareness were presented in a seminar organised by the Manufacturers Association of Israel for the industrial companies on: "New Regulations for Hazardous Wastes".
- New subjects were added to the ICPC existing website, such as case studies and the pollution prevention opportunities for different industries. The material exchange board is free of charge. Industries that are interested in buying or selling their wastes can advertise on the board in the web site, which is supported by the centre. The board and announcements are also spread to industrialists by means of the newsletter of the Manufacturers' Association of Israel. The board is to be upgraded soon.
- The ICPC's activities and projects were presented in the seminar arranged by the Manufacturer's Association, for industrial companies on: "New Regulations for Hazardous Wastes".
- A bi-monthly newsletter of the ICPC has been launched, and it is sent to the mailing list. Besides, the Manufacturer's Association of Israel's publishing tools are used to disseminate information about the activities.
- The on-line waste board was updated and some 40 new publishing were added to the board. The board's renewal is planned for the beginning of 2006.
- A call for proposals was prepared and will be published soon, in order to establish a database of experts in CP.
- Promotion of the "Green Labelling Program" for products and services in Israel. The "Green Label for Lodging Sector" was prepared during 2005.
- Promotion of the "Green Labelling" in the education sector, including kinder gardens, primary and high schools, community centres and universities.
- The board of directors of the ICPC, which consists of representatives from the Ministry of the Environment, Manufacturers Association of Israel and industries, is responsible in taking decisions concerning the ICPC. There is a full-time employee who is in charge of current issues and activities.

Manufacturers' Association of Israel

The Manufacturers' Association of Israel (MAI) is active in below issues:

- Introduction of high quality fuels in order to reduce sulphuroxides and particulate matter emissions.
- The introduction of Clean Development Mechanism (CDM) of the Kyoto Protocol, which is designed to meet the greenhouse gas (GHG) emission reduction targets.
- Promoting the Covenant on Implementing Standards on Air Pollutant Emissions into the Air, in order for more factories to join.

- Organisation of experts' meeting on adopting the German "TA-Luft 2002", in cooperation with the Ministry of The Environment and other organizations.
- Preparation for the EU REACH legislation - Registration, Evaluation, and Authorization of Chemicals – Under this system, facilities that manufacture in the EU or import to the EU, more than one ton of a chemical substance per year would be required to register it in a central database.
- Adoption of the European Directives in standard labelling of hazardous materials.
- Adoption of the European Directives in hazardous waste stabilisation classification and disposal.
- Protection of hazardous material storage tanks against earthquakes.
- Adoption of risk-based corrective action (RBCA) approaching the investigation of polluted soils.
- Examining the adoption of stringent standards for river discharge standards.
- Examining the opportunities for textile and food sector brine waste treatment in a central treatment plant.
- Participation in preparation of national action plan (NAP) in the framework of the Mediterranean Action Plan (MAP).
- Building of Community Advisory Panels (CAPs), with the goal of building trust, cooperation and mutual respect between companies and the surrounding communities: 10 CAP programs have already been started in the southern region of the country, in cooperation with NGOs.
- Expansion of activities of Responsible Care® within the chemical industry.
- Adoption of environmental management systems, like ISO 14001:2004.
- Involvement in sustainable development and cleaner production activities.
- Involvement in environmental legislation procedures.

There is coordinated action between on the Ministry of the Environment, the Manufacturers Association of Israel and the Israeli Cleaner Production Centre.

Furthermore, it should be noted that some of the NGOs are active in issues such as sustainable development, public involvement, implementation of European directives in Israel, e.g. waste from electrical and electronic equipment, restriction of hazardous substances and integrated pollution prevention and control (all related to sustainable development).

9.5. Programmes, action plans and projects to promote CP

Programmes and action plans

Sustainable Development Plan

On 14 May 2003, a government decision was taken determining that the policy of the Government of Israel would be based on the principles of sustainable development, that the government would promote the plan of implementation which was adopted at the Johannesburg World Summit, and that each government ministry would draft a strategic plan for sustainable development relating to the period up to 2020, to be constantly updated. In the first phase of this ongoing process, which is being coordinated by the Ministry of the Environment, each ministry was asked to identify which of its current activities promotes sustainable development in order to reinforce these activities and grant them priority in resource allocation within the ministry. In addition, each ministry was requested to identify

barriers to promote sustainable development so that appropriate steps could be taken to remove these barriers. Finally, each ministry was called on to identify those areas that had been neglected previously and require further action.

On 30 August 2004 the first report on the implementation of the government decision on sustainable development was presented to the government. To date, all ministries have completed the initial stage of mapping and identifying those activities that are expected to promote the assimilation of sustainable development practices, and some have actually formulated their initial strategies.

Currently, there is no direct reference to the need to prioritise pollution prevention measures. The Minister of Industry, Trade and Labour was required to implement according to the government decision, promotion of clean manufacturing practices and support for the Cleaner Production Centre.

The Pollution Prevention Plan

The main developments in the implementation of the pollution prevention plan, mentioned in the second edition, are the following:

- Reduction of solid and hazardous waste at source. A few Minimisation Opportunities Environmental Diagnosis (MOED) projects have been carried out for hazardous waste reduction at source.
- Reuse and recycling of industrial effluents. The waste exchange board has been serving in the website of the Centre, in order to promote reuse of industrial wastes of one factory, by another.

Other plans and programmes in Israel are the following:

- The reform in the dairy sector. In 1999, a reform package was initiated in the dairy sector, and is slated to continue until the end of 2006, with the following two aims:
 - Encouraging dairy producers to become larger, more competitive and more efficient.
 - Preventing pollution from dairy farms and protecting the country's water sources by upgrading cowsheds and establishing environmental infrastructure.

As part of the reform package, financial grants of 50 % were provided for investments in infrastructure for the purpose of protecting the environment from cowshed wastes and leachates and 30 % for investments in greater efficiency.

The reform package resulted from an agreement between the Ministry of Finance, the Dairy Board and the Ministry of Agriculture, with the Ministry of the Environment providing the professional requirements for investments in the cowsheds. Within the framework of the reform, strict criteria were formulated for the environment-friendly operation of dairy farms, largely based on guidelines developed by the Ministry of the Environment.

- A programme for sustainable consumption in Israel is planned from the beginning of 2006.

Projects

Guide for the Implementation of a System of Control of Pollution Based on BATs and BEPs in non-European Union Countries of the Mediterranean Basin

Israel has chosen to participate with other 4 countries in a project for the preparation of a "Guide for the Implementation of a System of Control of Pollution Based on BATs and BEPs

in non-European Union Countries of the Mediterranean Basin". The project was launched by the RAC/CP and it will focus on Croatia, Egypt, Slovenia and Syria, in addition to Israel.

Furthermore, some river restoration projects are being executed in the following rivers:

- Alexander River - the restoration project for the Alexander River, which flows some 32 kilometres from the Palestinian city of Nablus in the Samarian Hills to the Mediterranean Sea north of Netanya, was initiated in 1995 with the establishment of the Alexander River Restoration Administration. In 2003, the Alexander River Restoration Project was awarded one of the world's most prestigious international prizes for excellence in river management – the Thies International River Prize.
- Yarkon River - this 28-kilometer long river flows through Tel Aviv. To improve the state of the river, a Yarkon River Authority was set up in 1988, a government decision called for the conservation of the river and its vicinity as the "green lung" of the Tel Aviv metropolitan area in 1996 and government approval of a restoration and development plan for the river followed in 2003, calling for the allocation of one million cubic metres a year of water to the Yarkon River, in the first stage.
- Harod River - the 35-kilometer long Harod River, whose watershed basin encompasses 190 km², flows in the Jezreel and Beit She'an Valleys into the Jordan River. Domestic and industrial sewage discharge, agricultural drainage and discharge of fishpond waters have long hampered the inherent potential of the river for tourism development. The establishment of a regional river administration has resulted in the preparation of a comprehensive master plan and in the establishment of riverside parks.
- Taninim River - this coastal stream is the last relatively unpolluted coastal stream in Israel. A river administration for the 25-kilometre long Taninim River was established in 1998. The master plan for the river aims at preserving the river's ecosystem, on the one hand, and restoring and preserving the ancient water supply and transport system constructed by the Romans in the Caesarea area, on the other hand.
- Besor River - the Besor River is the longest of Israel's rivers flowing into the Mediterranean, with a watershed basin encompassing 3 700 square kilometres. Planning for restoration of the river was especially challenging due to the large physical area of the river basin, the absence of an available database, the presence of quarries and polluting industries, and the river's location in the arid southern part of Israel. The recently completed master plan for this desert river is expected to serve as a model for the restoration of other southern rivers.

9.6. Tools and activities to promote CP

Economic instruments

The main economic instruments promoted in Israel, since the second edition, are the following:

- As mentioned in the second edition, the Ministry of the Environment, through the Hazardous Materials Department, has been subsidising hazardous waste reduction projects since 1999. In the framework of these projects, grants are awarded to factories that carry out projects for reduction of hazardous wastes.
- The grants reach up to 40 % of the total sum of the project, or maximum 44 000 USD. Since 2004 the Ministry has started to support hazardous waste treatment or recycling facilities as well. In 2004, grants with a total of more than 200 000 USD were awarded to support hazardous waste reduction projects. Since 1999, 33 projects have been realised. Total amount of hazardous wastes reduced as a result of these projects is more than 15 000 tons of waste. The industries' savings due to the projects is around 3.5 billion

USD. The Ministry's grants have reached to a total of around 0.7 billion USD, while the total investment in these projects are around 4 billion USD.

- In order to decrease the amount of wastes disposed to landfill sites, one of the steps taken was to impose taxes. The government approved the imposition of taxes on land disposals of solid waste and construction waste. This landfill tax will be valid from 2006 on.
- Within the framework of the Protection of the Coastal Environment Law that was enacted in 2004, it will be possible to impose levies against offenders in the coastal region. These levies will be used to prevent pollution, protect and rehabilitate the coastal area.
- There is a government decision on upgrading the wastewater treatment plants in order to achieve higher discharge quality, by installing tertiary treatment units. It was decided to provide soft loans to the local authorities. In addition, the government is in favour of upgrading the plants by private sector.

Voluntary instruments

The main voluntary instruments implemented in Israel are the following:

- "The Green Label" is granted by The Standards Institution of Israel. The Green Label confirms that a product meets a rigid set of criteria regarding the products impact on the environment. Green labelling of products helps to promote "green consumption".

The scope of green labelling was recently broadened to include services, as well as products, e.g. green lodging properties and green garages.

- The Standards Institution of Israel grants also SI ISO 14001:2004 standard, which is a global measurement of environmental management systems. Its overall aim is to support environmental protection and prevent pollution. Adherence to the SI ISO 14001:2004 standard allows companies to demonstrate sound environmental performance by controlling the impact of its manufacturing operations on the environment. Currently, there are more than 230 companies that have been certified with ISO 14001:2004.

Awards

The Ministry of the Environment and the Manufacturers Association award annual prizes to industrial plants excelling in environmental problem solving and pollution prevention. In the decision process, priority is given to promote reduction at source.

9.7. Conclusions

Israel has a well developed and updated environmental policy that follows international and European standards and aims to respond to the main environmental challenges caused by its industry. An example of this policy, which identifies the problems and tries to provide solutions, is the action plan to abate pollution in Ramat Hovav area or the plan to subsidise hazardous waste reduction projects.

When it comes to cleaner production, the existence of a Cleaner Production Centre, which depends on the Manufacturers' Association of Israel, reflects a clear vision towards the need and the benefits of cleaner production.

Still, lack of awareness, skilled manpower in environmental issues, together with economical difficulties causes the small enterprises to see the environmental protection as a burden rather than a source for possible savings. Enterprises try to do the minimum to meet the

laws. Economical support in implementing cleaner production would be of help, in increasing the awareness to potential in environmental investments and improving the situation.

Furthermore, efforts towards pollution prevention and control are needed to meet international standards. This could be reflected in the permit system, with the inclusion of cleaner technologies as a prerequisite, and with further support to the Cleaner Production Centre so that it may boost cleaner production activities and projects in the country.

9.8. References

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Mediterranean Action Plan of the United Nations Environment Programme, <http://www.unepmap.org>
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- *Plan for the management of hazardous waste including inventory of hazardous waste in the Mediterranean region*. MAP Technical Reports Series, Number 147, UNEP/Map, 2004.
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10. Italy

10.1. Introduction

Italy has a diversified industrial economy. Regional imbalances still prevail with the central and northern regions benefiting from higher GDP per capita; higher employment rates, a more advanced industrial and service sector and a more developed export sector.

Most raw materials needed by industry and more than 75 % of energy requirements are imported.

Over the past decade, Italy has pursued a tight fiscal policy in order to meet the economic and monetary requirements of the European Union and has benefited from lower interest and inflation rates.

Numerous short-term reforms aimed at improving competitiveness and long-term growths have been enacted. Italy has moved slowly, however, on implementing needed structural reforms, such as in the fiscal sector, labour market and pension system.

Surface area	sq km	301 230
Population		58 103 033 (July 2005 est.)
Population growth rate	%	0.07 (2005 est.)
Life expectancy	Years	79.68 (2005 est.)
Literacy total	% age > 15	98.6 (2003 est.)
Literacy female	% age > 15	98.3 (2003 est.)
Unemployment rate	%	8.6 (2004 est.)
Inflation rate (consumer prices)	%	2.3 (2004 est.)
Public debt	% of GDP	105.6 (2004 est.)
GDP growth	% annual	1.3 (2004 est.)
GDP PPP estimated	\$10 ¹²	1 609 (2004 est.)
GDP PPP per capita	\$10 ³	27.7 (2004 est.)
GDP composition by sector - Agriculture	%	2.3 (2004 est.)
GDP composition by sector – Industry	%	28.8 (2004 est.)
GDP composition by sector – Services	%	68.9 (2004 est.)
Industrial production growth rate	%	0.7 (2004 est.)
Exports	\$10 ⁹ FOB	336.4 (2004 est.)
Imports	\$10 ⁹ FOB	329.3 (2004 est.)
Telephones – main lines in use	million	26 596 (2003)
Telephones – mobile cellular	million	55 918 (2003)
Internet hosts	Units	1 437 511 (2004)

10.2. Industry and environment

Industrial development and environmental impact

The major industries in Italy include machinery, iron and steel, chemicals, food processing, textiles, motor vehicles, clothing, footwear and ceramics production.

Several indicators have been created to analyse the main trends of industry and environment. Some conclusions of this analysis by means of indicators reflect the following:

- In 2003, most IPPC installations featuring the emission of one or more pollutants into the air and/or water in excess of the threshold values set out in the regulations (the most significant sources of emissions, which have to produce an IPPC report), were located in the north of Italy (60 % of reports) with Lombardy accounting for 23 % of them, followed by Veneto (11 %) and Piemonte (10 %). Out of these, the most significant sources of pollution are energy activities and activities related to the management of waste.
- In 2004, a ministry decree was enforced for treated wastewater reuse for irrigation and industrial reuse, including financial support. A national information system on water quality and quantity (including sectoral uses), taking into account the reporting requirements of all water directives was implemented in 2003 for a regular reliable assessment on water quality and water use. By the end of 2005, all regional authorities should have implemented a regional water protection plan to comply with the environmental objectives and sustainable water use as required by EU sectoral legislation, including Directive 2000/60/CE.”.
- Industrial pollutant emissions to the air come mainly from the Mezzogiorno (especially Apulia followed by Sicily and Sardinia). Some regions contribute totally, or almost, to certain pollutant emissions such as Valle d’Aosta (sulphur hexafluoride), Emilia Romagna (methane), Marche (tetrachloroethylene), Lombardy (tetrachloromethane), Umbria (trichloroethylene) and Apulia (PAHs). Activities that contribute mostly to industrial pollutant emissions into the air are the energy activities, metal industry and chemical industry.
- R&D expenditure in industry shows the industry’s trend towards technological development, which is a prerequisite for improving the environmental efficiency of its plants and installations. Basic research, applied research and experimental research feature a continuous upward trend. In particular, the industry is investing primarily in applied and experimental research.
- The Italian energy system is characterised by a good performance in terms of energy intensity and the ratio of final to total energy consumption and changing energy supply pattern, involving the increased use of natural gas, renewable energy, cogeneration and a recent increase in solid fuel consumption.
- Energy-related greenhouse gas emissions have increased constantly from 1995 (+ 13.8 % in 2003, compared to 1990). Based on this trend, Italy will probably be unable to comply with its reduction targets under the Kyoto Protocol and the European Burden Sharing Agreement without resorting to carbon absorption by forests and land use and the international cooperation mechanisms set out in the protocol.
- In the context of the convention on climate change and of the Kyoto Protocol, Italy has undertaken the commitment to reduce overall national emissions by 6.5 % with respect to the base-year by 2008-2012. The emission trend is closely related to energy consumption.

As regards tourism, the regions of Trentino Alto Adige and Valle d’Aosta feature the highest ratio of arrivals to residents, well above the national average. However seasonal tourism remains the typical feature, in the summer, of seaside resorts and historic cities, despite the general drop in overnight stays from 2003.

The preferred means of transport for holidaymaking purposes remains the motor car (64.2 %) followed by transport by air (28.9 %), sea (3.4 %) and rail (3.5 %) continues to significantly increase the pressure on the environment.

Areas of special concern

Industrial hazards in Italy are especially located in areas with particularly high concentration of hazardous establishments. The municipalities featuring a large number of such establishments (that fall under the EU Seveso Directive) are Ravenna, Venezia and Rome (>20), followed by Genova, Napoli Taranto (10-15). Then we have significant concentrations in Treccate, Brindisi, Porto Torres, Taranto, Catania, Augusta-Priolo and Livorno.

As regards major environmental problems, at present areas of concern are the following (some of them were already mentioned in the second edition):

- Gulf of Trieste - eutrophication problems due to pollution transported by the river Po, as well as coastal discharges.
- Lagoons of Venice, Comacchio and Orbetello are eutrophic to hypertrophic.
- The coastal areas of Liguria, Lazio and Emilia-Romagna - present eutrophication problems due to urban/industrial effluents.
- The Tyrrhenian coast near the mouths of the rivers Arno and Tevere - show signs of eutrophication.
- Industrial areas and harbours of Trieste, Venice, Genova, Livorno, Naples, Taranto, Brindisi, Ancona, Augusta-Priolo-Melilli, Milazzo, Ravenna and Gela - present widespread contamination of soil, groundwater, surface water, sediments and marine environment because of intense maritime traffic (41 % of the Mediterranean oil transport takes place through Italian ports) refineries' oil losses (150 oil slicks were recorded in 2000, OECD, 2002) and industrial activities. Many of these sites are (or are going to be) included in the National Priority List defined by the Ministry of the Environment.

It should be highlighted that some specific voluntary agreements have been subscribed for the remediation of the petrochemical area of Porto Marghera (Venice Lagoon) which enforces the adoption of cleaner production in the petrochemical area, the clean-up and industrial re-development of the Priolo (Sicily) and Taranto (Mar Piccolo) areas (Southern Italy). Further voluntary agreements were subscribed by the Ministry of the Environment for the remediation of former mine sites of Tuscany and Lombardy.

10.3. Legal and policy framework

Laws and regulations

From 2004 to October 2005, the following acts concerning cleaner production and related fields were issued in Italy:

Cleaner Production

- Legislative Decree 19 August 2005, No 192

Implementation of Directive 2002/91/EC on the energy performance of buildings.

It lays down criteria, conditions and ways to improve energy performance of buildings aimed at encouraging development, improvement and integration of renewable sources as well as energy differentiation. It also promotes the competition among the more advanced sectors through technological development.

- Decree 28 July 2005 of Ministry of Productive Activities
Criteria for stimulating the production of electric energy through photovoltaic conversion of solar source.
- Decree 27 July 2005 of Ministry of Infrastructures and Transports
Regulation of implementation of Law 9 January 1991, No 10 “Rules for the implementation of the national energy plan in the matter of rational use of energy, energy saving and development of renewable energy sources”.
It defines the general technical and building criteria and the type of subventions and conventions for buildings as well as for public and private buildings. These criteria concern also restoration of existing buildings in order to encourage and stimulate rational use of energy, restraint of energy consumption during production and use of handmade products.
- Legislative Decree 25 July 2005, No 151
Implementation of Directives 2002/95/EC, 2002/96/EC and 2003/108/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment as well as on their waste.

It lays down measures and procedures aimed at a) preventing the production of waste electrical and electronic equipment; b) promoting reuse, recycle and other ways of re-utilising so as to reduce the quantity of waste; c) improving, from an environmental point of view, the participation to the life-cycle of these types of equipment; d) reducing the use of hazardous substances.
- Decree 5 July 2005 of Ministry of Environment and Territory
Conditions and amounts of financial guarantees that firms, which carry out site reclamation, have to agree with the State.
Facilities for EMAS registered firms.
- Decree 16 June 2005 Ministry of Productive Activities
Terms, criteria and conditions of carrying out the thematic call for facilities of pre-competitive development programs, aimed at the improvement of energy efficiency and the dissemination of renewable energy sources, according to Art. 2 and 11 of the Ministry of Industry, Trade and Handicraft Directive, 16 January 2001 on the granting of credit facilities of the special rotative fund for technological innovation.

Credit facilities for development programs, if necessary also including those that are not specifically research activities, as well as activities related to research centres, aimed at improving the energy efficiency and the dissemination of renewable energy sources.
- Decree 31 January 2005 Ministry of Environment and Territory
Promulgation of guidelines for identifying and using the best available techniques for the activities listed in Annex I of Legislative Decree 4 August 1999, No 372 (acknowledging directive IPPC)
- Law 23 August 2004, No 239
Rearrangement of energy sector as well as delegation to the Government for the readjustment of provisions of the laws in force in the matter of energy.
Rules integrated as regards eco-efficiency.
- Legislative Decree 29 December 2003, No 387
Implementation of Directive 2001/77/EC on the promotion of electricity produced from renewable energy sources in the internal electricity market.

Protection of air quality and reduction of emissions in the atmosphere

- Legislative Decree 30 May 2005, No 128

Implementation of Directive 2003/30/EC on the promotion of the use of biofuels or other renewable fuels for transport.

Promotion of the use of bio-fuels or other renewable fuels to replace diesel or petrol for transport purposes, contributing to meet national objectives in the matter of the reduction of greenhouse gas emissions as well as in the assurance of energy supply.

- Law 18 April 2005, No 62

Provisions for the fulfilment of obligations resulting from the Italian membership to the European Community. Community Law 2004.

Art. 14: Provisions for the implementation of Directive 2003/87/EC of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community.

- Legislative Decree 21 March 2005, No 66

Implementation of Directive 2003/17/EC relating to the quality of petrol and diesel fuels.

- Legislative Decree 18 February 2005, No 59

Integral Implementation of Directive 96/61/EC concerning integrated pollution prevention and control.

- Law 30 December 2004, No 316

Urgent provisions for the enforcement of Directive 2003/87/EC in the matter of greenhouse gas emission allowance trading within the Community.

- Law 30 June 2004, No 316

Ratification and enforcement of the Amendment to the Montreal Protocol on substances depleting the shield of ozone, adopted during the 11th Conference of the Parties in Peking 3 December 1999.

- Legislative Decree 21 May 2004, No 171

Implementation of Directive 2001/81/EC on national emission ceilings for certain atmospheric pollutants.

It aims at ensuring that national annual emissions concerning sulphur dioxide, nitrogen oxides, volatile organic compounds and ammonia, as from the list in Article 4, respected, by 2010 and the subsequent years, the national emission limits as laid down in Annex I.

- Legislative Decree 21 May 2004, No 183

Implementation of Directive 2002/3/EC relating to ozone in ambient air

It lays down: a) target values, long-term objectives, alert thresholds and information thresholds in order to prevent or reduce the harmful effects on human health and on the environment; b) methods and criteria for the assessment of ozone concentration and for the assessment of the concentration of ozone precursors in ambient air; c) measures necessary for public information on the concentration of ozone; d) measures necessary to maintain air quality where it is good in terms of ozone, and measures for its improvement in other cases; e) conditions of co-operation between Member States of the European Union in reducing ozone levels.

Waste and contaminated sites

- Decree 3 August 2005 of Ministry of Environment and Territory

Definition of criteria for evaluating the acceptability of waste in landfill

- Legislative Decree 25 July No 151

Procedures for the management of waste from electronic and electrical devices containing hazardous substances

- Decree 5 July 2005 of Ministry of Environment and Territory

Conditions and amounts of financial guarantees that firms, which carry out site reclamation, have to agree with the State.

Facilities to EMAS registered firms.

- Law by Decree 30 June 2005, No 115

Provisions for ensuring urgent working in some public administration areas. It regulates the waste disposal

- Legislative Decree 11 May 2005, No 133

Implementation of Directive 2000/76/EC on the incineration of waste.

It concerns waste incineration and co-incineration plants and lays down measures and procedures aiming at preventing and reducing negative effects on the environment and the risks for human health. It regulates: a) emission limit values from waste incineration and co-incineration plants; b) sampling, analysis and assessment methods of the pollutants resulting from the waste incineration and co-incineration plants; c) general criteria and technical rules concerning building and operating characteristics, as well as operating conditions of waste incineration and co-incineration plants so that the equipment used for receiving, storing, pre-treating and moving waste as well as moving or storing of residues may be designed and managed so as to reduce emissions and smells, according to the criteria of the best available technology.

- Decree 2 December 2004

Radioactive waste (solid and liquid) treatment.

- Law 15 December 2004 No 308

Delegates from the Parliament to the Government authority to issue legislation acts to rearrange, coordinate and integrate the environmental legislation in force

- Decree of the Ministry of the Environment 29 July 2004 No 248

Valorisation of asbestos containing products and goods

- Decree 5 February 2004 of Ministry of Environment and Territory Conditions and amounts of financial guarantees that firms, which carry out remediation of asbestos-containing products and goods have to be agreed with the State.

- Law by Decree 14 November 2003, No 314

Urgent provisions for radioactive waste collection, disposal and storage under conditions of maximum security.

Integrated Pollution Prevention and Control, Environmental Impact Assessment, Strategic Impact Assessment.

- Legislative Decree 18 February 2005, No 59

Integral implementation of Directive 96/61/EC concerning integrated pollution prevention and control.

During the same period, no new important acts were issued in the fields of water quality protection and management of water resources, soil defence and desertification, environmental damages or related with cleaner production.

Enforcement

The main problems when enforcing legislation, like in other EU countries, are the existence of an excessive number of environmental laws or related legislative acts (in Italy, these are approx. 40 000); the overlapping of legislative tools acts and of specific lines of responsibility among the various administrations in charge of monitoring and controlling their implementation. With regard to cleaner production, environmental regulation may be

perceived by industry as an excessive bureaucratic burden rather than a tool for improving eco-efficiency and saving costs. In terms of the permit process, there is a need to reinforce the trust in environmental authorities at central and local levels, to improve communication with all stakeholders and to prove to companies that good regulation can contribute to raising their competitiveness.

New initiatives been launched to improve enforcement of legislation, notably:

Outline of the Consolidation of environmental law in Italy under L.308/2004 to rearrange, complete, simplify, and clarify the environmental law system

Law 308/2004, delegates from the Parliament to the Government competencies to issue legislation acts to rearrange, coordinate and integrate legislation in force, also through single-acts for the seven fields of application concerning environment and territory management:

- Protection of quality of air and reduction of emissions in the atmosphere
- Protection of water quality and management of water resources
- Soil defence and desertification
- Waste and contaminated sites
- EIA, SEA, IPPC
- Environmental damages
- Protected areas, flora and fauna

Its main objective is a novelty in Italian legislation:

- a) interconnection of sector regulations into a frame of uniform rules and procedures.
- b) promoting measures at international level aimed at solving local, regional, national, European and worldwide environmental problems.

In line with the most advanced regulatory approaches, this law calls for the streamlining of the existing environmental or related legislative acts (approximately 40 000). The law and the ensuing process, should also allow the upgrading and more effective implementation of European legislation in Italy.

The main principles to comply with, in order to achieve such objectives, include general principles and technical principles aimed at developing actions in the environmental field, in particular: best available techniques, save and efficiency in use of power, economic and administrative tools aimed at facilitating the application of environmental process (EMAS and ISO 14001) and product (Eco-label) certification systems, surveys and monitoring, training, research and technological innovation.

The task of proposing the single texts provided for by the law has been entrusted to a commission of 24 members, co-ordinated by 4 experts, and is divided in 7 sub-commissions, equal to the number of themes. The working group was installed on 21 January 2005.

Abstracts of the commission proposals include (in addition to soil defence and plans against desertification, compensation for environmental damages and management of protected areas) the following:

- I. Protection of air quality and reduction of emissions in the atmosphere - besides the traditional and more relevant industrial regulation, specific provisions concerning civil applications, as well as production of power, agriculture, transportation and information to consumers about environmental impact of the life-cycle of products will be rearranged.

The draft rearranges, coordinates and integrates legislation in force, promotes the best available techniques, and introduces the fixed duration for the authorisations of 15 years. There have been no changes in administrative and penal sanctions.

- II. Protection of water quality and management of water resources - around the problem of sustainable use of water and of its management and the protection and restoration of water quality, we find environmental problems concerning surveillance and inspection quality and quantity on surface and ground water, as well as technological, financial and institutional aspects defining the territorial institutions in charge.
- III. Management of waste and reclamation of contaminated sites - management of waste is ruled by 16 groups of provisions. Furthermore we have laws concerning reclamation and management of polluted land and specific laws ruling economic, fiscal and financial aspects.

The current procedure for remediation activities based on general clean-up goals given by the Decree of the Ministry of the Environment No 471 of 1999 is being completely re-arranged. According to the recent European trends, a risk-based procedure is enforced with the application of environmental risk analysis to obtain site-specific clean-up goals. The new procedure aims to achieve more streamlined procedures and shorter times taking into particular account the overall costs of the remediation activities according to the European Directive 96/61/CE. (definition of B.A.T.N.E.E.C. - best available technology not entailing excessive costs). The priorities about waste management according to EU law are being reconsidered and EU regulations on secondary raw materials are being transposed. A single water and waste Authority is instituted instead of the old bodies.

- IV. Environmental Impact Assessment (EIA), Systematic Environmental Assessment (SEA), and Integrated Pollution Prevention and Control (IPPC) - the law provides for correct and complete enforcement of European directives as well as coordination and integration between EIA / SEA procedures and EIA / IPPC procedures.

The draft contains the correct and complete enforcement of four European directives; it prescribes set times for the EIA procedures and coordination between EIA / SEA and EIA / IPPC procedures; it introduces a subsequent control system. There are no regulations on the silence/approval procedure.

Permit system

Competencies to implement the IPPC Directive

Competent authorities on Environmental Integrated Authorisation (AIA) in Italy are the following:

Kind of activity	Competent administration
Discharges	Competent regional administration
Activities for the production of electric energy with a power higher than 300 MW	Ministry of the Productive Activities with the cooperation of the Ministry of the Environment and Territory (In the delay of the complete transposition of the directive 96/61/CE)
Activities subject to the national EIA	Ministry of the Environment and Territory
Other activities subject to the Environmental Integrated Authorisation (AIA)	Authority identified by the regional administration
Substitutive power	President of the Council, under a proposal of the competent Ministry on the matter
Temporary derogations of the Activities for the production of electric energy with a power higher than 300 MW	Ministry of the Productive Activities with the cooperation with the Ministry of the Environment and Territory

As shown in the table, the Competent Authority for granting the IPPC permit in Italy is the Ministry of Environment at national level, and the Regional Administrations at regional level, depending on the production capacity and typologies of plants (power plants, refineries etc. have to apply to the national authority).

APAT (National Environmental Protection Agency) and ARPAs (regional environmental protection agencies) are responsible of data collection, controlling and monitoring.

Decree 372/99 (which transposed the IPPC Directive in Italy) also regulates operational changes, within the period of validity of the permit, since the operator must report them to the authority (Ministry or Region) providing a description of the change and an evaluation of expected consequences in terms of emissions of pollutants of and risk for the environment. The authority will then judge on a “case by case” basis.

Establishment of emission limit values according to the Best Available Techniques

The new Italian Legislative Decree 59/05 of Feb. 2005 for the complete endorsement of the IPPC Directive in Italy (mentioned in the previous section), replaces the previous decree No 372/99, mentioned in the second edition, and covers both existing and new industrial plants and aims to regulate prevention of pollution by enforcing the procedure for the issuing, renewal and examination of integrated environmental permit (IEP) for industrial plants.

As in the EU Directive, in order to operate all the industries listed in Annex I need to obtain an integrated pollution permit containing emission limit values (ELVs) based on the best available techniques (BATs) by 30 October 2007. This permit will replace all the current environmental authorisations and it has to be renewed every 5 years. If the installation is EMAS registered then the permit validity is extended up to 8 years. An extra annex has been introduced into this decree (Annex V) in which all the categories of plants under the National Authority are listed (thermal power plants, refineries, steelworks, chemical plants above certain threshold values in terms of production, and other similar plants wholly located in the

sea). These advancements are considered a key point for overall positive changes for CP enforcement in Italy.

Concerning the standardisation of BATs (best available techniques), several sector studies have been carried out in order to issue the National Guidelines for the IPPC application and authorisation procedure. These guidelines are also based on the Seville BREF (BAT Reference document), and have been prepared by an ad hoc Interministerial Commission, set up in 2003, made up of representatives of three Ministries: Environment & Territory, Industry and Health. Two typologies of guidelines have been planned to date: specific sectoral guidelines, for each sector and horizontal guidelines, applicable to all industrial sectors of the Annex I. The first group of guidelines (two horizontal and three specific for pulp and paper, ferrous and non ferrous metals) have been also approved and are in the process of being published.

Voluntary agreements

As mentioned in the second edition, in the last few years the Italian Environmental Ministry has promoted some actions together with industry representatives and economic bodies in order to reduce the environmental impact of the production.

In addition to the protocol of agreement between the Ministry of Environment and Confindustria on the administrative facilities for eco-certified companies and the Protocol of Agreement between the Ministry of Environment and Confagricoltura which were signed in 2002, the following initiatives have been launched:

- The constitution of the Economic & Social Council for Environmental Policy (ESCEP), 4 August 2004

The Ministry of Environment has instituted the council to bring together the representatives of businesses and corporate associations with the aim of their participation in the evaluation of strategies of environmental policy. The institution of ESCEP is in keeping with the recommendations of the European Commission and the indications of the Aarhus Convention of 1998 on access to information, on public participation in the decision-making process and on access to environmental justice.

Standing out among the purposes of its constitution are the positive effects of eco-management and of voluntary participation on the economic development of enterprises, international competitiveness and employment generation.

- Law 308/2004 for the streamlining of environmental legislation – industrial proposals, Confindustria, 11 May 2005

The document examines the sectors – air-emissions, air-quality, water-quality, water-resource, wastes, reclamation of polluted sites, EIA and IPPC – that are principally related to productivity and competitiveness.

The document examines the situation of the prevailing Italian legislation, highlighting the points of divergence with the Community legislation referred to. On certain points the need to respect particular national situations has been acknowledged. On other points the specific aspects that shall have to be taken care of in the process of streamlining have been proposed, with attention to the imperative of competitiveness.

- Law no. 80, 14 May 2005 – Dispositions in the framework of the action plan for economic, social and territorial development

It is a legal framework that sustains the competitiveness of many sectors of the economy. The environment comes into play in questions regarding administrative simplification, the promotion of tourism and programmes of investment in research and development for energy conservation.

The law comprises programmes of eco-compatible innovation in the community discipline of state aids for the safeguarding of the environment, referred to in the European Commission Communication of 3 February 2001. The document raises the question of whether even state aids for environmental intervention are compatible with the common market; on the other hand it is received wisdom that competitive policies and environmental ones are not antagonistic, but that environmental exigencies must be included in the definition and the implementation of market policy. The communication thus specifies the criteria for the control and concession of authorisations.

- As regards waste management, the new Framework Agreement between ANCI (National Association of Italian Municipalities) and CONAI (National Packaging Consortium) promotes the development of cleaner production, enhancing voluntary agreements.

Concerning reuse and recycling, a recent cost/benefit analysis study (in the process of being published), on differentiated paper and cardboard collection in Italy, has been commissioned by Comieco (the Italian National Consortium for the Valorisation and Recycling of Cellulose Based Packaging) to AGICI Finanza d'Impresa. The results of the activities of differentiated paper and carton collection carried out in Italy by the member industries over the last 6 years shows a positive balance of 610 million Euros, the equivalent of the entire yearly production of the Italian paper industry and the equivalent of 3.5 years of paper consumption of the newspaper industry". Comieco is a voluntary consortium, created by interested Italian Paper Mills and Converters (approx. 3 500 firms, mostly SMEs).

- Regarding the energy field, many VAs were subscribed to enhance the use of renewable energy (solar, thermal, eolian) and bio-fuel in public transport.
- Further voluntary agreements were subscribed by particular stakeholders (tanners, paper producers, etc.) for the application of eco-efficiency measures to the wastewater treatment plants.

International conventions and protocols

In the international framework for the protection of the environment through pollution prevention, Italy ratified the Beijing Amendment to the Montreal Protocol 22 October 2004.

10.4. Agents involved in promoting CP

Further to the information contained in the second edition, it should be highlighted that there are no organisational units specifically devoted to cleaner production or eco-efficiency as such. The activities carried out by the ministry and by APAT related to these themes are mostly performed by the Units working on related topics such as IPPC, EMAS, Eco-label, waste minimisation and recycling, water quality and water cycle, industrial risk, air quality and atmospheric emissions

The organisational units mentioned above in the ministry and in APAT coordinate their action. The General Director of APAT also chairs the Federative Council of the Network of the Environment Protection Agencies of the Italian Regions and Autonomous Provinces

which provides a framework for coordinated action among them, also on CP relevant activities when necessary.

10.5. Programmes, action plans and projects to promote CP

Programmes and action plans

The Environmental Action Strategy for Sustainable Development

This strategy, mentioned in the second edition, is considered a framework document to provide overall guidance to encourage public administrations to fulfil specific objectives in four focus areas: climate change and the atmosphere, nature and biodiversity, urban life and environmental quality, sustainable use of natural resources and waste management. Each of these areas includes several recommend implementation actions, based also on commitments subscribed by Italy within multilateral and regional environmental conventions and agreements.

With regards to quantified objectives, the Strategy established a 6.5 % reduction of national GHG emissions, compared to 1990 values, by 2008-2012, according to the Kyoto Protocol. Furthermore, the strategy adopted the eco-efficiency targets outlined by the European Union, such as those for the decrease in resource use of 25 % by 2010, 75 % by 2030 and 90 % by 2050.

Projects

These are some examples of EU LIFE-funded projects in Italy:

- Project for valorisation and reuse of industrial waters and trivalent chromium generated by tannery waste processing (2005-2008)
- Best available techniques for water reuse in Textile SMEs (2005-2008)
- Innovative technology to reduce greenhouse gas emissions (2005-2007)
- Volatile organic compound - free decals - eliminating toxic, harmful and/or dangerous chemical substances from the manufacturing of industrial decal transfers. (2005-2008)
- New Eco Spray System in the tanning industry (2004-2007)
- Sustainable industrial area model (2004-2007)
- Sustainable water management in the textile wet industry through an innovative treatment process for wastewater re-use (2004-2007)
- Dissemination of IPP tools in the furniture industry (2004-2007)
- New clean technology for the decoration of all kinds of ceramic surfaces, whether flat or textured, with a minimal use of raw noble materials (2004-2007)
- New ESD (eco-sustainable drawing) system, environment-friendly to process steel wire rods / by-products (2004-2007)

10.6. Tools and activities to promote CP

Economic instruments

At regional level many regions have established economical incentives for the SMEs regarding eco-efficiency and cleaner production.

Voluntary instruments

Number of EMAS registrations, Eco-label licences issued and ISO 14001 certifications has increased significantly since the second edition, especially as regards EMAS and Eco-label.

- So far 391 organisations have been registered with EMAS (December 2005 data), Italy being the third country in Europe for number of registrations, after Germany and Spain (Source APAT).
- Concerning Eco-label, 84 licences have been granted up to December 2005 for 1 467 products, split into 12 product categories: tissue paper, soil improvers, copying paper, various types of detergents, paints, footwear, textiles products, hard floor covering and tourism accommodation. Italy is currently (December 2005 data) the Member State with the highest number of licences (84) followed by Denmark (53) and France (45) (Source APAT).
- To date 6 049 ISO 14001 certifications have been issued in Italy (October 2005 - Source: SINCERT).

Awards

There are several awards by public and private institutions/foundations but there is no comprehensive survey available.

- Prize awarded by the Italian Ministry of Environment named “Premio Ambiente è Sviluppo” (“Environment is Development” Award). This prize is addressed to the institutions, industries, economic bodies and stakeholders engaged to sustainable development that realised innovative and original projects in the sector of the improvement and protection of the environment aimed at a socio-economic development, to the public administration for the management and planning initiatives, to the academic bodies to recognise the commitment to research, to the world of communication and to schools in order to spread a culture of sustainable use of the environment as a maker and result of economic development. This award is an effective tool to promote the dissemination of proactive behaviour towards environment, and by the organisation of different conventions in Italy during the 2006.
- The most important Italian packaging consortia, CONAI and COMIECO, yearly promote awards concerning waste prevention/minimisation initiatives, rewarding the companies' engagement in waste prevention and thus creating positive public image for these.
- ECOHITECH AWARD: promoted by Ecoqual'It in collaboration with WWF Italia and Lombardy Region. The prize is awarded to the hi-tech enterprises that are most respectful towards the environment. This award is the annual recognition to the national and international enterprises of the electric, electronic and information field working in planning, production, marketing and services, which distinguished themselves for:
 - Planning for processes of production and environmental-friendly distribution of products.
 - Processes of eco-friendly compatible production and distribution.
 - Environmental-friendly products.
 - Innovative services for collection, storage, treatment and recycling.

The award was created in 1998 by Consorzio Ecoqual'It (National Consortium quality, use, recycling and disposal for IT and office equipment). Over the years it has established itself as the only environmental recognition in the technological, information and electronic field. It represents an important opportunity to meet institutions and

enterprises involved in current environmental, legislative, technological and productive realities and perspectives.

The Ecohitech Award is sponsored by Ministry of Environment, Ministry of Productive Activities, Lombardy Region, Milan Province and Municipality.

- PREMIO CINQUE VELE (Five Sails Award): by Legambiente, for the cleanest water in Italy.

Every year at the beginning of the bathing season the “Guida Blu” (Blue Guide) results are presented by Legambiente. They concern the environmental quality of coastal tourist places and envisage awarding the “Cinque vele” as the maximum recognition for those municipalities which distinguish themselves in the implementation of management programs, providing for the protection of environmental resources in their own territories: bathing water quality, differentiate waste collection, water resource management, institutions of pedestrian precincts, protection of historic centres, etc.

- PREMIO NAZIONALE COMUNE RIUTILIZZATORE (Reusing Municipality National Award): it brought forward the new rules, among which Decree 8 May 2003, No 203 of Ministry of Environment envisaging the obligation for public administrations to buy at least 30 % recycled and reused goods and products within their own requirements. So engaging municipalities and local authorities in “green public procurement”.

The environmental associations “Amici della Terra” (Friends of the Earth) and “Umana dimora” (Human Residence) organise the award for the local administrations with a view to promote, disseminate and increase the use of eco-sustainable products as well as to encourage the knowledge of this “new” market. This initiative is sponsored by Ministry of Productive Activities, National Waste Observatory, a lot of Italian regions as well as the most important and operating consortia of this field.

- PREMIO INNOVAZIONE (Innovation Award): carried out by Legambiente in collaboration with Bocconi University, Milan Polytechnic and, for 2003 edition, also with Lombardy Region. It is an annual recognition to the enterprises of the economic and social system for their environmental innovations. A jury of experts consider the projects presented by private and public, individual, co-operative, consortium enterprises as well as non-profit organisations, which distinguish themselves for their investments in environmentally sustainable and efficient projects.
- PREMIO COMUNI RICICLONI (Very Recycling Municipalities Award) is promoted by Legambiente and sponsored by Ministry of Environment and Territory: it awards a prize for the best results in the field of waste municipal recycling.

Other activities and tools

Observatory for monitoring the application of IPPC

It should also be noted that APAT is in the process of setting up (funded by the Ministry of the Environment & Territory) an observatory for monitoring the application of IPPC at regional, national and EU level.

The aims of the observatory are:

- to allow the exchange of information among competent authorities, industries and the public in order to promote a more effective application of the directive;
- to provide support to the relevant ministerial directorate in its coordination and guiding function vis-à-vis the relevant regional and provincial authorities.

Specific “focus group” meetings have been held for the consultation of local authorities and industrial associations, in order to identify needs and expectations of principal stakeholders.

The observatory will operate through a database and a web site and will be located in the Ministry of the Environment & Territory.

Inventory of waste prevention/minimisation best cases

Furthermore, APAT yearly upgrades the inventory of waste prevention /minimisation best cases, monitoring the progresses achieved in Italy. In cooperation with the European Topic Centre on Resource and Waste Management, Italian success stories on waste prevention and minimisation (based on voluntary agreements, eco-efficiency, eco-design, integrated product policies, etc.) are regularly updated and shared online.

10.7. Conclusions

Italy has made important advances in the adoption of an IPPC system. An inter-ministerial commission has been set up to prepare national BAT reference documents and APAT is in the process of setting up an observatory for monitoring the application of IPPC.

Further improvements in the enforcement of legislation are also expected since a new law has been adopted which delegates the government competencies to rearrange and integrate legislation in force. Voluntary agreements between the Ministry of the Environment and industry representatives are fully integrated in the strategy to help enforce legislation.

Furthermore, it should be highlighted that the implementation of voluntary instruments is widely extended; Italy is the European country with most Eco-labels awarded, and the third one in terms of EMAS registrations.

Still, it should be noted that although cleaner production is a concept that is widely shared and recognised, it is not easily translated into an operative dimension. The promotion of relevant activities is in fact organised according to better-known legislative or regulatory schemes, such as IPPC, EMAS or Eco-label. This lack of a specific operational meaning also creates a difficulty in terms of surveying all relevant activities and developments.

10.8. References

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11. Malta

11.1. Introduction

The mainstays of the Maltese economy are tourism and the service industry, as well as valued added products (mainly semiconductors). The economy is dependent on these sectors as well as foreign trade. The construction industry is also an important sector in the Maltese economy.

During the last few years, several pharmaceutical companies have been attracted to Malta and will probably increase the export potential of the country.

Major resources in Malta are limestone, a favourable geographic location, and a productive labour force. Malta produces only about 20 % of its food needs, has limited fresh water supplies, and has no domestic energy sources.

Surface area	sq km	316
Population	Millions	398 53 (July 2005 est.)
Population growth rate	%	0.42 (2005 est.)
Life expectancy	Years	78.86 (2005 est.)
Literacy total	% age > 15	92.7 (2003 est.)
Literacy female	% age > 15	93.6 (2003 est.)
Unemployment rate	%	7 (2003 est.)
Inflation rate (consumer prices)	%	2.9 (2004 est.)
Public debt	% of GDP	NA
GDP growth	% annual	1 (2004 est.)
GDP PPP estimated	\$10 ⁹	7 223 (2004 est.)
GDP PPP per capita	\$10 ³	18.2 (2004 est.)
GDP composition by sector - Agriculture	%	3 (2003 est.)
GDP composition by sector – Industry	%	23 (2003 est.)
GDP composition by sector – Services	%	74 (2003 est.)
Industrial production growth rate	%	NA
Exports	\$10 ⁹ FOB	2.63
Imports	\$10 ⁹ FOB	3.41
Telephones – main lines in use	10 ³	208.30 (2003)
Telephones – mobile cellular	10 ³	290.00 (2003)
Internet hosts	Units	7 156 (2004)

11.2. Industry and environment

Industrial development and environmental impact

The main environmental concerns remain the disposal of solid and liquid waste. Air pollution is still contributed by power generation. The use of heavy plant and the generation of dust by the construction and demolition industry is also a cause for concern although of a localised nature.

With regards the disposal of solid waste, steps have been taken to construct an engineered landfill with special designated areas for the disposal of dangerous industrial wastes. The use of low-sulphur fossil fuels by the energy generating station and the introduction of lead-free petrol have contributed to improvements in the environmental situation.

In the service industry, the main pollution problems are still those mentioned in the second edition although steps are being taken for the safe disposal of contaminated clinical wastes using microwave/autoclaving technology. The disposal of solid waste is now being carried out in an engineered landfill.

When it comes to greenhouse gas emissions, Malta's greenhouse gas emissions are relatively low when compared to EU averages, however they rose 44 % between 1990 and 2003.

Areas of special concern

New areas of concern in Malta, since the second edition, could possibly be wastes generated by the new pharmaceutical companies situated in the south of Malta. These potentially can take the form of end-of-line pharmaceutical/medicinal remnants and expired stocks of pharmaceutical raw materials.

The Southern Harbour District remains an area of special concern, where mostly untreated urban and industrial effluents are discharged into the sea through submarine outfalls.

11.3. Legal and policy framework

Laws and regulations

The main changes as regards thematic legislation on the environment linked to cleaner production are the approval of regulations linked to the Environment Protection Act, which was approved in 2001, as mentioned in the second edition, and the approval of the Eco-contribution act in 2004 and its regulations.

The recent legal notices linked to cleaner production are listed below:

ACT No XII of 2004

AN ACT entitled the Eco-Contribution Act, 2004.

Government Gazette of Malta No 17 639 - 13 August 2004

L.N. 28 of 2005

ECO-CONTRIBUTION ACT, 2004 (ACT NO XII OF 2004)

Eco-Contribution Act (Amendment of First Schedule) Regulations, 2005

Government Gazette of Malta No 17 712 - 25.01.2005

L.N. 120 of 2005

ENVIRONMENT PROTECTION ACT (CAP. 435)

Urban Waste Water Treatment (Amendment) Regulations, 2005

Government Gazette of Malta No 17 757 - 22.04.2005

L.N. 140 of 2005
ENVIRONMENT PROTECTION ACT (CAP. 435)
European Community Greenhouse Gas Emissions Trading Scheme Regulations, 2005
Government Gazette of Malta No 17 768 - 17.05.2005

L.N. 312 of 2005
ECO-CONTRIBUTION ACT, 2004 (ACT NO XII OF 2004)
Eco-Contribution Act, (Amendment of First Schedule) (No 2) Regulations, 2005
Government Gazette of Malta No 17 813 - 02.09.2005

L.N. 98 of 2004
ENVIRONMENT PROTECTION ACT (CAP. 435)
Waste Management (Packaging and Packaging Waste) Regulations, 2004
Government Gazette of Malta No 17 543 - 24.02.2004

L.N. 99 of 2004
ENVIRONMENT PROTECTION ACT (CAP. 435)
Waste Management (End of Life Vehicles) Regulations, 2004
Government Gazette of Malta No 17 543 - 24.02.2004

L.N. 151 of 2004
ENVIRONMENT PROTECTION ACT (CAP. 435)
Government Notice of the Pollution Caused by Certain Dangerous Substances Discharged into the Aquatic Environment Regulations, 2004
Government Gazette of Malta No 17 563 - 02.04.2004

L.N. 163 of 2004
ENVIRONMENT PROTECTION ACT (CAP. 435)
Reduction in the Sulphur Content of Certain Liquid Fuels (Amendment) Regulations, 2004
Government Gazette of Malta No 17 569 - 16.04.2004

L.N. 164 of 2004
ENVIRONMENT PROTECTION ACT (CAP. 435)
Commencement Notice of the Waste Management (End of Life Vehicles) Regulations, 2004
Government Gazette of Malta No 17 569 - 16.04.2004

L.N. 165 of 2004
ENVIRONMENT PROTECTION ACT (CAP. 435)
Commencement Notice of the Waste Management (Packaging and Packaging Waste) Regulations, 2004
Government Gazette of Malta No 17 569 - 16.04.2004

L.N. 167 of 2004
ENVIRONMENT PROTECTION ACT (CAP. 435)
Commencement Notice of the Chemicals Co-ordinating Committee Regulations, 2002
Government Gazette of Malta No 17 569 - 16.04.2004

L.N. 188 of 2004
ENVIRONMENT PROTECTION ACT (CAP. 435)
Commencement Notice of the Integrated Pollution Prevention and Control Regulations, 2002
Government Gazette of Malta No 17 571 - 23.04.2004

L.N. 190 of 2004
ENVIRONMENT PROTECTION ACT (CAP. 435)
Commencement Notice of the Limit Values for Benzene and Carbon Monoxide in Ambient Air Regulations, 2002
Government Gazette of Malta No 17 571 - 23.04.2004

L.N. 191 of 2004
ENVIRONMENT PROTECTION ACT (CAP. 435)
Commencement Notice of the Urban Waste Water Treatment Regulations, 2001
Government Gazette of Malta No 17 571 - 23.04.2004

L.N. 192 of 2004
ENVIRONMENT PROTECTION ACT (CAP. 435)
Urban Waste Water Treatment (Amendment) Regulations, 2004
Government Gazette of Malta No 17 571 - 23.04.2004

L.N. 193 of 2004
ENVIRONMENT PROTECTION ACT, ACT (CAP. 435)
Assessment and Management of Environment Noise Regulations, 2004
Government Gazette of Malta No 17 571 - 23.04.2004

L.N. 230 of 2004
ENVIRONMENT PROTECTION ACT (CAP. 435)
Integrated Pollution Prevention and Control (Amendment) Regulations, 2004
Government Gazette of Malta No 17 574 - 30.04.2004

L.N. 231 of 2004
ENVIRONMENT PROTECTION ACT, 2001 (ACT NO XX OF 2001)
Limit Values for Nitrogen Dioxide, Sulphur Dioxide and Oxides of Nitrogen, Particulate Matter
and Lead in Ambient Air (Amendment) Regulations, 2004
Government Gazette of Malta No 17 574 - 30.04.2004

L.N. 232 of 2004
ENVIRONMENT PROTECTION ACT (ACT NO XX OF 2001)
National Emission Ceilings for Certain Atmospheric Pollutants (Amendment) Regulations,
2004
Government Gazette of Malta No 17 574 - 30.04.2004

L.N. 233 of 2004
ENVIRONMENT PROTECTION ACT, 2001 (ACT NO XX OF 2001)
Protection of Waters against Pollution caused by Nitrates from Agricultural Sources
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Government Gazette of Malta No 17 574 - 30.04.2004

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L.N. No 391 of 2004
ECO-CONTRIBUTION ACT, 2004 (ACT NO XII OF 2004)
Notice of Coming into Force
Government Gazette of Malta No 17 644 - 30.08.2004

L.N. No 392 of 2004
ECO-CONTRIBUTION ACT, 2004 (ACT NO XII OF 2004)
Designation of the Competent Authority Order, 2004
Government Gazette of Malta No 17 644 - 30.08.2004

L.N. No 393 of 2004
ECO-CONTRIBUTION ACT, 2004 (ACT NO XII OF 2004)
Eco-Contribution Act, (Amendment of First Schedule) Regulations, 2004
Government Gazette of Malta No 17 644 - 30.08.2004

L.N. No 394 of 2004
ECO-CONTRIBUTION ACT, 2004 (ACT NO XII OF 2004)
Eco-Contribution Act, (Amendment of Second Schedule) Regulations, 2004
Government Gazette of Malta No 17 644 - 30.08.2004

L.N. No 395 of 2004
ECO-CONTRIBUTION ACT, 2004 (ACT NO XII OF 2004)
Eco-Contribution Regulations, 2004
Government Gazette of Malta No 17 644 - 30.08.2004

L.N. No 529 of 2004
ECO-CONTRIBUTION ACT, 2004 (ACT NO XII OF 2004)
Eco-Contribution Act, (Amendment of First Schedule), No 2 Regulations, 2004
Government Gazette of Malta No 17 701 - 30.12.2004

L.N. No 533 of 2004
ECO-CONTRIBUTION ACT, 2004 (ACT NO XII OF 2004)
Eco-Contribution Act, (Amendment of First Schedule), No 2 Regulations, 2004 (Amendment)
Regulations, 2004
Government Gazette of Malta No 17 702 - 31.12.2004

Enforcement

The main problem encountered in Malta when it comes to enforcing legislation on the environment is still the lack of trained personnel. However, this situation has improved with the recruitment of new personnel.

The construction and demolition industry is the sector facing the most difficulties in compliance. This industry is widespread over the island, as numerous projects, both infrastructural and construction of residential units, are in the pipeline.

As for the initiatives launched to improve enforcement of legislation, regulations substantially increasing fines for environmental pollution have been published and are coming into force from 1 January 2006.

Permit system

The administrative agency involved in the permitting system when enforcing the IPPC Directive is the Pollution Prevention and Control Unit within the Malta Environment and Planning Authority (MEPA).

Emission limit values for polluting substances in Malta according to the best available techniques have been established in line with the IPPC Directive.

The use of best available techniques and best environmental practices has been promoted indirectly through legislation and through consultancies by the Cleaner Technology Centre (CTC).

Voluntary agreements

Voluntary agreements were negotiated by the Malta Federation of Industries (FOI) with the former Drainage Department -now part of the Malta Resources Authority (MRA)-.

The FOI negotiated on behalf of specific industries that could not comply with the emissions limits contemplated in the Sewage Discharge Act. The regulations were suspended for a definite period to enable those industries signing the voluntary agreements time to upgrade/modify their processes in order to come in line with legislation. Upgrading/modifying techniques to comply with the legislation has meant the adoption of CP and eco-efficiency.

International conventions and protocols

In the international framework for the protection of the environment through pollution prevention, Malta ratified the Copenhagen Amendment, the Montreal Amendment and the Beijing Amendment to the Montreal Protocol on 22 December 2003.

11.4. Agents involved in promoting CP

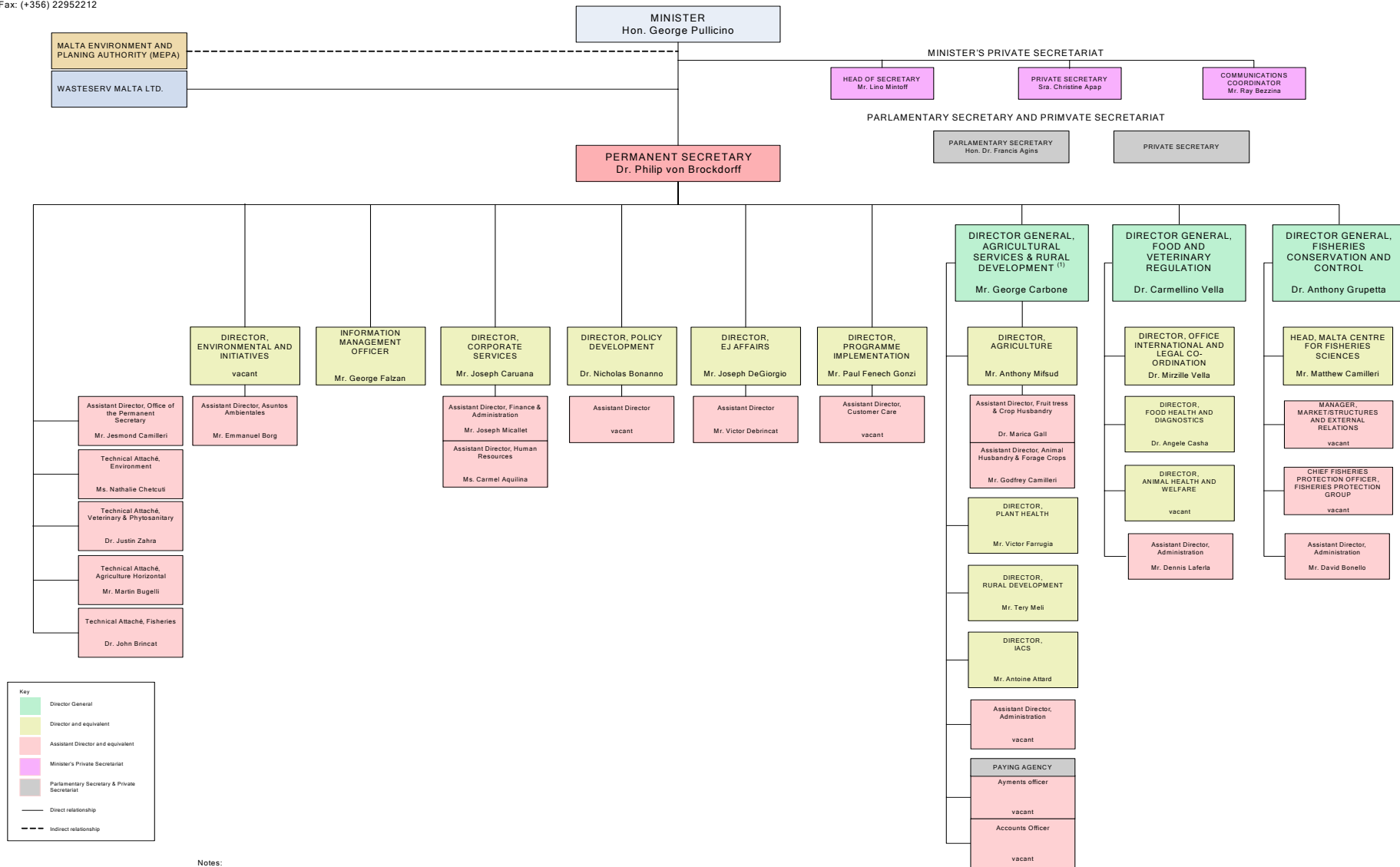
The Ministry for Rural affairs and the Environment

The institutional framework for environmental management and policy in Malta has not changed since the second edition: it is still made up of the Ministry for Rural Affairs and the Environment and the Malta Environment & Planning Authority (MEPA), which supports the Ministry on the implementation and development of the environmental regulations and planning.

The organisation chart of the Ministry is as follows:

Ministry for Rural Affairs and the Environment
 Barriera Wharf
 Valletta CMR02
 Malta
 Tel.: (+356) 22952000, 22952222
 Fax: (+356) 22952212

MINISTRY FOR RURAL AFFAIRS AND THE ENVIRONMENT



Notes:
 (1) the Director General (Agricultura Services & Rural Development) also fulfills the function of Head (Paying Agency).

The Malta Environmental and Planning Authority (MEPA), which as mentioned in the second edition is a para-statal body established by an act of parliament and independent of the Ministry, consists mainly of two directorates: the Environment Protection Directorate (EPD) and the Development Planning Directorate.

Within the EPD, there is the Pollution Prevention and Control Unit, which is the regulatory arm of MEPA responsible for preventing and regulating activities which may give rise to pollution and environmental degradation. It thus constitutes a large bulk of the regulatory and inspectorate functions required in the Environmental acquis.

The main focus of this unit over the past years has been to reach the required compliance standards required by the EU accession, in reacting to and commenting on new legal documents being formulated by the EU institutions, and in putting into place the required legal, and administrative systems and structures which will bring into practice and effect, and to the required standard, the new legal regime of the EU. The Unit is also responsible for several monitoring related activities.

During the past year, a special focus has been given to Integrated Pollution Prevention and Control (IPPC). The activities undertaken in 2004 on the IPPC are the following:

- The relevant legal instruments have been updated to take into account Malta's specific needs and to bring them in line with the EU requirements.
- Guidance documents for operators have been drafted, as well as template permit application forms.
- All IPPC sites were visited and detailed discussions as to compliance requirements were held with the operators.
- Three workshops were held for operators in general, including 2 specific workshops for operators in the farming and animal husbandry sector, which were very well attended.
- The IPPC committee has been formally set up and the respective members have been gazetted. The IPPC Committee oversees the definitive establishment of the IPPC installations, the inspection of installations and ensures that the necessary guidance in the legislation is carried out. It is involved in the permitting system. The committee met 5 times during 2004.
- A section devoted to IPPC issues has been set up as part of the MEPA website, which will serve as a platform and "front page" to all the public consultation and information process required by the IPPC Directive.

The Cleaner Technology Centre (CTC)

As already mentioned in the previous editions, the Cleaner Technology Centre is a major agent in Malta.

The staff of the CTC is made up of three people: the director, an environmental scientist and a secretary. Policy is usually formulated by a management board composed of a representative from Malta University Services Ltd., the Director of Environment Protection Directorate and the Director of the Cleaner Technology Centre.

The CTC is represented on the Clean Air Board, the Pesticide Board, the Adjudicating Board on Waste Management Tenders; the Environment Award for Industry Adjudicating Board, the Steering Committee of the Green House Gases Inventory and it is a Member of the Malta Enterprise Award Committee.

- Since the second edition, the CTC has undertaken the following activities.
 - 3 March 2004. Half-Day Seminar "Waste Separation – What's the big Deal? " organised in conjunction with WasteServ Malta Ltd.

- 9 June 2004. “Half-Day Seminar “Malta – Industry – The EU and the Environment – Practical Solutions” organised in collaboration with CUTEC Institut, Germany and FOI.
- 18-19 November 2004. Workshop “Scientific Technical Reference System for Renewable Energies and Energy End-Use Efficiency” organised in conjunction with TAIEX, Institute for Energy Technology and Malta Resources Authority.
- 9–14 May 2005. Eurachem workshop and General Assembly. Organised in collaboration with Eurachem Malta.
- 24 May 2005. Half-Day Seminar “Social Corporate Responsibility and the Emissions Trading Directive – Challenges and Opportunities” organised in collaboration with the Faculty of Laws, University of Malta.
- 21 July 2005. Working Seminar “Implementation of the Strategic Action Plan (SAP) – Malta’s National Action Plan for the Reduction and Elimination of Land-Based Pollution”. The CTC has actively participated in this Seminar.
- 1 – 14 August 2005. Course “Solid Waste Management”, organised for the WasteServ Malta personnel.

In addition to these activities, the CTC has had a representation and an active participation in the following meetings and seminars:

- September 2003 - International Seminar on Waste Water Reclamation and Re-use (Turkey).
- 22-23 November 2004 – Regional Workshop on BAT and BEP (Spain).
- January 2005 - Environment Award Steering Committee Meeting (Brussels).
- March 2005 – Workshops on Innovative Approach in EMAS II implementation in Local Authorities (Invited Expert, Latvia).
- 24-26 May 2005 - RAC/CP 5th National Focal Points Meeting (Spain).
- May 2005 – Environment Award Steering Committee Meeting (Brussels).
- May 2005 – Workshops on Innovative Approach in EMAS II implementation in Local Authorities (Invited Expert, Latvia).

Dec 2005 – EU Environment Award Steering Committee Meeting (London)

The CTC has organised the following courses:

- Safe Handling of Ozone Depleting Substances for the Cooling and Refrigeration Technicians (8 Courses)
- Pesticide Use for Agricultural Workers (1 Course)
- Dealing with Pesticide Products for Vendors of Biocides (3 Courses)

The CTC has offered the following lectures:

- December 2004 - B.Sc Environmental Health Students “Air and Hazardous Chemical Pollution Module”.
- Supervision of Theses with Environmental Protection themes by students in different faculties.

The WasteServ Malta Ltd.

The WasteServ Malta Ltd. is a company that was established in November 2002. It is responsible for organising, managing and operating integrated systems for waste management including integrated systems for minimisation, collection, transport, sorting,

reuse, utilisation, recycling, treatment and disposal of solid and hazardous waste. It is responsible for the waste management policy and plan of the Government of Malta while observing internationally recognised waste management principles.

There are 32 people working in WasteServ Malta Ltd., most of them as professional officers. The working staff is made up of ex-government employees, even though it contracts several outsourcing services.

There are three departments in the WasteServ Malta Ltd. The relevant departments concerning pollution prevention and eco-efficiency are the following:

The Strategy and Development Unit. It organises and manages initiatives to strategy development, communications and education, waste separation and minimisation as well as funding and research.

The operations unit is responsible for managing, monitoring and operating all government-owned waste management facilities. It also finds and explores markets for the sale of recovered materials and the treatment of waste such as electronic waste both locally and foreign. It also performs waste audits on various waste streams.

In regard to the activities and projects undertaken by the WasteServ Malta Ltd. company, amongst others, it has led ongoing waste initiatives with the private sector (hotels and restaurants, manufacturing industries, etc).

11.5. Programmes, action plans and projects to promote CP

Programmes and action plans

The National Strategy for Sustainable Development

After the second edition, a participatory and consultative process involving major stakeholders was devised by the National Commission for Sustainable Development to further develop the Strategy and to identify priorities. Towards this end, the National Commission for Sustainable Development drew up a plan of meetings to be held between April and December 2004.

The strategy makes a proposal of strategic direction and implementation measures. Some of the main strategic directions are linked to cleaner production in the industrial and the economic sector, since they concern, i.a., sustainable consumption and production patterns (to economise on the use of non-renewable resources, minimise waste and pollution, and allow enough time for regeneration of renewable resources and promote eco-efficiency) and strategic directions for the manufacturing sector (to encourage participation in the EU eco-labelling scheme, to promote environmental management and audit systems, industry design and cleaner production technology), etc.

The Waste Management Strategy

The main developments concerning the implementation of the Waste Management Strategy since the second edition have been the closing down of the unregulated landfill, the construction of an engineered landfill, a sustained educational campaign on proper waste disposal and the establishment of a number of pilot bring-in sites for the separation of four streams of wastes, namely glass, paper, plastic and metal.

Other programmes and action plans

Since the second edition, other programmes and action plans have been developed:

- Plans for the introduction of waste separation all over the island.
- Plans for the establishment of bring-in sites and material separation facilities.
- Upgrading of the Sant'Antnin Waste Recycling Plant.
- Construction of three other waste recycling plants on sites yet to be identified.

Projects

Malta and Environmental Management Systems Project

This project co-funded by the European Union and the Maltese Government has just been initiated by the Malta Standards Authority to increase awareness of environmental management systems and to provide advice and training to the food, hotel, construction, and chemical sectors, and light engineering industries as well as to local councils and government entities on the implementation of an environmental management system such as the EU Environmental Management and Audit Scheme (EMAS), MSA BS 8555, and MSA EN ISO 14001.

This project is co-ordinated by Adi Associates Environmental Consultants Ltd. and Tuning Fork Ltd. International expertise and experience will be provided by Millennium Science & Engineering Limited, the UK's Institute for Environmental Management and Assessment, Environmental Resources Management Ltd, and the United Kingdom Accreditation Service.

The main activities in connection with EMS are:

- A two-day introductory training course on EMS
- A training course on the implementation of EMS for the representatives of the food, hotel, construction, light engineering and chemical industries, and for local authorities and government entities
- An EMS internal auditor course for the representatives of the food, hotel, construction, light engineering and chemical industries, and for local authorities and government entities
- An EMAS verifiers training course

The main activities in connection with the Eco-label Scheme are:

- Awareness workshop on the EU Eco-labelling Scheme
- Ad hoc technical expert advice, consultation, and facilitation on the EU Eco-labelling Scheme.

11.6. Tools and activities to promote CP

Economic instruments

The main economic instruments related to the environment, that have been adopted in Malta since the second edition are:

- Eco-contribution.
- Limits to the amount of subsidised water and electricity usage.
- Substantial increase in penalties for littering.
- Waiving of import taxes on apparatuses for alternative source of energy generation.

However, none of these instruments are directly aimed at promoting cleaner production and eco-efficiency, but indirectly, as the limits on subsidies on the use of water and electricity by themselves promote eco-efficiency.

Voluntary instruments

EMAS, ISO 14000 and eco-label systems are still relatively new in Malta. There is a program (partially funded by the EU) being run under the auspices of the Malta Standards Authority (mentioned in the second edition) to provide information and possible adoption of Environmental Management Systems within the industrial community.

Awards

The Environmental Award for Industry

This award, whose first edition was held in 2001 on the initiative of the Cleaner Technology Centre with the support of the then Environment Protection Department, was mentioned in the second edition.

Initially, there were two categories:

- Category A, which was a management award for sustainable development.
- Category B, which is a conservation award for sustainable development.

In the third edition, 2005, a third category was added called the “Environment Protection Initiative Award for SMEs”.

The winners for the third edition were

Category A – Trelleborg Sealing Solutions Malta

Category B – HSBC Bank Malta plc

Category C – The Limestone Heritage

The regulations are mainly based on those of the European Business Awards for the Environment.

The winners of Category A and B are assisted by the CTC to compete in the European Environment Award Scheme. In fact, the winners of the first edition’s management awards were also winners in the European Business Awards Scheme. The winners are also awarded a trophy and a certificate.

11.7. Conclusions

Malta became an EU Member State on 1 May 2004. This has produced significant changes over the last years in Malta’s environmental policy and legislation. Still, there is a lack of personnel that hinders enforcement (although new personnel have been recruited). On the other hand, it is expected that increased fines for environmental pollution that will come into force soon will further enhance the enforcement of legislation.

As regards pollution prevention and control, there is an IPPC system in place and the use of BATs and BEPs has been promoted through legislation and consultancies by the Cleaner Technology Centre.

The major disadvantages connected to the implementation of cleaner production in Malta remain:

- The lack of institutional support due to the unavailability of personnel trained in cleaner production.
- The fear on innovation and wrong perception of high cost of cleaner production by SMEs.
- The limited human and financial resources in the Cleaner Technology Centre drastically curtailing its programme of activities.

On the other hand, there are new opportunities in this sense since the newly set-up agency, Malta Enterprise, in collaboration with the Federation of Industry and with the support of the Cleaner Technology Centre can embark on an intensive and sustained programme for raising awareness about cleaner production. At the same time, they can emphasise the need of new companies starting operations in Malta to adopt cleaner production and eco-efficiency in their new venture.

11.8. References

- Questionnaire submitted to the RAC/CP by the NFP for Malta.
- Ministry of Rural Affairs and the Environment website, <http://www.mrae.org>
- *Annual Report and Accounts*, Malta Environment and Planning Authority 2004.
- WasteServ Malta website, <http://www.wasteservmalta.com>
- CIA, *The World Factbook*, <http://www.cia.gov>
- *Comprehensive monitoring report on Malta's preparations for membership*, European Commission, 2003.
- *A Draft Sustainable Development Strategy for Malta*, National Centre for Sustainable Development, 2004.
- Malta and Environmental Management Systems website, <http://www.m-ems.com/default.htm>
- The European Environment- State and Outlook 2005. State of the environment report no 1/2005, European Environment Agency, Office for Official Publications of the European Communities.
- Protocols and conventions referenced from the following websites:
- United Nations Economic Commission for Europe, <http://www.unece.org/>
Mediterranean Action Plan of the United Nations Environment Programme, <http://www.unepmap.org>

12. Monaco⁸

12.1. Introduction

Monaco is a small country covering an area of 2.01 km², which borders France on the Mediterranean coast.

The economy of Monaco is based on light manufacturing, banking and financial services, shipping and trade, as well as tourism, research and development in technology and marine environment. In recent years, the principality has successfully sought to diversify into services and small, high-value added, non-polluting industries.

Industry is currently one of the main economic sectors of Monaco, as accounted for the 8 % of the annual revenue, and it employed 3 729 people in 2004, that is to say, almost 12 % of the employed population.

The main industrial sectors are: fine chemistry, plastic material processing, pharmaceutical products, cosmetic products, electric and electronic materials, printing and textile and clothing.

Nowadays, the Principality is a dynamic economic centre and a lot of employment is concentrated there. Unemployment practically does not exist, industry comprises about one hundred enterprises and the economy generates about 39 000 jobs for a population of more than 30,000 inhabitants. Economic activity is responsible for the annual revenues of 9 million euros.

* It has not been possible to provide a table on socio-economic aspects in Monaco, since no updated data have been verified by the National Focal Point.

12.2. Industry and environment

Industrial development and environmental impact

The revenues of the industrial sector in Monaco increased by 4.24 % between 2003 and 2004, from 789.9 million euros in 2003 to 823.4 million euros in 2004. The industrial sector employed more than 3 700 people in 2004.

The chemical and plastic transformation, as well as the pharmaceutical products and cosmetic products sub-sectors account for 72.46 % of the production of the Monegasque industrial sector.

When it comes to environmental impact, wastewater effluents are treated by a wastewater treatment plant before being discharged deep into the sea.

As for the pollution due to transport, it will be soon minimised by means of an urban transport plan, which is currently being executed, and the construction of mechanical connections such as public lifts and mechanical stairs.

⁸ The information in this chapter has not been corroborated by the National Focal Point for Cleaner Production in Monaco.

Areas of special concern

There are no areas of special concern or “hotspots” in Monaco.

12.3. Legal and policy framework

Laws and regulations

The only relevant environmental development since 2003 is the improvement of the treatment of air emissions coming from the incineration plant with the aim of complying with the European Directive 2000/75/CE.

Permit system

The permit system has not changed since the 2nd edition, as it works properly and it has proved to be efficient and adequate as regards the local objectives.

Competencies

There have been no changes concerning the administrative agencies involved in the permit system since the 2nd edition. The files are instructed by the Technical Commission for Pollution Abatement and the Maintenance of Public Security, Hygiene and Tranquillity.

The technical sub-commission that is in charge of the evaluation of the industries' environmental performance is appointed by the above-mentioned Commission. It is formed by a representative of the Directorate of Environment, Urban Planning and Construction; a representative of the Monaco Fire Brigade; a representative of the Department of Work; a representative of the Directorate of Economic Expansion and a representative of the Food and Sanitary Safety.

All the industrial plants of Monaco are visited and controlled by this technical sub-commission each year. During this annual inspection, safety, working rights and the environmental performance of industries are controlled. The representative who is in charge of the industrial environmental affairs makes an estimation of the environmental performance of industries by using the information provided by the manufacturer, by visiting the installations and by verifying the manufacturing techniques that are used.

The permitting system procedure

Cleaner techniques and BEPs are not mandatory requirements in the industrial permitting system, nor a component of industrial facilities compliance action plan. The only mechanism for achieving cleaner production in Monaco is by accepting only low polluting industries in the territory.

However, the ISO 14000 authorisation is an asset for the installation and maintenance of the industrial installations. In fact, great attention is paid to the presence or the absence of these practices during the instruction of the files in order to ensure that the installation can be better integrated in the urban environment. Moreover, the use of dangerous substances whose presence generates specific prescriptions is closely monitored, with the aim of reducing its dangerousness.

Voluntary agreements

There are no voluntary agreements between the administration and industries. However, the environmental authorities are at the industries' disposal for advice and consultation (for example, by providing the manufacturers with the RAC/CP publications).

International conventions and protocols

In terms of international environmental protection through pollution prevention, Monaco ratified the Stockholm Convention on Persistent Organic Pollutants on 20 October 2004.

12.4. Agents involved in promoting CP

The former Environment Service, which was in charge of environmental issues, is nowadays called the Directorate of the Environment, Urban Planning and Construction.

There are 35 people working in the Directorate of the Environment, Urban Planning and Construction, out of which 11 work in the "environment" section.

Apart from the Directorate of the Environment, Urban Planning and Construction, there have been no other public or private agencies working for the promotion of cleaner production and eco-efficiency in Monaco since 2003. The coordinated structure of the agencies that promote cleaner production and eco-efficiency has not changed either. As has already been mentioned, one of the main activities of this Directorate linked to cleaner production is the dissemination of the technical works prepared by the RAC/CP.

12.5. Programmes, action plans and projects to promote CP

The Plan for the Treatment and Disposal of Solid Municipal Waste has been updated with the consultation of the French Department of the Maritime Alps. The decontamination master plan (for wastewater treatment) has been updated with the consultation of the French municipalities that are bordering Monaco who share the same basin. This plan foresees some retention basins aimed at limiting the polluting flows to sea during the rains, which have a quarterly return period.

Other national policies aimed at integrating and conciliating environment within economic development are:

- Trend generalisation to save energy and fossil fuels, and to develop renewable and alternative sources of energy.
- Extending the implementation of waste minimisation strategies and best environmental practices (Plan for the elimination of solid municipal wastes in preparation).
- To develop saving of water (for example, by using natural river water to clean roads)

12.6. Tools and activities to promote CP

Economic instruments

There are no economic instruments aimed at promoting cleaner production and eco-efficiency in Monaco, nor any award to industries aimed at recognising an outstanding contribution to the environment.

Voluntary instruments

There are already 8 enterprises with the ISO 14001 certification, and there are currently two enterprises which are under the adoption of the ISO 14001 certification.

12.7. Conclusions

As mentioned in the second edition, Monaco is a small country with low dependence on industry. Therefore, industry-related environmental emissions are consequently low; lower, in fact, than urban concentration and tourism related emissions.

Air pollution in the country are being minimised by means of several measures tackling emissions due to transport and improvements in the treatment of emissions from the incineration plant.

Cleaner production measures are not mandatory in the activities permitting system, but environmental management systems are well accepted and could further be promoted.

12.8. References

- Monaco official website, <http://www.visitmonaco.com>
- Monaco's Government official website, www.gouv.mc
- Mediterranean Action Plan of the United Nations Environment Program, <http://www.unepmap.org>
- Note on the activities carried out for promoting the implementation of cleaner production in Monaco sent by the National Focal point to the RAC/CP.
- CIA, *The World Factbook*, <http://www.cia.gov>
- United Nations Economic Commission for Europe, <http://www.unece.org>
- Questionnaire submitted by the RAC/CP National Focal Point for Monaco.

13. Montenegro⁹

13.1. Introduction

The economy of the former Federal Republic of Yugoslavia (FRY), which was once considered the most advanced among the Socialist Bloc countries, underwent a significant decline in the 1990 as a result of the structural problems of the socialist economic system combined with the break-up of the Federation, international isolation and ethnic conflicts. The same period also witnessed the collapse of a considerable number of industrial enterprises as well as the decline in infrastructure and in government capacity to enforce regulations in a number of areas.

As regards the Republic of Montenegro (ROM)¹⁰, during recent years, real GDP growth rate has ranged from 1.7 to 3.7 % annually. Unemployment in this Republic is still high, (almost 19 % of the country's workforce in 2005, and with considerable regional variations. The average salary in 2004 was approximately EUR 213, while the poverty rate was 12.2 % in 2003. With an approximate rate of 5 %, inflation has been kept at low levels during the past several years. Other macro-economic indicators show a high share of public expenditure in GDP, a high trade deficit and foreign direct investments that, although increasing, are still low (some EUR 50 million in 2004). Positive trends have been recorded in the banking sector¹¹.

Montenegro is not as heavily industrialised as Serbia. It is characterised by large, sparsely populated regions, with industry concentrated in a few, more urbanised areas. The mining industry has been the starting point of industrialisation in Montenegro.

Most industries are small or medium-sized enterprises (SMEs). However, there are a relatively small number of large, heavy industries in the fields of steel and iron, metal processing, beer production and manufacturing of glass, paper, soap, detergents and other household appliances.

All those industries are relatively minor compared to the huge aluminium production plant KAP (Kombinat Aluminijuma Podgorica) in Podgorica. This enterprise has approximately 4 000 employees (more than 10 % of the local labour force), accounts for approximately 96 % of Montenegro's exports, and approximately 53 % of the economy of the Republic depends on KAP. KAP consumes 45 % of the total electricity production in Montenegro.

At present it is not the intention of the Government of the Republic of Montenegro to promote either the establishment of new heavy industries or the expansion of existing heavy industries; rather, it is the Government's intention to support a faster growth of the SME sector and to stimulate privatisation. However, limited possibilities for export and lack of technical and managerial skills among entrepreneurs still represent constraints on accelerating the development of SMEs.

⁹ The following information focuses on the Republic of Montenegro, according to its recent declaration as an independent State, though, at the time in which the information was collected, Montenegro still belonged to the former Union State of Serbia and Montenegro. For that reason, some information may refer to both States. Nevertheless the National Focal Point for RAC/CP can only confirm the information that is given concerning Montenegro but not on Serbia.

¹⁰ Surface area: 13 819 sq km. Population: 600 000 inhab.

¹¹ For more information on economic and social aspects on Montenegro, refer to the Montenegrin Human Development Report (UNDP/ISSP 2005).

13.2. Industry and environment

Industrial development and environmental impact and areas of special concern

The major pollution problems in Montenegro are untreated urban effluents, eutrophication of coastal waters and uncollected solid waste. It is estimated that 50 % of the produced solid waste in the coastal area is being collected and disposed of in open dumps without sanitary treatment.

Over the years hazardous waste discharges were uncontrolled, as no management system for that type of waste was applied. There were no special facilities for the incineration or any constructed landfill for hazardous waste. As a result, most generators of hazardous waste stored their wastes in their own facilities temporarily. Other times, normally in the case of SMEs, industrial and hazardous wastes were mixed with common waste and transported to the municipal waste dumps.

However, new policy and legal structures have recently been established for tackling waste management, which has become a priority issue in national policy. In December 2004, a National policy on waste management was adopted, and a new law on waste that is harmonised with EU Directives was adopted in December 2005. Likewise, a master plan for waste management and for wastewater treatment has been prepared.

Other environmental problems related to industrial activities are due to stone quarrying near the town of Bar and Platamuni peninsula, causing dust generation and alteration of the coastal morphology (land erosion signs can be seen throughout the coastal area).

As regards the environmental impact linked to the services industry, the main environmental problems linked to tourism are, once again, solid waste management and wastewater treatment, along with waste produced from ships and port aquatories; the main environmental problem linked to healthcare is hazardous waste storage.

According to MEDPOL, the areas of concern in Montenegro are:

- Bar: urban and industrial effluents (food).
- Herzeg Novi: urban and industrial effluents (shipyard, harbour and food).
- Kotor: urban and industrial (metal, chemicals, petroleum storage and harbour)
- Ulcini: urban and industrial (salt and harbour)
- Budva: urban and harbour
- Tivat: urban and industrial (shipyard and harbour)

As regards to the main hot spots, the following must be mentioned:

- Podgorica Aluminium Plant (KAP):

This is the first and dominant industrial pollution problem in Montenegro. KAP operates virtually without having proper pollution prevention or reduction measures in operation. The results are air pollution from anode baking plant and electrolytic process (fluoride, phenols, PAH, SO, etc.), groundwater pollution from the "red mud", which is a waste product from the production of aluminium, and generation of various types of hazardous wastes without enough adequate options for treatment or disposal. However, the problem of groundwater was addressed by State intervention, and a special programme of sanitation that was realised few years ago. On the other hand, in 1993, the Government adopted an action plan suggested by a State commission to prevent further pollution and solve present problems at the KAP. The plan included 51 specific measures to be taken by the KAP itself (34 measures), the national authorities (15 measures) and the Municipality of Podgorica (2 measures). The most costly measures were related to

reducing the air pollution and to improving the industrial and mining waste management practices. Due to financial constraints, a very limited number of measures were actually implemented in each case.

- **Pljevlja Thermal Power Plant**

This plant produces from locally mined lignite coal. Existing mechanisms for filtering and purifying gas emissions are old-fashioned. Their replacement by more suitable ones is planned, once the privatisation process undertaken in the company is finalised. Due to the location of the power plant in a rather enclosed valley with often humid and unfavourable climatic conditions (particularly no wind during 67 % of the year), severe air pollution events frequently occur during the heating season. The frequency of respiratory diseases in the area is markedly above average.

- **Niksic Iron Works**

This operates with old-fashioned filters and equipment and emits a range of heavy metals, noxious gases, PAH and particular matter. Levels of particulates and heavy metals in ambient air in the vicinity of the plant are known to exceed the established limit values.

- **Mojkovac Disposal Site**

This site contains mining tailings and industrial waste from lead and zinc production and it occupies an area of 20 ha. The site is located on the bank of Tara River – part of Durmitor National Park, and the river is protected by an earth and gravel dam. This site poses a serious threat to the population and the environment, especially in the case of an accident or of heavy rainfall.

During 2005 the Ministry of Environmental Protection and Physical Planning launched a comprehensive programme for the restoration and sanitation of the Mojkovac Disposal Site. The budget for that purpose is provided by the Government of Montenegro with important support from the Czech Republic.

Most measures tackling the environmental threats caused by the biggest factories are being set through the ongoing privatization processes undertaken in the main industrial sectors. In agreements that are concluded between Government and future owners, there is an Annex that specifies the investments for carrying out the necessary measures for environmental protection.

13.3. Legal and policy framework

Laws and regulations

In December 2005 Montenegro adopted a law on environmental protection, and new laws on waste management, environmental impact assessment (EIA), strategic environmental impact assessment (SEIA) and integrated pollution prevention and control (IPPC). These regulations will be implemented from 1 January 2008. In the meantime, implementation capacities will be strengthened.

Laws on air, eco-fund, noise, ratification of the Kyoto Protocol, amended Barcelona Convention and Basel convention are under preparation.

Enforcement

Compliance and enforcement of environmental law and regulations in Montenegro are weak. There are various reasons for this, including the following:

- A fragmented and in many parts inconsistent and outdated legal framework.
- Insufficient staffing and lack of modern equipment in inspection departments.
- Complicated institutional structure where the demarcation of competencies vertically between the federal level and the two Republics (and to a lesser extent between the republic level and the municipalities) and horizontally between different government institutions is often unclear.
- Rather low levels of fees and fines combined with a low collection rate and lengthy court procedures.
- Difficult economic situation and non-existent or incomplete emissions data from enterprises.

Permit system

The Ministry of Environmental Protection and Physical Planning of Montenegro issues 190 permits per year based on EIA studies. The content of EIA focuses mainly on biodiversity, air and soil issues, as direct competences of the Ministry. Water issues are also included, though to a lesser extent, as water is a competence shared by several Ministries (Agriculture, Maritime Affairs, Environment,).

For all investments that require permit on submitted EIA study there is obligation to pay compensation amounting to 1 % of the total value of the investment, and this sum is used for activities aimed in protection and rehabilitation of environment.

The main legal provisions applicable for EIA in Montenegro are:

- The Law on Environmental Impact Assessment (EIA Law).
- The Regulations on the projects that are subject to elaboration of EIA Study.
- The Rulebook on the contents of the developer's application, contents and scope of EIA Study, contents, format and method of public register keeping.
- The Law on Strategic Environmental Impact.
- The Rulebook on the content of the Strategic Environmental Assessment report and of the criteria for its validation;
- The Law on integrated Pollution Prevention and Control (IPPC Law).
- The Regulation on activities and installation that are subject to integrated permit issuing, on the contents of programmes of measures for bringing existing installations or activities into compliance with the set condition, on criteria for determination of the best available techniques, on criteria for determination of emission limit values in integrated permit.
- The Rulebook on the contents and methods of keeping the register of issued integrated permits.

Despite the EIA system being in place, environment is insufficiently taken into consideration in economic or political decision-making in Montenegro. Due to the lack of thresholds, there is such a high number of EIA that the very few staff working on the matter are overstrained.

Furthermore, it should be noted that so far the environmental authorities in Montenegro have not signed voluntary agreements with the industry to facilitate enforcement of legislation or reduce their environmental impact.

International conventions and protocols

In the international framework for the protection of the environment through pollution prevention, Montenegro is signatory of the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol of 12 March 2001. It accepted the London, Copenhagen, Montreal and Beijing amendments to the Montreal Protocol the 22 March 2005.

Furthermore, is signatory of the Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal of 18 April 2000, and accepted the Ban amendment to the Basel Convention of 27 November 2002.

Montenegro has been a signatory of the Stockholm Convention on Persistent Organic Pollutants since 2 May 2002 and a programme for the preparation of national capacities for the ratification of the Convention is under way.

13.4. Agents involved in promoting CP

In Montenegro, the Ministry of Environmental Protection and Physical Planning (MEPP), which has been operating since 1992, has been entrusted with supervising the implementation of the Environment Law and associated by-laws.

Other ministries with responsibilities in the environment sector are: the Ministry of Agriculture, Forestry and Water Resources (water and soil protection, water resources management) and the Ministry of Industry, Energy and Mining (mineral resources exploitation and power supply).

National Cleaner Production Centre

It is important to note that some activities have been undertaken for the establishment of a National Cleaner Production Centre with the support of UNIDO as the implementing agency (for more information, see the section below).

Other agents that operate in Montenegro in the environment field linked to industry are:

- The European Agency for Reconstruction (EAR), which has managed several programmes in Montenegro. The EAR has helped the Government of Montenegro to agree its energy policy and a strategy to promote energy efficiency, and it has also promoted a cleaner environment by means of the building of a new wastewater treatment plant in Virpazar and in Rijeka Crnojevic, close to the Skadar Lake. An Agency project assisting the drafting of new environmental legislation and a master plan to improve solid waste and wastewater services has been completed.
- The REC Country Office in the former Serbia and Montenegro. The most relevant projects undertaken by the REC Country Office in Serbia and Montenegro in 2001 – 2004 are:
 - Development of environmental legislation in Serbia and Montenegro (YUGOLEX).
 - Capacity Building for environmental impact assessment.
 - Support for activities of the Balkan Environmental Regulatory Compliance and Enforcement Network (BERCEN).

- REMUS - Regional Municipal Waste Management Project.
- SWAMAP – Municipal Solid Waste Management Plan.

13.5. Programmes, action plans and projects to promote CP

Programmes and action plans

National Waste Management Policy

The Republic of Montenegro adopted its National Waste Management Policy on 26 February 2004. This policy of integrated and sustainable waste management in Montenegro sets out a vision for the future waste management and defines objectives and strategies facilitating its achievement.

The purpose of this policy is to:

- Promote the prevention and minimisation of waste generation and hence pollution at source.
- Promote the management and minimisation of the impact of unavoidable waste from its generation to its final disposal.
- Ensure the integrity and sustained "fitness for use" of all environmental media, i.e. air, water and land.
- Ensure the remediation of any pollution of the environment by holding the responsible parties accountable.

Within the National Waste Management Policy, a hazardous waste strategy has also been prepared in the Republic of Montenegro.

The strategic interim objectives of the plan are to establish a controlled system of production, treatment and intermediary storage of hazardous waste. Storage facilities will also serve for the initial years as an intermediary storage for export of the hazardous waste to treatment facilities abroad.

With respect to the industrial non-hazardous waste, the implementation of IPPC directive and introduction of activities related to industrial implementation of cleaner production measures are defined as strategic interim objectives.

Other plans or strategies related to the environment in the Republic of Montenegro are:

- Directions for development of Montenegro as an ecological state.
- National strategy for sustainable development, which is under preparation.
- First phase of the strategy for coastal zone management has been finished and the second phase will start in 2006.
- Master plan for solid waste management.
- Master plan for wastewater treatment.
- Draft national inventory for GHG has been prepared.
- National plan for CFC reduction has been prepared.
- National plan for the elimination of POPs is under preparation, etc.

These documents promote all the above-mentioned aspects, but the reduction of hazardous of wastes more than the others. Promotion of cleaner production is insufficiently treated and must be the object of further elaboration.

Projects

Many projects have been carried out in Montenegro, financed by bilateral cooperation agencies or other agencies. The following project is worth highlighting as an example:

Preparatory assistance for the establishment and operation of a national cleaner production programme in Serbia and Montenegro, UNIDO Project.

The activities for the establishment of the National Cleaner Production Centre (NCPC) in Serbia and Montenegro with two different offices in both republics have been initiated. These two offices should act due to different development characteristics of both republics: in Montenegro with special care on aluminium and steel industry, as well as in respect to its Mediterranean profile, while in Serbia NCPC activities will be more focused on agriculture sector.

A preliminary project proposal on NCPC has been submitted to UNIDO. This proposal mainly focuses on training activities in industrial sector for involvement of cleaner technologies in industry. There was no consensus in the Ministry of the Environment on the scope of the activities that should be realised initially:

- To start with proposed activities focusing on training of the employees in enterprises that are under process of privatisation, or
- To start activities on development of the legal and professional basis for cleaner production involvement in national system.

The UNIDO project proposed the initial scope of the activities; however, the lack of intersectoral cooperation, as well as the lack of institutional and legal basis, make this project almost impossible to be successfully realised. There is an additional obstacle: only 15 people are engaged in the environmental field in the Ministry.

13.6. Tools and activities to promote CP

Economic instruments

A number of economic instruments are employed as environmental policy tools in Montenegro, including the following:

- Non-compliance fees for air emissions, wastewater discharges, and waste. These are issued to industries when their emission and effluent levels exceed the levels specified in their permits.
- User charges for communal water supply, sewage and waste collection services. User fees also exist for natural resources, including natural park visitor fees and resource extraction fees for water, sand and gravel, and timber.
- Deposit-refund systems for beverage containers.
- Tax allowances in the form of exemptions from wholesale sales, import taxes and accelerated depreciation for investments in technology for environmental protection.

There are several problems with the current state of economic instruments:

- Charges are too low to cover production, operating and maintenance costs in case of energy and utilities, and sustainable management costs in case of natural resources, without taking into account negative externalities their production and consumption generate.
- The current levels of non-compliance fees are too low to provide a clear incentive to undertake environmental protection activities. Fees have eroded as a result of inflation and, as such, do not provide any real incentive for compliance. In fact, one of the reasons for the lack of compliance is that they do not even cover the enforcement costs. It is reported that some companies prefer to pay the fines regularly, rather than invest in technology that would reduce their effluent levels.
- Environmental taxes and levies are rarely used as policy tools but are often seen as sources of revenues.

13.7. Conclusions

Even though there are important issues to be improved with regard to the environmental impact of industries in Montenegro, there are recent advances in terms of policy and legislation that should be highlighted.

Of special relevance is the new National Waste Management Policy and new regulations as the Law on Environmental Protection, and the new Laws on Waste Management, Environmental Impact Assessment (EIA), Strategic Environmental Impact Assessment (SEIA) and Integrated Pollution Prevention and Control (IPPC)

Even though a legal framework linked to environmental impact assessment exists, enforcement of the permit system faces important challenges.

It is expected that if the UNIDO Project for preparatory assistance for the establishment and operation of a National Cleaner Production Programme in Serbia and Montenegro succeeds, further efforts will be dedicated to enforce legislation and implement cleaner production in the economic and industrial sector.

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14. Morocco

14.1. Introduction

Morocco faces the problems typical of developing countries, such as constraints on government spending, barriers to private investment and foreign trade, and the struggle to achieve sustainable growth.

With a population of over 30 million, Morocco's economy is worth some US\$ 134.6 billion. It is a small but open economy, which has recently experienced an improvement in its average GDP growth to some 4.4 %.

The inflation rate has been below 3 % since 1997. In 2003, the government succeeded in meeting its target average inflation of 2 % supported by favourable domestic and international developments. Improved agricultural production reduced foodstuff prices and low international demand contained inflationary pressures.

Unemployment levels in Morocco remain high, with a wide gap between urban areas (over 20 %) and rural areas (around 4 %).

In 2003 Morocco renewed its efforts to upgrade the overall business environment and to foster private sector development. The authorities have taken some steps towards creating a level playing field and to remove obstacles to the creation of new enterprises.

The state has a monopoly on phosphate mining and tobacco marketing and remains involved in the provision of a number of other goods and services.

The main industrial sectors in Morocco are phosphate rock mining and processing, food processing, leather goods, textiles, construction and tourism.

Long-term challenges include preparing the economy for freer trade with the US and the European Union, improving education and job prospects for Morocco's youth, and raising living standards.

Surface area	10 ³ sq km	446.55
Population	Millions	32.73 (July 2005 est.)
Population growth rate	%	3.5 (2005 est.)
Life expectancy	Years	70.66 (2005 est.)
Literacy total	% age > 15	51.7 (2003 est.)
Literacy female	% age > 15	39.4 (2003 est.)
Unemployment rate	%	12.1 (2004 est.)
Inflation rate (consumer prices)	%	2.1 (2004 est.)
Public debt	% of GDP	29.6% (2004 est.)
GDP growth	% annual	4.4 (2004 est.)
GDP PPP estimated	\$10 ⁹	134.6 (2004 est.)
GDP PPP per capita	\$10 ³	4.20 (2004 est.)
GDP composition by sector - Agriculture	%	21.2 (2004 est.)
GDP composition by sector – Industry	%	35.8 (2004 est.)
GDP composition by sector – Services	%	43 (2004 est.)
Industrial production growth rate	%	NA
Exports	\$10 ⁹ FOB	9.75 (2004 est.)
Imports	\$10 ⁹ FOB	15.63 (2004 est.)
Telephones – main lines in use	10 ⁶	1.22 (2003)
Telephones – mobile cellular	10 ⁶	7.33 (2003)
Internet hosts	Units	6,627 (2004)

14.2. Industry and environment

Industrial development and environmental impact

Due to rapid industrialisation and urbanisation over the last 20 years, Morocco faces certain problems related to the management of natural resources and environmental pollution, such as the degradation of air quality due to atmospheric, industrial and urban pollution, especially in Casablanca, Safi, Rabat and Marrakech, and industrial pollution due to discharges of untreated wastewater into water courses (most industries discharge untreated effluents and around 1bn cubic metres are discharged annually into natural water bodies), discharges by the fertiliser industry into the Atlantic Ocean, air pollution from heating plants and the petrol industry, solid waste disposal, and hazardous waste disposal.

Only 20 % of industrial waste is recycled. The industrial sector in Morocco produces 125 000 tones of hazardous waste each year. Priority types of hazardous wastes (based on their generation) in Morocco are from inorganic chemical processes, agriculture waste, leather and fur waste, from wood processing and shaping, and physical surface treatment.

Areas of special concern

According to MEDPOL criteria and the national report on hot spots and areas of special concern, there are four classified hot spots in Morocco: Tangier, Tetouan, Nador and Al Hoceima.

In Tangier and Tetouan a liquid sanitation master plan has been under way since 2002. This plan includes the following action:

- Tangier - delegated management to the Wilaya of Tangier of liquid decontamination services, drinking water and electricity distribution, and diversion and treatment of the wastewater discharged in the bay of Tangier by streams which have been transformed into sewers. These sewers will be linked to a purification station to provide initial treatment, before being piped to an outfall 3 miles out to sea off the Bouknadel Marchane coast. Within this perspective, a new decontamination network adapted to the size of a city in full growth is currently being implemented, and work will be finished by 2006.
- Tetouan - this city is mainly affected by industrial and urban effluents, sand erosion, eutrophication and toxic algal blooms. As in the city of Tangier, wastewater which is discharged from the city of Tetouan will be conveyed to a pre-treatment station to be built in the plain of O. Martil, 5 km downstream from the city of Tetouan. This station will also serve the towns of Martil, M'diq and Azla. The pre-treated wastewater will then be piped to an outfall 2.8 km off the Azla coast.
- Nador - this city is mainly affected by urban and industrial effluent, solid waste and sand erosion.
- Al Hoceima - mainly affected by urban and industrial effluent, solid waste and sand erosion.

Within the framework of the Project GEF/SAP-MED. To determine priority actions for the setting up of the Strategic Actions Program for the Mediterranean, pre-investment studies have been prepared for Nador and Al Hoceima which will allow projects to be formulated in technical, environmental, organisational and financial terms.

Furthermore, a training plan has been prepared in agreement with the French Agency for Development to help build the capacities of the managers of sensitive sectors with major impact on Mediterranean sea pollution. This plan consists of 5 modules:

- Module 1 - training of 40 inspectors on environment and safety.
- Module 2 - training on the optimisation of domestic solid waste.
- Module 3 - Training on laboratory techniques for the analysis of pesticides.
- Module 4 - Technical and legal assistance for the fight against illicit sea pollution due to desludging and oil dumping by boats.
- Module 5 - training of trainers on management and the fight against accidental sea pollution.

The industrial units in these hotspots are:

City	Industrial units				Total
	Agrofood industries	Textile and tanning industries	Mechanical and metallurgical	Chemical and paracheimical	
Tangier	49	188	41	62	340
Tetouan	56	21	21	60	158
Nador	55	3	24	42	124
Al Hoceima	21	0	0	10	31

Source: MATEE /DSPR/MED POL, 2005 : Rapport national MED POL "Evaluation de la pollution tellurique véhiculée vers la Méditerranée marocaine

The volumes of industrial toxic pollution discharged in these hotspots are:

- Tangier: 118 479 tonnes/year.
- Tetouan: 88 476 tonnes/year.
- Nador: 72 657 tonnes/year.
- Al Hoceima: 37 651 tonnes/year.

The main pollution problems caused by the service industry are:

Tourism: production of wastewater, which needs adequate treatment for its recycling and reuse; air pollution, due to fuel combustion from boilers; generation of solid waste.

Health: generation of hazardous waste such as medical and hospital waste.

14.3. Legal and policy framework

Laws and regulations

The new relevant laws and regulations issued in Morocco, to which the second edition made reference, are the following:

- Dahir number 1-03-59 of the 10 rabii I 1424 (12 May 2003), which promulgates Law number 11-03, relative to the protection and the improvement of the environment.
- Dahir number 1-03-60 of the 10 rabii I 1424 (12 May 2003), which promulgates Law number 12-03, relative to environmental impact studies.
- Dahir number 1-03-61 of the 10 rabii I 1424 (12 May 2003), which promulgates Law number 13-03 relative to the fight against air pollution.
- Dahir number 1-02-130 of the 1 rabii II 1423 (13 June 2002) which promulgates Law number 08-01, relative to the exploitation of quarries.
- Implementing decree number 2-04-553 of the 13 hija 1425 (24 January 2005) relative to discharges, the spillage of pollutants, and direct or indirect deposits to surface or underground waters.

Enforcement

The main obstacles to the enforcement of environmental laws and regulations are social, political, economic, technical and financial.

Among the initiatives taken to overcome these problems, it is worth emphasizing that the Ministry for Planning, Water and the Environment (MATEE) has organised awareness campaigns and workshops addressing: protection of the environment, the negative effects of pollution to human health and the environment in general, the legal framework of the environment, and the organisation of training workshops on the formulation and application of environmental laws aimed at officials working in the concerned departments – including the Ministry of Justice.

No major changes have been made to the permit system since the second edition.

Voluntary agreements

The following partnership agreements concerning the cement industry should be highlighted:

- Partnership agreement between the Moroccan Cleaner Production Centre (CMPP) with the Professional Association of cement finishers.

The objectives of this agreement are:

- To promote the progression towards sustainable development.
- To improve environmental management in the cement industry.
- To disseminate the principles of eco-efficiency within enterprises active in this sector.
- To promote environmental management tools.

By means of this agreement, the CMPP has ensured training essentially to benefit ready-mixed concrete enterprises, the enterprises using cement and subcontractors of the members of the APC. Training consists mainly of the following: a presentation of the national legal framework for protection of the environment, held on 29 March 2005, introduction of the environmental management system ISO 14001 on 9 May 2005, and the Occupational Safety and Hygiene initiative of 31 May 2005.

The CMPP will also carry out environmental audits in 4 enterprises which are subcontractors of the APC during September 2005.

- Another important agreement related to public–private partnerships is the agreement between HOLCIM (a major cement producer) and GTZ on energy recovery (co-processing) and the use of organic derivatives (plastics) for energy recovery alternatives.

Another aspect of these agreements is the fact that the large cement manufacturing plant of LA FARGE in the north of Morocco (Tetouan) has agreed to use wind energy for its supply of electricity.

International conventions and protocols

On the international level, as part of its efforts to secure protection of the environment through pollution prevention, Morocco approved the Ban amendment to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal of 10 September 2004.

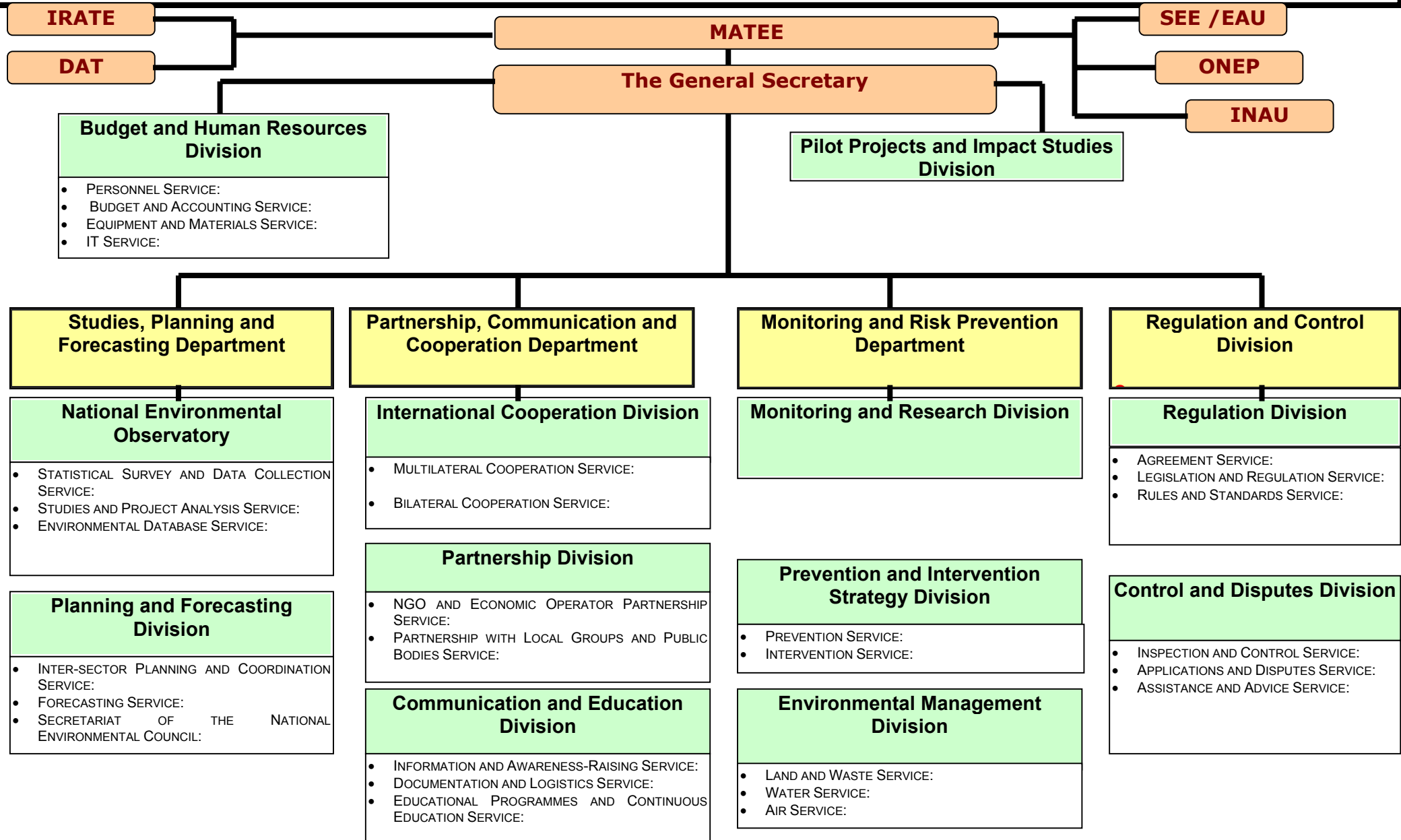
Morocco also ratified the Stockholm Convention on Persistent Organic Pollutants on 15 June 2004.

14.4. Agents involved in promoting CP

The agents involved in promoting cleaner production in Morocco are the following:

The Ministry of Land Management, Water and Environment

ORGANISATION CHART OF THE BODY RESPONSIBLE FOR THE ENVIRONMENT AT MATEE



This ministry, as the government authority in charge of the environment, has the job of formulating and implementing government policy in the area of environmental management.

Its mission is to work with the other ministries involved, within the scope of the powers vested in other departments and organizations by applicable legislation and regulations, to encourage, stimulate, promote and coordinate government action in the area of environmental management, monitoring this action with a view to:

- strengthening the institutional and legal framework with regard to the environment;
- contributing to the preservation of natural resources, so that any form of waste or deterioration likely to compromise sustainable development can be avoided;
- enforcing the appropriate environmental inspection and ongoing supervision measures;
- carrying out environmental impact surveys and issuing rulings on development projects which affect the environment;
- preventing and combating all forms of pollution and hazards which may pose a threat to public health;
- carrying out the inspections which it is entitled by applicable law to perform, and providing public or private corporations with assistance and advice in environmental matters;
- improving the living conditions and milieu of the population, both urban and rural;
- incorporating an "environment" factor in development programs, with particular emphasis on programs addressing education, training, research and information;
- cultivating regional and international cooperation in the area of environmental management;
- promoting cooperation with non-governmental organizations, national associations and local authorities.

The department comprises 5 sections:

- Studies, Planning and Prospective.
- Partnership, Communication and Cooperation.
- Monitoring and Prevention of Risks.
- Legislation and Control.

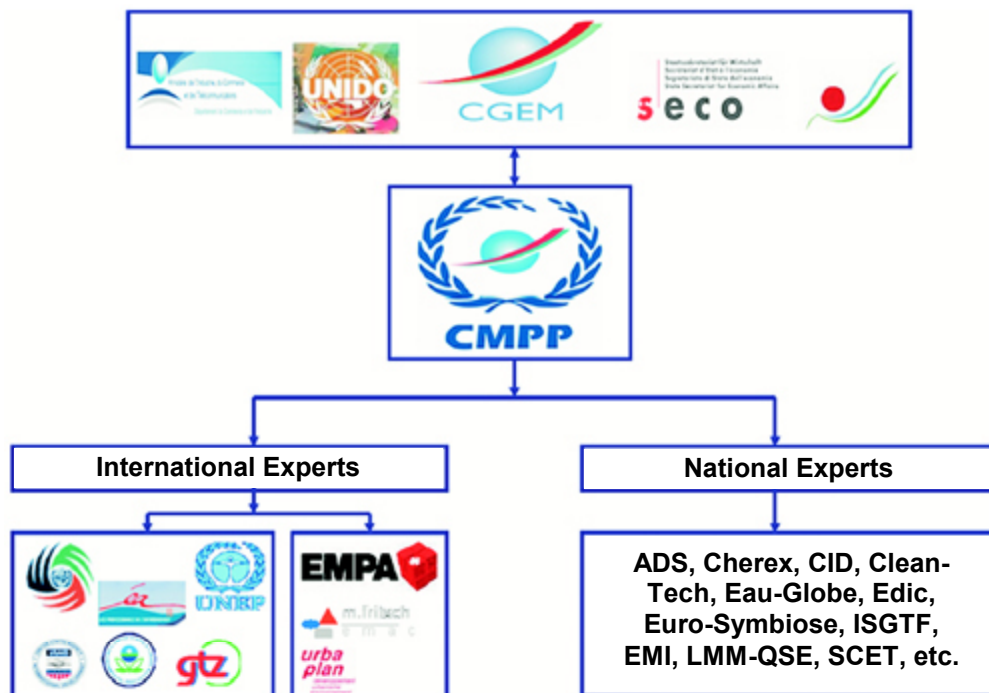
Within the Ministry, two groups of reporting agents who act as witness-policemen have been created. These agents come under several management departments, and they will intervene in the field of activity in which their respective departments operate (the Risk Monitoring and Prevention Department or the Legislation and Control Directorate).

Moroccan Cleaner Production Centre (CMPP)

The balance of the first phase of work of the CMPP is very positive, as the activities undertaken have yielded results and the CMPP has succeeded in helping to create a market for cleaner industrial production. The aim of the CMPP is to promote the transfer towards clean technologies.

There are currently 5 people working in the CMPP: the Chief Executive Officer, 2 engineers, an information officer and an assistant to the management. It is planned to appoint an expert on social responsibility to the CMPP soon.

The organisational chart of the CMPP is given below:



The services provided as of 2005 by the CMPP are the following:

- Environmental audits (in-plant assessments).
- Capacity building.
- Raising awareness and disseminating information.
- Financial advisory.
- Enforcing international conventions.
- Advising on environmental policies.

Some examples of the activities undertaken by the CMPP in 2004 and 2005 are:

- Training programmes. In 2004, 211 people benefited from the training sessions organised by the CMPP. The training sessions were organised with the collaboration of partners such as UNIDO, the OFPPT, Ea-pôle de l'Eau and BASF. The themes addressed during these sessions were:
 - Industrial refrigeration procedures and reconversion techniques.
 - Rationalisation and water savings in the industrial sector.
 - Environmental evaluations of industrial sites.
 - Methods for cleaner production.
 - The Environmental Management System ISO 14001.
 - Safety management.
 - Analysis of eco-efficiency in the dyeing sector in Morocco.
- Environmental audits (in-plant assessments). The CMPP concentrated on the following industrial sectors: textiles (3 units), leather tanning (1 unit), agro-food (9 units) and chemical/parachemical (2 units).
- Participation in seminars. In 2004 the CMPP participated in 20 national seminars organised by the administration and national operators in environmental protection. The participation of the CMPP essentially took the form of presenting the mission of the centre,

its role in the increasing the environmental competitiveness of SMEs and SMIs, and the concept of cleaner production.

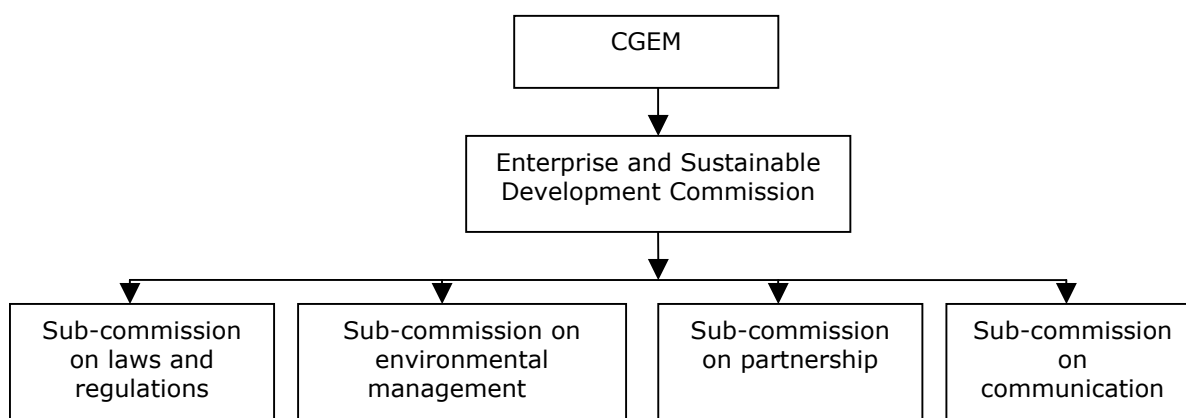
- Participation in the organisation of the Salon EnviroMaroc. This event was a chance to meet different actors working in the environmental sector, especially manufacturers, professional organisations, NGOs, etc.
- Regional workshop on eco-efficiency in the textile sector. The CMPP held a regional workshop from 13 –17 December 2004. This workshop addressed eco-efficiency in the textile dyeing and leather tanning sectors. It was organised within the framework of international cooperation with UNIDO and the multinational group BASF.
- Participation in the TEMPUS training programme on industrial safety and security. The CMPP coordinates the module on the environmental impact assessment and, within the training module, will introduce the concept of cleaner production and the tools for the environmental diagnosis of industrial installations.
- The CMPP organised the 3rd Round Table on Sustainable Consumption and Production, held in Casablanca between 17 and 20 May May 2004.

The CGEM Enterprise and Sustainable Development Commission

The Enterprise and Sustainable Development Commission was created within the General Confederation of the Enterprises of Morocco (CGEM). The main objective of this commission is to increase the environmental competitiveness of the Moroccan industrial fabric, in order to increase its economic performance in terms of productivity and competitiveness while also reducing its ecological impact. The main functions of the Enterprise and Sustainable Development Commission are:

- To promote the concept of sustainable development and environmental culture within SMEs and SMIs.
- To confer with public administration on the establishment of a national legal framework for the protection of the environment.
- To disseminate tools for eco-efficiency, cleaner production and environmental management among enterprises.
- To keep enterprises informed of funding opportunities.

The Enterprise and Sustainable Development Commission is formed by four workgroups:



Centre for the Transfer of Technologies and Techniques in Mohammedia (C3TEM)

A Centre for the Transfer of Technologies and Techniques in the city of Mohammedia (C3TEM) has recently been established. Mohammedia is located on the Atlantic Coast, near

Casablanca (the largest economic city of Morocco), and it has 200 000 inhabitants. The Centre C3TEM is aimed at:

- Collecting and making information available on the environment and the establishment of a technological watch on the environment and on laws and regulations.
- Organising training sessions on environmental management and protection.
- Providing enterprises with technical assistance on the plan for the transfer of environmental technologies and techniques.
- Acting as an interface between scientific research and the needs of the industrial sector on environmental matters.
- Providing assistance and aid for the creation of enterprises active in environmental areas.
- Creating a network of centres which are specialised in the transfer of environmental technologies at the national level (technical centres, CMPP) and at the regional or international levels (CITET in Tunisia, etc.).
- Representing enterprises which are active in the environment.

Furthermore, "AMINE", a support structure in Mohammedia, was created to improve environmental competitiveness and to help the polluting companies in the Mohammedia area to identify best environmental practices and techniques, to better organise work, to improve safety at the workplace, to manage the areas where waste is stocked, to reuse raw materials after special treatment, and to save energy, water, raw materials etc.

The first cell of local environmental inspectors was also created in this city. This cell is formed by executives from different administrations, and, pending promulgation of legislation on the environmental laws in force, it acts as a supporting structure for the increase of environmental competitiveness in industrial enterprises. It can, for example, act as liaison between industrialists looking for information on environmental rules and standards.

Representatives of five enterprises have been trained on profitable environmental management.

14.5. Programmes, action plans and projects to promote CP

Programmes and action plans

The National Environment Action Plan

The National Environment Action Plan, mentioned in the second edition, prioritises the promotion of cleaner technologies and good house-keeping practices, the reduction of waste hazardousness and the promotion of waste reuse and recycling as measures for pollution prevention rather than end-of-pipe corrective measures.

Projects

In addition to the action carried out by the CMPP as mentioned above, the CMPP's work in Morocco has also addressed some pertinent initiatives and projects:

- Project for the technical assistance to the cold storage industrial sector in Morocco.

This project was launched in 2002 within the framework of international cooperation between the Ministry of Industry, Commerce and Economic Competitiveness (MICMNE) and the French Agency for Development (AFD). It finished in 2005. The objective was to contribute to the respect of the engagements of Morocco concerning the provisions of the Montreal

Protocol on the progressive elimination of ozone-depleting substances. The CMPP was chosen by the MICMNE as technical centre in charge of the project. The main achievements of the project were:

- The training on cold storage of more than 250 technicians from the main cities of Morocco.
- Reconversion of 4 cold storage installations of R12 (HFC) to R 134a (HFC) within two companies, in an attempt to guarantee respect for the commitments of the Montreal Protocol.
- The actors' awareness of the problem of the elimination of CFCs within the framework of the Montreal Protocol by means of 3 regional workshops which were held in Casablanca, Marrakech and Fez.

The CMPP participated with the MATEE and the GTZ in the introduction of the Network of North African Enterprises for the Environment (REME) project

The objective of the REME project is to federate the organisations and the professional structures which represent employees in Morocco and to mobilise member enterprises by strengthening their competitiveness via better management of environmental factors, and by letting them maintain the environmental roles they have acquired. The steering committee of the REME met for the first time in Tunis on 13 - 14 June 2005. The aim of this meeting was to adopt an action plan for the first two years of REME. The REME project is supported by the German government by means of the GTZ and started 1 September 2005. The completion date is 31 August 2011.

- Carrying out of technical studies for the industrial enterprises in the sector of wastewater treatment with the French Agency for Development.
- National inventory of the CTC/TCA concerning the Montreal Protocol with UNIDO.
- Technical assistance to the industrial sector for the realisation of projects to be selected in the Clean Development Mechanism with UNIDO.
- USTDA - Realisation of technical studies for the treatment of industrial wastewater.
- USEPA - Technical assistance for the textiles sector.

Other examples of relevant projects implemented in Morocco are the following:

- Programme for support to the Moroccan industrial technical centres, implemented within the Azahar Programme of the Spanish International Cooperation Agency (AECI), 2004 – 2007.
- Marrakech Environmental Management Audit Scheme – Project LIFE Environment. 2005 – 2007.
- Development of a pilot eco-efficient industrial estate adapted to the Morocco situation through the appointment of an internal expert team for technical assistance to companies introducing waste water treatment and reuse technologies. Project LIFE Environment, 2005 – 2007.
- Support to the Ministry of Land Management, Water and Environment for integrated environment management, harmonisation of the national environmental legal framework, and convergence with EU environmental legislation. Funding: Support Programme for Implementation of the Association Agreement under MEDA. 2005 - 2007.
- Project to develop national capacities to enable Morocco's implementation of the Stockholm Convention on Persistent Organic Pollutants, executed by the Secrétariat d'Etat chargé de l'Environnement of Morocco and UNDP. This project was launched in 2004.

14.6. Tools and activities to promote CP

Economic instruments

The National Law for the Protection and the Improvement of the Environment (mentioned in the section concerning laws and regulations) and the National Law 10-95 on Water promulgated in 1995 apply pollution taxes calculated according to the polluter pays principle.

Industrial Depollution Fund (FODEP)

As mentioned in the second edition, FODEP is an economic instrument for the promotion, of investment in industrial depollution and for the preservation of resources, which was established by the Secretary of State for the Environment with the support of the German agency KfW.

It should be noted that a special department for the ceramics and olive oil production sectors has been created to fund pollution elimination projects within the framework of FODEP.

Since FODEP started in 1998, it has financed 36 projects for industrial depollution, with investment totalling 178.5 million DH.

Twenty-three of the projects accepted are related to the treatment of liquid discharges, 10 concern the treatment of the gaseous emissions and 3 the treatment of solid waste.

As for the classification of these projects by sector , 10 belong to the agrofood industry, with investment totalling 95 million DH; 7 to the chemical and paracheical sector, with investment totalling 35 million DH; 3 belong to the textile and tanning industry, with investment totalling 15 million DH; 4 projects belong to the mechanical and metallurgical industry, with investment totalling 14 million DH; 4 projects belong to the handicraft pottery sector, with investment totalling 1.5 million DH, and 8 projects belong to the olive mills with investment totalling 18 million DH.

National Fund for the Environment

A National Fund for the Environment is currently in the preparation stage.

The Clean Development Mechanism (CDM).

There are 25 projects earmarked for funding within the CDM, with investment totalling 10 billion DH over the next 10 years.

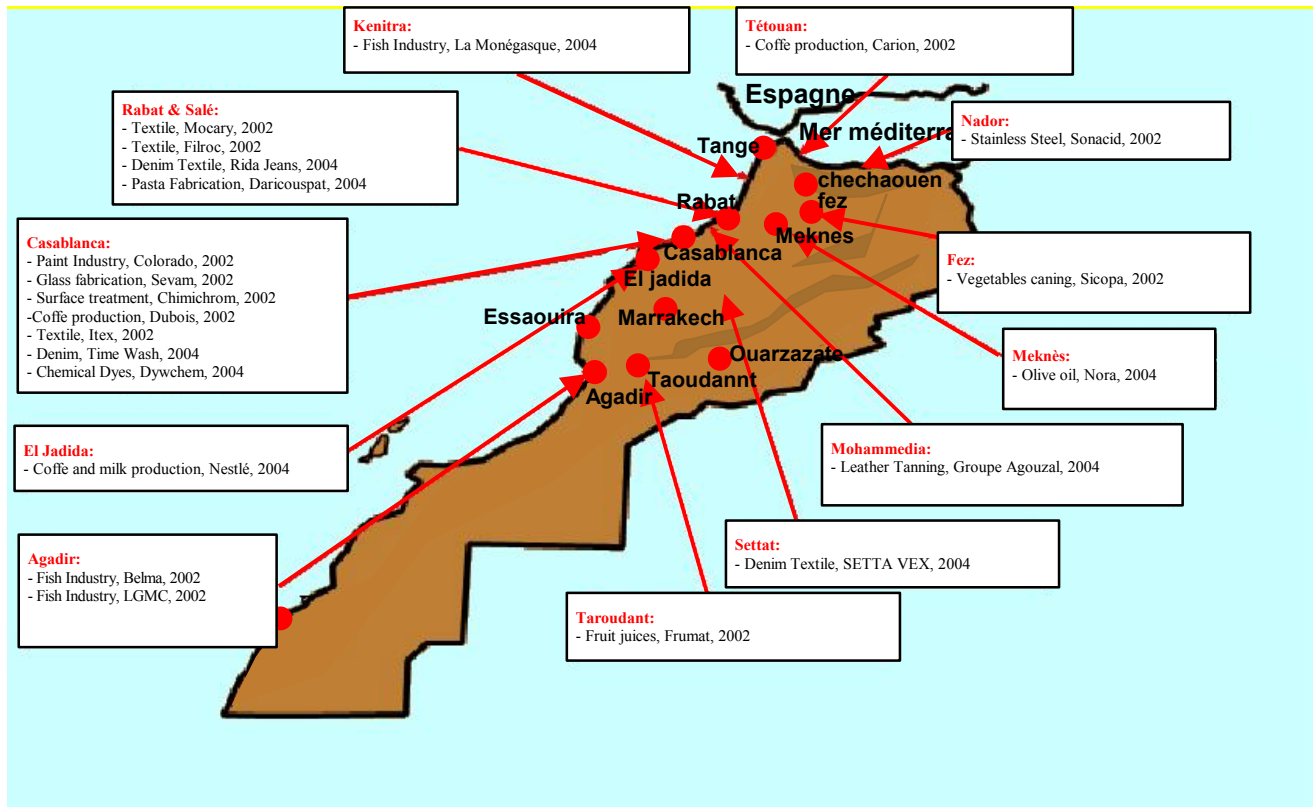
Innovation awards

There are two awards in Morocco aimed at recognising enterprises that have made an outstanding contribution to the environment. These awards are:

- The Hassan II Award for the environment.
- The Mohammedia Award for best environmental practices.

Voluntary instruments

The CMPP makes about 20 environmental audits per year, and this rate is growing by petition of SMEs/SMIs. The improvement measures so far implemented are normally based on good housekeeping practices. Currently, the CMPP has about 40 environmental diagnoses in different industrial sectors all over the national territory.



In order to implement ISO 14001 certification, Morocco has consultancies which are specialised in helping enterprises secure certification. By the end of 2004 21 enterprises had been awarded ISO 14001 certification.

14.7. Conclusions

The inclusion of environmental aspects in the development of industry and the adoption of cleaner production measures are increasing in Morocco thanks to dialogue between the CMPP and industrial associations, and to the services that this centre, specially dedicated to cleaner production, offers in the country. Good examples of this are the activities and projects undertaken by the CMPP, often in partnership with other international organisations.

As regards the disadvantages encountered when promoting cleaner production, the following should be highlighted: lack of funding, banks that do not fund independent projects, lack of interest from industry due to a lack of understanding of the advantages of cleaner production, and lack of awareness.

On the other hand, there are some opportunities for the promotion of cleaner production in Morocco, mainly the fact that legislation will be more stringent, free trade agreements will oblige Moroccan enterprises to adopt certain standards and norms, and an increase in awareness in industry may change attitudes and promote a sort of competition to see which is the cleanest producer. In this sense, efforts should be made to create an autonomous, evolving environmental market.

Furthermore, when it comes to environmental permits, it should be noted that given that the law on Environmental Impact Assessment was recently published in 2003, and with the number of projects subject to EIA increasing significantly, institutional capacity should be put in place to ensure trouble-free implementation of the law.

As concerns waste management, a country-wide strategy for waste management and waste minimisation could be developed, taking into special consideration the hazardous wastes generated in the industrial sector.

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15. Slovenia

15.1. Introduction

Slovenia enjoys a GDP per capita substantially higher than that of the other transitioning economies of central Europe.

In March 2004, Slovenia became the first transition country to graduate from borrower status to donor partner at the World Bank.

On 1 May 2004, it became a full member of the EU.

Privatization of the economy proceeded at an accelerated pace in 2002-04.

Structural reforms to improve the business environment have allowed for greater foreign participation in Slovenia's economy and have helped to lower unemployment. Further measures to curb inflation are still needed.

In the year 2003 the economic growth in Slovenia dropped by 2.5 % but the rate of employment increased from 6.1 % to 6.5 %, and the GRP per capita is increasing (Table 1).

Table 1: GRP per capita in Slovenia from the year 2000 to the year 2004 (in EUR per capita).

Year	2000	2001	2002	2003	2004
Gross domestic product	10 543	11 094	11 866	12 461	13 103
Gross national income	10 554	11 123	11 805	12 384	12 982

In 2003 Slovenia had 140 237 business subjects: 111 907 economy subjects and 28 330 institutions, bodies and organisations. Out of the 111 907 economy subjects, there are 45 140 legal persons and 66 767 natural persons. Limited liability companies represent 84 % of the legal persons and individual private entrepreneurs 88 % of natural persons.

This also means that the private initiative in business is increasing and SMEs are the most important in industrial research and development (see Table 2 and Table 3). More than 78 % of business subjects are private.

Table 2: Business subjects by size class and number of employees, 2003.

Total	Business subjects unemployed	Small		Medium	Large	
		1-9	10-49	50-249	250-499	500+
140 237	57 652	74 174	6 051	1 966	230	164
100 %	41.1	52.9	4.3	1.4	0.2	0.1

Table 3: Share of enterprises by size class and share of their turnover, 2003.

Size class (persons employed)	Share of enterprises in %	Share of turnover in %
0-9	95.9	47.4
10-49	3.8	35.9
50+	0.3	16.7

Surface area	sq km	20 273
Population		2 011 074 (July 2005 est.)
Population growth rate	%	-0.03 (2005 est.)
Life expectancy	Years	76.14
Literacy total	%	99.7 (2003 est.)
Literacy female	%	99.6 (2003 est.)
Unemployment rate	%	6.4 (2004 est.)
Inflation rate (consumer prices)	%	3.3 (2004 est.)
Public debt	% of GDP	31.5 (2004 est.)
GDP- Real growth rate	%	3.9 (2004 est.)
GDP PPP	\$10 ⁹	39.41 (2004 est.)
GDP PPP per capita	\$	19 600 (2004 est.)
GDP composition by sector - Agriculture	%	3 (2004 est.)
GDP composition by sector – Industry	%	36 (2004 est.)
GDP composition by sector – Services	%	60 (2004 est.)
Industrial production growth rate	%	3.9 (2004 est.)
Exports	\$10 ⁹ FOB	14.97 (2004 est.)
Imports	\$10 ⁹ FOB	16.07 (2004 est.)
Telephones – main lines in use		812 300 (2003)
Telephones – mobile cellular	10 ⁶	1 739 100 (2003)
Internet hosts	Units	45 491 (2004)

15.2. Industry and environment

Industrial development and environmental impact

The main concerns as regards environmental impacts of economic activities in Slovenia relate to chemical accident prevention, preparedness and response (the European Seveso Directive), cross border pollution, generation and prevention of packaging waste and control of Volatile Organic Compound (VOC) emissions.

When it comes to service industries, tourism is increasing and, as mentioned in the second edition, its environmental impact mainly relates to water consumption, wastewater and solid waste generation, land use and air pollution. Transport is another source of air emissions, since it is responsible for 19.5 % of all emissions released into the air in Slovenia.

Areas of special concern

As regards the areas of special concern mentioned in the second edition, there have been no major improvements to reduce its environmental impact, but the following developments should be highlighted.

In the past year some waste water treatment plants (WWTP) have been built, e.g. in the Maribor county (the second biggest city in Slovenia), in Ljutomer city etc., and some of the older WWTP in larger cities have been retrofitted, e.g. in Ljubljana. Many small regions or even villages have started investing in their own sewage systems and in small WWTPs for domestic wastewater.

Slovenia has formally introduced the separating waste collecting system because of the lack of disposal areas. Many waste disposal areas introduced composting of the biodegradable waste from households.

Slovenia still does not have a location for hazardous waste disposal. The Environmental Protection Agency (EPA) exercises strict control over hazardous waste production in the industry. Companies are obliged to record and to report the type and quantity of the hazardous waste produced. They are also obliged to destroy their hazardous waste through the licensed companies approved by the EPA. Most of this waste is exported or burned in the cement kiln (e.g. used oils or waste from hospitals) or in the power plant of Sostanj (e.g. meat and bone meal). The production of hazardous waste has dropped because several plants have gone out of business or decreased their production and they have changed the raw materials, chemicals or even processes.

Agriculture is still a large polluter of the underground and drinking water. The Government encourages farmers to practice the so-called “integral farming”. Personnel from the Ministry of Agriculture are responsible for cooperation with the farmers, to train them in sustainable farming and offer advice (fertiliser consumption, manure, rotating etc.). The Official Gazette No. 34/2000 and No. 134/2004 also released instructions for good practice in fertilising.

As regards greenhouse gas emissions, although total GHG emissions have not changed significantly compared with the base-year, their distribution by sector has changed considerably. Traffic emissions, fuel consumption in residential and commercial sectors, and emissions from waste have increased, while emissions from manufacturing industries have decreased. For the purposes of maintaining competitiveness, emissions trading and compliance with the Integrated Pollution Prevention and Control (IPPC) directive, the industrial sector is being encouraged to make use of existing best available technologies. The agricultural sector is also showing lower emissions, mostly as a result of a reduction in the number of livestock. Forests cover more than half of Slovenia's land surface and constitute an important sink of greenhouse gases.

The main areas which suffer environmental impact in Slovenia are the Gulf of Trieste, due to Hg and Pb contamination from the mines of Idrija and Predil, Koper Bay due to partly-treated urban effluents from the town of Koper and the Bay of Piran, which receives partly-treated urban effluents from Piran and untreated effluents from Izola.

Since many heavy polluters have gone out of business, mainly in textiles, metal processing, furniture, etc. no new areas of special concern have appeared.

15.3. Legal and policy framework

Laws and regulations

As mentioned in the second edition, Slovenian environmental legislation is fully in line with the EU environmental *acquis communautaire* due to its accession to the EU in May 2004.

Since the second edition, the enactment of the Environmental Protection Act (Official Gazette NO. 41/2004) should be highlighted since it involves pollution prevention, recycling and reuse of waste as principal measures in every industrial operation and in services and introduces the prevention of waste as the principal task before end-of-pipe.

Enforcement

Many companies, especially companies which have introduced EMAS and ISO 14001 have no problems when enforcing the environmental legislation.

Companies, that have financial problems usually have also problems when enforcing environmental legislation. These companies are mainly passive on the market, have ineffective management, do not introduce research and development, but are located in areas where the unemployment rate is particularly high.

The EPA and the environmental inspectors have demanded the preparation of the sanitation program to solve their environmental problems and establish an environmental plan, but the situation has not changed. Usually the government is forced to tolerate pollution to keep social peace in those underdeveloped regions.

Most of these companies that face problems with enforcement are small companies in the metal processing industry which do not have enough resources to introduce emission limit values. They are located in the Maribor county, the Ljutomer county, Murska Sobota and Lendava (southeast Slovenia). Special attention is also paid to the companies which release VOC emissions such as glass-reinforced polyester plants (sanitary equipment producers, boat producers, etc.).

Permit system

Slovenia adopted the European IPPC Directive fully at the end of 2002 via a number of legislative and sub-legislative acts.

Competencies to implement the IPPC Directive

The responsible body for enforcing the IPPC Directive is the EPA, which is part of the Ministry of Environmental Protection and Spatial Planning. Every group of companies has a responsible person from the EPA who helps and controls them.

Establishment of emission limit values according to the best available techniques

Emission limit values for polluting substances in Slovenia have not up to now been established according to the best available techniques. The government involves emission limit values gradually through a harmonisation process regarding EU directives and the environmental protection legislation. In many cases, these limit values are stricter than those in the BREF (BAT reference) documents. The IPPC companies are obliged to consider BAT values in case they are not presented in BREF documents.

When IPPC was initially introduced in Slovenia, the EPA, in cooperation with the Chamber of Economy and the International Centre for Sustainable Development, promoted the concept mainly amongst industry. After approximately one year this project was cancelled and EPA continued the process with individual meetings with the IPPC companies. Every group of companies in a particular region received a responsible environmental inspector and expert at the EPA. Informally, the EPA demanded the preparation of a program for the introduction of BAT techniques in their processes. At the same time the process for adopting licences started.

In general, the situation is better than 2 years ago. Many companies have introduced CP or they already know the meaning of it. Great emphasis is placed on the 120 IPPC companies, which have introduced CP measures through EMAS and good environmental praxis, good housekeeping, BAT introduction, etc.

Voluntary agreements

As regards voluntary agreements in Slovenia, emphasis should be placed on the Responsible Care agreement signed between the companies and the Chamber of Commerce. According to this agreement the companies are obliged to prepare a yearly report regarding the fulfilling of the Responsible Care requirements. Since 2003, 18 companies from the chemical and rubber industries have participated in this agreement.

International conventions and protocols

In the international framework for the protection of the environment through pollution prevention, Slovenia ratified the Ban Amendment to the Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal on 1 December 2004. It also ratified the Stockholm Convention on Persistent Organic Pollutants on 4 May 2004.

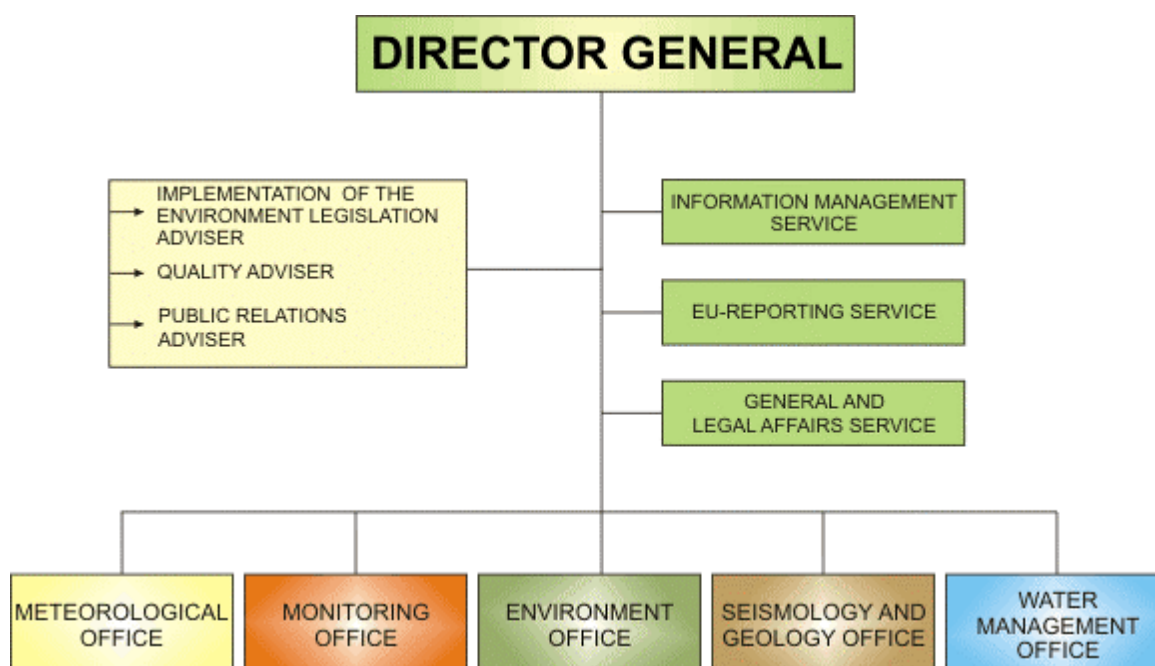
Slovenia also signed the Protocol on Strategic Environmental Assessment on 22 May 2003.

15.4. Agents involved in promoting CP

The Environment Protection Agency

As mentioned in the second edition, the EPA is a body of the Ministry of the Environment and Spatial Planning (MOPE). It performs expert, analytical, regulatory and administrative tasks related to the environment at the national level. Amongst other things, the MOPE issues a variety of environmental permits, such as IPPC permits.

The structure of the EPA is as follows:



The Environment Office within the EPA performs administrative, expert and other tasks in areas covered by individual sections. These are the areas of environmental impact assessments and state of environment reports, air quality, water quality, water management, waste management, nature conservation, industrial pollution and rehabilitation of natural and other disasters. The office conducts administrative procedures of environmental consent, environmental permits, calculating environmental taxes and water charges and relief of

payment of environmental taxes, as well as issuing administrative decisions and other legal acts in its area of work.

The Agency for Efficient Use of Energy and Renewable energy Sources

It is also worth mentioning the role of the Agency for Efficient Use of Energy and Renewable energy Sources within MOPE. This Agency is responsible for carrying out different programs that will increase efficiency in energy use, the use of energy from renewables and cogeneration of heat and power. The targeted audience is not just household consumers, but industry and public service sectors as well.

In order to achieve these goals, two main lines of action are taken: disseminating information on energy-saving possibilities and other options for improved patterns of energy use for different target groups, and financial investment incentives and different projects according to the program of the Agency.

In the year 2003 this directorate spent EUR2 million for investments and projects resulting in the decrease of fossil fuels consumption by 77 590 MWh and the decrease of green house gasses by 25 750 t/a.

In the year 2004 EUR1,9 million was spent resulting in a decreasing fossil fuel consumption by 47 000 MWh and decreasing of CO₂ by 15 000 t/a.

In 2003 and 2004 several projects were co-financed by the directorate including the following:

- Using renewable energy sources in public and private companies and institutions (geothermal energy utilisation, 10 heat pumps, 4 solar systems and two solar power plants);
- Co-financing 18 energy audits, 6 feasibility studies for co-generation, 12 energy plans for communities and 8 feasibility studies on the installation of district heating systems with biomass as fuel.
- Annual award for an energy efficiency company and an energy management.

The Steng National Cleaner Production Centre Ltd.

As regards the Steng National Cleaner Production Centre, further progress has been made since the second edition such as further activities in cleaner production-research and development, the Programme for the introduction of BAT in Nafta-Petrochem Ltd. (chemical plant for methanol, formaldehyde and resins production) and activities to reduce VOC emissions in glass-reinforced polyester production.

The International Centre for Sustainable Development

The International Centre for Sustainable Development has been cooperating to establishing of TENVORS, multinational network of active participants promoting the concept of Lifelong Learning for Sustainable Regional Development. It was established in 2001, and now incorporates over 70 leading experts and agencies from 13 countries. It has also cooperated with the International Center for the Promotion of Enterprises at the postgraduate study programme (MBA) regarding sustainable development, and participates in international Leonardo da Vinci projects, such as Train to LA21, a project to produce high quality training products (courses and materials) on the technical and socio-dynamic know-how for LA 21 implementation.

It is also worth mentioning that the National Institute of Chemistry of Ljubljana and Liveo Ltd have further promoted the adoption of cleaner production measures in different companies in Slovenia and the University of Maribor, Faculty of Chemistry and Chemical Engineering, has

introduced two new postgraduate courses on Cleaner Production and Sustainable Development, and has carried out several projects in heat exchanger network optimisation in the Slovenian industry.

REC Country Office Slovenia

This office was established in 1993 and, amongst other things, it is dedicating significant efforts towards promoting eco-efficiency in SMEs and international partnerships. It has helped to implement global conventions such as UNFCCC and has supported the implementation of strategic environmental assessment in Slovenia.

There is no coordinating body to coordinate actions among the agents that promote cleaner production and eco-efficiency in Slovenia.

15.5. Programmes, action plans and projects to promote CP

Further to the adoption of the National Environmental Action Programme in 1999, the promotion of cleaner technologies and good housekeeping practices has basically been done through the demands of the IPPC directive and the implementation of BAT, as mentioned above.

Furthermore, reuse and recycling schemes are promoted regularly by financing feasibility studies or offering credits with lower interest rates in the equipment and processes for recycling and reuse. In Slovenia many waste disposal sites have implemented the composting of biodegradable wastes, and now sell composts produced in those facilities.

As regards the National Energy Programme, which is mentioned in the second edition and which was approved in 2003, cleaner production and eco efficiency are not highlighted, but it does promote introducing sustainable energy use and energy sources. At the moment activities are taking place in the installation of wind power plants in the Istra region, the implementation of small water power plants, using geo thermal energy, using bio gas, bio diesel and bio mass as fuel for motor vehicles and for heating, etc.

15.6. Tools and activities to promote CP

Economic instruments

There are no specific economic instruments in Slovenia for promoting the adoption of cleaner production and eco-efficiency measures; nevertheless, as mentioned in the second edition, the Environmental Development Fund (Eco Fund) is a key instrument for financing environmental investment projects.

The Eco Fund

Eco fund is responsible for enhancing the investment of the citizens and companies in environmental protection by:

- Offering credits for investment in environmental protection with lower rates of interest.
- Offering guarantees for investment in environmental protection.
- Financial, economical and technical consulting at investments in environmental protection.
- Offering credits for the installation of efficient heating systems, using renewable energy sources, the reduction of heat loss from buildings, investment in energy efficient devices

and equipment, replacing building materials which contain hazardous materials with environmentally sound materials, efficient consumption of water etc.

In 2003, the Fund approved 931 loans, with a total amount of 20 billion EUR, or 34 % of the value of all investments. In 2003 the downward trend in interest rates continued. The base interest rate published by the Bank of Slovenia in 2003 for long-term loans on the bank market was 6.2 %. The Fund's interest rate ranged from 0.9 % to 1.1 %, so the average difference was 5.2 %. The trend of securing repayments through cheaper forms of insurance will continue. The benefits of the Fund for future investment stimulation will also be assured, besides through interest rates, via other financial and non-finance loan terms.

Since 2003 the Eco fund has financed several projects, but the most important are:

- Investment in a new disposal site and facility treatment of non-hazardous solid waste in the Ptuj county.
- Investment in reducing water consumption and in retrofitting of the WWTP in Delamaris Izola (production of canned fish).
- Additional heat insulation for pig farm buildings for the company Farme Ihan.
- Investment in a new hot water boiler house running on biomass fuel for district heating in Kocevje.
- Investment in a heating facility for greenhouse heating using geothermal energy in Moravske Toplice.
- Investment in the installation of a new facility for waste plastic washing with a waste water treatment plant in the plant for waste plastic recovery Omaplast Grosuplje.

The instruments of the Directorate for Activities on an Efficient Use of Energy and renewable Energy Sources

Furthermore, it is also worth mentioning that the Agency for the Efficient Use of Energy, which was renamed the Directorate for Activities on an Efficient Use of Energy and Renewable Energy Sources aims at enhancing activities and investments in rational energy consumption, sustainable energy sources consumption and the use of renewable energy sources through:

- Consulting.
- Financial support of citizens and companies.
- Development of new programmes for encouraging in the efficient use of energy and consumption of renewable energy sources.
- Standards and regulations proposals.
- International co-operation.
- Literature dissemination, training and other promotion activities.

Voluntary instruments

Great importance is given to ISO 14001 in Slovenia because it helps companies on the market. Up to the year 2003 approximately 220 companies were awarded the ISO 14001 certificate.

Awards

Every year awards are given to environmentally sound companies, energy efficiency companies and recognised environmental sound products in Slovenia.

15.7. Conclusions

Slovenia, which became an EU Member State on 1 May 2004, had already reached a high level of alignment of legislation with the EU environmental *acquis* when the second edition was published.

Since then, the situation of cleaner production has further improved. Many heavy polluters have gone out of business, and many companies have either introduced cleaner production or they already know the meaning of it.

Furthermore, great emphasis is placed on the 120 IPPC companies, which have introduced cleaner production measures through environmental management systems, best available techniques, good housekeeping practices, etc.

Several agents are dealing with cleaner production or related aspects in Slovenia, and the economic instruments and voluntary instruments implemented in the country further help to improve the environmental situation.

Nevertheless, the environmental situation of some companies which still have problems when enforcing environmental legislation (in many cases, associated with financial problems) should be improved.

15.8. References

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16. Spain

16.1. Introduction

The Spanish economy has enjoyed many years of brisk growth and has recovered swiftly from the recent international slowdown. Activity has been boosted by low interest rates and strong job creation, and underpinned by structural reforms and a sound fiscal policy.

As a result, the income gap with the euro area steadily narrowed. However, tensions have arisen that could undermine the strong growth performance, as inflation is relatively high, thus eroding competitiveness, while the surge in house prices does not yet show signs of abating. Furthermore, productivity gains have remained meagre and unemployment is still high.

Adjusting to the monetary and other economic policies of an integrated Europe, reducing unemployment, and absorbing widespread social changes will pose challenges to Spain over the next few years.

There are concerns that competitiveness of the industrial sectors will be affected if prices due to higher petrol costs and the requirements of new regulations on the environment, safety and quality arise. As a consequence, some multinationals are evaluating the possibility of migrating to more permissive countries.

As regards the products, these are specialising day by day and there is a certain tendency to change from commodities production, especially in the chemical sector.

The most important industrial sectors in Spain are textiles and clothing (including footwear), food and beverages, metals and metal manufactures, chemicals, shipbuilding, automobiles, machine tools, tourism, clay and refractory products, footwear, pharmaceuticals and medical equipment.

Surface area	10 ³ sq km	504.78
Population	Millions	40.34 (July 2005 est.)
Population growth rate	%	0.15 (2005 est.)
Life expectancy	Years	79.52 (2005 est.)
Literacy total	% age > 15	97.9 (2003 est.)
Literacy female	% age > 15	97.2 (2003 est.)
Unemployment rate	%	10.4 (2004 est.)
Inflation rate (consumer prices)	%	3.2 (2004 est.)
Public debt	% of GDP	53.2 (2004 est.)
GDP growth	% annual	2.6 (2004 est.)
GDP PPP estimated	\$10 ⁹	1 029 (2005 est.)
GDP PPP per capita	\$10 ³	25.5 (2005 est.)
GDP composition by sector - Agriculture	%	3.5 (2004 est.)
GDP composition by sector – Industry	%	28.5 (2004 est.)
GDP composition by sector – Services	%	68.00 (2004 est.)
Industrial production growth rate	%	3 (2004 est.)
Exports	\$10 ⁹ FOB	194.3 (2005 est.)
Imports	\$10 ⁹ FOB	271.8 (2005 est.)
Telephones – main lines in use	10 ⁶	17.57 (2003)
Telephones – mobile cellular	10 ⁶	37.51 (2003)
Internet hosts	10 ⁶	1.06 (2004)

16.2. Industry and environment

Industrial development and environmental impact

In many instances, economic growth has led to increased pressures on the environment, in terms of both pollution and use of natural resources (e.g. water, land etc.).

According to the OECD Environmental Performance Review for Spain of 2004, this partly reflects a 52 % increase in international tourist arrivals and housing construction at a rate of 700 000 new dwellings per year (the tourism and construction sectors accounted in 2004 for 11 % and 9 % of GDP, respectively). The population density of the coastal regions and the islands (where almost 60 % of the population lives) is 5 times higher than in the interior regions.

However, it should be noted that over the last few years, much progress has been made in developing environmental infrastructure (e.g. water supply, waste water treatment) and environmental legislation has evolved very significantly and some regions implement very advanced environmental policies, partly in response to EU directives.

Spain faces important challenges with respect to high energy intensity, high water use intensity and increasing CO₂ emissions, soil pollution, chemical substances management and municipal waste generation.

During 1990–2003, total greenhouse gas emissions increased by almost 40.6 %. This is 25.6 % above the Kyoto Protocol agreements for Spain, which allows for a 15 % increase above 1990 levels by 2008–2012. In 2003, total greenhouse gas emissions reached 402 million tonnes of CO₂-equivalent. Greenhouse gas emissions in Spain are similar to other large European countries. CO₂ emissions per capita (8 tonnes/inhabitant) are below the EU average.

Areas of special concern

The study on industrial hotspots and sensitive areas which impact the Mediterranean Sea in Spain conducted for the RAC/CP in 2005 has identified 33 hotspots from the point of view of the industrial emissions (not their environmental impact), which are classified according to three variables:

- direct discharges to water (14) independently of their destination (discharges to the littoral, to the basin, to the sewer system or to a waste water treatment plant);
- direct discharges to the littoral (11);
- air emissions (8).

Most hotspots are located in the autonomous community of Catalonia (50 % of discharges to water, 36 % of discharges to the littoral and 62 % of air emissions). This may be due to the fact that there is a high level of concentration of industrial activities in Catalonia, located in large production centres as in the chemical industry, but also to the fact that there are more data available for Catalonia than for other autonomous communities.

Priority hotspots according to their nature are as follows:

Discharges to water	Discharges to the littoral	Air emissions
Barcelona – Zona Franca	Carboneras	Amurrio/Etxegoien
Les Franqueses del Vallès	Los Barrios	San Roque
Benicarló	Castellón de la Plana – P.I. El Serrallo	Castellón de la Plana – P.I. El Serrallo
Tarragona	Motril	Tarragona
Castellbisbal	Tarragona	Castellbisbal
Martorell	Vila-seca	Barcelona – Zona Franca
Burgos	Barcelona- Puerto	Martorell
Castellón de la Plana – P.I. El Serrallo	El Prat de Llobregat	Flix
Zaragoza	San Roque	
Villarreal	Valle Escombreras	
Vitoria	Cuevas del Almanzora - Villaricos	
Zubillaga-Lantarón		
Vila-seca		
Flix		

- There are two priority hotspots concerning discharges to water, discharges to the littoral and air emissions: Tarragona and Castelló de la Plana.
- There are four priority hotspots concerning direct discharges to water and air emissions: Barcelona- Zona Franca, Castellbisbal, Martorell and Flix.
- Hotspots from discharges to water are mainly due to the chemical industry, the metal industry, the mineral industry, the paper industry, and combustion facilities.
- Hotspots from discharges to the littoral are due to the chemical industry, combustion facilities, waste management and the paper industry.
- Hotspots from air emissions are due to the chemical industry, combustion facilities, the metal industry and the use of solvents.

16.3. Legal and policy framework

Laws and regulations

When it comes to laws and regulations related to the environment, the influence of the transposition and enforcement of the EU Water Framework Directive, the Kyoto Protocol, the EU Directive on the incineration of waste and the Stockholm Convention on Persistent Organic Pollutants should be highlighted.

Enforcement

Major problems encountered when implementing and enforcing environmental legislation in Spain refer to the accomplishment of the requirements in the time span given by the EU, launching the necessary instruments to comply with the requirements for transposition of international agreements, the different degree of development when it comes to environmental protection among the 17 Spanish autonomous communities, and the lack of means and human resources given the magnitude of the new pollution prevention and control guidelines.

The industrial activities which face most difficulties when implementing the IPPC directive are SMEs in general, and specifically the metal surface treatment industry which uses solvents, facilities from large sectors which are at the end of their life (such as the metallurgical), intensive breeding of birds and pigs, big combustion facilities and refineries.

These are specially located in the industrial and livestock areas of Catalonia, Valencia, Murcia, Andalusia and the Basque Country.

Permit system

Spain, which did not have a pre-existing integrated permit system in place, has over recent years developed new legislation as well as new integrated permit systems and procedures following the provisions of the European IPPC Directive.

The basic principles of the Spanish approach to IPPC are at-source prevention, abatement (via close-to-source measures), rational use of natural resources and the compensation principle. The overall objective is to protect the environment in its entirety.

According to the Fundación Entorno, in Spain, 4 886 installations are affected by the IPPC Directive:

- 1 552 from the agrifood industry

- 465 from the ceramic industry
- 277 from the organic chemistry industry
- 253 from hazardous waste installations
- 197 from installations with organic solvents
- 155 landfills.

A total of 1 279 of these industries, almost half of them, are located in Catalonia.

Competencies to implement the IPPC Directive

Responsibility for issuing the integrated environmental permits required for certain industrial installations lies with the 17 Spanish autonomous regions. Under these permits emission limit values are established which take into account the following conditions:

- technical aspects of the installation, its geographical location and local environmental conditions.
- the nature of the emissions.
- national plans to comply with international agreements.
- the impact of the emissions on human health.
- existing limit values under current legislation.

Each region, for its part, must maintain records of principal emissions and sources responsible as well as the emission limit values authorised. To support transparency of information, several items are made available to the public: the permit request, successive reviews of authorisation, waste supervision and emissions inventory.

For certain provisions the collaboration of the town hall where the facility affected by the IPPC Directive is located is necessary. The participation of the hydrographical confederations should also be highlighted when authorising discharges to intercommunity basins.

Coordination at national level is guaranteed by means of Article 6 of Spanish Law 16/2002 which implements the EU IPPC Directive. According to this law, the Ministry of the Environment and the autonomous communities unify their criteria when it comes to interpreting different aspects of the authorisation procedure according to the EU guidelines. It is the responsibility of the State to ensure that information on BAT reference documents reaches the autonomous regions.

Establishment of emission limit values according to the best available techniques

In some cases, the autonomous communities are establishing emission limit values whose ranges are set according to emission limit values associated to BATs taking as a reference the European BREF (BAT Reference) documents and the Spanish BAT guideline documents, the legislation of the autonomous region, or specific legislation from other EU Member States.

Still, in most cases, when it comes to granting integrated environmental authorisations, BATs are taken into account together with the environmental situation of the area. Each authorisation is studied on a case-by case basis.

At local level, there are initiatives to promote BATs in SMEs as a part of the implementation of environmental management systems, which are subsidised in many autonomous communities. Furthermore, there are fiscal exemptions for the application of BATs in SMEs, independently of whether they fall under the IPPC Directive requirements or not.

Voluntary agreements

In Spain, several agreements with the industry have been promoted to reduce pollutant discharges and emissions, which contemplate the adoption of cleaner production techniques and eco-efficiency.

Agreements that target heavy metals or organohalogenated compounds and/ or establish measures towards minimisation or management of hazardous wastes	
STATE LEVEL	<ul style="list-style-type: none"> • Framework collaboration agreement for the establishment of agreements related to the environment between the Spanish Ministry of the Environment and the Spanish Confederation of Business Organisations (CEOE) to target different economic sectors (signed on 17 October 2001). • Voluntary agreement for pollution prevention and control in the Spanish Cement industry between the Spanish Ministry of the Environment and the Association of Spanish Cement Producers (OFICEMEN) to target the cement industry (signed on 28 November 2001 and updated in 2005). • Voluntary agreement for the progressive reduction of mercury emissions from all Spanish chlor-alkali facilities that use the amalgam technology (mercury cathode) between the Spanish Ministry of the Environment, the Ministry of Environment and Regional Planning of the Basque Government, the National Electrochemistry Association and Electrochemistry Hernani, S.A. This agreement was updated in 2005 to cover all Spanish autonomous communities. • Agreement between the company EMGRISA and the Spanish Confederation of Wood Business (CONFEMADERA) to improve management of waste from the wood sector. This agreement was signed in 2001. • The Spanish Ministry of the Environment collaborates with some autonomous communities for the management of specific hazardous animal waste materials related to bovine spongiform encephalopathy. All of this in relation with the "State program on the elimination of specific risk materials (MER) and other animal wastes related to bovine spongiform encephalopathy (PNEMRA)".
AUTONOMOUS COMMUNITY OF VALENCIA	<ul style="list-style-type: none"> • Collaboration agreement between the Ministry of Land and Housing of Valencia, the National Association of Frits, Enamels and Ceramic colours Producers (ANFFECC) and the Spanish Association of Tile and Ceramic Floors Producers (ASCER) with the aim to promote industrial packaging reutilisation and contribute, in the Land of Valencia, to the minimisation objectives established by the national law on packaging and packaging wastes.
AUTONOMOUS COMMUNITY OF MURCIA	<ul style="list-style-type: none"> • Collaboration agreement between the Ministry of Environment, Agriculture and Water of Murcia and the Regional Federation of Hotel Industry Businessmen (HOSTEMUR) for the greening of the sector and the training of environmental operators that will deal with environmental management in the enterprises. • Collaboration agreement between the Ministry of Environment,

	<p>Agriculture and Water of Murcia and the Association of Food Preservers of Alicante, Albacete and Murcia for the greening of the vegetal preservation sector in the autonomous community of Murcia.</p> <ul style="list-style-type: none"> • Collaboration agreement between the Ministry of Environment, Agriculture and Water of Murcia and the Association of Stone and Marble Businessmen of the autonomous community of Murcia (MARSA) for the greening of the business involved in the ornamental rock extraction sector. • Collaboration agreement between the Ministry of Environment, Agriculture and Water of Murcia and the Federation of Livestock Associations (FADESPORM), the Regional Association of Porcine Enterprises (AREPOR), the Coordinating Association of Farmers and Livestock breeders Organisations- Rural Initiative of Murcia (COAG-IG), the Association of Farmers and Livestock Breeders Industries (ADEA-ASAJA), the Union of Small Farmers businesses (UPA) and the Federation of Farmers Cooperatives of Murcia (FECOAM) for the greening of the porcine industries.
AUTONOMOUS COMMUNITY OF THE BASQUE COUNTRY	<ul style="list-style-type: none"> • Voluntary agreement between the Ministry of Environment and Regional Planning of the Basque Government and the signing companies from the glass, ceramic and lime companies for the greening of these industries in the Basque Country.
AUTONOMOUS COMMUNITY OF CATALONIA	<ul style="list-style-type: none"> • Collaboration agreement between the Ministry of the Environment and Housing of Catalonia and the Association of Fine Chemicals Producers for the greening of the companies of the sector.
Agreements aimed at achieving a general commitment for waste reduction and reduction of pollution discharges to water, air emissions and soil pollution for different economic sectors.	
STATE LEVEL	<ul style="list-style-type: none"> • Agreement on the National Strategic Plan of the Sector and on measures to manage and control wastewater discharges between the General Directorate of Hydraulic Works and Water Quality of the Spanish Ministry of the Environment and the National Association of Paste, Paper and Cardboard Producers
AUTONOMOUS COMMUNITY OF CATALONIA	<ul style="list-style-type: none"> • Collaboration agreement between the Catalan Water Agency of the Government of Catalonia, the town hall of Igualada, the company Igualadina de Depuración y Recuperación S.L, and the Tanners' guild to reduce the pollution load of waste waters from the tanning industry of Igualada so that they may become similar to urban waste waters in order to be treated in a urban waste water treatment plant. • Collaboration agreement for pollution prevention and control between the Ministry of Environment of the Government of Catalonia and the Association of cement producers of Catalonia.

International conventions and protocols

In the international framework for the protection of the environment through pollution prevention, Spain ratified the Stockholm Convention on Persistent Organic pollutants on 28 May 2004.

16.4. Agents involved in promoting CP

As mentioned in the second edition, in addition to the central government, the governments of the 17 autonomous communities in Spain also play a relevant role, since under the Spanish Constitution the autonomous regions have a major role to play in implementing environmental policy and have their own normative capacity, which is complementary to the central legislation.

Spanish Ministry of the Environment

Within the Directorate General of Quality and Environmental Evaluation, which depends of the General Secretariat for Pollution Prevention and Climate Change, there is an area dealing with Industrial Environment- Pollution Prevention and Control, which focuses on the following key aspects:

- Integrated environmental authorisations.
- Spanish BAT guidelines.
- Emission registers (European Pollutant Emission Register- EPER Europe and EPER Spain, Pollutant Release and Transfer Register- PRTR, National Plan for Dioxins).
- BREF (BAT Reference) Documents.

A brief summary of recent activities carried out by the Spanish Ministry of the Environment are presented below.

- The environmental permit is a requirement of the EU IPPC Directive for the most potential polluting installations that should lead to the emissions reduction through the application of the best techniques available, best environmental practices and cleaner technologies. Before the end of the year 2007 all of these installations should be working under IPPC conditions. More than 500 have already obtained this permit over the last two years in Spain.
- The Spanish Ministry of Environment participates actively in the so-called Seville Process to compose and revise the BREF Documents (BAT reference documents). From the beginning of the project, coordinated by the EU IPPC Bureau, 18 out of 33 BREF documents have been adopted. The finalisation of all of the BREF documents is scheduled by the end of this year. In every case there is a national technical working group represented by industrial and technical experts that supervise and provide information to the European Technical Working Group.
- From the texts already adopted, four BREFs (monitoring, glass industry, intensive livestock farming and non-metal ferrous installations) were translated into Spanish to make them easier to understand for the national stakeholders and two more BREF translations are going to be released soon.
- The Spanish Ministry of Environment continues to publish the sectoral guidelines of best environmental techniques in Spain. These texts reflect on the application of BATs on a certain IPPC Spanish industrial sector and at the same time promote BATs. Over the last two years guides on cement, tanning, textile and refinery installations have been released and work has started or is about to end on guides dealing with the glass, chlor-alkali, PVC, organic fine chemistry, intensive livestock farming, sugar, and beer industries, and others involving food and drink processing (vegetables and meat processing, chicken related products, dairies and pre-cooked meals industries).
- Related to the clean production but within the framework of the Stockholm Convention on Persistent Organic Pollutants a national technical working group has been formed with all the stakeholders (NGOs, industry, trade unions, local authorities, etc.) to determine a

national action plan to promote and require the application of BATs in order to reduce unintentional POP emissions from industrial or diffuse sources.

- As tools to determine priorities of emission reduction and therefore the state of the art in the application of BATs, the Spanish Ministry of Environment, through its Industrial Environment Area, manages the Spanish Pollutant Emission Register (within the EPER framework), which is updated every year, as well as the National Plan for Dioxins and Furans. The Spanish EPER is in the process of becoming integrated in the EU initiative for a European Pollutant Release and Transfer Register (E-PRTR).
- Furthermore, it should be noted that the Spanish Ministry of Environment is preparing an environmental technologies action plan (ETAP- an EU initiative to stimulate the development and uptake of environmental technologies) that will promote cleaner production in different environmental sectors and aspects. This plan will most probably promote new agents dealing with cleaner production.

CEMA, Centre for the Environment and the Enterprise

CEMA is the instrument of the Ministry of the Environment of Catalonia for the promotion of the adoption of CP practices and technologies by industry. It is a public company with capital that belongs in its entirety to the Government of Catalonia. The range of services that CEMA offers has become broader as a result of its activities. As well as disseminating and promoting the tools of CP, the centre has become a point of reference in the relationship between the different industrial sectors and the Ministry of Environment of Catalonia.

Out of the activities carried out by CEMA during 2003 and 2004, the following can be highlighted:

- Coordination of 3 working groups¹² - one made up by companies from the graphic arts sector and two made up by 16 companies from the tanning sector.
- Collaboration with the Catalan Ministry of environment in the application of a Best Environmental Practices Programme (BEP) - development of pilot projects for training on BEPs in hotels and offices; preparation of handbooks on BEPs in the logistic sector and laboratories.
- Preparation of studies - pollution prevention in several industry sectors (i.e. meat, tanning, dairy, solvents use); rational water use in the Catalan industry; Catalan guides on best available technologies (BATs) on tanning and monitoring (based on the corresponding EU BREFs); selective collection of domestic oils for their transformation to industrial by-products.
- Assessment on CP (more than 1 500 phone and internet consultations dealt with).
- Updating and adapting technology databases of the paper, textile, surface treatment and metal sectors to web format.
- Publication of files showing real cases of the application of CP measures in Catalan companies.
- Pilot project on eco-design (on-going) - development of a methodology for the eco-design of the packaging of 6 companies (including training activities for the personnel and dissemination of the results obtained to other companies).
- Participation and collaboration in several agreements between the Ministry of Environment and different industry associations.

¹² Working groups bring together a group of enterprises from the same sector or location in order to define sound alternatives for the prevention of common environmental impacts.

IHOBE, Sociedad Pública de Gestión Ambiental

A publicly-owned company which, always in consonance with the plans and directives of the Basque Government and on the basis of sustainable development criteria, seeks to motivate all players in the Basque Autonomous Community in order to achieve a correct environmental performance by meeting the needs of customers, staff, associates and society in general.

Its areas of action relevant to business and industries include clean air, water and soil, management of resources and waste, climate change, to improve legislation and encourage the market in environmental matters and R&D&I in environmental affairs.

IHOBE's main lines of action in 2004 were the following:

- IHOBE-line telephone information service.
- Environment workshops. Special mention should be made of the IHOBE hosting the 9th European Roundtable on Sustainable Consumption and Production, and organising the Basque section of the European Environment Awards for firms.
- "Orekan" cleaner production newsletter.
- "Ekoscan" environmental improvement programme for firms and organisations.
- "Legescan" service for industrial diagnosis and action plans.
- Basque database of environmental indicators.
- Coordination, drawing up, and implementation of the eco-design promotion Programme for the Basque country 2004-2006.
- Preparation of a list of cleaner technologies for the Basque Government.
- Support to voluntary agreements with industries.
- Participation in the creation of the Association of Basque Firms for Sustainability.

NAMAINSA, Navarra de Medio Ambiente Industrial, S.A.

A publicly owned company of the Ministry of the Environment, Land Use and Housing of the Government of the autonomous region of Navarre aims at promoting activities and initiatives to improve the environmental performance of the society of Navarre.

NAMAINSA focuses in the business sector, to search and develop measures to minimise the environmental impact of companies. It therefore launches and coordinates initiatives towards environmental management, it manages the Office for Recycling Promotion and it undertakes studies and projects that aim at developing and promoting environmental remediation and the analysis of techno-economic viability of environmental management practices.

As examples of NAMAINSA's activities, it should be mentioned that it develops environmental management projects in collaboration with entities and firms in Navarre:

- Projects with certified companies.
- Projects with business associations.
- R+D+I projects
- Projects with the Navarre Association of Environment Certified Companies.

Inter alia, in 2004, NAMAINSA has also published the guide on waste minimisation in Navarre and a guide entitled "What should I know about industrial wastes".

Other examples of organisations dealing with cleaner production and ecoefficiency are the following:

- ICAEN, Institut Català d'Energia, a publicly-owned institute of the Ministry of Labour and Industry of the Government of Catalonia which develops, i.a., a programme for energy assessment in the industry. This programme promotes, inter alia, the optimised management of energy resources in the industry by means of energy diagnosis as well as diagnosis for improved water management and saving.
- Publicly-owned companies such as GEDESMA, Gestión y Desarrollo de Medio Ambiente de Madrid, S.A. of the Ministry of the Environment and Land Use of the Land of Madrid which develops and executes strategic plans and programmes related to the environment and waste management, including R + D of new technology, or EGMASA, Empresa de Gestión Medioambiental, S.A. of the Ministry of the Environment of the autonomous community of Andalusia, which deals, for example, with waste management and minimisation alternatives in the industry.
- Foundations such as Fundación Entorno, which is a Spanish partner of the World Business Council for Sustainable Development and promotes and deals with corporate social responsibility, eco-efficiency, climate change, energy efficiency, training activities, etc in enterprises as well as being the organisation is in charge of organising the Spanish section of the European Environment Awards to companies in collaboration with the administration.
- The Fundació Fòrum Ambiental is also a Spanish member of the World Business Council for Sustainable Development and aims at creating a dialogue and collaboration platform between the enterprises, the administration and society to foster sustainable development. By means of the diffusion of information, the execution of projects and the support to training and research programmes the foundation promotes, inter alia, the integration of an environmental culture in the enterprises.

16.5. Programmes, action plans and projects to promote CP

Programmes and action plans

Since the second edition, the Implementation Plan of the Stockholm Convention on Persistent Organic Pollutants and the upcoming Barcelona Convention National Action Plan are the new plans worth highlighting when it comes to pollution prevention in Spain.

Projects

These are some examples of projects funded in Spain through the EU-LIFE Programme

- Ozone clean in place in food industries (2005-2008).
- Integrated liquid waste management model for surface treatment industries through BATs (ZERO PLUS) (2005-2008).
- Benign and environmentally friendly fish processing practices to provide added value and innovative solutions for a responsible and sustainable management of fisheries (2005-2008).
- Alternatives for waste volume reduction in the textile sector through the application of minimisation measures in the process and in the consumption (2005-2007).
- Processing plant for the integral treatment and valorisation of the wasted generated during the olive oil production process (2005-2009).
- Demonstration project for gelatine production with use of innovative technology achieving an important washing wastewater reduction (2003-2006).

- Saving of forest exploitation for obtaining tannin extracts through wine recovery waste (2004-2007)
- Demonstration of innovative models at a European level based on clean technologies and on the obtaining of final scenes with a positive environmental balance in aggregate and gravel extraction activities (2004-2007)

Other projects are being launched and executed in Spain in the context of other programmes such as the project on eco-efficiency in the industry and industrial areas in the autonomous community of Valencia.

In addition, several projects are being launched in Spain under the EU Intelligent Energy-Europe program. These are some examples:

- Project E-Check in Craft SMEs which aims at developing energy audits for five sectors of five European countries, including Spain.
- Project RECIPE, which aims at providing the European plastics processing industry with the knowledge and tools required to reduce energy consumption through the implementation of best practice and the introduction of new technologies.
- Project for the promotion of energy management practices in the textile industry.
- Benchmarking and Energy management schemes in SMEs.

16.6. Tools and activities to promote CP

Economic instruments

The following economic instruments should be highlighted in Spain:

- In 2005, a resolution of the Spanish Ministry of the Environment was issued to facilitate grants for the execution of environmental projects related to scientific research, development and technological innovation in the framework of the National Plan for scientific research, development and technological innovation 2004-2007.
- The PROFIT programme, for the promotion of technical research of the Spanish Government, finances projects within the framework of the National Plan for scientific research, development and technological innovation 2004-2007 which, *inter alia*, deal with energy efficiency and reducing greenhouse gases.
- Ten per cent deduction in the income tax for industries that produce environmental benefits.
- As mentioned in the section concerning the agents involved in promoting cleaner production, at present the Spanish Ministry of the Environment is drafting the Environmental Technologies Action Plan, which will promote and finance cleaner production projects in different environmental sectors and aspects.

In addition, several autonomous communities provide grants such as the following (these are some examples):

- Grants for investment in the installation of systems for the elimination of pollutants in emissions from the ceramic industry of the autonomous community of Andalusia and grants for investments for the reduction of SO² emissions for industries of the autonomous community of Andalusia.
- Grants for the execution of industrial waste minimisation projects of the Government of Catalonia and grants for testing the viability of obtaining the eco-labels of the autonomous community of Catalonia.

- Grants for the development of environmental management systems of the autonomous community of the Canary Islands, Catalonia, Galicia, Madrid, etc.

Voluntary instruments

Voluntary instruments are recommended by legislation dealing with pollution prevention and control. Certified companies benefit from a simplification in the procedures and controls from this legislation.

The number of EMAS registrations in Spain is increasing, also in SMEs thanks to the grants from the different autonomous communities. Spain is at present the second EU country with most EMAS registrations (649 registered sites in November 2005).

As regards the European eco-label, as of October 2005, the number of Spanish holders was 17, ranking in third position in the EU countries.

It should also be mentioned that the Minimisation Opportunities Environmental Diagnosis (MOED) of the Centre for the Enterprise and the Environment are also being implemented in Catalonia and in other Mediterranean countries.

Awards

Every year, the Spanish Ministry of the Environment launches the National Environmental Awards, which have different categories. One of them is the “economy and environment” award, which benefits enterprises that are worthy of merit for their resources’ management and the reductions in resources consumption and pollutant emissions.

In addition, most autonomous communities in Spain (Catalonia, Basque Country, Castilla la Mancha, Aragon, Andalusia, Cantabria, Galicia, etc.) also launch annual environmental awards.

Other environmental awards are given by private entities.

16.7. Conclusions

In Spain, there are varying degrees of development when it comes to the promotion and adoption of measures linked to cleaner production amongst its 17 autonomous communities.

The autonomous communities are in charge of implementing the IPPC directive and some of them, such as Catalonia, the Basque Country and Navarre, have established their own organisations to support enterprises and promote cleaner production.

The Spanish Ministry of the Environment, on the other hand, has to ensure that information on BAT Reference Documents reaches the autonomous communities.

The Ministry is also preparing an Environmental Technologies Action Plan, and it is expected that it will further promote the application of cleaner production mechanisms in different industrial sectors and catalyse the inclusion of cleaner production in the portfolio of more organisations.

Efforts towards the adoption of an IPPC system have led to more active participation by industry, a variety of initiatives for specific environmental media and voluntary agreements in several industries. Still, it should be noted that further efforts to promote enforcement of legislation and inclusion of cleaner production, especially in SMEs, are needed.

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17. Syrian Arab Republic

17.1. Introduction

Real GDP growth in Syria rose to 2.3 % in 2004, a slight increase from 2003 when the predominantly statist economy suffered from disruptions caused by the war in Iraq and other developments in the region.

Annual real GDP growth has averaged 2.3 % for the last seven years.

The Government of Syria has implemented modest economic reforms in the last few years, including cutting interest rates, opening private banks, consolidating some of the multiple exchange rates, and raising prices on some subsidised foodstuffs.

Long-term economic constraints include declining oil production and exports and pressure on water supplies caused by rapid population growth, industrial expansion, and increased water pollution.

The main industries are petroleum, textiles, food processing, beverages, tobacco and phosphate rock mining.

Three industrial zones have been established in the main cities (Rural Damascus, Homs and Aleppo). All industries should move to these industrial according to the schedule of infrastructure process. Many of international companies have their industrial projects as investments projects in these zones. Procedures to simplify the construction, financing, and operation of the enterprises have been taken.

Surface area	10 ³ sq km	185.18
Population	Millions	18.45 (July 2005 est.)
Population growth rate	%	2.34 (2005 est.)
Life expectancy	Years	70.03 (2005 est.)
Literacy total	% age > 15	96.90 (2003 est.)
Literacy female	% age > 15	64.00 (2003 est.)
Unemployment rate	%	20 (2002 est.)
Inflation rate (consumer prices)	%	2.1 (2004 est.)
Public debt	% of GDP	32 (2004 est.)
GDP growth	% annual	2.3 (2004 est.)
GDP PPP estimated	\$10 ⁹	60.44 (2004 est.)
GDP PPP per capita	\$10 ³	3.40 (2004 est.)
GDP composition by sector - Agriculture	%	25 (2003 est.)
GDP composition by sector – Industry	%	31 (2003 est.)
GDP composition by sector – Services	%	44 (2003 est.)
Industrial production growth rate	%	7 (2002 est.)
Exports	\$10 ⁹ FOB	6.09 (2004 est.)
Imports	\$10 ⁹ FOB	5.04 (2004 est.)
Telephones – main lines in use	10 ³	2 099.30
Telephones – mobile cellular	10 ³	400.00
Internet hosts	Units	11 (2004)

17.2. Industry and environment

Industrial development and environmental impact

A number of priority environmental problems were identified by national committees which evaluated and analysed available data and information on the state of the environment in Syria. The identified priority problems are:

- Depletion and contamination of surface and groundwater resources
- Land degradation
- Air pollution in large cities (mainly due to transport)
- Inappropriate practices in solid waste disposal
- Dwellings and industrial sites growth in illegal areas

In addition a number of local environmental problems, which can negatively impact the Government's ability to solve other problems, were identified. These are:

- Poor management of chemicals.
- Non-integrated management of coastal areas.
- Degradation of public green space.
- Degradation of biodiversity.

Serious environmental problems in Syria include the disposal of untreated urban and industrial effluents, oil slicks from the oil refinery and the oil terminal, and management of solid wastes.

Areas of special concern

The main areas of special concern in Syria are the following:

- Lattakia: urban effluents (7 364 tonnes of BOD5, 1 664 tonnes of nitrogen and 377 tonnes of phosphorous), solid waste dumping site on the shore, eutrophication of the coastal zone.
- Tartous-Banias area: urban effluents, (5 582 tonnes of BOD5, 714 tonnes of nitrogen and 218 tonnes of phosphorous), industrial plants including a petroleum refinery (at Banias) and a power generation plant.

As regards the Aleppo and Damascus areas, which are mentioned as hot spots in the previous edition, the following improvements in the environmental impacts should be taken into account.

On the Al Sheikh Saeed site in Aleppo, filters for cement factories have been installed, most of factories for batteries recycling have been closed and a management plan for tanneries in the area and pre-treatment has been operated to comply with the standards of discharging to the sewer network.

The tanneries in the Damascus area will be moved to the industrial city, which has a treatment plant for these enterprises.

17.3. Legal and policy framework

Laws and regulations

The following developments should be noted since the second edition:

- A new law (Law No. 49/2004) regarding the cleanliness of cities has been enacted. This law is taking into account beside other aspects, the waste management (municipal and hazardous wastes).
- An energy research centre has been established under the umbrella of the Ministry of Electricity to promote the use of clean and renewable energy (solar, wind, etc.) and to conduct research into this field for energy saving and use efficiency.
- The Industrial Zones Law includes a few incentives such as soft and tax-free Loans for 2-5 years for introducing measures to achieve less negative impacts on the environment.

When it comes to the implementation of Environment Law No. 50/2002, the following developments since the second edition should be taken into account:

- A proposal for Environmental inspection guide is under-preparation and it will be ready next year for adoption by the Environmental Safety Council.
- A general Guide for EIA procedures and requirements supported with an EIA law is under-preparation. The new decree on environmental impact assessment mentioned in the second edition, has not been issued, but a draft law for EIA is being prepared and will be submitted to the Environmental Safety Council soon.

- A list of executive procedures and standards regarding to the Law No.50/2002 has been adopted.
- Environmental labs are installed in 14 governorates. These labs consist of basic equipment, mobile and portable labs. The installed equipment covers air and water analysis. Staff training is an essential part to ensure the efficiency and quality control of the process.
- Next year, three continuous monitoring networks in three main cities (Damascus, Aleppo, Homs) will be installed for continuous monitoring for air quality.

It should be also noted that EIA guides for some industrial sectors (food, wastewater treatment plants, oil refineries, fertilisers, cement, etc.) are being finished and they will be submitted to the Environmental Safety Council soon.

Furthermore, the engineering and environmental precautions guide for the industrial enterprises has been issued and adopted by the Environmental Safety Council in March 2005. An environmental auditing guide has been adopted as well.

Concerning waste minimisation it should be noted that:

- A master plan for waste management in Syrian cities has been carried out by the Ministry of Local Administration and Environment in co-operation with TRIVALOR. The study included an audit and reviewed the existing situation and proposed the master plan.
- A sorting plant has been installed in Damascus countryside landfill by the private sector.
- Many sorting plants and other plants in Syrian cities for composting and incinerators for hazardous and pharmaceutical wastes are considered for installation in the coming few years, according to the above-mentioned master plan.

Furthermore, a hazardous wastes management system has been adopted by the Environmental Safety Council in March 2005. Guides for the hazardous wastes landfills and incineration have been adopted as well in March 2005.

Enforcement

The main problems faced in the application and enforcement of environmental regulations in Syria are as follows:

- Lack of environmental legislation.
- Lack of integrated mechanisms to implement environmental regulations.
- Lack of qualified human resources.
- Lack of sufficient funds.
- Lack of institutional coordination.

New initiatives such as the following have been adopted to overcome these problems: an environmental inspection guide will assist the environmental inspectors in applying the environmental law and better monitoring of the enterprises; executive lists and procedures have been adopted; environmental laboratories for better monitoring and data; a national chemical profile for better management of the chemical substances.

The environmental authorities in Syria do not sign up to the now voluntary agreements with the industry to facilitate enforcement of legislation or reduce their environmental impact.

Permit system

The developments to be reported since the second edition are the following:

Consultation offices have been instructed to conduct EIA studies (when required) prior to the final permit that will be issued by the environmental directorates in the 14 governorates according to the guidelines issued by General Commission for Environmental Affairs (GCEA).

A licence to import and use ozone-depleting substances in the related enterprises has been created and a licence to import chemical substances is required as well by the GCEA prior the final permit.

Furthermore, new technology and equipment are required instead of importing and installing old ones (this action was taken by the Ministry of Industry to save power and other natural resources).

International conventions and protocols

In the international framework for the protection of the environment through pollution prevention, the Syrian Arab Republic acceded to the Basel Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and their Disposal on 5 October 2004.

Concerning the Stockholm Convention on Persistent Organic Pollutants, it was ratified on 5 August 2005.

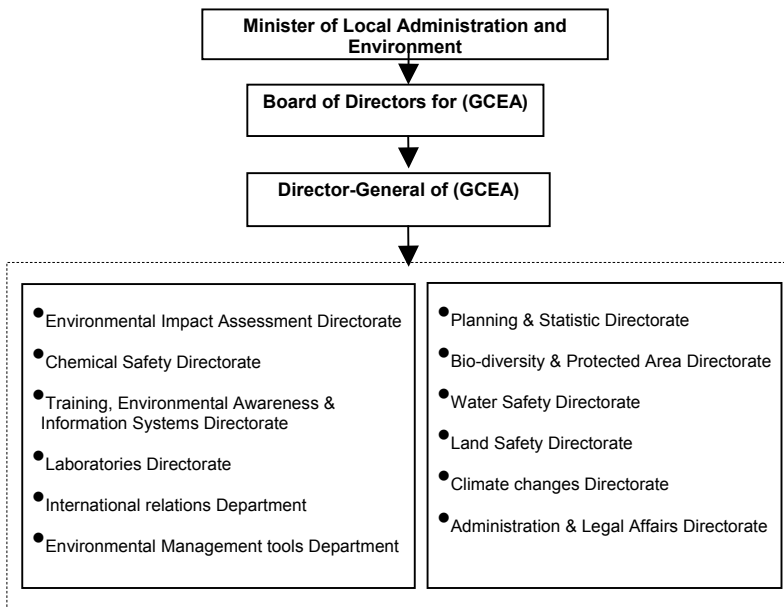
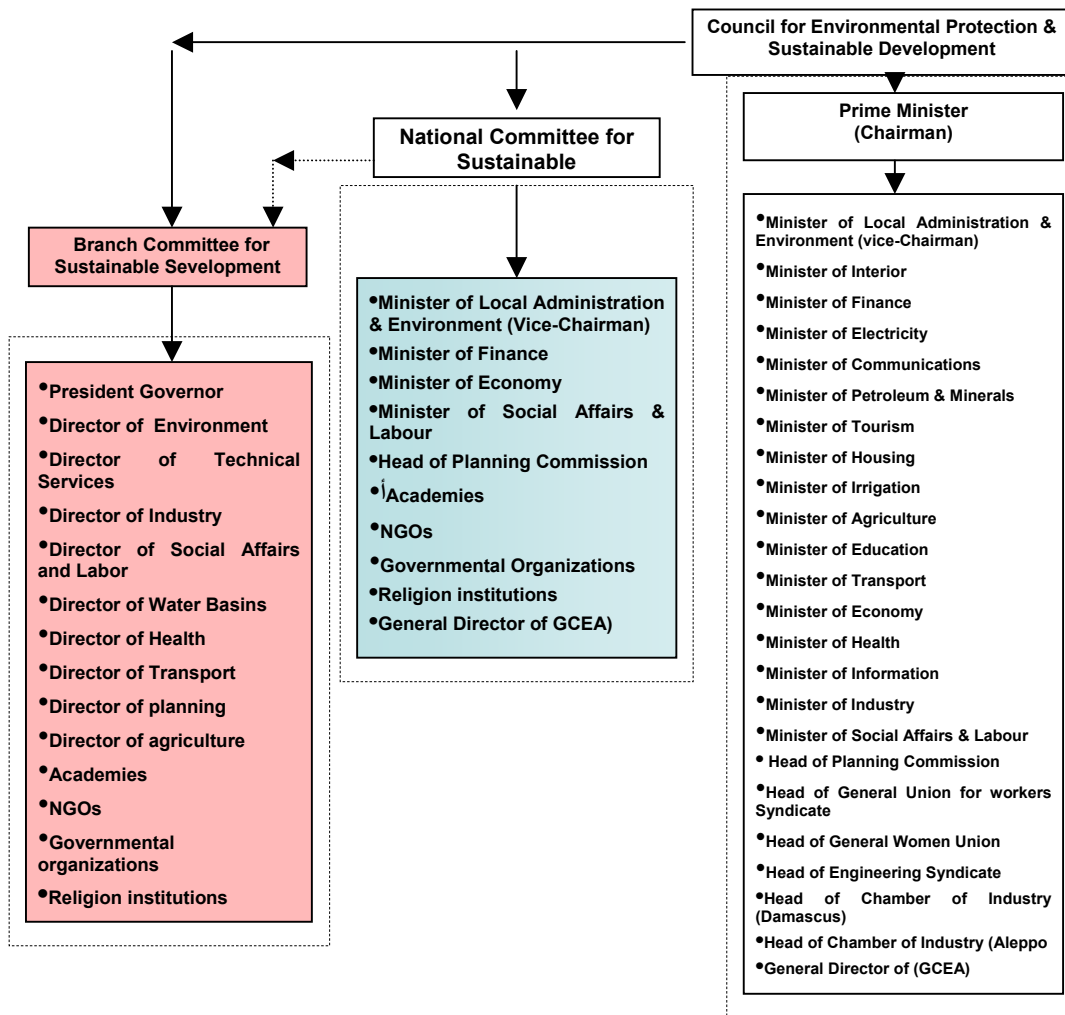
17.4. Agents involved in promoting CP

There are no substantial changes as regards the agents involved in promoting cleaner production mentioned in the second edition.

It should be noted that a fund to prepare the study for establishing a new cleaner production centre has been allocated for the year 2006.

Good coordination and cooperation exist between the GCEA, chambers of industry and the Ministry of Industry in the field of eco-efficiency.

Organizational Structure of General Commission for Environmental Affairs (GCEA)



17.5. Programmes, action plans and projects to promote CP

Programmes and action plans

National Environmental Action Plan

The National Environmental Action Plan considers the need to prioritise pollution prevention measures, such as the following over end-of-pipe corrective actions: promoting cleaner technologies and good housekeeping practices, reducing the hazardousness of wastes, promoting reuse and recycling schemes, etc. The actions included in the plan should be taken for implementation by the relevant organizations according to their mandates. These actions are being considered in their future plans.

Since the second edition, the main developments in the implementation of the National Environmental Action Plan have been the following.

- Installing environmental labs and monitoring networks.
- Setting- up national environmental standards and limits.
- Training staff to operate the environmental labs; training on other aspects is ongoing as well.
- Preparing to issue the State of the Environment Report. The report contains indicators and data to diagnose the state of the environment.
- Networks to exchange data and information among the GCEA and environmental directorates in the 14 governorates will be ready by the mid of 2006.

Projects

Environmental management systems in the Syrian Enterprises Project

This EU-funded project through the LIFE programme, which started in 2001 and was executed up to August 2004 aimed at improving the management and efficient protection of the environment through the development and introduction of strategies and supporting instruments that favour sustainable development. In particular, the project's purpose was to introduce EMAS to Syrian enterprises.

Specifically, the project aimed to:

- Prepare the public administration bodies which will be involved in the implementation of EMAS.
- Stimulate enterprises to comprehend, accept, and prepare for the implementation of EMAS.
- Establish a national action plan, which will promote the integrated introduction and implementation of EMAS.
- Publicise and disseminate the project's outputs and follow-up initiatives to all key bodies that may influence EMAS' successful implementation.

DELTA Phase III: Environmental upgrading of enterprises in Maghreb and Mashrek countries Project

This EU-funded Project through the LIFE Programme, which started in 2002 and was executed up to 2004, and whose beneficiary is the Sustainable Business Association, is aimed at the environmental upgrading of enterprises in Maghreb and Mashrek countries. The work focused on the enterprises of the following six countries: Algeria, Jordan, Lebanon, Palestinian Territories, Syria, and Turkey.

The project's specific objectives were:

- Development of eco-management practices in enterprises.
- Institutional strengthening of the DELTA networks.
- Development of individual skills to promote eco-efficiency in the future.

The tools of the DELTA program (GHK, Eco-mapping, etc.) are still used as tools to promote eco-efficiency in Syrian SMEs.

Many awareness sessions and training seminars on environmental management systems and DELTA tools have been held in various cities as well as workshops for training trainers.

Integration of economic instruments and voluntary agreements in the environmental policies of Jordan and Syria Project

This EU-funded Project through the LIFE Programme aims to integrate the environment into a sustainable framework for economic and social development by developing a broader range of environmental policy tools including economic instruments and voluntary agreements. More specifically, the project will:

- Prepare strategic plans for the integration of market-based tools in the environmental policies of Jordan and Syria.
- Introduce environmental agreements (EA) and economic instruments through the setting-up of implementation plans and pilot applications.
- Carry out the necessary awareness raising and training activities.
- Establish administrative capacity within the relevant public bodies.
- Disseminate the project results.

The Syrian Ministry of Local Administration and Environment is a partner to this project, which will last from January 2005 to December 2006.

Regional Solid Waste Management Project in METAP Mashreq and Maghreb Countries Project

This is an EU MEDA-SMAP-funded Project which started in 2002 and was implemented over 48 months. The overall objective of the project was to promote the adoption of sustainable integrated waste management practices in the Mediterranean Environment Technical Assistance Program (METAP) beneficiary countries. More specifically the project aims to assist target countries in:

- Designing, developing and implementing the main elements of integrated solid waste management systems.
- Promoting the exchange of information and experiences in the region in support of the enhanced application of Integrated Solid Waste Management Systems.
- Laying the groundwork and building the necessary foundation for increased investment in the sector, for example from the World Bank, European Investment Bank and/or private sector.

In order to achieve these objectives, the project is structured around the following:

- Capacity development supported by provision of the tools necessary to enable national and sub-national entities to apply integrated solid waste management Systems
- Identification of regional options and strategies for implementing integrated solid waste management systems and promotion of the uptake of these approaches.

- Creation of a regional network of expertise including a centre of expertise based in Tunisia, and clusters of expertise in each partner country.

Integrated waste management for the olive-oil pressing industries in Lebanon, Syria and Jordan Project

This is an EU MEDA-SMAP-funded Project which started in 2005 and will be implemented over 36 months. The overall objective of the project is to introduce the elements of an integrated olive oil waste management system. This is one way to optimise resource use and improve process performance. More specifically the project aims are:

- To establish a database of the industrial oil processing sector in Lebanon, Syria and Jordan
- To introduce cleaner production options, prevention, control and treatment measures to the olive oil industry
- Training and technical assistance for concerned stakeholders provided to maintain principles of "green" processing of olive oil.
- Standards and limits relevant to the olive oil industry effluents set in Lebanon, Syria and Jordan
- A monitoring strategy to control/regulate olive oil production and associated inline industries adopted by the Ministries of the Environment
- Financial and technical incentives elaborated to promote the mandates of previously agreed memorandums of understanding (MoU) relating to the proposed environmental quality standards and compliance strategy.
- Increased awareness on how to mitigate environmental impacts of waste produced by olive oil pressing industries.

17.6. Tools and activities to promote CP

Economic instruments

Further to the information contained in the second edition, a national committee has been established to set up the procedures to implement such instruments. Soft loans are allocated for the public to promote using solar energy heaters and yearly fees are imposed on vehicles (% of production year) to finance environmental projects.

Voluntary instruments

Due to the weakness of environmental awareness only ISO 14000 is applied as a common system for this issue. Only 44 companies have received ISO 14000 certificate. Most of them are pharmaceutical factories. Those factories have applied the ISO 14000 at the request of the Ministry of Health.

There are no environmental awards to recognise and promote companies that make an outstanding contribution to the environment in Syria.

Other activities and tools

The Syrian International Environment Exhibition "SYRENVIRO 2004" was held 5-8 April 2004 at the New Damascus International Fairground. This first-ever specialised environmental event in Syria was patronised by H.E. the Syrian Prime Minister with the

support of the United Nations Development Programme (UNDP), the Syrian Ministry of Local Administration and the Syrian Environment Association.

Sixty exhibitors representing ten countries were present at SYRENVIRO 2004, of which five were from the Mediterranean basin: Syria, France, Egypt, Lebanon, Tunisia, Ukraine, Germany, Austria, the Kingdom of Saudi Arabia, and the United Arab Emirates. The exhibitors included:

- National and international companies that are active in various environment-related fields (e.g. Envirotech, Syrian Agricultural Services Company–SASCO, CQT consultancy, Chemonics, VIMPEX).
- Leading international organisations such as the United Nations Development Programme (UNDP), the Food and Agriculture Organisation (FAO), and the German Agency for Technical Cooperation GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit).
- Governmental bodies, including several town councils (among others, Damascus, Der Ez Zor, Homs and Tartous).
- NGOs (e.g. the Syrian Environment Association).

Cleaner technologies were represented at SYRENVIRO 2004 along with other sectors of activity: namely, environmental management systems, environmental auditing, environmental training, energy, noise and vibrations, occupational hygiene and risk management, environmental software, publications and journals, as well as environmental monitoring. Furthermore, end-of-pipe options, such as waste, wastewater treatment, air and gas purification, and water treatment were also present at the exhibition.

During the exhibition, six parallel seminar sessions were held to tackle challenging aspects of the environment in the Middle East, such as sustainable development in the Middle East, natural resources, wastewater reuse and solid waste. Speakers included experts from leading organisations (such as Ms Stephanie Hodge from UNDP New York, Dr Kourdab and Dr Hazouri from the United Nations Economic and Social Commission for Western Asia–ESCWA) as well as national officials and consultants.

During the four days of this event, over 8 650 visitors visited SYRENVIRO 2004. SYRENVIRO is a bi-annual event, the next edition being foreseen for April 2006.

17.7. Conclusions

Several positive advances have been made in Syria to improve environmental policy and management. Worth highlighting, for example, are several new environmental inspection guidelines and new measures to improve waste management in the country.

There are still several gaps in the environmental policy, such as lack of environmental legislation and enforcement mechanisms.

Major disadvantages to be overcome to promote cleaner production in Syria are lack of awareness of CP principles, lack of experience of implementing the cleaner production and eco-efficiency, weakness of co-ordination among the related authorities, difficulty to get the data and information and lack of financial resources.

It should be highlighted that funds are allocated for 2006 to create a cleaner production centre and with its establishment new opportunities will arise to promote cleaner production in the industry sector.

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18. Tunisia

18.1. Introduction

Tunisia has a diverse economy, with important agricultural, mining, energy, tourism and manufacturing sectors.

The control of the Government on economic affairs, while still heavy, has gradually lessened over the past decade with increasing privatisation, simplification of the tax structure and a prudent approach to debts.

Progressive social policies also have helped raise living conditions in Tunisia relative to the region. Real growth slowed to a 15-year low of 1.9 % in 2002 because of agricultural drought and lacklustre tourism. Better rains in 2003 and 2004, however, helped push GDP growth above 5 % for these years. Tourism also recovered after the end of combat operations in Iraq.

Tunisia is gradually removing barriers to trade with the European Union. Broader privatisation, further liberalisation of the investment code to increase foreign investment, improvements in government efficiency, and reduction of the trade deficit, are among the challenges ahead.

Surface area	10 ³ sq km	163.61
Population	Millions	10.07 (July 2005 est.)
Population growth rate	%	0.99 (2005 est.)
Life expectancy	Years	74.89 (2005 est.)
Literacy total	% age > 15	94,3(2004 est.)
Literacy female	% age > 15	65.3(2004 est.)
Unemployment rate	%	13.8 (2004 est.)
Inflation rate (consumer prices)	%	4.1 (2004 est.)
Public debt	% of GDP	59.2 (2004 est.)
GDP growth	% annual	5.1 (2004 est.)
GDP PPP estimated	\$10 ⁹	70.88 (2004 est.)
GDP PPP per capita	\$10 ³	7.1 (2004 est.)
GDP composition by sector - Agriculture	%	13.8 (2004 est.)
GDP composition by sector – Industry	%	31.8 (2004 est.)
GDP composition by sector – Services	%	54.4 (2004 est.)
Industrial production growth rate	%	4.4 (2004 est.)
Exports	\$10 ⁹ FOB	9.93 (2004 est.)
Imports	\$10 ⁹ FOB	11.52 (2004 est.)
Telephones – main lines in use	10 ⁶	1.16 (2003)
Telephones – mobile cellular	10 ³	1.90 (2003)
Internet hosts	Units	281 (2004)

18.2. Industry and environment

Industrial development and environmental impact

Tunisia's industrial sector is comprised of 5 468 enterprises having 10 or more employees, which account for the employment of 446 104 people.

The most dynamic of Tunisia's productive sectors has been the manufacturing industries. In fact, the production value of the manufacturing industries passed from 19.3 million dinars in 2000 to 24.8 million dinars in 2004, representing an average growth of 6.5 % for the period 2000 – 2004. Furthermore, the contribution of manufacturing industries to the GDP has risen to close to 21 % for the period 2000 – 2004.

The main industrial branches in Tunisia are:

Industrial branch	Number of enterprises having more than 10 employees	Total number of employees
Building materials, ceramic and glass industries	428	29 615
Chemical industries	249	22 364
Electric, electronics and electrical appliances	283	42 382
Food processing industries	945	60 021
Leather and shoes industries	289	25 430
Wood, cork and furniture industries	205	10 184
Textiles and clothing industries	2,094	204 460
Pulp, paper and paperboard industries	201	10 629
Mechanical and metal works industries	464	27 591
Plastics industries	221	10 355

Tunisian industrial activity produces 250 000 tons of solid waste, and it consumes about 4% of the water resources (which means more than 50 million cubic meters of groundwater, most of which are not renewable) and 35 % of the energy.

The impact of industry on the environment is in the process of being improved as a result of the application of the environmental legislation and notably that on the environmental impact assessment, which is compulsory for every new industrial project. It is important to mention that while industrial pollution in the area of Great Tunis, Kasserine and Sfax Nord is partially controlled, other zones are still exposed, at a different degree, to industrial pollution.

Industrial development is progressing in Tunisia in a context of liberalisation, of exchanges and of competition. It is important to note that within this context, and as a result of the association agreement with the European Union (EU) and the World Trade Organisation (WTO), several exporting sectors will have to face new challenges and difficulties by 2008. This incites the industrial enterprises to modernise themselves by means of adhering to programmes of complete standardisation aimed at the strengthening and modernisation of the tool of production. Moreover, the enterprises are more and more conscious of the environmental stakes and are ever more orientated towards the setting up environmental management systems and the application of good practices and clean technologies.

As regards the environmental problems linked to the service industries, they are particularly the excessive consumption of resources such as water and energy, as well as the generation of great quantities of solid waste.

Areas of special concern

The main environmental problems in Tunisia are industrial and urban effluents, industrial (phosphogypsum) and urban solid wastes, and coastal urbanisation.

The hotspots identified by MEDPOL, which were already mentioned in the second edition, are:

- Gulf of Gabes - Phosphogypsum slurry (10 000 – 12 000 tonnes per year) from the production of phosphoric acid and fertilisers is discharged into the sea (acidity, suspended particulate matter, fluoride, phosphorous and cadmium). There are also urban effluents.
- Sfax coastal line - industrial effluents (containing 12 000 tonnes of fluoride, 5 700 tonnes of phosphorous, 2.4 tonnes of cadmium and one tonne of mercury) and phosphogypsum wastes are dumped on the seafront (19 million m³ in two dumping sites). There are, in addition, urban solid wastes and illegal dumps.
- Lake of Bizerta - there are urban and industrial effluents, as well as leachates from two main solid wastes dumping sites at Sabra Bay and El Fouledh.
- Island of Djerba - there is tourist development, sand extraction for construction purposes (building of hotels at the north-eastern side of the island) and trawling in the Posidonia meadows.

The hotspots identified in Tunisia have been the object of programmes of cleaning by means of mechanisms of technical and financial assistance set up during the last years. The amount of hotspots has not increased and their environmental impact is progressively being reduced. For that purpose, the discharges of polluted wastewaters have been significantly reduced in the receiving body of water.

18.3. Legal and policy framework

Laws and regulations

Some new legislation has been promulgated since the second edition, notably to manage water and energy consumption. These laws establish as compulsorily an energetic audit for those enterprises which consume 100 TEP/year and a water consumption audit for those enterprises which consume more than 5 000 m³/year.

The application of these regulations has been facilitated by the setting up of incentives to initiatives for the efficient use of resources.

Permit system

There have been no major changes on the permit system since the second edition. The permit system for the industrial installations is subjected to a compulsory environmental impact assessment (EIA) which analyses the impacts of industrial activity on the environment and proposes preventive measures, including cleaner production.

The coordination between the administrative agents concerned in the permit system is centralised in a “unique window”.

Voluntary agreements

Voluntary agreements between the environmental administration and the industrial federations are on the agenda and they are an efficient way of engaging industry in cleaner production.

Pilot projects of voluntary agreements in several sectors (textile, chemical and leather) are currently being prepared with the support of the German technical cooperation (GTZ).

International conventions and protocols

In the international framework for the protection of the environment through pollution prevention, Tunisia ratified the Stockholm Convention on Persistent Organic pollutants on 17 June 2004, as well as the Beijing Amendment to the Montreal Protocol.

18.4. Agents involved in promoting CP

Ministry of the Environment and Sustainable Development

As mentioned in the first and second editions, the institutional framework in Tunisia is headed by the Ministry of Agriculture, Environment and Hydraulic Resources, which counts on the support of the National Agency for the Protection of the Environment (ANPE).

Furthermore, it is important to note that the National Agency for the Waste Management (ANGED) was created within the Ministry by the decree No 2317 of 2005 (22 August 2005).

Tunis International Centre for Environmental Technologies (CITET)

The Tunis International Centre for Environmental Technologies (CITET), which was mentioned in the first and second editions, is the main agent involved in the promotion and implementation of cleaner production. It is the Tunisian National Cleaner Production Centre in the international cleaner production network and it is the Cleaner Production National Focal Point in Tunisia within the framework of the UNEP's Mediterranean Action Plan.

The activities undertaken by the CITET since the second edition are:

- Collaboration with the DELTA network and SBA for the organisation of an e-learning session on the Environmental Self-Diagnosis Guide (ESDG), which took place from 16 August to 2 October 2004. The distance course was aimed at enabling the participants to gain knowledge about a new eco-management tool that will help them make a first appraisal of their respective enterprises and achieve the initial stages of the continued improvement process.
- Counselling and assistance for enterprises. In 2004 CITET initiated various assistance programmes for enterprises, with the collaboration of national bodies and international organisations (EU, GTZ, UNEP, UNIDO, WB, among others). This assistance involved the following actions: pre-diagnosis, diagnosis, counselling, backstopping with respect to the introduction on an environmental management system, ISO 14001 certification and the adoption of solutions and new technologies for cleaner production. As such, CITET has diagnosed over 30 enterprises and signed assistance contracts (ISO 14001, GEP) with more than 20 enterprises, while more than 10 contracts are in the process of being negotiated with other enterprises of various sub-sectors of the industry. It is worth noting that CITET is targeting new groups, the number of which exceeds 300 enterprises.
- The EIA Centre at the CITET is implementing a multimedia programme that will strengthen and develop EIA capacity in support of countries' sustainable development strategies. In this regard, the centre works on improving the consistency between national EIA systems and international financial institutions. As part of the EIA Centre's programme, a course designed for private sector EIA practitioners was offered 21–25

November 2005. This advanced training workshop was aimed at providing up-to-date, state of the art tools and techniques that are keeping with current international standards.

- Collaboration with the Ministry of the Environment and Sustainable Development for the organisation of the 2nd International Conference on Upgrading Environmental Performance “The Sustainable Enterprise”, which took place from 7 to 9 December 2005.

National Union of Industry, Commerce and Handicraft (UTICA)

The National Union of Industry, Commerce and Handicraft (UTICA) was created in 1946 and its main missions are:

- To promote enterprises by means of providing them assistance, advice and information.
- To participate with the government and the civil society in the debates and programmes aimed at creating and consolidating a favourable environment for the enterprise.
- To organise the partnership missions in order to connect the Tunisian manufacturers with foreign manufacturers.

UTICA is organised by sector and by region, and it also has 16 professional federations and 24 regional unions, which cover the different industrial, commerce and handicraft sectors.

UTICA organised a seminar on “The environmental upgrading, a vital action for the enterprise” in 2005, with the collaboration of the Ministry of the Environment and Sustainable Development, the Ministry of Industry, Energy and SMEs and the German agency for technical cooperation (GTZ).

There are other institutions which deal with cleaner production, all of which were already mentioned in the first and second edition: The National Sanitation Utility (ONAS), The Agency for Coastal Protection and Planning (APAL) and the National Renewable Energies Agency (ANER).

It is also important to mention the particular technical and managerial assistance to SMEs that is provided through institutions such as the following:

- The Technical Centre of the Wood and Furniture Industry (CETIBA).
- The Technical Centre of the Mechanical and Electrical Industries (CETIME).
- The Textile Technical Centre (CETTEX).
- The National Leather and Footwear Centre (CNCC).
- The Agro-food Technical Centre (CTAA).
- The Construction Materials, Ceramics and Glass Technical Centre (CTMCCV).
- The Packaging and Conditioning Technical centre (PACKTEC).

18.5. Programmes, action plans and projects to promote CP

Programmes and action plans

The 10th Development Plan

As regards the environment, the 10th Development Plan of Tunisia sets guidelines and objectives for environment policy in the period 2002 – 2006. The main objectives of this Plan include the improvement of waste management and the fight against industrial pollution.

The programme for the rehabilitation of industrial areas

The main objective of this programme is to ensure the upgrading of the industrial network in order to achieve environmental protection and to guarantee sustainable development. Within the framework of this programme 18 industrial areas will be rehabilitated during 2002 – 2006.

The programme for the environmental upgrading of industries

The Ministry of the Environment and Sustainable Development is working on a programme aimed at:

- Integrating the environmental issues in the industrial sector.
- Strengthening the competitiveness of the industrial sector in the local and foreign market.
- Rationalising the production and consumption patterns.

With the aim of fulfilling these objectives, a strategy on the following issues has been developed:

- To promote the use of clean technologies and to strengthen the transfer of the environmental technologies best adapted to industrial enterprises.
- To consolidate the training and awareness raising programmes and to motivate manufacturers to adopt them.
- To strengthen technical assistance and policies within industries regarding the improvement of the production modes and the management of raw materials and resources.
- To promote the training of experts on environmental auditing and the managers and technicians specialised within the public and private enterprises.
- To develop a legal framework.
- To harmonise and promote the economic instruments within the existing mechanisms.
- To prepare the pack of projects to include in the framework of the partnership with the European Union.
- To mobilise supplementary technical and financial resources within the framework of the partnership with the European Union.

Some of the executive mechanisms that are foreseen within this strategy are:

- To establish partnership conventions between the public and the private sector in order to set up cooperation relationships and to strengthen the integration of the environmental issues in the industry.
- To create economic mechanisms and to establish motivations to help industries to use clean technologies and to develop projects which are likely to strengthen their industrial competitiveness.
- To create the function of the person responsible on the environmental issues within the industrial enterprises.

The National Programme for the Management of Solid Waste (PRONAGDES)

The PRONAGDES, as mentioned in the first and second editions, was implemented in 1993, it is managed by the ANPE and its objective is to provide Tunisia with solid waste management units and with solutions to deal with all kinds of wastes.

One of the main achievements of the PRONAGDES since its implementation is the development of solid waste management master plans in 23 governorates of Tunisia.

The Strategy for the Management of Solid Waste

The Ministry of the Environment and Sustainable Development, with the collaboration of the Ministry of Interior and of local development and the other concerned parties have prepared a strategy for waste management. Some of the main components of this strategy are:

- The definition of the general principles on the management of all kinds of wastes on the base of the “polluter-pays” principle and the “producer-recuperator” principle.
- The setting up of an integrated system for the waste management according to scientific criteria and with respect for ecologic aspects.
- The association of the private sector with the different activities linked to waste management.
- The promotion of waste production at source and the use of cleaner production means.

ECOLEF

As already mentioned in the first and second editions, the programme ECOLEF is a public system launched by ANPE in 1998 for the recuperation and valorisation of used packaging. In its first phase (1999 – 2002), ECOLEF was based on the voluntary collection of plastics by means of special containers. In a second phase, a remunerated collection was set up. The operations were carried out in the so-called ECOLEF points.

Since 2001 and until the end of 2003, about 90 ECOLEF points were created, and another 110 ECOLEF points were expected to be established during 2004 – 2005.

Projects

Some examples of the most relevant projects linked to cleaner production and eco-efficiency implemented in Tunisia are:

- Establishment of a Tunisian ecolabel. Project of the EU Life Programme, 2004 – 2006. The objective of this project is to develop a Tunisian ecolabel related to a number of sectors, which still have to be defined.
- Demonstration of wastewater treatment in Tunisian tanneries. Project of the EU Life Programme, 2005 – 2007. The main objective of this project is to promote and improve the use of wastewater treatment technologies in tannery industries in Tunisia.
- Programme of support to the Tunisian industrial technical centres in the area of environment. Programme Azahar of the Spanish International Cooperation Agency (AECI), 2004 – 2006. The aim of this project is to give support to several industrial technical centres by means of the transfer of knowledge and the support homologue institutions of Spain in the following sectors: leather and shoes, electric and mechanical, wood and furniture, construction and ceramics and textile. Special attention will be given to actions related to cleaner production, BATs and eco-efficiency in the production processes of the mentioned sectors.
- ISO EMA SME 2000: Pilot programme to implement EMAS and ISO 14001 in a group of Tunisian SMEs. Project of the EU Life Programme, 2002 – 2005. The overall objective of this project is to contribute to the efforts and initiatives taken by the Tunisian authorities to raise standards of Tunisian firms by integrating environmental aspects into their management systems. The specific objectives are:
 - To assist SMEs in their efforts to obtain EMAS and ISO 14001 certification.
 - To reinforce national capacity to undertake environmental audits and in EMAS/ISO 14001 certification.
 - To obtain ISO 14001 and if possible EMAS certification for some 30 firms selected to take part in the pilot project.

- To create a permanent national unit responsible for distributing all information related to EMAS/ISO 14001 certification and for providing support to interested enterprises.
- Tunisia – Energy Efficiency Programme / Industrial Sector, project granted by the Global Environmental Facility (GEF), 2004 – 2009. The main objective of this project is to overcome barriers to the development of a sustainable market of energy efficiency projects.
- Upgrading of the industrial enterprises. This project is undertaken with the cooperation of the Ministry on the Environment and Sustainable Development, the Ministry of Industry and Energy, the UTICA and the German Agency of Technical Cooperation (GTZ). This project is aimed at strengthening national capacity on the integration of environmental management in the industrial units. The first phase of the project covered the 2001 – 2004 period, and the second phase the 2004 – 2007 period.
- Assistance to almost 20 industrial units. This project is developed by the CITET within the framework of the German cooperation. It is aimed at assisting about 20 industrial units to obtain the ISO 14001 certification.
- Assistance and training in 30 industrial units. This project is developed by CETIME with the Spanish cooperation. It is aimed at assisting 30 industries to obtain the ISO 14001 certification.

18.6. Tools and activities to promote CP

Economic instruments

There are several economic instruments in Tunisia aimed at promoting the adoption of cleaner production in industries, the most relevant being the Industrial Cleaning Fund (FODEP). This instrument, which was already mentioned in the first and second editions, provides financial assistance for pollution prevention in industry giving a 20 % grant, a subsidised credit of 50 % and requires 30 % investment with the companies' own funds.

Since its creation the FODEP has financed 382 projects (up to 2005). The number of projects financed by FODEP by sector are:

- Tanning sector, 8.
- Agro-food sector, 96.
- Mechanical and electrical sector, 32.
- Textile and bleaching sector, 41.
- Construction materials sector, 59.
- Waste collection and recycling sector, 97.
- Chemical industry sector, 47.
- Other sectors, 2.

It is important to note, however, that during the last few years the number of installations that have benefited from the FODEP has been very limited and ANPE has received very few demands. This can be explained by the fact that most industrial enterprises created before 13 March 1991 have benefited from the FODEP (firms created after 13 March 1991 cannot benefit from the Fund).

With the aim of making the FODEP more dynamic, laws are being prepared in order to enlarge the action in its field of intervention in order to include most of the pollutant economic sectors, and more specifically the services sector.

There is also the “program of modernisation of industry”, which foresees the technical and financial support for the introduction of clean technologies or of environmental management systems.

Voluntary instruments

Regular activities on training and in situ technical assistance on environmental audits, Profitable Environmental Management, ISO 14001 and adaptation and transfer of environmental technologies are being carried out by the CITET.

Since 2003, about 35 enterprises have been certified by ISO 14001. In this regard, it is important to note that the CITET, as has been mentioned in point 5. 2, is working on a project for the establishment of a Tunisian eco-label within the framework of a project financed by the EU.

Awards

There is the annual award of the President of the Republic, which recognises those enterprises having the best project for the protection of the environment. This award is given every 5 June.

18.7. Conclusions

The industrial sector in Tunisia is the most dynamic production sector of the country. The environmental impacts caused by industry in Tunisia are very diverse and even though they are controlled in some areas, other are still exposed to industrial pollution. There are no new hotspots and their environmental impacts are being reduced.

Because of the Tunisian association agreement with the European Union and the World Trade Organisation, the country’s industry will have to face new challenges and difficulties in order to adapt to the international environmental standards before 2008. With this aim, most of the programmes, strategies and projects developed in Tunisia in the recent years are targeted at the industrial upgrading and the adoption of environmental management systems.

Within this framework, the Tunis International Centre for Environmental Technologies (CITET) has kept on playing an important role as it has organised training and dissemination activities and it has participated in projects on cleaner production and eco-efficiency.

Tunisia promotes cleaner production in industry by means of the award of the President of the Republic and economic instruments, the most important one being FODEP.

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19. Turkey

19.1. Introduction

Physically, Turkey is at the crossroads linking Asia, Europe and Africa. It is surrounded by four seas with a total coastline of over 8 333 km.

It is one of the 20 most densely populated countries in the world with around 70 million people and has the fastest population growth rate of all OECD countries, accelerating the pace of urbanisation and the consumption of natural resources, thus also increasing the scale of the waste generated.

Turkey's dynamic economy is a complex mix of modern industry and commerce along with a traditional agriculture sector that in 2004 still accounted for more than 35 % of employment. It has a strong and rapidly growing private sector, yet the state still plays a major role in basic industry, banking, transport, and communication. Industry and tourism are the economic business sectors with the highest growth rate.

The industrial structure in Turkey is heterogeneous in terms of sectors and size of enterprises.

The largest industrial sector is textiles and clothing, which account for one-third of industrial employment. However, other sectors, notably the automotive and electronics industries are rising in importance within Turkey's export mix.

Other relevant sectors in the Mediterranean and Aegean region of Turkey are the following: leather industry, cement industry, manufacture of petrochemicals, food and food processing industries, fertilisers and inorganic chemicals, manufacture of organic chemicals, manufacture of metals, production of olive oil, dairy industry, aquaculture and energy production.

In terms of size of facilities, there are a few large, often publicly owned plants which are related to the energy sector (power plants) or to the petroleum industry and a multitude of relatively smaller plants related to other industrial sectors such as fertiliser production, food production and processing, cement, leather, textile, papers and chemicals. Often the industrial plants are very small especially in sectors such as leather and textiles.

Surface area	sq km	780 580
Population		69 660 559 (July 2005 est.)
Population growth rate	%	1.09 (2005 est.)
Life expectancy	Years	72.36
Literacy total	% > 15	86.5 (2003 est.)
Literacy female	% > 15	78.7 (2003 est.)
Unemployment rate	%	9.3 and underemployment of 4 % (2004 est.)
Inflation rate (consumer prices)	%	9.3 (2004 est.)
Public debt	% of GDP	74.3 (2004 est.)
GDP- Real growth rate	%	8.2 (2004 est.)
GDP PPP	\$10 ⁹	508.7 (2004 est.)
GDP PPP per capita	\$	7 400 (2004 est.)
GDP composition by sector - Agriculture	%	11.7 (2003 est.)
GDP composition by sector – Industry	%	29.8 (2003 est.)
GDP composition by sector – Services	%	58.5 (2003 est.)
Industrial production growth rate	%	16.5 (2004 est.)
Exports	\$10 ⁹ FOB	69.46 (2004 est.)
Imports	\$10 ⁹ FOB	94.5 (2004 est.)
Telephones – main lines in use		18 916 700 (2003)
Telephones – mobile cellular	10 ⁶	27 887 500 (2003)
Internet hosts	Units	355 215 (2004)

19.2. Industry and environment

Industrial development and environmental impact

Industrial enterprises operating in the textile, leather, food and animal feed sector contribute in a significant way to the level of pollution in the Mediterranean. To mitigate the pollution load and improve the environmental conditions in the region special attention should be paid to these sectors.

Total pollutant loads discharged annually into the Mediterranean and Aegean Seas are indicated in figure 1. Among the pollutant parameters organic loading which is predicted in terms of BOD5 has utmost importance.

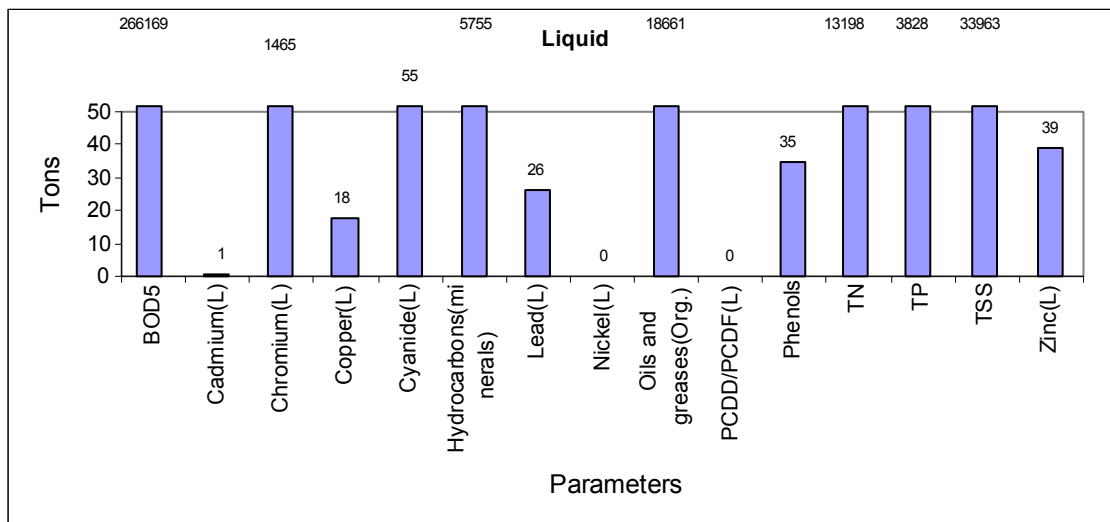


Figure 1. Total pollutant loads annually discharged in 2003

Furthermore, it should be noted that:

- Food industry wastewater discharges play a major role in organic pollution (70 % of annual BOD5 load) and the majority of the nutrients in the region are generated from the food and especially the animal feed sector.
- Textile wastewater discharges constitute 65% of total industrial suspended solids loads; the textile industry has the major portion of contribution to oily wastewater discharges with about 89% and contributing to 93% to 93 % of total cyanide load.
- Heavy metal loads discharged by wastewaters (cadmium, chromium, cyanide, copper, zinc, lead and nickel) are mainly due to the textile and leather industries and these two sectors are also responsible for the largest amounts of phenols discharged.

Areas of special concern

Agricultural activities comprise the largest source of pollutants that are carried to the sea by the rivers. In addition to agriculture, urbanization in Turkey within the last thirty years, as well as the developments in the industrial, commercial and tourism areas have caused an increase in the variety and amount of pollution sources. Industrial establishments are also concentrated in certain location causing regional pollution of the sea.

Areas of concern and land-based source of pollution include:

- Bay of Izmir - urban and industrial effluents; the Rivers Gediz and Bakircay drain large agricultural and urban areas transporting important nutrient loads into the sea causing eutrophication.
- Buyuk Menderes River - untreated industrial effluents (mercury, cadmium and chromium from leather industry).
- Aliaga and Foca regions - harbours and untreated industrial effluents.
- Iskenderun Bay - industrial activity including petroleum pipeline terminal (oil pollution from deballasting and operational oil spills).
- Mersin - industrial and urban effluents, heavy shipping activity.
- Bodrum - tourism and aquaculture activities.

19.3. Legal and policy framework

Laws and regulations

An Integrated Environmental Approximation Strategy has been developed by the Ministry of Environment and Forestry (MoEF) to harmonise Turkish environmental legislation with the European Union environmental acquis.

Furthermore, the General Directorate for Environmental Management (DGEM) at the MoEF has prepared an Approximation Strategy for the Industrial Pollution Control Sector with the European Union environmental acquis. Completing transposition of the IPPC directive is a major priority for the MoEF since, at present, transposition of the industrial pollution control sector requirements is at an early stage in Turkey and there is no integrated pollution prevention and control system in place.

As regards new pieces of legislation, an existing EIA regulation from 1993 was updated in 2003, and now transposes most of the EU EIA Directive requirements, and a new regulation on oil waste control was enacted in 2004.

Weaknesses in implementation and enforcement are still sources of major concern.

Permit system

In most areas of implementation (permitting, monitoring, inspection, enforcement and reporting), responsibilities at national level are shared between the MoEF and the Ministry of Health (MoH). This also applies at provincial level, where responsibilities are shared between their respective provincial directorates. Responsibilities at local level rest with the municipalities, although this only relates to smaller/less polluting installations.

Since there have been no significant changes or improvements in the permit system, which does not contemplate cleaner production requirements and given that there is no integrated pollution prevention and control system in place, the following needs have been identified:

- Specification of responsible persons and institutions when it comes to industrial pollution prevention and control.
- A scope inventory for the facilities that would fall under the IPPC directive.
- Identifying emission limit values and other technical parameters based on BATs
- Determining BAT harmonisation requirements and cost analysis for Turkey
- Elaborate a methodology on implementing individual BREFs in Turkey

Voluntary agreements

There is a responsible care programme run by the Chemical Manufacturers' Association to promote the voluntary adoption of CP criteria in which almost all the chemical manufacturing plants in Turkey are participating.

As an example, within this Programme, a technological change to introduce BATs was performed in the Aliağa Chlor-Alkali Plant, belonging to the PETKİM Petrochemical Holding Company: mercury cells were replaced by membrane cell technology. The payback of the US\$40 million investment made in the plant is expected in 2.6 years by means of reducing energy costs, increasing quality of the product and reducing treatment costs.

International conventions and protocols

Within the framework of the Mediterranean Action Plan, Turkey ratified the Hazardous Wastes Protocol on 3 April 2004.

19.4. Agents involved in promoting CP

There is no special institution that is solely responsible for cleaner production in Turkey. Responsibilities and roles are shared among certain institutions.

Ministry of Environment and Forestry (MoEF):

The MoEF in Turkey was established in 2003, through the merging of the Ministry of Environment (established in 1991) with the Ministry of Forest.

The MoEF is the primary organisation responsible for policy making, implementation, enforcement, auditing and monitoring in the environmental field, and works in close co-operation with other ministries, governmental agencies, local authorities and NGOs through links and active partnerships.

The Directorate General for Environmental Management (DGEM) is one of the main bodies in MoEF. It co-ordinates the activities on IPPC through the Air Management Department, Chemicals Management Department, Waste Management Department, Water and Soil Management Department, and Measuring and Inspection Department which are the Units of DGEM.

As previously mentioned, although MoEF has overall responsibility for implementing environmental legislation in the industrial pollution control sector, responsibilities remain with several other ministries:

Responsibilities Covered By The IPPC Directive	Competent Authority
Environmental roles and permits: emission permit, waste water discharge permit and the waste recycling plant permit.	MoEF
Environmental health and related permits	Ministry of Health (MoH)
Labour safety	Ministry of Labour and Social Security (MLSS)
Energy efficiency	Ministry of Energy and Natural Resources (MENR)
Eco labelling, EMAS and industrial policies	MoEF, Ministry of Industry & Trade (MoIT)

Recently the communication between the MoEF and MoH has been strengthened yielding a consensus on coordination between the two institutions in the field of IPPC. To avoid conflicts and duplications, also communication with the MoIT and the MoENR should be co-ordinated.

The Scientific and Technical Research Council of Turkey (TUBITAK)

As mentioned in the second edition, TÜBİTAK is a central organisation that comprises the different institutes and technical research centres in Turkey. Marmara Research Centre (MRC) is a section of TUBITAK that carries out applied research and development. MRC was founded in 1972 and has a staff of 634 people.

The Regional Environmental Center for Central and Eastern Europe Office Turkey

The Regional Environmental Center for Central and Eastern Europe (REC) Office Turkey was opened on 27 May 2004. It has several programmes:

- Capacity Building Programme - training, environmental education, consultant and advisory services.
- Environmental Information Programme - providing access to environmental information, promoting networks and assisting constituents to solve environmental problems in Turkey.
- Grants Programme - assisting environmental stakeholders, in particular the NGO community.
- Special programmes - on-going assessments and development of new services.

19.5. Programmes, action plans and projects to promote CP

Programmes and action plans

Further to the National Environmental Action Plan mentioned in the second edition, pollution prevention at source, sustainable development and the use of clean and efficient production technologies are integrated into the government policy through the Eighth Five-Year Development Plan 2001-2005 for Turkey (State Planning Organisation, 2001).

The Eighth Five-Year Development Plan 2001-2005 for Turkey

According to this plan, environmentally friendly technologies will be a priority in the determination of industrial policies and new industrial investments and local manufacturers will be informed and encouraged about environmentally friendly technologies. Furthermore, this plan gives priority to waste minimisation, recovery and recycling, as well as safe disposal.

Projects

Project for capacity building on the adoption and implementation of the Integrated Pollution Prevention and Control Directive

This project was carried out from January 2003 to December 2004 (with extension to March 2005) for the "Institutional strengthening of Turkish administration for the adoption and implementation of the EU IPPC Directive".

More specifically, the project aimed at the development of a legal framework and an institutional infrastructure for the benefit of the execution of the abovementioned directive. This was supported by a pilot project in the petrochemical industry. The Dutch company 'Grontmij Water & Reststoffen BV' implemented the project with the MoEF (General Directorate of Environmental Pollution, Prevention and Control, Air Management Department, Air Pollution Control Division) as its counterpart. The MoH also participated actively to the different project elements (pilot project; capacity building; legal and institutional assessment) and benefited from it.

The table below presents the summary of the final IPPC project results compared to its objectives.

Objective:	Results and comments:
Institutional strengthening of Turkish administration for the adoption and implementation of the EU IPPC Directive	The overall objective has been widely achieved, primarily through the capacity building activities, the pilot project and Seminars. In addition, government staff provided important contributions to the different project elements resulting in "learning by doing". This resulted in overall understanding of the IPPC Directive and the principles of integrated permitting among a number of staff.
Develop legal framework	The legal and institutional assessment resulted in a clear overview of legal gaps and recommendations for legal improvement. A draft-IPPC Act will further assist the MoEF in implementing the EU IPPC Directive.
Develop IPPC taskforce	An IPPC Taskforce was established with the MoEF including participation of the MoH. This taskforce is able to adopt and develop further IPPC activities although continued support in this field is required in view of the many organisations involved.
Prepare handbook and guidelines on IPPC	Pilot project guidelines were prepared and applied for IPPC application preparation and for IPPC permitting. A draft-IPPC permit was prepared for the petrochemical facility in Izmir. The aforementioned taskforce actively participated in the audit of the facility and in the permit-preparatory work.
Capacity building among governmental officials	A sufficient number of government staff continuously participated in the capacity building activities and in the pilot project. There has been no staff turnover resulting in adequate capacity building efforts.
Public consultation and information dissemination	Public consultation and information dissemination took place through the wider explanatory and final project seminars. Both events had about 80 participants from industry, scientific experts, environmental NGO's and involved ministries. The project also prepared a website through which continuous information is disseminated. At the final seminar two IPPC leaflets were distributed that can and will be used for future information supply.

The project has created substantial interest in IPPC issues in Turkey. The different events organised during the project period have resulted in the involvement of a large group of experts, staffs, officials and other persons and organisations with interest in IPPC. The total number of persons influenced as a result of the project is estimated at more than 250. Actually, given the number of Turkish organisations that participated in events under the project, one can conclude that all sectors of Turkish society relevant for IPPC, have been informed and/or influenced.

The Netherlands Embassy recently approved the start of a new IPPC project. The purpose of this new (and follow-up) project is 'to prepare and execute an agreed and broadly accepted IPPC Implementation Action Plan, including institutional setting and training programmes'.

Project for capacity building in the field of the environment in Turkey

This EU co-funded project which started in April 2003 and lasts 2 years, aims to strengthen the capacity in legal, institutional, technical and investment matters related to the approximation process in the field of environment in Turkey, thereby accelerating the effective implementation of the environmental acquis. The main beneficiary is the MoEF.

The achieved or expected results of the project, i.a., are the following:

- Developing capacity in implementation and enforcement of environmental legislation through the ACIMPEL network (The Associated Countries Implementation and Enforcement of Environmental Law network draws together the implementation and enforcement agencies of the candidate countries to promote cooperation in capacity building, both between themselves and with the equivalent network in the Member States).
- Establishment of Regional Environmental Centre-REC in Turkey.
- Institutional building and facilitated access to environmental information.
- Development of a number of mature infrastructure projects ready to be financed by the European Commission and/or other international financial institutions as well as the development of financial resources for the financing of heavy environmental investment.
- Institutional and procedural arrangements for the financing of heavy environmental investment are operational and efficient.
- Quality of environmental project applications and of project designs, in particular; respect of EU environmental technical standards.
- Developing an efficient financial mechanism for financing EU environmental heavy-cost directives.

Project for environmental standards in the textile sector

This EU-funded project which was awarded in 2003 and involves the Small and Medium Industry Development Organisation (KOSGEB, mentioned in the second edition), the Chambers of Industry Izmir, and Aegean Import and Exports Union, aims to ensure that material used in the Turkish textile industry will meet recognised EU environmental standards.

The specific objective is to establish an accredited laboratory in line with the ISO 17025 standards and then, subsequently, to Oeko-tex-100 which will assist industry- notably SMEs, and particularly the textile industry as an important Turkish economic sector, to address environmental concerns and to maintain compliance with regulatory standards.

In the first instance, the regulatory standard being addressed involves the certification of textile products. This will be done by analysing pollution parameters defined by the governing body for the European textile industry in its certification programme. Compliance by textile manufacturers with the limits set by the certification standards, and determined by the new KOSGEB laboratory, will allow certification of products intended for export to the European market.

Project for supporting Turkey's air quality, chemicals and waste management

This EU co-funded project, which started in 2004 and will last for 2 years targets the MoEF and MoH and aims to improve the environmental conditions in Turkey by implementation and enforcement of the EU environmental *acquis*. The specific purposes are;

- Establishing the necessary capacity within MoEF and MoH to transpose and implement two related EU Directives;
- Establishing the necessary system, institutional structure, the institutional capacity and the legal framework and strengthening the regulatory cycle for implementation of the related EU Chemicals Directives in Turkey;
- Establishing the necessary capacity within MoEF to transpose and implement related EU Directives on waste management.

The program has three components:

- Air Quality;

- Approximation on the National Chemicals Sector;
- Waste

Project for promoting climate change policies in Turkey

- Beneficiary: The Regional Environmental Center for Central and Eastern Europe (REC)
- Country Office located in Turkey
- Project Objectives: to assist Turkey in developing tools to reduce greenhouse gas emissions and fulfil its obligations towards the UNFCCC. To this effect, the project strives to build capacities related to climate change within national administration and civil society groups; promote intra-governmental cooperation; and increase the awareness of stakeholder groups and strengthen their role in climate change debate. The project will directly support the development of climate change policies for priority sectors and will enhance public participation and access to environmental information.
- Duration: 2005-2007.

Project for establishing an information system for Turkish SMEs on EU environmental approximation

- Beneficiary: Hacettepe University, Faculty of Engineering
- Project Objectives: to enhance capacities in the environmental sector by preparing an interactive guidance service which will enable SMEs to access information on EU environmental approximation. Specifically, the project will:
 - Review the current Turkish and EU legislation;
 - Develop an information system on EU environmental approximation;
 - Prepare an approximation strategy for the “End-of-Life Vehicles” Directive; and
 - Provide training for the users of the information system.
- Duration: 2005-2007.

19.6. Tools and activities to promote CP

Economic instruments

Crimes against the environment such as causing ecological impacts in air, land or water by ignoring precautions during the transportation of chemicals, violation of pollution bans, related to shores, seas, bays, rivers, etc., carries administrative penalties according to the Environment Act which have been increasing from 1999-2004, both for individuals and businesses and institutions.

Furthermore, it is also worth mentioning that as from of 2004, water bills also include an environment cleaning tax. A new law for municipal administrations has been prepared (under discussion in The Grand National Assembly of Turkey) so that revenues from charges will be used only for environmental expenditure and will contribute to the municipal budget rather than the general state budget.

Voluntary instruments

The application of CP through environmental diagnoses is very common in different industries, especially large and multinational companies. The main reason is the pressure exerted by

clients and the work carried out to establish their environmental management system and obtain ISO 14001 certification. There is no organised approach to its application in SMEs.

Awards

Some chambers of industry and trade are acting together in environmental affairs. They include the promotion of CP in their yearly programme by giving prizes for best environmental performance, including CP.

19.7. Conclusions

EU accession negotiations with Turkey were launched on 3 October 2005. Turkey faces an important challenge to harmonise its legislative framework and implement and enforce the EU environment acquis.

Due to this, it is expected that significant positive changes arise, which will considerably diminish the environmental impact of the industrial sector and help promote a cleaner production culture amongst the industrial facilities and enterprises over the coming years.

At present there is no integrated pollution prevention and control system in place and transposition of the integrated pollution and control sector is at a very early stage. The new approximation strategy to the IPPC sector sets the path forward as to the legal and operational challenges ahead and the changes needed.

To guarantee the proper application of the approximation strategy to the IPPC sector, coordination at national level and between the different ministries involved in environmental affairs, especially the Ministry of Environment and Forestry and the Ministry of Health, should be further promoted.

An organised approach to promote SME interest in cleaner production opportunities and practices all over the country is also required.

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Conclusions

According to the information collected in this study, the following should be highlighted as regards some key aspects of the progress and the challenges ahead for the effective implementation of measures aiming at promoting cleaner production and sustainable production patterns in the industrial sector of the Mediterranean region:

Positive effects of the remediation and mitigation of pollution in some hot spots and areas of concern are counteracted by the appearance of new ones accompanying the process of industrial development in many Mediterranean countries

Since the second edition of *The State of Cleaner Production in the Mediterranean Action Plan countries*, some countries have reported an improvement in areas of environmental concern as a result of the application of measures directly addressing the remediation and mitigation of pollution in those areas (e.g. the Liquid Sanitation Master Plans in Tangiers and Tetuan, or the mitigation projects developed in Albania during last few years). Likewise, projects developed within the framework of programmes for the upgrading and rehabilitation of existing industrial complexes and facilities - most of them pollution hot spots- are including more and more components for environmental management improvement and pollution reduction (i.e. Algeria, Egypt, Montenegro). Other initiatives contributing to reducing environmental impacts in areas of concern include the relocation of SMEs from urban areas to new industrial cities with better infrastructures for tackling pollution emissions (in Egypt and Syria).

However, these positive effects are counteracted by the appearance of new hot spots and areas of concern accompanying the process of industrial development in most of these countries (e.g. Algeria, Croatia).

The generalised lack of adequate infrastructures, systems, and equipment for the environmentally sound management of waste, water and air emissions from both urban and industrial development are still common problems faced by southern and eastern Mediterranean countries regarding the prevention and control of pollution in the main areas affected by the pressure of human activities.

General progress in the consolidation of legal frameworks for preventing and controlling pollution is hampered by problems in the implementation and enforcement of regulations. Weak development of government-industry partnerships in most Eastern and Southern countries.

General Remarks

The Mediterranean countries show different levels of progress in the consolidation of their legal and policy frameworks for controlling and reducing industrial pollution. Both EU members (Cyprus, France, Greece, Italy, Malta, Slovenia and Spain) and countries in the European orbit (either candidates for EU membership, like Croatia and Turkey, or pre-candidate countries, such as Albania, Bosnia & Herzegovina and Montenegro) share the common objective of aligning their legal frameworks with the environmental policies marked by the EU and the regulations issued accordingly. In most cases, important steps are being taken by the less developed countries in advancing towards an effective application of the most relevant EU regulations for controlling and reducing pollution. Bosnia & Herzegovina and Montenegro, for example, have adopted, among other things, laws based on the IPPC Directive. In Croatia, through the adoption of the Waste Management Strategy, the country is paving the way towards aligning its regulations on waste with EU standards and in

addressing the main causes preventing the implementation of existing regulations (e.g. unauthorised disposal sites or lack of hazardous waste disposal sites). In most candidate and pre-candidate countries, governments have approved National Plans and strategies, respectively, for harmonising their environmental legislations to the EU acquis.

Southern Mediterranean countries have legislated adhering to their own previously adopted national strategies on sustainable development, in several cases expressed in National Environmental Action Plans; nevertheless, there does seem to be a trend for some of them to progressively incorporate environmental objectives and standards that are similar to the EU ones, as a result of their participation in European partnership initiatives, such as the European Neighbourhood Strategy and the Euro-Mediterranean Partnership.

New Legal Developments

Countries with less developed legal frameworks, such as those from the southern basin and the western Balkan ones, show continued progress in the development of legislation promoting the introduction of sustainable patterns of production in the economic and industrial sectors, whether through the introduction of related principles, such as the prevention, precautionary and polluter pays principles, in the general laws for environmental protection (e.g. Law 03-10 2003 in Algeria) or through the enactment of new regulations establishing emission limit values, pollution thresholds, monitoring procedures, polluters obligations, etc. In addition to the enactment of new regulations, some countries have also undertaken a revision of the existing ones, and have introduced diverse modifications and amendments to update and improve their content and their effective application. In Egypt for example, new modifications to the Framework Law on Environment and its executive regulations refer to diverse issues, ranging from a better definition of key concepts (“emission loads”, “solid waste”, “water environment”, etc) to an increase in the number of establishments falling under the EIA Law or the obligation of certain establishments to keep a hazardous waste register. In Bosnia & Herzegovina regulations on EIA procedures have been clarified and improved, and executive regulations for the application of laws on air protection and waste have been adopted.

Implementation and Enforcement

Even though progress has been made in the consolidation of the legal frameworks of these countries, this has not been yet accompanied by effective enforcement in the implementation of both the existing and new laws and regulations. The principal causes include the lack of secondary and executive regulations, lack of human and financial resources for governmental authorities in charge of applying the regulations; over-lapping and imprecise distribution of responsibilities among the different authorities involved in environmental protection; the inexistence of preconditions for implementation. Moreover, command and control regulations are rarely accompanied by mechanisms facilitating progressive compliance with environmental regulations (e.g. voluntary agreements and partnerships government-industry).

EU Med countries generally have more highly developed legal and institutional mechanisms, in accordance to the requirements coming from the new EU directives and regulations. In this respect, the special effort made by the new EU members Cyprus, Malta and Slovenia, should be noted; in the last few years they have embarked on a deep process of adapting their legal frameworks in order to ensure harmonisation with the European environmental acquis.

A problem that is common to older and some new EU members alike is the excessive number of environmental laws and related legislative acts (e.g. around 40 000 in Italy) due to the obligation of continuously updating their legal frameworks according to new EU regulations. As a consequence of this, some countries have encountered an overlapping of legislative tools and responsibilities of the various administrations in charge of monitoring and controlling their implementation, as well as a lack of means and human resources to ensure their effective application. Nevertheless, some initiatives have already been

undertaken in order to tackle these problems. In Italy, for example, a law has been issued to rearrange, complete, coordinate, simplify and clarify the diverse components making up the country's environmental law system – these include IPPC, EIA, air, water and waste management regulations, contaminated sites, etc. As regards the implementation of the IPPC Directive, all EU Med countries have transposed this regulation, although some are having problems complying with the time span given by the EU as regards the full implementation of the Directive in both existing and new activities by 2007.

Voluntary Agreements

In regard to the development of voluntary agreements between public authorities and the industry sector for facilitating compliance with the environmental regulations and/or reducing environmental impact, it is only a common practice in Mediterranean EU states (and in Israel), while it is still an unsettled subject in most eastern and southern Mediterranean countries. Of these, Algeria, Egypt, Morocco and Turkey have reported the existence of some partnerships between government and industry since the second edition of *The State of Cleaner Production in the Mediterranean Action Plan countries*. In Syria, voluntary agreements are expected to be created in the framework of a bilateral agreement with Jordan aimed at integrating economic instruments and voluntary agreements in the environmental policies of both countries.

CP included in national planning for environmental protection. But many CP projects and activities that are developed rely solely on multilateral or bilateral support from other countries, and do not have a national planning coordinating them.

Most Mediterranean countries are adopting or updating their National Environmental Action Plans/Strategies, including CP and the pollution preventive approach as key elements for introducing sustainable patterns in the industrial sector, promoting it prior to end-of-pipe measures. Likewise, activities promoting sustainable production (CP, energy efficiency, waste minimisation, etc) are being developed within sectorial planning initiatives, i.e. waste, water management, environmental upgrading of industrial cities, pollution reduction in the Mediterranean (National Action Plans within the framework of the SAP), main industrial sectors, etc. Especially in southern and eastern countries, programmes and agencies for international and/or bilateral cooperation are playing a major role in supporting projects and activities for introducing CP and improving the economic and environmental performance of the industrial sector.

However, they are normally one-off disperse actions that are developed with no coordination/communication between agents in charge as there is no national policy on CP that can be used as a framework for a joint action between them. This situation may result in duplication of efforts, no consideration of synergies and insufficient dissemination and replication of the results and outputs obtained in the projects developed. Nevertheless, in recent years some countries are tackling the creation of national policies for identifying CP needs and priorities. This is, for example, the case of Croatia and Egypt, where ministries dealing with environment, industry, economy, agriculture, health welfare, etc are involved in this process, together with industrial associations and other stakeholders. Croatia is going even further by not only addressing production, but consumption as well.

National CP centres are spreading to most eastern and southern Mediterranean countries.

Currently national CP centres have been established in most eastern and southern Mediterranean countries, the most recent in Egypt and Albania. However, most of them still lack of enough human resources and remain dependant on support of host institutions/international donors.

In EU Med countries, CP is usually included as one of the components in the general programmes of the public institutions and agencies dealing with pollution and prevention control, although it also counts on some specially dedicated agents (i.e. Malta, Spain).

It must also be noted that in addition to CP centres, it is possible to identify other institutions, such as Chambers of Trade and Industry, university centres, and specialised energy centres, performing CP related activities.

Application of environmental taxes is not well balanced with economic instruments facilitating investment in CP by industries

The Mediterranean countries show different trends concerning the development and implementation of economic instruments preventing pollution by companies. These are based on the following environmental principles:

- Polluter pays - taxes, charges on waste and wastewater generation, air emissions, specific hazardous pollutants, etc
- Preventive-proactive attitude:
 - Soft loans, environmental funds, grants schemes, for waste/wastewater minimisation, energy efficiency, optimisation of the use of water resources
 - Low customs fees (in some cases, waiving of import duty) for importing environmentally friendly technologies
 - Subsidies on CP projects
 - Income tax deduction

It is perceived that the application of environmental taxes is currently not well balanced with economic instruments facilitating investment in CP. This trend may result in a negative impact on the sector's performance, as for big companies "polluter pays" would become "payer pollutes", while it places excessive pressure on the capacity of SMEs to respond to environmental requirements. Likewise, many of the existing instruments promoting proactive attitudes still focus on corrective actions (end-of-pipe) rather than on preventive ones (CP), resulting in environmental management lying outside the scope of general company management, and involving high investments with no benefit other than compliance with environmental regulations.

Voluntary instruments (EMS, eco-labelling, environmental awards) are still barely developed in some countries

According to the information collected, slow progress is being made in the implementation of Environmental Management Systems (ISO 14000 & EMAS) as competitive tools to help companies enter the international market. As for eco-labelling schemes and awards for environmental performance are concerned, these are still poorly developed in some countries.

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