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Other business

Overview of internationally agreed standards and recommendations on waste statistics

Note by the secretariat*

Summary

The paper is part of a desk study to assess the capacity of countries of Eastern Europe, Caucasus and Central Asia (EECCA) to produce statistics on measuring sustainable development and environmental sustainability. The paper introduces the desk study project, which aims to support the EECCA countries to meet the demand for high quality statistics on environment and sustainable development.

The current part of the desk study focuses on the topic of waste statistics. It introduces the topic and its relevance to the environment, and stresses the need to compile and disseminate high-quality, harmonised and timely statistics on waste, and in particular on waste generation and waste management. Furthermore, the paper makes an overview of the internationally agreed standards and recommendations in the area of waste statistics.

* This document was submitted late due to the need to consult with experts.

I. Introduction

1. The Statistical Division of the United Nations Economic Commission for Europe (UNECE) is implementing United Nations Development Account (UNDA) project starting 2012. The project is titled: “Strengthening statistical capacity of countries with economies in transition to assess progress in achieving the Millennium Development Goal on Environmental Sustainability and provide data on environmental vulnerabilities”.
2. The project aims to support the EECCA countries to meet the demand for high-quality statistics on sustainable development and environment sustainability, and address the following issues:
 - (a) Lack of statistical processes in place to produce statistics and indicators to measure the long-term sustainable development and environmental sustainability;
 - (b) Problems with the quality, availability and international comparability of data to monitor the implementation of environmental policies; and
 - (c) Lack of timely data that can be used to identify vulnerabilities and monitor environmental sustainability.
3. In addition, strengthening the cooperation between various government institutions providing data on different aspects of sustainable development and environmental sustainability will help to assess correctly the current state and progress made by the countries.
4. Under the project, a desk study will be carried out. The desk study will make an assessment of the capacity of countries with economies in transition to produce statistical data related to environment for identifying environmental vulnerabilities and measuring sustainable development. The study recommends further steps in priority areas where improvement is most needed.
5. The study aims to cover to the extent possible the following main aspects:
 - (a) Availability of data and indicator sets;
 - (b) Use of statistical classifications, data collection methods and procedures for the production of data and indicators;
 - (c) Data quality;
 - (d) Data dissemination.
6. In the context of the UNDA project, four workshops are being organized. The desk study, therefore, consists of four reports that will focus on specific topics, identified as topics for the four workshops. The first workshop took place on 11-13 April 2012 in Geneva and was on the topic of waste statistics, and in particular on how to compile and disseminate high-quality, harmonised and timely statistics on waste generation and waste management. The current paper is the first of the four reports of the desk study and focuses on waste statistics.

II. Background

A. The Environment Impact of Waste Generation and Waste Management

7. Every year, more than 2 billion tonnes of waste, including hazardous waste, are produced in the Member States of the European Union (EU) and this figure is rising steadily. According to the 2008 data of the Statistical office of the European Union (Eurostat), the major waste sources are construction (32.9%), mining industry (27.8%), manufacturing industry (13.1%) and households (8.5%). The situation is even more alarming in the EECCA countries. According to the data reported by these countries the waste generated account for 4.7 (2008) and 3.9 (2009) billion tonnes of waste. Russian Federation alone has generated around 90% of waste in the EECCA region.

8. Furthermore, the international context has become more and more important. Growing globalization had led to increasing imports of raw materials and semi-manufactured materials in the advanced countries. The extraction of such materials produces large amounts of waste. At the same time, the exports of waste from more advanced countries also increased, which raises questions on the potential export of environmental problems to less developed countries, where waste ends up in poor waste management facilities. This makes it even more important to account rightly for the amount of imported and exported waste.

9. Waste management is a complex subject. Stockpiling waste is not a viable solution and destroying it results in emissions and highly concentrated, polluting residues. Most of the municipal and hazardous waste is disposed of into or onto land. The environmental drawbacks of landfill are many. Legal landfill sites are becoming increasingly full. Heavy metals and toxins are leaking into the surrounding groundwater and soil. Explosive and toxic gases are being generated. There exist an unknown, but surely very high, number of illegal landfills, the environmental risks of which cannot be quantified. The main alternative disposal method to landfill — incineration — produces toxins and heavy metals. To prevent their release, expensive filters must be installed in incinerators. Used filters with highly concentrated contamination, together with a quarter of the waste's original weight, must still finally be landfilled.

10. Waste management is a key concern for the environment and the sustainable management of natural resources. The optimum solution is to prevent the production of such waste, reintroducing it into the product cycle by recycling its components where there are ecologically and economically viable methods of doing so. The primary targets of waste management are therefore:

- (a) Prevention of waste - reducing toxicity and volume of waste generated in the different production and consumption processes;
- (b) Recycling and reuse - increasing the share of recovered waste materials;
- (c) Sound environmental management of waste for disposal, including optimum final disposal and improved monitoring.

B. Accounting for the Waste

11. To assess the waste management policies the policy-makers need sound waste statistics. Data, however, remain a key challenge. Statistics on waste production, composition, transport and treatment are not collected in the same way, neither in the same amount of detail, in the countries. This makes it difficult to obtain an overall picture of the waste situation and identify trends. Lack of data on hazardous waste is of particular

concern. The attention to waste statistics at the EU level was drawn fairly recently. The EU Member States have started to report to Eurostat on generation of waste only in 2004 and on generation of municipal waste in 2001. The short time-series makes it difficult to analyze trends. Additional analysis is needed to see whether a decrease in the generated waste is due to the impact of the economic crisis or progress made in terms of prevention. The data comparison between countries still needs improvement due to different methodologies. It is difficult to believe that a country with a population of 8 million like Bulgaria will produce more waste (11% of EU total) than Italy (7% of EU total) and almost as much waste as the United Kingdom (13% of EU total).

12. The EECCA countries are facing similar challenges concerning data quality. In particular, there are issues with data collection from enterprises and municipalities, for example not all economic sectors are covered, estimates are needed for rural areas not covered by the municipal waste collecting system, data are collected mainly by the waste management companies and not from companies generating the waste, obligation for reporting are legally in place, however, not applied in practice.

13. If we try to compare the two regions – the EU and the EECCA regions, the outcome is even more puzzling. The data show that the Russian Federation alone has generated almost twice as much as the waste generated in the entire EU, and that Kazakhstan has generated more waste than France. These numbers do not look sufficiently plausible given the size of population and the level of development of these economies. These and other examples indicate that there are certainly inconsistencies in the methodologies and/or differences in classifications that make it difficult at this moment of time to compare the data produced by the countries.

C. The Workshop on Waste Statistics

14. To address these data challenges, the UNECE organized jointly with the Eurostat and the European Environment Agency (EEA) a workshop on Waste Statistics, which was held in Geneva, Switzerland, from 11 to 13 April 2012. The workshop focused on how to compile and disseminate high-quality, harmonized and timely waste statistics in the EECCA countries. In particular, it discussed practical challenges and problems in producing statistical data, information and indicators on waste generation and waste management, including recovery and disposal of waste. The workshop was conducted in close collaboration with the Joint UNECE Task Force on Environmental Indicators. It aimed at national experts involved in the production of waste statistics. Experts from international organizations and institutions were invited to share experience and broaden the exchange of knowledge and best practices. All documents for the workshop are available online at the UNECE website: www.unece.org/stats/documents/2012.04.enviro.html.

15. This paper makes a review of the waste statistics in the EECCA countries, also from the international and European perspectives. It also summarizes the discussions held during the workshop, analyzes the data provided by the countries and highlights the main issues and challenges in the area.

16. The desk study consists of six parts. Parts 1 and 2 provided in the current paper present an overview of the existing trends and international standards on waste. Part 3 makes an analysis of the waste data as reported by the EECCA countries and identifies the key issues and challenges in the process of collection and reporting of data. Part 4 focuses on the latest developments in terminology and approaches for accounting for recovery and recycling of waste, which is a fairly new area where countries are not yet compiling regular statistics. Part 5 is dedicated to the main concern of countries – problems and issues with classifications and definitions, introduction of new classifications, changes in the terminology, etc. Part 6 concludes and provides recommendations for future improvements.

III. Overview of internationally agreed standards and recommendations

17. Some 100,000 chemicals are present on the global market, of which about 20,000 are considered dangerous. These substances can contaminate air, water, land, animals, food, and human beings and thus need to be managed safely.

18. Various agencies within the United Nations are engaged in supporting governments, organizations, and stakeholders in developing capacity to protect human health and the environment from hazardous chemicals and wastes. This includes activities to support the implementation of international agreements, such as the Strategic Approach to International Chemicals Management (SAICM), the Stockholm Convention, the Rotterdam Convention, the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) and the Basel Convention. In the recent years, EU has also developed an extensive legislation on waste, including waste classifications and definitions.

A. The Stockholm Convention

19. The *Stockholm Convention on Persistent Organic Pollutants (POPs)* is a global treaty to protect human health and the environment from chemicals that remain intact in the environment for long periods. The exposure to POPs can lead to serious health effects including certain cancers, birth defects, dysfunctional immune and reproductive systems, greater susceptibility to disease and even diminished intelligence.

20. The Convention was adopted 22 May 2001 and entered into force on 17 May 2004. One hundred forty nine countries signed the Convention, of which among the EECCA countries Armenia, Georgia, Kazakhstan, Kyrgyzstan, Republic of Moldova, Russian Federation, Tajikistan, and Ukraine. Azerbaijan and Belarus acceded the Convention. Each Party to the Convention has to report to the Conference of the Parties on the measures it has taken to implement the provisions of the Convention and on the effectiveness of such measures in meeting the objectives of the Convention.

B. The Rotterdam Convention

21. The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade addresses the countries' lack of monitoring system on the import of hazardous chemicals and pesticides. The growth in chemicals production and trade during the past three decades has raised both public and official concern about the potential risks posed by hazardous chemicals and pesticides. The Prior Informed Consent (PIC) procedure was introduced in 1989 to help ensure that governments have the information they need about hazardous chemicals for assessing risks and taking informed decisions on chemical imports. The Convention was adopted and opened for signature on 10 September 1998 and entered into force on 24 February 2004. Seventy-three countries signed the Convention, of which among the EECCA countries Armenia and Kyrgyzstan. Georgia, Kazakhstan, Republic of Moldova, Russian Federation, Tajikistan, and Ukraine acceded the Convention. Parties have an ongoing obligation to submit to the Secretariat their decision concerning the future import of the chemical as soon as possible, and in any event no later than nine months after the date of dispatch of a

decision guidance document. The responses submitted by Parties are published each June and December in the PIC Circular¹.

C. Globally Harmonized System of Classification and Labelling of Chemicals

22. Given the extensive global trade in chemicals, and the need to develop national programs to ensure their safe use, transport, and disposal, it was recognized that an internationally harmonized approach to classification and labelling would provide the foundation for proper assessment of hazardous chemicals.

23. The work on developing the *Globally Harmonized System of Classification and Labelling of Chemicals* was mandated by the 1992 United Nations Conference on Environment and Development. The purpose is to offer countries consistent and appropriate information on the chemicals they import or produce in their own countries, the infrastructure to control chemical exposures and protect people and the environment. The *Globally Harmonized System* serves to address issues resulting, for example, from variations in definitions of hazards, e.g. a chemical may be considered flammable in one country, but not in another; or it may be considered to cause cancer in one country, but not in another.

24. The *Globally Harmonized System* includes the following two components:

(a) Harmonized criteria for classifying substances and mixtures according to their health, environmental and physical hazards; and

(b) Harmonized hazard communication elements, including requirements for labelling and safety data sheets.

25. The *Globally Harmonized System* covers all hazardous chemicals in all types of use situations, including production, storage, transport, workplace use, consumer use, and presence in the environment. They are intended to protect people, facilities, and the environment. Regrettably, products such as foods that may have trace amounts of food additives or pesticides in them are not currently labelled to indicate the presence or hazard of those materials and the *Globally Harmonized System* would not require them to be labelled as such.

D. The Basel Convention

26. The overarching objective of the *Basel Convention on the Transboundary Movement of Hazardous Wastes and Their Management* is to protect human health and the environment against the adverse effects of hazardous waste. The Convention covers a range of wastes defined as “hazardous” based on their origin, composition and characteristics, as well as two types of “other wastes” - household waste and incinerator ash. Hazardous waste is further grouped into waste streams, e.g. clinical wastes from medical care in hospitals, and waste having specific chemicals (copper compounds, mercury, etc). The Basel Convention defines hazardous and non-hazardous waste, while it allows for the countries to adapt its legislation to its national needs. For example, in the case of the transboundary movement of waste, some countries place a greater emphasis on the import side since it is easier to account for revenues from waste import, and less on the export side.

¹ <http://www.pic.int/TheConvention/Chemicals/AnnexIIIChemicals/tabid/1132/language/en-US/Default.aspx>

27. The scope of the Convention does not include radioactive waste. Radioactive waste is considered subject to other international control systems, including international instruments, applying specifically to radioactive materials.

28. Fifty-three countries have signed the Convention, of which only Russian Federation among the EECCA countries. Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Republic of Moldova, Turkmenistan, Ukraine and Uzbekistan acceded the Convention. Tajikistan is the only EECCA country, which is not a Party to the Convention².

29. Every year, the Parties are obliged to submit to the secretariat of the Convention a report on the previous year. The national reporting format includes formal reporting as well as statistical information, which has to be updated every year, including data on hazardous and non-hazardous waste. Important challenge is to have an efficient information system in place to allow compiling the data from different sources. For that purpose, the secretariat of the Convention has established an inventory. Unfortunately, the record of national reporting to the Convention is irregular: for example, 108 parties reported in 2001, while only 70 parties reported in 2006. The last reporting information from the EECCA countries is as follows: Armenia – 2009, Azerbaijan – 2010, Belarus – 2007, Georgia – 2010, Kazakhstan - 2010-2009-2008, Kyrgyzstan – 2009, Moldova – 2009, Russian Federation – 2007, Tajikistan - not a Party to the Basel Convention, Turkmenistan - 2003 (no data provided), Ukraine – 2010, and Uzbekistan – 2010.

30. The secretariat of the Convention does not yet carry out quality checks on compliance with the reporting requirements on a continuous basis. A system for cross-checking of transboundary movement data with other statistics, e.g. statistics from customs, could be established in the future. Furthermore, problems exist with waste data collected from trade statistics, for example problems with accounting for the purpose of treatment for which waste was shipped, e.g. waste shipped for recycling.

E. EU Waste Legislation

31. Waste statistics at the EU level have had a legal basis since 2002 as a response to the need for comparable and harmonized data. The main legislative documents on waste statistics are as follows:

(a) Waste Framework Directive, or Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste. It provides for a general framework of waste management requirements and sets the basic waste management definitions for EU.

(b) Decision 2000/532/EC establishing a list of wastes. This Decision establishes the classification system for wastes, including a distinction between hazardous and non-hazardous wastes. It is closely linked to the list of the main characteristics which render waste hazardous contained in Annex III to the Waste Framework Directive. The List of Wastes is the waste classification in EU for administrative purposes, i.e. for permitting and supervision in the field of waste generation and management. The List of Wastes defines 839 waste types, which are structured into 20 chapters, mainly according to the source of waste (i.e. the economic sector or process of origin).

(c) Regulation 2150/2002/EC on Waste Statistics. The objective of this Regulation is to establish a framework for production of the Community statistics on the

² Source:

<http://www.basel.int/Countries/StatusofRatifications/PartiesSignatories/tabid/1290/Default.aspx>

generation, recovery and disposal of waste. The regulation obliges the EU Member States to report statistical data on waste generation and waste treatment according to the statistical waste nomenclature named European Waste Categories – Statistics (EWC-Stat). The EWC-Stat is a mainly substance-oriented aggregation of the waste types defined in the European List of Wastes. Annex III to the regulation provides a transposition table between the EWC-Stat and the List of Wastes. The regulation was amended in 2010 with the Commission Regulation (EU) No 849/2010 replacing Annexes I, II and III with amended waste categories. The new version entered into force in 2010, and therefore, countries have applied it for the first time in 2012 for reference year 2010.

(d) Manual on Waste Statistics and Guidance on classification of waste according to EWC-Stat categories/ Supplement to the Manual for the Implementation of the Regulation 2150/2002/EC on Waste Statistics. The manual and the guidance support the producers of statistical data to apply the statistical waste nomenclature EWC-Stat in a correct way. In addition, the documents are designed to help the users of statistical data to use and interpret the data correctly. In practice, most of the EU Member States collect their data according to the List of Waste and convert it subsequently into the required EWC-Stat categories on the basis of the transposition table in Annex III of the Regulation. The direct use of the EWC-Stat for data collection is applied only by a few countries.

(e) Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste. This Regulation specifies under which conditions waste can be shipped between countries.
