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ON SUSTAINABLE DEVELOPMENT**

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**TRANSPORT, MINING, CHEMICALS AND WASTE MANAGEMENT, AND  
SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS:  
ACHIEVEMENTS, TRENDS AND CHALLENGES**

Note by the secretariat<sup>1</sup>

*Summary*

The United Nations Economic Commission for Europe (UNECE) decided at its sixty-third session to hold the Fourth Regional Implementation Meeting on Sustainable Development (RIM) on 1 and 2 December 2009 (E/ECE/1453, chapter IV, point 7). To facilitate the meeting discussion, the secretariat prepared the present document with contributions from a number of partner bodies and organizations working in the thematic areas of the fourth two-year cycle of the Multi-Year Programme of Work of the United Nations Commission for Sustainable Development (CSD).

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\* ECE/AC.25/2009/1.

<sup>1</sup> This document is submitted on the above date due to the complex consultations required for preparing the document.

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## INTRODUCTION

1. This document aims at monitoring implementation of sustainable development policies in the UNECE region in the areas of transport, chemicals and waste management, mining and sustainable consumption and production patterns. These policy areas comprise the thematic issues under review during the current two-year cycle (2010–2011) of the CSD Multi-Year Programme of Work.
2. With respect to cross-cutting issues and interlinkages, the document includes some information integrated under each of the thematic issues. Additional information related to education, as a cross-cutting issue, is provided in the document on addressing sustainable consumption, production and transportation through education for sustainable development: analysis of good practices in education for sustainable development (ECE/AC.25/2009/4) and in the compilation of these good practices (ECE/AC.25/2009/5).
3. The document has been prepared by the UNECE secretariat with contributions mainly from the United Nations Environment Programme (UNEP), the secretariats of the Basel, Rotterdam and Stockholm Conventions<sup>2</sup> and the Montreal Protocol<sup>3</sup>, and the Strategic Approach to International Chemical Management (SAICM) secretariat.
4. This document is submitted to the Fourth RIM as a background paper with a view to facilitate the discussions at the meeting. The outcome of the Fourth RIM, in the form of a Chair's Summary, will constitute the UNECE regional input to the eighteenth CSD session. In addition to providing an overview of accomplishments and obstacles encountered regarding actions, measures and partnerships related to the above policy areas and cross-cutting issues, the outcome could also highlight policy options for consideration at the nineteenth CSD session.

## I. TRANSPORT<sup>4</sup>

5. The transport sector contributes up to 10 per cent of gross domestic product (GDP) and provides mobility, prosperity and jobs in UNECE member countries. However, the negative effects of transport include air and noise pollution, congestion, landscape degradation as well as traffic accidents and other harmful health effects, particularly in urban areas. Transport is also responsible for 23 per cent of carbon dioxide (CO<sub>2</sub>) emissions from fossil fuel combustion globally, rising to 30 per cent in developed countries; three quarters of those emissions caused by road transport. The sector is 95 per cent dependent on oil and accounts for 60 per cent of all oil consumption.

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<sup>2</sup> The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade and the Stockholm Convention of Persistent Organic Pollutants.

<sup>3</sup> The Montreal Protocol on Substances that Deplete the Ozone Layer.

<sup>4</sup> This chapter was prepared with inputs from the UNECE Transport Division and the secretariat of the Transport, Health and Environment Pan-European Programme (THE PEP), as well as from the United Nations Environment Programme.

## A. Trends and achievements

### 1. Trends

6. There is a growing sustainability divide in transport among the UNECE countries. While the European Union (EU) Member States, the United States of America and some emerging economies have started mainstreaming sustainability conditions in their transport policies and investment planning practices, there are still many UNECE countries where the transport sector suffers from a legacy of economic stagnation and environmental neglect. The transition process, initiated almost two decades ago, has led to a healthier economic situation in some and to an increased awareness of environmental problems in most of the countries.

7. However, the global target of making cars 50 per cent more fuel efficient by 2050, as established by the Global Fuel Economy Initiative<sup>5</sup>, will remain an ambitious goal only, unless far reaching transport measures are taken at all possible levels: local, national and international.

8. While many UNECE Governments have started to look into the arsenal of CO<sub>2</sub> mitigation interventions, they have also started to develop adaptation strategies. These are needed all the more as the popular perception that UNECE countries are not significantly affected by climate change impact has now been recognized as fundamentally wrong. Furthermore, the most serious climate change impacts in the UNECE countries increase vulnerabilities in other parts of the world. Melting of the ice belt, for example, can drastically alter global transport routes.

9. These changes exacerbate the already severe infrastructure problems. The legacy of Eastern Europe includes shortcomings in infrastructure management systems, poorly built infrastructure and the numerous transition traps (insufficient governance in public infrastructure, the lack of available funding in several transition economies), making parts of the UNECE region even more vulnerable.

### 2. Achievements

10. Reduction of emissions of gaseous pollutants such as carbon monoxide, hydrocarbons, nitrogen oxides (NOx) and particulates. Road vehicles have become significantly cleaner compared with the limits established in the 1970s. Substantial abatements in emission limits (95–97 per cent between now and the 1970s) have been achieved for passenger cars. Thus the limits today are more than 20 times lower than those established over 30 years ago, and in 2011 they will be more than 100 times lower. Regarding particulate emissions, the levels are now more than 5 times lower than those in 1990 and in 2011 they will be more the 50 times lower. Similar results have been achieved for the engine emissions of trucks, motorcycles, agricultural and forestry tractors and non-road mobile machinery (which covers even engines for locomotives and ships). The work of the UNECE World Forum for Harmonization of Vehicle Regulations has contributed significantly to achieving these results, with the emission standards being implemented, inter alia, through the *acquis communautaire* of the EU Member States. An important element in this process is that limits have been enforced first of all through the “Euro”

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<sup>5</sup> The Global Fuel Economy Initiative (GFEI) was launched jointly by the Fédération Internationale de l'Automobile, the International Energy Agency, the International Transport Forum and UNEP in March 2009.

vehicle norms that coupled green and greener vehicles with market access conditions. However, more remains to be done, especially regarding emissions of NO<sub>x</sub>, which contribute to ozone pollution, and of fine particulates.

11. Global warming. In response to the transport ministers' request at the International Transport Forum in 2008, the World Forum agreed that, regarding abatement of global warming and reduction of CO<sub>2</sub> emissions, a possible short-term strategy for transport could be to focus on energy efficiency and sustainable biofuels (2015). For the mid term, the focus could be development and market introduction of plug-in hybrid vehicles (2020–2025), and for the long term, development and market introduction of electric vehicles (2030–2040). However, there are signs that market pressures are accelerating such developments. The policy implications of the shift in transport from fossil energy to hydrogen and electric energy are still unclear, with the key question being the availability of no-carbon (renewable) electricity in the short and medium term. The World Forum called for an integrated approach, also taking into account that measures such as eco-driving and better traffic management may be very cost-effective in obtaining substantial short-term CO<sub>2</sub> reduction in the existing vehicle fleet. For this integrated strategy to be effective, the energy sector must ensure the sustainable and cost-effective generation of electricity and production of hydrogen. The World Forum is working on more than 20 measures to reduce CO<sub>2</sub> emissions from vehicles. In the near future, the noise limits will also be further reduced.

12. Transport infrastructure development. In the UNECE region, the development of international transport infrastructure has been supported by multi-country planning mechanisms focusing on regions or subregions. Non-EU European and Central Asian countries continue to benefit from UNECE supported coordination through the master plan of trans-European motorways (TEM), trans-European railways (TER) and the Euro-Asian Transport Linkages (EATL) project. Four major infrastructure agreements standardize common infrastructure standards across the international transport network. In addition, a common UNECE methodology for the identification of bottlenecks has been developed to support the prioritization of the infrastructure investments needed to improve pan-European traffic flows and links to peripheral countries.

13. Ports and their hinterland connection. UNECE Governments have examined the ways in which seaports and their hinterland connections can help to enhance supply chain performance, through the removal of bottlenecks and the improvement in the efficiency and sustainability of port hinterland links in the region. Measures to improve hinterland flows could play an important role in reducing the environmental impacts of transport activity.

14. The Transport, Health and Environment Pan-European Programme (THE PEP) addresses key challenges to achieve sustainable transport patterns and to encourage national and local Governments to pursue an integrated approach to policymaking and put sustainable mobility at the top of the international agenda. At the Third High-level Meeting on Transport, Health and Environment in 2009, Governments adopted the Amsterdam Declaration (Making THE Link), agreeing four priority goals: (i) to contribute to sustainable economic development and stimulate job creation through investment in environment- and health-friendly transport; (ii) to manage sustainable mobility and promote a more efficient transport system; (iii) to reduce emissions of transport-related GHGs, air pollutants and noise; and (iv) to promote policies and actions conducive to healthy and safe modes of transport.

## **B. Challenges and lessons learned, and the way forward**

15. While there has been good progress in reducing emissions per vehicle due to improved technology, the number of cars has increased significantly. Consequently, the level of fine particulates, very harmful for human health, remains very high in many European countries and cities. Moreover, Serbia is still using leaded petrol, which is very harmful, especially for the mental development of children. Leaded petrol also blocks all standard clean vehicle (petrol cars) technologies like catalytic converters. Several UNECE countries have still not introduced low-sulphur fuels. Imports of cleaner vehicles should be enabled. The issue of export and dumping of old vehicles from Europe to developing countries is a big concern that needs to be addressed without delay.

16. Some UNECE countries have advanced in their work towards a sustainable urban transportation through innovative and successful transport policies that promote non-motorized and public transport, e.g. bicycle facilities in Denmark and the Netherlands, a bicycle plan in Paris, a high vehicle ownership combined with a very high use of public transport in Vienna, and the congestion tax in London. However, many European cities are still struggling with this issue; they could learn from existing good practices.

17. Road traffic safety continues to be an issue of great concern in all UNECE countries. In many developed UNECE countries, the number of road accidents and injuries reached an all-time peak level around 1970. This serious situation has since been acknowledged and most countries are making progress in bringing down the number of fatalities and casualties, even as mobility continues to grow. While those countries have considerably improved road safety and have effective programmes in place, Eastern European and Central Asian countries face a double-lined degradation. Over the past two decades, their motorization level has been increasing rapidly, but their transport infrastructure and institutions cannot bridge the development gap and cope with the relevant safety requirements.

18. Despite an available multilateral regulatory framework (the Vienna Conventions) that offers a basic platform to jumpstart major traffic safety improvements, there is still no global consensus about a unified traffic code. Traffic safety does not enjoy full political and financial support in most UNECE countries. This critical situation called for a new approach, and Governments launched the reform and modernization of the UNECE Working Party on Road Traffic Safety, the only intergovernmental forum in the United Nations system. At the same time, the United Nations Development Account (UNDA) decided to support the global project on “improving global road safety: setting regional and national road traffic casualty reduction targets”. The project helps developing countries and transition economies to embark on ambitious traffic safety programmes similar to those of the EU and other high-income countries.

19. For UNECE countries, the biggest transport-related challenge is likely to make good use of the opportunity that the current economic crisis offers in terms of infrastructure development. For transition economies in the region, this could be the time to narrow their gap in infrastructure availability and quality compared to their more developed neighbours. Sustainability criteria, particularly in terms of safety and environmental conditions, should be given political priority. In addition, countries may benefit from certain low-cost/high-return interventions, such as an improved legal and regulatory framework for their transport systems.

20. The main challenges for Governments to manage the transport sector in a sustainable way are:

- (a) Climate change mitigation and adaptation measures in transport;
- (b) For climate change adaptation in transport, Governments need to assess the actual vulnerability of their transport infrastructure and to make the necessary adjustments in their investment planning;
- (c) Transport investment planning needs to be global, not just regional and subregional. A strong Euro-Asian perspective is warranted that supports economic development needs locally (increased network approach vs. corridor approach, with as much as possible harmonized standards for different categories of transport infrastructure).
- (d) More widespread use of planning tools is required, thus maximizing the impact of economic, social and environmental considerations in investment planning, as well as integration with spatial planning;
- (e) Having road safety improvement targets in all UNECE countries and powerful national programmes to achieve these targets;
- (f) Adopting strategies for cleaner and more efficient vehicles, including cleaner fuels, stricter vehicles standards and a shift towards more efficient technologies (e.g. electric). More UNECE countries should participate in global initiatives such as the Partnership for Cleaner Fuels and Vehicles and the Global Fuel Economy Initiative, which promote technology and knowledge exchange;
- (g) Periodic technical inspection of vehicles is a must for improved road traffic safety and for enforcing environmental vehicle standards – neither the regulatory nor the institutional framework is in place in many UNECE countries;
- (h) In urban areas sustainable public transport requires sustainable financing for the long term, as well as closer coordination of land management and city planning;
- (i) Use of economic tools (e.g. taxes, incentives) to change behaviours and choices with a view to switch to low- and no-carbon transport modes, as well as to establish the required infrastructure;
- (j) Thorough understanding of ramifications of transport policies (e.g. lessons learned from the promotion of biofuels);
- (k) UNECE Governments have been spearheading the development of multilateral agreements on land transport, dangerous goods and vehicle construction. However these agreements have entered a new phase. They face two types of challenges: (i) to accelerate the process towards universal coverage of those legal instruments that are key to ensure sustainable development; and (ii) to improve the implementation of monitoring mechanisms.

Questions for interactive discussion:

- (a) Which policies and measures does sustainable transport development require in the different subregions?
- (b) How can national policy objectives for sustainable transport be translated into action at the local level?
- (c) What are the challenges in implementing climate change adaptation and mitigation strategies in the transport sector in UNECE member countries?

## **II. CHEMICALS MANAGEMENT<sup>6</sup>**

21. The sound management of chemicals is essential for the protection of human health and the environment and thus for sustainable development. The Johannesburg Plan of Implementation (JPOI) requests that by 2020 chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment.<sup>7</sup>

### **A. Trends and achievements**

#### **1. Trends**

22. Historically and presently, the chemical industry has been concentrated in three areas of the world, Western Europe, North America and Japan. The European Community remains the largest producer area, followed by the United States and Japan.

23. The chemical industry has been growing worldwide and is of significant economic importance in Europe, especially in the EU, Switzerland and Russian Federation; the production of toxic chemicals has increased at almost the same rate as total chemical production, and both have grown faster than GDP. Since 2002, about 1 billion tons of toxic chemicals have been produced in the EU. Demand for chemicals is increasing across Eastern European, Caucasian and Central Asian and South-Eastern European (SEE) countries, leading to rising imports. European countries contribute significantly to the global trade in chemicals, which increased by an average of 14 per cent a year between 2000 and 2005. The EU-25 and Switzerland together have a 59 per cent share of world exports and 49 per cent of world imports. Although countries of Eastern Europe, Caucasus and Central Asia account for just 1.8 per cent of world exports and 2.1 per cent of imports, the Russian Federation's exports grew by 13 per cent from 2000 and by 2005 its trade in chemicals was valued at US\$ 13.2 billion. Exports from Belarus, Kazakhstan and Ukraine are also increasing, while the trade in chemicals in Armenia, Azerbaijan, Georgia, Kyrgyzstan and the Republic of Moldova is characterized by higher imports than exports, with demand increasing, for example for agrochemicals and consumer products. In SEE, there is a similar trend, with increasing imports and, to a lesser extent, exports between 2001 and 2005.<sup>8</sup>

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<sup>6</sup> This chapter was prepared with input from UNEP and the UNECE Transport Division, as well as is based on findings of the EEA Fourth Assessment on Europe's Environment.

<sup>7</sup> Extract from the Joint Statement on Participation in the Implementation of SAICM, Inter-Organization Programme for the Sound Management of Chemicals (IOMC), Dubai, February 2006.

<sup>8</sup> Europe's Environment: the Fourth Assessment, EEA 2007.



24. In North America, the chemical industry is a keystone of the economy both in the United States and in Canada. The chemical industry in the United States provides over 2 per cent of the total US GDP and nearly 12 per cent of the manufacturing GDP. On a value-added basis, chemicals is the largest US manufacturing sector. The industry employed more than 1 million people in 1997, including nearly 90,000 scientists, engineers, and technicians engaged in research and development<sup>9</sup>. The United States is the largest chemical producer in the world, with over 25 per cent of total production. The US production of the top 100 chemicals exceeded 500 million tons in 2000. For 1998–2008, the annual growth in US chemical shipments was 5.2 per cent.<sup>10</sup> In Canada, the chemical/chemical products sector ranks fourth in manufacturing sectors and sixth overall as a creator of wealth in Canada's economy. Over half of Canada's manufactured chemicals are exported. Canada accounts for 3 per cent of the international trade share. In Canada, chemical manufacturing rose 5 per cent annually during 1998–2008.

## 2. Achievements

25. International cooperation on chemicals management. To address the issue of sustainable management of chemicals at the policy level, a number of international instruments and mechanisms have been established. At the global level, in addition to the Basel Convention and the Montreal Protocol, two major chemicals-related conventions entered into force in 2004: the Rotterdam Convention and the Stockholm Convention. A “globally harmonized system of classification and labelling of chemicals” was agreed in 2001, and is in the process of being implemented worldwide<sup>11</sup>.

26. Negotiations for a global legally binding instrument on mercury will commence in 2010 and will be completed by 2013. Current discussions under the Montreal Protocol focus on ozone and climate interlinkages and the most appropriate alternative chemicals and technologies with zero ozone depletion (ODP) and zero or low global warming potential (GWP).

27. At the regional level, UNECE supports countries' efforts to achieve the 2020 goal, by providing a set of international agreements. These UNECE instruments include the Convention on Long-range Transboundary Air Pollution and its two protocols on persistent organic pollutants (POPs) and heavy metals, the Convention on the Transboundary Effects of Industrial Accidents (Industrial Accidents Convention), the Aarhus Convention's<sup>12</sup> Protocol on Pollutants Release and Transfer Registers (PRTRs). There are also a number of European Agreements related to the international transportation of dangerous goods. The Industrial Accidents Convention supports Governments in the correct identification and establishment of an inventory of hazardous activities, as well as the notification of neighboring countries. The Protocol on PRTRs, the first such international legally binding instrument, enables access to and information-sharing on chemicals; it enters into force on 8 October 2009.

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<sup>9</sup> (<http://www.eia.doe.gov/emeu/mecs/iab/chemicals/page6.html>).

<sup>10</sup> *Facts & Figures of the Chemical Industry*, *Chemical & Engineering News* (American Chemical Society), 6 July 2009, vol. 87, no. 27, p. 29.

<sup>11</sup> ([http://www.unece.org/trans/danger/publi/ghs/implementation\\_e.html](http://www.unece.org/trans/danger/publi/ghs/implementation_e.html)).

<sup>12</sup> The Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters.

28. There is a need to identify and act on the emerging policy issues stemming from nanotechnology, particularly with regard to the currently unidentified risks that will be associated with this technology, and the perception of these risks. The Organisation for Economic Co-operation and Development (OECD) Working Party on Manufactured Nanomaterials and the Working Party on Nanotechnology were established in 2007 and lead the work in this field.
29. The EU Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) was adopted in 2007 to streamline and improve the former legislative framework on chemicals in the EU. The adoption of the REACH regulation was followed, in 2008, by the adoption of a regulation on classification, labelling and packaging of substances and mixtures (CLP regulation). Both REACH and the CLP regulation serve as a subregional contribution to SAICM. A proposal for a new EU Directive on industrial emissions (integrated pollution prevention and control) was adopted in 2007.
30. A considerable number of international organizations, mechanisms and multi-stakeholder bodies<sup>13</sup> are active in this area, supporting governments and providing a platform for multi-stakeholder participation.<sup>14</sup>
31. At the national level, the U.S. Environment Protection Agency's Chemical Assessment and Management Programme (ChAMP) broadens the efforts to ensure the safety of existing chemicals by developing screening-level characterizations for the chemicals produced or imported, and by prioritizing the chemicals for the collection of additional data or the consideration of control measures that may be needed to address potential hazard or risk of chemicals. Canada's New Government's Chemicals Management Plan aims to improve the degree of protection against hazardous chemicals. It includes a number of new, proactive measures to make sure that chemical substances are managed properly.
32. To enhance the coherence of international and national activities in chemicals management and to incorporate chemical safety issues into the international and national development agendas, the SAICM structure has delivered an effective national, regional and international communication mechanism to enable rapid dissemination of information and discussion of priorities. SAICM Quick Start Programme, designed to provide funding and assistance to develop chemicals management capacity, has so far funded 82 projects in 76 countries worldwide, with 10 projects in several countries of Eastern Europe, Caucasus and Central Asia and SEE. The second International Conference on Chemicals Management reviewed the SAICM Global Plan of Action (GPA) and added five emerging issues: nanotechnology and manufactured nanomaterials, chemicals in products, lead in paint, electronic waste and perfluorinated chemicals.

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<sup>13</sup> Among these are UNECE, UNEP, the United Nations Development Programme, the International Labour Organization, the Food and Agriculture Organization of the United Nations (FAO), the United Nations Institute for Training and Research UNITAR, the United Nations Industrial Development Organization (UNIDO), the World Health Organization (WHO), the World Bank, OECD, the International Conference on Chemicals Management (ICCM), the Intergovernmental Forum on Chemical Safety, the Inter-Organization Programme for the Sound Management of Chemicals, the International Programme on Chemical Safety, the Arctic Council, the International Council of Chemical Associations/CEFIC and the European Commission.

<sup>14</sup> For an overview, see Capacity-building for Chemicals Management – a Situation and Needs Analysis for the Environmental Management Group (EMG), Geneva, 2004 ([www.unemg.org](http://www.unemg.org)).

## **B. Challenges and lessons learned, and the way forward**

33. With the growing production, trade and use of chemicals their impact on the environment and human health is also increasing. The chemicals industry is energy and water intensive. Past accident and other sites, sometimes contaminated with obsolete chemicals, continue to have environmental and health impacts.<sup>15</sup>

34. Policies and measures are required in the following areas: assessment and data collection, implementation of international instruments, strengthening of regulatory infrastructure, capacity-building and financial assistance, and multi-stakeholder involvement.

35. The lack of relevant data and information covering the whole UNECE region means that it is not possible to conclude whether serious threats from chemicals to human health and the environment have been reduced since 2002.<sup>16</sup>

36. There is no comprehensive overview available on the status of chemicals management in countries of Eastern Europe, Caucasus and Central Asia, although some countries – Armenia, Belarus, Kazakhstan, Kyrgyzstan and the Russian Federation – have published national profiles to assess their national infrastructure for the sound management of chemicals, under SAICM.<sup>17</sup> There is also a need to identify any further contaminated sites in countries of Eastern Europe, Caucasus and Central Asia.

37. There is a need to ensure that new hazardous chemicals, such as pesticides and POPs, are rapidly identified, and that necessary health and safety and toxicities assessments are undertaken without delay<sup>18</sup>, followed by dissemination of appropriate information. A means of identifying emerging problems (presumably some form of surveillance strategy) associated with hazardous chemicals is required. The OECD-led work on nanotechnology and nanomaterials reflects this approach.

38. Hazardous chemicals have a negative impact in particular on children's health. Chemicals assessments conducted by WHO<sup>19</sup>, provide the basis for Governments and international and national organizations for taking preventive actions against adverse health and environmental impacts.

39. Among the challenges to fully implementing legal instruments is the need to ensure that all countries have the capacity to manage chemicals in a sound way, in particular in light of increasing trade, use and production of chemicals to less industrialized regions. Increased cooperation between countries is needed to prevent the transfer of the negative impacts of chemicals from one region to another and to stop repeating the mistakes of the past. Also, an enhanced cooperation and coordination of activities is required among the existing chemicals-related international instruments with a view to strengthening the implementation of these instruments at the national, regional and global levels, enhancing effectiveness and maximizing

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<sup>15</sup> Europe's Environment: the fourth assessment, EEA 2007.

<sup>16</sup> Ibid.

<sup>17</sup> Ibid.

<sup>18</sup> cf. Air Toxics Benefits Assessment, U.S. EPA White Paper, 2009.

<sup>19</sup> (<http://www.who.int/ipcs/assessment/en/>).

the efficient use of resources. In this regard, the Basel, Rotterdam and Stockholm Conventions have formally agreed to do so.

40. The weakness in regulatory infrastructure for chemicals management in developing countries and countries with economies in transition has been identified as one of the major challenges to implementing the Basel, Rotterdam and Stockholm Conventions. Technical assistance that increases awareness of the requirements under the Conventions, enhances infrastructure, and provides the skills needed to implement the Conventions, can all improve the implementation of obligations. Resource mobilization for the Conventions' full implementation continues to be a challenge. Countries should be encouraged to take an integrated approach to chemicals management when seeking assistance from bilateral and multilateral donors to fill these gaps, in particular in developing infrastructure for the management of chemicals.

41. Effective implementation of the globally harmonized system of classification and labelling of chemicals requires significant efforts from States to amend many existing legal texts concerning chemical safety in each sector (transport, consumer protection, occupational health and safety and environment protection) or to enact new legislation. Although the objective of having the system fully operational by 2008, as recommended by the World Summit on Sustainable Development, has not been completely met, significant progress has been made.

42. A number of countries within the UNECE region have yet to adopt SAICM. The Quick Start Programme requires evaluation to assess whether it is achieving what it was originally intended to achieve. In the UNECE region, only a relatively small proportion of applications to this programme has been successful (17 governmental applications, 9 funded; 2 civil society application, 1 funded).

43. The funding of SAICM requires further consideration and development. A broader donor base needs to be established. The question of distribution of costs of chemicals management – across industry, society and across different levels of scale, and across boundaries – requires consideration. Chemicals management is currently viewed as an area of environmental policy, but the issue needs greater priority and mainstreaming within the chemicals industry.

44. New problems are appearing, resulting from exposures to low levels of an increasing number of chemicals, often in complex mixtures. New risks from “old” pollutants are also becoming evident in light of increased scientific knowledge and new uses.<sup>20</sup> For many pollutants, products account for a large part of the emissions of hazardous substances. Therefore, it would be important to work towards a wider inclusion of these emissions into PRTRs, as PRTRs based solely on point sources only account for a part of the total emissions, which limits their use in environmental decision-making.

45. There are two work programmes examining specific chemicals problems: the removal of lead in paint (ICCM2, UNEP, WHO lead); and the processing of electronic waste (Basel, Stockholm, UNIDO lead). Attention also needs to be focused on the safe storage and disposal of existing ozone-depleting substances; this issue may be considered at fifteenth Conference of the Parties (COP-15) of the United Nations Framework Convention on Climate Change (UNFCCC).

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<sup>20</sup> Europe's Environment: the fourth assessment, EEA 2007.

46. Awareness of the relative costs and benefits of preventing chemicals accidents needs higher priority. A clear message needs to be established that prevention is less costly than clearing contamination. Regarding accidents and poor practices in chemicals management, a mechanism needs to be put in place for lessons learned, and for disseminating the experience gained.

47. Sound chemicals management must be considered as a key issue of corporate social and environmental responsibility (CSER). Responsible Care was launched in 1992; its Charter was adopted in 2006. Chemical industry associations in 53 countries participate in Responsible Care as of 2009. Outside of the EU/North America/Western Europe, only Turkey participates in Responsible Care in the UNECE region, underscoring the need for CSER to be extended in this field to Eastern European, Caucasian and Central Asian countries.

Questions for interactive discussion:

- (a) What is the most appropriate way to build capacity in chemicals management, including infrastructure and regulatory frameworks, in the region?
- (b) What is the appropriate distribution of costs for chemicals management between society and business? What is the best mechanism for apportioning these costs?
- (c) How can Responsible Care's Charter to promote corporate social and environmental responsibility be extended to Eastern European, Caucasian and Central Asian countries?
- (d) How can emerging problems associated with hazardous chemicals be identified?

### **III. WASTE MANAGEMENT<sup>21</sup>**

48. Waste, if not managed in an environmentally sound manner, has serious consequences for the environment, human health and sustainable livelihood. The JPOI calls for the prevention and minimization of waste, the maximization of reuse and recycling, and the use of environmentally friendly alternative materials (the 3R approach). Sustainable waste management is also required for the achievement of the Millennium Development Goals, in particular to halve, by the year 2015, the proportion of people without access to safe drinking water and basic sanitation.

#### **A. Trends and achievements**

##### **1. Trends**

49. Based on the data available, annual waste generation in EU-25 + EFTA (European Free Trade Association) is estimated at between 1,750 and 1,900 million tons, or 3.8–4.1 tons of waste per capita. The Eastern European, Caucasian and Central Asian countries are estimated to generate about 3,450 million tons of waste annually, i.e. 14 tons per capita on average, but there are strong differences between countries, from about half a ton per capita in the Republic of Moldova to 18 tons per capita in the Russian Federation. The SEE countries are estimated to

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<sup>21</sup> This chapter is based on findings of the EEA Fourth Assessment on Europe's Environment, as well as on input from UNEP.

have an average total waste generation, ranging from 5–20 tons per capita per year. A rough estimate of the total annual waste generation in the pan-European region is 6–8 billion tons.

50. The amount of waste generated is still increasing in absolute terms, but trends differ from subregion to subregion. From 1996 to 2004, the total waste generation increased by 2 per cent in EU-25 + EFTA. In EU-15 + EFTA, total waste generation increased by 5 per cent in the same period, while total waste generation in EU-10 declined by 6 per cent. However, large differences exist between individual countries, and significant annual variations within a country, mainly due to changes in waste generated in the mining industry.

51. In the five<sup>22</sup> Eastern European, Caucasian and Central Asian countries for which data are available, total waste generation increased by 27 per cent in 2002 EFTA 2004. Per capita waste generation in Eastern Europe, Caucasus and Central Asia is higher than in the EU because of the raw material extraction and processing industries, which generate large amounts of waste. For example, in the Russian Federation waste generation varies from 5 to 7 tons per ton of actual product, and in some cases may be even higher.

52. The largest waste streams in Europe originate from construction and demolition, along with manufacturing activities. Most EU municipal waste is still sent to landfill (45 per cent). However, more and more municipal waste is recycled or composted (37 per cent), or incinerated with energy recovery (18 per cent).

53. Furthermore, despite the political importance of waste prevention, the amount of waste generated is growing due to the increase in economic activity. Economic growth and consumption has proven much stronger drivers for waste generation than different prevention initiatives.<sup>23</sup>

#### Hazardous waste generation

54. More than 250 million tons of hazardous waste, 3–4 per cent of the total waste, are generated annually in the pan-European region, mostly in countries of Eastern Europe, Caucasus and Central Asia, where the Russian Federation dominates hazardous waste generation. The large differences in generation of hazardous waste between Eastern Europe, Caucasus and Central Asia and other regions are due to the varying classifications of hazardous waste. In Eastern Europe, Caucasus and Central Asia, more waste types are classified as hazardous, and therefore the figures on hazardous waste are not completely comparable.

55. Hazardous waste generation in EU-25 + EFTA increased 20 per cent in 1996–2004. The increase in Eastern Europe, Caucasus and Central Asia until 2003 resulted from increasing economic activity since the mid-1990s, although improved registration probably also played a role.

#### Accumulated waste — a legacy of the past

56. Many Eastern European, Caucasian and Central Asian countries are experiencing environmental problems arising from the long-term storage of hazardous waste generated during

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<sup>22</sup> Azerbaijan, Belarus, the Republic of Moldova, the Russian Federation and Ukraine.

<sup>23</sup> Europe's Environment: the fourth assessment, EEA 2007.

the Soviet era. A variety of pollutants accumulated, including radioactive, military and industrial wastes. The break-up of the Soviet Union, the formation of new independent Eastern European, Caucasian and Central Asian countries and the changes of ownership mean that much of this waste has no legal owner. To make matters more complicated, the smaller Eastern European, Caucasian and Central Asian countries often have little capacity to improve the situation.

57. In Central Asia, large amounts of industrial waste have been accumulated, mainly from resource mining and processing activities. Estimated amounts include 40 billion tons in Kazakhstan, 1 billion tons in Kyrgyzstan, 210 million tons in Tajikistan, 165 million tons in Turkmenistan and 1.3 billion tons in Uzbekistan. The wastes contain radioactive nuclides and metal compounds (e.g. cadmium, lead, zinc and sulphates).

58. There are also large stockpiles of obsolete pesticides containing persistent organic pollutants (POPs), which date back to the Soviet era and that have become a large risk to the environment. Supply of pesticides to state-owned collective farms was administered centrally, and substantial amounts were sent to farms each year regardless of need. Stockpiles grew gradually, with farmers storing them as best they could. Following the break-up of the Soviet Union the supply of pesticides stopped, but these stockpiles have increasingly become a problem, as many storage facilities have no legal owner. In Uzbekistan, about 18,000 tons of banned and obsolete pesticides have been kept in underground depositories since 1972, while in other areas pesticides and their packaging materials were buried in landfills.

59. The US Environmental Protection Agency (EPA), in partnership with States, biennially collects information regarding the generation, management, and final disposition of hazardous wastes regulated under the Resource Conservation and Recovery Act of 1976. The 2007 National Biennial Report indicates the amount of 46 million tons of hazardous waste generated in 2007. Also, according to EPA statistics, municipal solid waste generation in the US was 254 million tons in 2007. The total non-hazardous waste disposed of in Canada was about 27 million tons in 2007<sup>24</sup>; hazardous and liquid industrial wastes produced each year amount to about 6 million tons<sup>25</sup>.

60. E-waste generation is steadily increasing owing to large-scale use of electronic and white goods.<sup>26</sup> E-waste is one of the fastest growing segments of the waste stream. The developing international trade in electronic waste (from computers, mobile phones, etc.) is becoming problematic, as large quantities of e-waste are being exported to developing countries for the purpose of re-use, repair, refurbishment, recycling and recovery of non-ferrous and precious metals at facilities that do not always operate under sound environmental conditions.

## **2. Achievements**

61. Waste policies both in the EU and in individual EU Member States have been progressively put in place since the 1970s. Current EU waste policy is based on the “waste hierarchy”. This first aims at waste prevention, then at reducing waste disposal through re-use, recycling and other waste recovery operations. This hierarchy has been strengthened by the

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<sup>24</sup> Statistics Canada 2007.

<sup>25</sup> (<http://www.cielap.org/pdf/hwfactsheet.pdf>).

<sup>26</sup> White goods are house and kitchen appliances such as refrigerators, washing machines and microwaves.

revised Waste Framework Directive, and by the thematic strategy on the prevention and recycling of waste.

62. The main waste treatment activities are regulated by the Landfill Directive, the Waste Incineration Directive and the IPPC Directive. For some special waste streams such as packaging waste, end-of-life vehicles and waste electrical and electronic equipment, the principle of waste hierarchy has been transformed, e.g. by the introduction of concrete targets for recycling.

63. In North America, waste management has evolved from waste dumps to integrated waste management with designed sanitary landfill as the central component. Now greater attention is being directed at improved and cost-effective practices that uses landfills as waste processing facilities. Furthermore, with greater emphasis on GHG releases at landfills, novel technologies are being developed either to recover energy from landfill gas or sequestering methane gas.

64. The ninth meeting of the Basel Convention's Conference of the Parties in June adopted a global workplan on electronic waste that includes, inter alia, a global partnership on computing equipment and the development of technical guidelines on the environmentally sound management of e-waste.

## **B. Challenges and lessons learned**

65. The sustainable management of waste should lead to avoiding health risks, reducing emissions to the environment and utilising the resources in waste. For the UNECE region, currently both the main challenges and the solutions to achieve these objectives differ between subregions.

66. Countries in SEE and Eastern Europe, Caucasus and Central Asia face significantly greater challenges than those in Western Europe. While some progress has been made in developing national legislation and in setting up information systems for different waste streams, overall there has been little improvement in waste management since 2000. There is a large reliance on external aid for developing effective waste management programmes. Poor economic growth across the area is likely to retard development of the waste management sector. Natural resource extraction and processing, the majority of which is mining for coal, is a major component of the economy of many of these countries, and generates vast quantities of hazardous waste. Poorly designed and maintained landfills remain an ongoing challenge. Seepage of effluent, sometimes into water courses, and the escape of the potent GHGs such as methane are surmountable technical problems that need to be addressed. Overall, a policy of moving away from landfill use to more sustainable waste management is required.

67. Municipal waste production is 50 per cent that of EU countries. There is little recycling or incineration, although some schemes are still existent from the Soviet era, such as glass bottle re-use. The failure to maintain separation of hazardous industrial waste from municipal waste is a common problem. Recently, in some larger cities a more proactive approach is being taken to formulating effective strategies; this has resulted in some municipal waste management being outsourced.

68. While the Basel Convention is in force in almost all UNECE countries, its three pillars – effective and more rigorous implementation of controls at all levels of scale, waste minimization;



and capacity-building in waste management – require strengthening, particularly in the SEE and Eastern European, Caucasian and Central Asian countries. Greater focus on waste minimization and effective segregation of hazardous industrial waste from municipal waste is required.

69. Currently, waste management is not seen as a priority issue by the public, largely unaware of the potential environmental and public health consequences of poor management. In SEE and Eastern European, Caucasian and Central Asian countries, there is little history of citizens having paid for waste disposal; consequently, apportioning of the costs between public and private sectors and individual citizens is an issue that needs addressing. This relates also to the broader challenge of identifying means to better internalize the economic and environmental consequences to waste management and of promoting responsible waste management as a key issue for industry and business, perhaps utilizing a corporate social responsibility approach.

### **C. The way forward**

70. Data collection on waste management in SEE and Eastern European, Caucasian and Central Asian countries needs improving to enable identification of ongoing problems and to assess the contributions resulting from adoption of new strategies.

71. Assistance is still needed for the development of national hazardous waste minimization and management plans as well as for the development or correction of existing national legislation, including framework legislation. There is a need for further capacity-building in the field of handling of hazardous and other wastes.

72. The economics of waste management require consideration in SEE and Eastern European, Caucasian and Central Asian countries. The fair and just distribution of costs, with application of the polluter pays principle, so that waste management can be funded effectively. With slow growth in economies, the private waste management sector is unlikely to grow at rates that would justify investment in modern equipment and operating practices. Although currently, provision of foreign direct investment can help overcome these deficiencies, this is not a long-term sustainable option. Creating a business climate where the private waste sector can flourish is therefore desirable.

73. The concepts of sustainability and sustainable waste management need to be given priority. Sustainable waste management is becoming a reality in more economically developed parts of the UNECE region. Yet further consideration needs to be given to policies that lead to waste prevention and the decoupling of waste production from GDP. A paradigm shift is needed, namely to move from waste management to sustainable material management and linking the waste agenda with sustainable consumption and production (SCP) policies.

#### Questions for interactive discussion:

- (a) What strategies could countries apply to address problems related to growing volume of waste such as e-waste, energy and material efficiency problems and related pollution?
- (b) What actions could be taken quickly to reduce the GHG effects of landfills across the region?

- (c) What is the most effective way of changing perceptions about waste in business and civil society?

#### **IV. MINING**

##### **A. Trends and achievements**

##### **1. Trends**

74. European countries with developed economies used to be large producers of a wide-range of minerals. Sustained mining over the centuries depleted many known mineral deposits, and locating new deposits has become increasingly difficult, with the exception of common construction minerals. The increased globalization of commodity markets has reduced policymakers' perception of that it is a necessity to achieve national self-sufficiency in minerals. The substantial growth of environmental awareness has made mining less popular to both the public and politicians. For these and other reasons, policies that provided various subsidies, protection and economic incentives to the mineral sector have been increasingly eliminated or substantially scaled back. While coal and base metals production has declined, the industrial mineral sector has prospered. The production of sand, gravel, clay and dimension stone now constitutes the main part of mining activity in most Western European countries. Many of these operations are small, although some large operations also exist. There has been a trend to decentralize regulatory control, at least in part, of these industrial mineral operations to local government.<sup>27</sup>

75. United States and Canada are major mineral-producing countries with good to excellent geological prospectivity. United States is a net importer of minerals while Canada exports more than it consumes. Mining has been and continues to provide a substantial contribution to the economy of Canada. In the United States and Canada, an increasingly large area is being closed to mineral claim-staking. The largest of these land areas are places of significant natural beauty or areas that are particularly environmentally sensitive. There has been a clear trend over the past decade to accord mining a lower land-use priority. Furthermore, environmental policies developed over the past two decades have led to the implementation of regulations, permitting procedures, and controls (such as effluent standards) that impose significant costs on industry. In some instances, these costs have acted as an incentive for companies to develop new, more environmentally sound technologies that have significantly lower costs than previous technologies (e.g. in the recovery of copper).<sup>28</sup>

76. While the share of mining has tended to drop over the last two decades in Central European countries, it has increased (production of petrochemicals and minerals) in several countries of Eastern Europe, Caucasus and Central Asia. Over the past 10 to 15 years, Western as well as Central and Eastern European economies have increasingly imported raw materials moving the environmental burden associated with their extraction to other parts of the world. At the same time, the Eastern European, Caucasian and Central Asian countries have become major exporters of raw materials to the EU and have had mixed success in bringing about a shift towards less resource-demanding industrial sectors.

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<sup>27</sup> J.M. Otto, Mining, environment and development, 4. Mineral policy, legislation and regulation, UNCTAD.

<sup>28</sup> Ibid.

## 2. Achievements

77. A number of international organizations and bodies are actively assisting Governments in their sustainable development efforts in the mining sector. Among these are the UNECE, UNEP<sup>29</sup>, the United Nations Conference of Trade and Development (UNCTAD), UNIDO and the World Bank.

78. Several activities at UNECE address specific problems related to mining activities: The *Safety Guidelines and Good Practices for Tailings Management Facilities*<sup>30</sup>, developed in 2008 under the UNECE Industrial Accidents Convention and UNECE Water Convention<sup>31</sup>, aim at supporting Governments and stakeholders' efforts with a view to limiting the number of accidents at tailings management facilities and the severity of their consequences for human health and the environment.

79. Recognizing the many benefits associated with the coal mine methane (CMM) recovery, UNECE, with support from the U.S. EPA and in close cooperation with the Methane to Markets Partnerships<sup>32</sup>, launched a programme in 2004 to promote implementation of best practices and provide technical assistance to plan, design and finance CMM projects. With UNECE member States producing 38 per cent of the world's coal and generating 40 per cent of coal mine methane emissions, successful project implementation will benefit the regional and global environment and economies in the UNECE region.<sup>33</sup>

80. Improvements in the mining sector cannot happen without active multi-stakeholder involvement. The International Council of Mining and Minerals (ICMM) was established as a platform for industry and other key stakeholders to share challenges and to develop solutions based on sound science and the principles of sustainable development. Its work aims for a respected mining and metals industry that is widely recognized as essential for society and as a key contributor to sustainable development. One of its main activities is enabling the sharing of experiences through good practices in sustainable mining.

### B. Challenges and lessons learned, and the way forward

81. In the countries<sup>34</sup> of Eastern Europe, Caucasus and Central Asia, the legacy of the past is still present in the mining sector. Currently, the main environmental problems in mining are related to: (a) the non-careful design and management of mining operations resulting in severe environmental and social consequences; (b) the use of outdated technologies; and (c) the low efficiency or lack of pollution controls and of the disposal and treatment of waste accumulated around the facilities. The introduction of appropriate water-treatment facilities at mines and ore-processing plants is crucial to reducing or eliminating continuous environmental damage in local ecosystems. Moreover, effluents from mining tailing, particularly from coal, iron and uranium

<sup>29</sup> (<http://www.unep.fr/scp/metals/mining.htm>).

<sup>30</sup> ECE/CP.TEIA/2008/9 – ECE/MP.WAT/WG.1/2008/5 (<http://www.unece.org/env/teia/>).

<sup>31</sup> Convention on Protection and Use of Transboundary Watercourses and International Lakes.

<sup>32</sup> (<http://www.methanetomarkets.org/m2m2009/index.aspx>).

<sup>33</sup> (<http://www.unece.org/energy/se/cmm.html>).

<sup>34</sup> UNECE Environmental Performance Reviews on Armenia, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Ukraine and Uzbekistan.

ore mines, are also potential sources of groundwater and soil pollution with heavy metals and radionuclide. In addition, the absence of adequate environmental monitoring makes it difficult to assess present and past pollution from mining activities. As a result, waste composition and volume – and the extent of soil, surface and groundwater contaminations, and its effect on human health – are typically not known.

82. The mining sector is an important contributor to local and national economies in SEE. However, in parts of SEE, it is often characterized by inappropriate planning, and operational and post-operational practices taking place within inadequate regulatory frameworks. Poor or negligible implementation of mine rehabilitation and closure activities has resulted in, and continues to cause, significant adverse environmental and health and safety impacts and related liabilities. Increasing expectations for environmental protection, desires to reduce health risks, competition for land, and the increasing value of the natural environment for recreational space have led to marked improvements in regulatory requirements and mining practices in a number of countries. Furthermore, many mining companies have introduced management policies, practices and technologies that markedly reduce the environmental harm caused by mining. Continued improvement in mining practices can be expected, as can stakeholder expectations for ever higher standards.

83. At the national level, an effective and workable system of environmental management will require an understanding of the concept of sustainable use and development of national mineral resources and a greater participation by those involved in the management of mineral resources. The UNECE EPRs' recommendations related to mining in the reviewed countries from SEE and Eastern Europe, Caucasus and Central Asia include a broad range of measures, inter alia (a) the updating of the legal and regulatory basis for the management of mineral resources, (b) the assessment of mining hot spots and of impacts of existing harmful emissions on the environment and human health; (c) the mitigation of the existing environmental problems; (d) the development of medium- and long-term policy objectives and environmental strategies for the mineral sector; and (e) periodic environmental audits by mining companies, to evaluate and stimulate their environmental performance and competitiveness.

Questions for interactive discussion:

- (a) What are the key challenges with regard to mitigating environmental and health impacts from mining in the UNECE region?
- (b) How can stakeholder participation be enhanced for sustainable metals and mining development throughout the life cycles of mining operations?
- (c) How can the export of environmental and health impacts to other regions be avoided, given UNECE countries' heavy reliance on imports from these regions?

## **V. THE 10-YEAR FRAMEWORK OF PROGRAMMES ON SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS**

84. SCP has been prominently on the international policy agenda since Agenda 21 in 1992. The JPOI called for the development of a 10-Year Framework of Programmes on Sustainable Consumption and Production. In response, the Marrakech Process was launched in 2003 to foster

international and regional collaboration on the promotion of SCP and to support the development of the 10-Year Framework of Programmes for 2012–2021.

85. In the UNECE region, ministers committed to promoting SCP at the 2003 Kiev and 2007 Belgrade “Environment for Europe” Ministerial Conferences.

86. The urgent need for changes in consumption and production patterns have been also recognized as an essential challenge and have been debated in the context of other key global sustainability issues, e.g. climate change, the Millennium Development Goals, and most recently, the Green Economy.

87. Furthermore, while the current multiple crisis is particularly affecting many countries in the UNECE region, it is also creating opportunities to reconsider development patterns and direct public stimulus packages towards the longer-term sustainability of societies. Changing consumption and production patterns is vital to increasing the quality of life, creating employment opportunities, and sustainably managing resources in a world economy interlinked by globalized supply chains in production and consumption.

## **A. Trends and achievements**

### **1. Trends**

88. Subregional differences are significant in the UNECE region when it comes to the basic economic structure. The EU Member States and North American countries are service-dominated, whereas SEE and Eastern Europe, Caucasus, and Central Asia have stronger industry and agriculture sectors, although significant growth has been observed in the service sector in the past decade. Eastern European, Caucasian and Central Asian countries are now dominated by few subsectors, often with polluting and resource-intensive extractive industries. Fossil fuels, minerals and metals represent 65 per cent of all exports from countries of Eastern Europe, Caucasus and Central Asia.

89. Over the last decade, the average per capita use of resources (as measured by the Domestic Extraction Used Index (DEU)) in the pan-European region has been stable, with clear differences between subregions and countries<sup>35</sup>. DEU is double in EU-15 and EFTA-3, at 17 tons per capita, than in SEE.<sup>36</sup> DEU of Eastern European, Caucasian and Central Asian countries is similar to EU-10 countries, 13 tons per capita. In North America, DEU has been decreased but remains high, 27 tons in Canada and 21 tons in United States.<sup>37</sup>

90. Energy intensity also varies significantly between subregions and countries: compared to Western Europe, it is four times higher in Central Asia, three times in Eastern Europe and the Caucasus and 1.4 times in North America<sup>38</sup>.

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<sup>35</sup> Europe's Environment: The fourth assessment, EEA, 2007.

<sup>36</sup> MOSUS-project material input data set. Used in EEA, op cit.

<sup>37</sup> Sustainable Europe Research Institute 2008 ([www.materialflows.net](http://www.materialflows.net)).

<sup>38</sup> World Bank 2008, original data from United Nations Statistics Division.

91. As for human resources in the production processes, the share of vulnerable employment was 10.1 per cent in developed economies and the EU in 2007, with an unemployment rate of 5.7 per cent<sup>39</sup>. A positive trend regarding employment is the current green job creation taking place in some countries<sup>40</sup>.

92. Although there is still considerable room for improvement in Eastern Europe, Caucasus and Central Asia, some countries have succeeded in slowing resource and energy use, materials extraction and environmental pollution relative to their economic growth in certain subsectors. The relatively high efficiency of resource consumption in Western Europe is partially because of a clear tendency to outsource resource-intensive and polluting industry.<sup>41</sup> Western and Central Europe have achieved a relative decoupling of material and energy use from economic growth. However, there is a little evidence to show decoupling the global environmental impacts from European consumption in general<sup>42</sup>. In North America, which experienced strong growth in per capita GDP, the ratio between energy use and GDP continued a slow but positive decline beginning in 1970, reflecting a shift to less resource-intensive production patterns, although the subregion remains among the most energy-intensive in the industrialized world.

93. EEA projected that resource use in both EU-15 and EU-10 is set to increase towards 2020.<sup>43</sup> Energy needs in SEE and Eastern European, Caucasian and Central Asian countries are projected to rise by 60–80 per cent over the next 20 years, if an improvement of energy efficiency does not take place.<sup>44</sup> These projections highlight the urgency of promoting more SCP patterns.

## **2. Achievements in policy development**

94. In the global arena, the UNECE region has demonstrated leadership by providing support and active involvement in the Marrakech Process. The Governments of Finland, France, Germany, Italy, Sweden, Switzerland and the United Kingdom have been leading thematic Task Forces on: Sustainable Building and Construction; Sustainable Tourism; Sustainable Lifestyle; Education for Sustainable Consumption; Cooperation with Africa; Sustainable Products; and Sustainable Public Procurement. Other UNECE countries, including the United States, are supportive of and active in these initiatives.

95. Several subregional and national efforts have been made to develop SCP programmes and action plans. The European Commission presented a SCP and Industrial Policy Action Plan in 2008 consisting of various proposals to improve the environmental performance of products and stimulate the demand for more sustainable goods and production technologies. It will be implemented through a limited number of directives and other initiatives. The SCP policies of the EU will be assessed by 2012.

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<sup>39</sup> Global Employment Trends January 2009, Geneva, ILO, 2009.

<sup>40</sup> Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World, UNEP and ILO. ([http://www.unep.org/labour\\_environment/features/greenjobs-report.asp](http://www.unep.org/labour_environment/features/greenjobs-report.asp)).

<sup>41</sup> Europe's Environment: The fourth assessment, EEA, 2007.

<sup>42</sup> Ibid.

<sup>43</sup> Ibid.

<sup>44</sup> European Bank for Reconstruction and Development, 2006, Energy Operation Policy 2006.

96. Many countries have initiated policy work on SCP. The Czech Republic, Finland, Hungary, Poland and the United Kingdom, for example, have developed policy programmes and action plans. SCP was also embedded in national strategies for sustainable development (SD) in Austria, France, Italy, Malta, the Netherlands and Sweden, and in the Federal Strategies for Development in Belgium. Other countries, e.g. Denmark and Germany, are pursuing approaches that focus more on the implementation of specific policy instruments, e.g. Sustainable Public Procurement or Eco-Labeling without explicit policy framework documents<sup>45</sup>. Sweden is integrating SCP aspects and action into other Strategies and Governmental Bills. Croatia and Kazakhstan started work with assistance from UNEP<sup>46</sup> on the development of SCP action plans and programmes in 2009 as mandated by their SD strategies.

97. There are also numerous examples of SCP initiatives and activities in North America and Europe, initiated by national and local authorities, civil society, industry, and international agencies, for example sustainable labelling, sustainable public procurement, education, awareness raising, information sharing<sup>47</sup>, campaigning, partnerships, CSER initiatives and sector-specific initiatives.

98. Targeted policy measures (i.e. standards and labelling) and increased public awareness of the sustainability of their consumption behaviours have led to, inter alia, the expansion of organic food markets, fair-trade products and energy-efficient lighting.

99. UNIDO, in close cooperation with UNEP, supported the establishment of National Cleaner Production Centres (NCPCs) in Armenia, Bulgaria, Croatia, the Czech Republic, Hungary, Romania, Russian Federation, Serbia, Slovakia, the former Yugoslav Republic of Macedonia, Ukraine and Uzbekistan, with preparations for an NCPC in Albania at an advanced stage. These centres support businesses with the implementation of sustainable production methods and practices, including resource efficient and cleaner production, environmentally sound management of chemicals and waste and elements of CSER. They actively support policy initiatives at national level and increasingly internationally through networks, e.g. the European Roundtable on Sustainable Consumption and Production.

## **B. Challenges and lessons learned**

100. Overall resource/energy efficiency has been improved in the UNECE region. For example, the resource/energy efficiency of various goods and services, e.g. electric appliances, buildings and vehicles, has been improved due to technological progress, cleaner and more efficient production processes, stricter product standards and energy labels, and increased consumer awareness. However, such improvement has not led to a decrease in overall resource/energy consumption, mainly due to an increase in the ownership and size of goods. Another example is that despite the development of policies to increase reuse and recycling, on aggregate the pan-European region is increasingly generating waste.<sup>48</sup>

<sup>45</sup> See EEA Technical Report 1/2008 'Time for Action: Towards Sustainable Consumption and Production in Europe.

<sup>46</sup> Planning for Change: ([http://www.unep.org/publications/search/pub\\_details\\_s.asp?ID=3976](http://www.unep.org/publications/search/pub_details_s.asp?ID=3976)).

<sup>47</sup> North American Sustainable Development and Consumption Alliance database (<http://NASCA.ICSPA.net/db>).

<sup>48</sup> Europe's Environment: The fourth assessment, EEA, 2007.

101. The remaining challenge, therefore, is to maintain the positive development in resource/energy efficiency and to stabilize and decrease the absolute amount of resource/energy use, in particular with respect to certain resources and materials. Further challenges are the development and implementation of policies to ensure positive links between economic growth and decent job creation and improved livelihoods, and integrating SCP components into sectoral policies.

102. In the SEE and Eastern European, Caucasian and Central Asian countries, SCP policy initiatives can contribute to addressing poverty reduction and meeting basic needs. In these countries, some elements of the past can support good SCP behavioural patterns. These include the widespread existence of district heating systems, the extensive railway infrastructure, the relatively widespread use of public transport, and re-use and recycling systems. The decreased use of fertilizers, pesticides and other agro-chemicals in agriculture for the last 15 years opens up good prospects for organic food production. Political commitment is needed to ensure the development of policy package and necessary investment in a timely manner.

103. There are a wide range of SCP activities in North America, but they are “dispersed and scattered”. “Governments, business and the consumers generally were undertaking many constructive actions. But they were not coordinated and were conducted in piecemeal fashion. There is a need to identify these actions, increase their number and seek ways to pull them together in a more coordinated manner”<sup>49</sup>.

104. A similar observation was made by EEA with regard to the pan-European region, “(...) the general trend is an increase in environmental pressures because consumption growth is outweighing gains made through improvements in technology. The reasons seem not to be a lack of activity, but a lack of integration and cohesion within public policy, and also a focus on the supply side of markets in the programmes”<sup>50</sup>. Thus, development of a comprehensive package of policies and initiatives to address the root causes of unsustainable patterns of production and consumption remains much needed.

105. The coherent development of the SCP policies should target those production and consumption practices that cause the greatest environmental and social impacts, and could adopt the life-cycle approach suggested by the Marrakech Process Advisory Committee and the JPOI. Studies have shown that the three household consumption clusters that generate the highest environmental pressures are: food and drink, private transportation and housing<sup>51</sup>.

106. At the national level, as was noted at the North America SCP Workshop, progressive SCP activities have so far developed without an overall strategy. They could be further developed by encouraging deeper and more widespread adoption of the SCP approach in relevant government programmes<sup>52</sup>. Furthermore, concerted and coherent action at the regional and subregional level seems necessary. The EU has set an example with its SCP and Industrial

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<sup>49</sup> North America Multi-Stakeholder Workshop on Sustainable Consumption and Production 2008, Co-Chairs' Summary and Workshop Report, Washington D.C., 6-7 November 2008.

<sup>50</sup> EEA 2005: 14.

<sup>51</sup> Household consumption and the environment, EEA, 2006,

<sup>52</sup> North America Multi-Stakeholder Workshop on Sustainable Consumption and Production 2008, Co-Chairs' Summary and Workshop Report, Washington D.C., 6-7 November 2008.



Policy Action Plan, but it remains to be seen how it will progress and how fast the various initiatives will be implemented and take effect. NGOs have criticized the plan for being limited in scope, and for being not nearly enough<sup>53</sup>.

### C. The way forward

107. At the Sixth “Environment for Europe” Conference (Belgrade, 2007), the ministers of the UNECE region called and supported the following three key areas of work for SCP: (a) development of national SCP programmes, strategies and implementation plans; (b) subregional and regional partnerships; and (c) dissemination of best practices<sup>54</sup>. Governments also recommended capacity-building on SCP through training and demonstration projects<sup>55</sup>.

108. Development of SCP programme at the national level. Making consumption and production patterns more sustainable requires country-specific plans and policies, enriched by experience and information from subregional and regional activities providing experience and information-sharing. A strategic programmatic approach can help balance the necessary interventions for the consumption and production of, and markets for, goods and services. It should also link long-term vision to medium-term targets and short-term action. A SCP programme could be concentrated on a few initial key priority areas. Another way to approach a SCP programme is to develop one or two sector-based action plans that link to a framework document or existing strategy.

109. Examples of policies and plans could include the promotion of resource efficiency and management of material flows, consumer information (including eco-labelling) and awareness raising, financial incentives, efficient infrastructure, promotion of green jobs, corporate social and environmental responsibility and accountability and build on the life-cycle approach. Also, the development of general and sectoral indicators and targets, including evaluation processes, could be useful.

110. Subregional and regional partnerships: sharing practical information, knowledge and experience. Many innovative approaches and practices are applied in the pan-European region. Sharing information, tools and success stories and learning from one another are crucial for enhancing capacity and diffusing technology, and good practices through discussions among experts and the use of new and existing Web-based systems and databases. Strengthen various networks involving UNIDO-UNEP Cleaner Production Centres, Cleaner Technology Centres, the Regional Environment Centers, NGOs and sectoral associations/groups are essential. Possible key SCP areas could be: resource-efficient and cleaner production for industry, sustainable mobility, sustainable tourism, sustainable foods, sustainable life styles and supply-chain management.

111. Capacity-building through training and demonstration projects at the national and local levels in SEE/ Eastern European, Caucasian and Central Asian countries There is a need for up-

<sup>53</sup> European Environmental Bureau 2009, Blueprint for European Sustainable Consumption and Production: finding the path of transition to a sustainable society ([http://www.eeb.org/publication/2009/0905\\_SCPBlueprint\\_FINAL.pdf](http://www.eeb.org/publication/2009/0905_SCPBlueprint_FINAL.pdf)).

<sup>54</sup> (<http://www.unece.org/env/documents/2007/ece/ece.belgrade.conf.2007.8.e.pdf>).

<sup>55</sup> (<http://www.unece.org/env/documents/2007/ece/cep/ac.11/ece.cep.ac.11.2007.10.e.pdf>).

to-date information and know-how on SCP on the one hand, and on the other for local promotion of SCP goals, which could be met through capacity-building targeted at government officials, local administrations, industry and civil society. The expansion of the services delivery capacity to businesses and other organizations is also urgently needed.

112. Continued support to the global process of reaching more sustainable consumption and production patterns. The UNECE region has played an important role in bringing forward the global agenda on SCP via the Marrakech Process and through design and implementation of a range of national and subregional policies and strategies. More active contribution to make the links between ongoing local and national initiatives and the regional and global processes was also recommended<sup>56</sup>. The current fourth implementation cycle of CSD brings with its focus on SCP and the 10-Year Framework Programme an opportunity to reach a global agreement on concerted SCP action.

Questions for interactive discussion:

- (a) What would be the key SCP objectives and themes to be considered when designing the 10-Year Framework Programme from pan-European and North American perspectives? Please list three.
- (b) How could regional or subregional SCP programmes be established and how could the funding be scaled up?
- (c) What would be the key 3–5 programmes the UNECE region would like to see in decisions on SCP made at the nineteenth session of CSD?

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<sup>56</sup> North America Multi-Stakeholder Workshop on Sustainable Consumption and Production 2008, Co-Chairs' Summary and Workshop Report, Washington D.C., 6-7 November 2008.