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Approval of amendments to indicators that were discussed at two previous joint meetings on environmental indicators

Revised texts for five indicators

Note by the secretariat

Summary

This note presents the revised texts for five indicators that the secretariat prepared in the light of the discussions held at two previous joint meetings on environmental indicators. The five indicators are: (i) Emissions of pollutants into the atmospheric air; (i) Greenhouse gas emissions; (iii) Household water use per capita; (iv) Land uptake, and; (v) Waste reuse and recycling. According to its decision taken at its May 2010 session, the Joint Task Force is expected to review and agree on the revised texts.

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I. Emissions of pollutants into the atmospheric air

A. General description

1. Brief definition

(a) From stationary point sources: Emissions of sulphur dioxide (SO_2), nitrogen oxides (NOx), ammonia (NH_3), particulate matter ($PM_{10,}$ $PM_{2.5}$ and total suspended particulates (TSP)), carbon monoxide non-methane volatile organic compounds (NMVOCs), persistent organic pollutants (POPs, including polychlorinated biphenyls (PCBs), dioxins/furans and polycyclic aromatic hydrocarbons (PAHs)) and heavy metals (cadmium (Cd), lead (Pb) and mercury Hg) and specific polluting substances (chlorine, phenol, benzene and their compounds), in total volumes and broken down by economic activities as defined by the International Standard Industrial Classification of All Economic Activities (ISIC Rev. 4); comparison of the present values with targets (if any) and with emission projections (if available).

(b) From mobile sources: Emissions of carbon monoxide (CO), nitrogen oxides (NOx), hydrocarbons (CH), soot, sulphur dioxide (SO2), lead compounds, formaldehyde, and benz(a)pyrene in total volumes and broken down by mode of transport (road, railway, air, inland waterways and machinery); comparison of the current values with targets (if any) and with emission projections (if available).

2. Unit of measurement

3. Thousands of tons per year, tons per year or kilograms per year, as appropriate for a particular pollutant. For cross-country comparisons, the indicator may also be presented per km² of the country's territory, per capita or per unit of gross domestic product (GDP). GDP is to be presented in constant prices both in national currency and in USD as well as in USD in parity of purchasing power (PPP). In comparisons with targets, percentages are used. This indicator can also be presented in terms of emissions (kg) per unit of production (ton, kWh, etc.).

B. Relevance for environmental policy

1. Purpose

4. The indicator provides a measure of existing and expected pressure on the environment in terms of emissions of harmful substances into the atmospheric air and "distance to target" (if any).

2. Issue

5. The above-mentioned pollutants are known for their adverse effects on human health and ecosystems. Some of these pollutants are eroding technical infrastructures as well. Emissions of NO_x and NMVOC are the main causes of the formation of ground-level ozone, which has adverse effects on human health and ecosystems. The indicator is important not only for assessing pressure on atmospheric air pollution in the country as a whole but also for identifying pressure from stationary and mobile sources of particular economic activities like energy, transport, industrial processes, agriculture and waste management, and from households.

6. On the basis of this indicator, public authorities can adjust the national environmental policy by, for instance, revising emission standards and emission limit values, strengthening permitting of potentially polluting activities and improving the application of economic instruments. The public in turn should be informed in an understandable way of the status of the problem and the ways of tackling it. Information on pollutant emissions is also necessary for the assessment of transboundary air pollution and for international cooperation to address this problem.

C. International agreements and targets

7. **Global and regional level:** The UNECE Convention on Long-range Transboundary Air Pollution (CLRTAP) requires implementation of measures to prevent, control and reduce emissions of air pollutants and to exchange information on them. The Convention and its eight protocols together set targets for the reduction of specific emissions, prescribe stringent emission limit values for emission sources, propose concrete pollution reduction measures and establish requirements regarding the submission of data on emissions of the above-mentioned pollutants. The Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone sets emission reduction targets for SO_2, NO_x, NH_3 and NMVOCs to be reached by 2010. Under the Stockholm Convention on Persistent Organic Pollutants, both limit values and reporting requirements are set at the global level. The Protocol on Pollution Release and Transfer Registers to the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters provides for the collection and presentation of data on emissions of pollutants into the air.

8. **Subregional level:** The EECCA Environmental Strategy, approved in 2003 by the Kiev Ministerial Conference "Environment for Europe", foresees the implementation of legislative, normative, economic, financial, technical and other measures which would lead to the reduction of emissions of pollutants into the air.

9. In the European Union (EU), Directive 2001/81/EC on national emissions ceilings for certain atmospheric pollutants requires the introduction of national emission ceilings for emissions of SO_2, NO_x, NMVOC and NH_3 in each member State to be complied with by 2010.

D. Methodology and guidelines

1. Data collection and calculations

10. Two basic methods of emission inventory are generally applied: the first, detailed, one is based on direct measurements of emissions, and the second is based on technological calculations (the use of statistics on activities like data on production volumes and fuel and raw materials consumption and of the relevant emission factors). National classifications of emission sources should be harmonized with international standards (see following section). Among individual pollutants, the reporting of emissions of heavy metals and POPs should require particular attention in EECCA countries. Modelling and technological calculations based on statistical data on economic activities according to the EMEP/CORINAIR Emission Inventory Guidebook should be applied where data are not available. Calculation of emissions of pollutants into the atmospheric air from mobile sources could be carried out according to the EMEP/CORINAIR Emission Inventory Guidebook, based on quantity of vehicles by mode of transport, their age, distance run, quantity and quality of used fuel.

2. Internationally agreed methodologies and standards

11. CLRTAP and its eight protocols cover the methodology of collection of data on emissions of pollutants into the air. Important internationally agreed standards are included in the Guidelines for Estimating and Reporting Emission Data under CLRTAP and in the EMEP/CORINAIR Emission Inventory Guidebook. Calculations of emissions originating from different economic activities must take into account the correlation between the UNECE nomenclature for reporting (NFR) source classification system for air emission reporting, the selected nomenclature for sources of air pollution (SNAP97) developed by the EEA European Topic Centre on Air Emissions (ETC/AE) and reporting source categories in the Common Reporting Format of the Intergovernmental Panel on Climate Change (IPCC) and the United Nations Framework Convention on Climate Change (UNFCCC).

3. Data sources and reporting

12. In the EECCA countries, national statistical and/or environmental agencies collect data on emissions into the air from stationary sources using standardized reporting form. Data on emissions from mobile sources are frequently calculated on the basis of fuel consumption by vehicle fleets. Aggregated data are published in annual national environmental and statistical reports. Parties to the Convention on Long-range Transboundary Air Pollution (CLRTAP) report emissions of the main air pollutants and projections. The emission database is managed by EMEP. EECCA countries report emission data to UNSD in response to the UNSD/UNEP questionnaire on environmental statistics.

E. References at the international level

Guidelines for Estimating and Reporting Emission Data under the Convention on Long-range Transboundary Air Pollution. Air Pollution Studies No. 15. United Nations, New York and Geneva, 2003. (ECE/EB.AIR/80).

EMEP/CORINAIR Emission Inventory Guidebook, 3rd edition. September 2004. (EEA Technical Report 30/2005).

EMEP/CORINAIR Emission Inventory Guidebook - 2007 (EEA Technical Report 16/2007). http://www.eea.europa.eu/publications/EMEPCORINAIR5

EMEP/CORINAIR Emission Inventory Guidebook - 2006 (EEA Technical Report 11/2006). http://www.eea.europa.eu/publications/EMEPCORINAIR4

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Annual European Community CLRTAP Emission Inventory 1990–2003 (EEA Technical Report 6/2005).

Environmental Pressure Indicators for the EU. Eurostat, 2001.

Air Emissions Inventory, Air Pollution Monitoring and Modelling in Kazakhstan. In: Environmental Monitoring and Assessment: Eastern Europe, the Caucasus and Central Asia. UNECE, 2003. (CD-ROM).

Environmental Partnership in the UNECE Region: Environmental Strategy for

Countries of Eastern Europe, Caucasus and Central Asia, 2003. (ECE/CEP/105/Rev.1).

Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on National Emission Ceilings for Certain Atmospheric Pollutants.

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http://www.emep.int

http://webdab.emep.int/

http://www.ipcc-nggip.iges.or.jp/public/gl/invs4.htm

http://unstats.un.org/unsd/environment/

http://themes.eea.europa.eu/IMS/CSI

http:/europa.eu.int/comm/eurostat

II. Greenhouse gas emissions

A. General description

1. Brief definition

13. Emissions – in total and with sinks, by sector, per capita and per unit of GDP (in constant prices in the national currency or in USD, and in USD in PPP) – of the greenhouse gases (GHG) included in Annex A to the Kyoto Protocol to the UNFCCC: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6); current trends in anthropogenic GHG emissions with sinks in relation to the country targets (the "distance to target" measurement unit helps in comparing EECCA countries with countries covered by the networks of EEA); projected trends in anthropogenic GHG emissions in a country.

2. Unit of measurement

14. Million tons of CO2 equivalent in total and by sector. For cross-country comparisons, the indicator may be presented in thousand tons per square km of the country's territory and in tons per capita and tons per GDP unit (expressed in constant prices in the national currency or in USD, and in USD in PPP).

B. Relevance for environmental policy

1. Purpose

15. The indicator provides a measure of the existing and future pressure on the environment in terms of emissions of GHG into the atmosphere. It shows the extent to which countries have achieved their specified goals and the response to country policies for achieving the emissions target.

2. Issue

16. The main concern relates to the effects of increasing GHG concentrations on global temperature and the earth's climate, and to the potential consequences for ecosystems, human settlements, agriculture and other socio-economic activities. Emissions of CO_2 and other GHG are still increasing in many countries, despite some progress in decoupling CO_2 emissions from economic growth. The main challenges are to limit emissions of CO_2 and other GHG and to stabilize the concentration of GHG in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. This implies

achieving GHG emissions targets set by international agreements or national strategies and strengthening efforts to implement related national and international strategies and to further decouple GHG emissions from economic growth. Future GHG emissions will largely depend on development trends in the economy, on technologies and on social transformations, and also from absorbing ability of sinks (first of all, by forests) of GHG on territory of the country. A country development scenario with a special focus on the priority sectors of the economy that are the major sources of emissions is a specific way to analyse consequences based on various assumptions about future trends and GHG reduction strategies.

C. International agreements and targets

17. **Global level:** The UNFCCC binds the Parties to reduce their emissions, ensure collection of the relevant information, and develop strategies for adjusting to climate change and for cooperation in research and in developing new technologies. The UNFCCC requires all Parties to carry out regular emission inventories. In addition, the Annex 1 countries must regularly submit "national communications" to the Conference of the Parties. The communications should describe the work done by a particular Party to implement the Convention, including projection of GHG emissions for the next 10–20 years.

18. The Kyoto Protocol to the UNFCCC stipulates that Annex 1 Parties (mainly industrialized countries) shall individually or jointly reduce their aggregate emissions of a "basket" of six GHGs to 5% below 1990 levels by the period 2008–2012. So that this group target can be achieved, each Party has to accomplish its own specific task in the area of emissions reduction. The Russian Federation and Ukraine, for instance, have to stabilize their emissions at 1990 levels, whereas the EU-15 countries have to reduce their levels by 8%. The World Summit on Sustainable Development (WSSD) held in Johannesburg in 2002 made commitments to an urgently needed and substantial increase in the use of renewable (non-carbon) energy sources as well as the setting up of programmes leading to more sustainable consumption and production patterns, including a reduction in energy use.

19. **Subregional level:** The EECCA Environment Strategy foresees, in particular, energy efficiency measures in environmental policies as well as in programmes for mitigating climate change and for achieving the Kyoto Protocol targets.

D. Methodology and guidelines

1. Data collection and calculations

20. The contribution of each of the GHG to global warming depends on its ability to absorb Earth's radiant heat flux and its lifetime in the air. Three GHGs – CO_2, CH_4 and N_2O – account for around 98% of the environmental pressure that leads to climate change. At the same time, perfluorocarbons, hydro fluorocarbons and sulphur hexafluoride have more considerable time of existence in atmosphere in comparison with carbon dioxide, methane and nitrous oxide. In order to aggregate the emissions of different GHGs and to present a single figure for the climate change issue, these are presented in CO_2 equivalent based on the concept of its global warming potential (GWP). GWP is the estimated potential of a greenhouse gas to contribute to global warming in the atmosphere, which is based on its effect over 100 years. For example, the GWP of methane (CH_4) is 21 and that of nitrous oxide (N_2O) is 310, and that of sulphur hexafluoride (SF6) is 22800, which means that the impact of 1 kilogram of methane on global warming is 21 times higher than that of 1 kilogram of carbon dioxide, while that of 1 kilogram of N_2O is 310 times higher

than that of 1 kilogram of CO_2, and impact of 1 kilogram of sulphur hexafluoride is 22800 times higher than that of 1 kilogram CO_2.

21. Estimation of total amount of flux of the GHG into the atmosphere should include not only emissions, but also their absorption by a biomass and soil. The estimate of a country's GHG emissions can be based on statistical data of state administration bodies regarding activities which affect the GHG concentration in the atmosphere (sources and sinks of GHGs). For instance, annual data on GHG emissions from fuel combustion activities can be estimated based on the annual consumption of fossil fuels. Annual data on methane production in agriculture in relation to gastric fermentation can be evaluated based on the number of animals and the species involved. Conversion (emission) factors connect emissions with statistics on anthropogenic activities. Following is a simplified description of the estimation technique:

GHG emissions = (data on anthropogenic activities) × emission factors.

22. Both internationally adopted emission factors developed by the Intergovernmental Panel on Climate Change (IPCC) and national emission factors can be applied.

23. Data on absorption by anthropogenic sinks GHG can be calculated through annual deposition of carbon in structure SO_2 from atmosphere.

24. The GHG emissions values should be estimated for each year. The difference between the estimated line indicator and the actual indicator for a certain year may have both the "+" (advance) and the "–" (lagging behind) signs.

2. Internationally agreed methodologies and standards

25. Parties to the UNFCCC have adopted reporting guidelines, including a set of tables for the Common Reporting Format which is in line with the *IPCC Guidelines for National Greenhouse Gas Inventories*. Signatories to the Kyoto Protocol adopted Guidelines for national systems for estimation of anthropogenic GHG emissions by sources and removals by sinks. ISO has developed ISO 14064 standards for the quantification, reporting and verification of GHG emissions.

26. A large number of international models for projecting both short-term and long-term trends in the evolution of GHG emissions in various sectors of the economy are available. IPCC has published three types of scenarios: "without measures", "with measures" and "with additional measures". National-level emissions scenarios are developed based on state programmes for socio-economic development, with special focus on the priority sectors of the economy that are the major sources of emissions and sinks.

E. Data sources and reporting

27. In several EECCA countries, national statistical and/or environmental agencies collect data on GHG emissions into the atmospheric air from stationary sources using standardised reporting form. Emissions from mobile sources are calculated on the basis of quantity of consumed fuel and park of mobile vehicles.

28. The EECCA countries which are Parties to the UNFCCC submit national GHG inventories of anthropogenic emissions by sources and removals by sinks of GHGs not controlled by the Montreal Protocol on Substances That Deplete the Ozone Layer. As a part of their UNFCCC commitments, Annex 1 Parties are required to submit a national communication on a regular basis (every four to five years); other Parties have no obligation regarding regularity. EECCA countries which are Parties to the Kyoto Protocol have established national coordination centres which collect the data for the calculation of

emissions and sinks of GHGs, and take care of GHGs emission projections scenarios. EECCA countries report emissions data to the UNSD in response to the UNSD/UNEP Questionnaire on Environmental Statistics.

F. References at the international level

UN Framework Convention on Climate Change (1992).

Kyoto Protocol to the UN Framework Convention on Climate Change (1997).

2006 IPCC Guidelines for National Greenhouse Gas Inventories. http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html

Revised 1996 IPPC, Guidelines for National Greenhouse Gas Inventories (1996).

Good practice guidance and uncertainty management in national GHG inventories (IPCC, 2000). http://www.ipcc-nggip.iges.or.jp/public/gp/english/

Good practice guidance for land-use, land-use change and forestry (IPCC, 2003). http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.html

IPCC Special Report, Emission Scenarios. Summary for decision-makers (IPCC, 2000) (ISBN 92-9169-313-8).

The GHG Indicator: UNEP Guidelines for Measuring GHG Emissions for Businesses and Non-commercial Organizations (UNEP, 2000).

Review of the implementation of commitments and of other provisions of UNFCCC.

National communications: greenhouse gas inventories from Parties included in Annex 1 to the convention. UNFCCC guidelines on reporting and review (FCCC/CP/2002/8, 28 March 2003).

The GHG Indicator: UNEP Guidelines for Calculating Greenhouse Gas Emissions for Businesses and Non-Commercial Organizations (UNEP, 2000).

UNFCCC guidelines on reporting and review (document FCCC/CP/2002/8).

2006 IPCC Guidelines for National Greenhouse Gas Inventories.

Revised 1996 Intergovernmental Panel on Climate Change (IPCC) guidelines (IPCC, 1997).

Annual European Community GHG inventory 1990–2003 and inventory report 2005 (EEA Technical Report No. 4/2005).

Council Decision 2002/358/EC of 25 April 2002 concerning the approval, on behalf of the European Community, of the Kyoto Protocol to the UNFCCC and the joint fulfilment of commitments thereunder.

Decision No. 280/2004/EC of the European Parliament and of the Council of 11 February 2004 concerning a mechanism for monitoring Community greenhouse gas emissions and implementing the Kyoto Protocol.

http://www.unfccc.int

http://www.ipcc.ch

http://unstats.un.org/unsd/environment/

http://www.globalreporting.org

http://www.ghgprotocol.org

http://cait.wri.org

http://iso.org

http://themes.eea.europa.eu/IMS/CSI

III. Household water use per capita

A. General description

1. Brief definition

29. The quantity of freshwater used by households during a year (or daily) divided by the number of the population.

2. Unit of measurement

30. Cubic metres/year (or litres/day).

B. Relevance for environmental policy

1. Purpose

31. The indicator provides a measure of the pressure on the environment in terms of water used by the population for household purposes. It also gives an indication of the volume of wastewater discharged from households.

2. Issue

32. Adequate quantities of water for meeting basic human needs are a prerequisite for life, health and development. The indicator indirectly reflects the level of development of water services and the degree of water accessibility to cover all household needs of the population. This indicator helps to identify trends in rational water use. Household water use differs by location and depends on many environmental and economic factors.

3. International agreements and targets

33. The Convention on the Protection and Use of Transboundary Watercourses and International Lakes.

C. Methodology and guidelines

1. Data collection and calculations

34. Household water use refers to all freshwater used in the normal functioning of households (e.g. drinking, cooking, washing, sanitation etc) and may include household garden watering but not freshwater used for commercial agriculture. Freshwater use by households is defined in the UNSD/UNEP Questionnaire as the quantity of freshwater that is actually used during a year by household end users including water delivered by the water supply industry (ISIC 36), water directly abstracted by households for own use and water received from other parties.

35. The volume of freshwater delivered by ISIC 36 to households is usually metered by the water supply industry. Sometimes it is not possible to distinguish between water supplied to households and water supplied to other users of the public water supply such as

small industries, services etc. Public water supply connections don't always refer to households (e.g. one connection for a building with many households), thus the number of households and the number of inhabitants covered by the public supply have to be calculated with the help of data on the number of households in buildings and on household size, usually available from population and housing censuses or surveys.

36. Volumes of freshwater use from sources other than the water supply industry, such as household own-abstractions from private wells or nearby surface water have to be estimated using water use coefficients. Use coefficients are calculated based on data on water use from household surveys, or other records that can approximate average water use by resident households that aren't connected to the water supply industry.

37. Household water use per capita is calculated by dividing the volume of total water use of households by the number of inhabitants.

38. To ensure cross-country comparability, the indicator should be accompanied by a description of the definitions and calculation methodology used.

2. Internationally agreed methodologies and standards

39. The International Recommendations for Water Statistics (UN), the UNSD/UNEP Questionnaire on Environment Statistics.

D. Data sources and reporting

40. In EECCA countries, data collection on freshwater use is based on annual data reported to state statistical services. In many countries, data on household water use are still frequently collected by the government branch dealing with housing and municipal services. At the international level, WHO/UNICEF have been collecting estimates of national average figures from governments as part of their water supply and sanitation monitoring activities. The OECD/Eurostat Joint Questionnaire on the State of the Environment and the UNSD/UNEP Questionnaire on Environment Statistics collect data relevant to the indicator.

E. References at the international level

Convention on the Protection and Use of Transboundary Watercourses and International Lakes (1992).

AQUASTAT – FAO global information system on water and agriculture.

Eurostat, Environment Statistics: Pocketbook

http://www.unece.org/env/water/links/link.htm

http://www.unece.org/env/water/pdf/waterconr.pdf

http:/europa.eu.int/comm/eurostat

http://www.fao.org

http://unstats.un.org/unsd/environment/questionnaire2010.htm

http://themes.eea.eu.int/IMS/CSI/

http://www.euro.who.int/ehindicators/

IV. Land uptake

A. General description

1. Brief definition

41. Land uptake by industrial and transport infrastructure, urban development and by legal waste disposal (landfills and waste dumps), and by tailing pits and refuse heaps in a country.

42. Indicators can be presented as:

a) Average annual change;

b) Percentage of the country's total area;

c) Percentage of the various types of land cover used by industrial and transport infrastructure, urban development, landfills and waste dumps, tailing pits and refuse heaps of total land uptake in a country.

2. Unit of measurement

43. Km2/year or thousand hectares/year; percentage; percentage.

B. Relevance for environmental policy

1. Purpose

44. The indicator provides a measure of the impact on the environment and shows trends in the encroachment of artificial land developments on natural and semi-natural land.

2. Issue

45. Land uptake by industrial and transport infrastructure, by urban development and by landfills, waste dumps, tailing pits and refuse heaps has the highest impact on the environment due to sealing of soil as well as disturbances resulting from transport, noise, resource use, waste dumping and pollution. Transport networks add to the fragmentation and degradation of the natural landscape. The intensity and patterns of urban sprawl are the result of three main factors: socio-economic development, demand for housing and extension of transport networks. A high percentage of land used for waste dumps, landfills, tailing pits and refuse heaps for legal or illegal waste disposal is an indicator of unsustainable development.

3. International agreements and targets

46. None.

C. Methodology and guidelines

1. Data collection and calculations

47. Results are presented as the average change, as a percentage of the country's total area and as a percentage of the various types of land cover used by industrial and transport infrastructure, urban development and landfills, waste dumps, tailing pits and refuse heaps in the total land uptake in a country. Land use by urban and related infrastructures is generally calculated using statistical data. In a few EECCA countries these data are

supplemented by satellite images. Difficulties often arise in accounting for land used illegally for waste dumps, landfills, tailing pits and refuse heaps. The period of reporting is 10 years.

2. Internationally agreed methodologies and standards

48. FAO is working on the harmonization of classification systems and databases to improve national and international land-use information. This includes the development of definitions and protocols, a computerized land-use database structure, and a broadly accepted structure of land-use classifications.

D. Data sources and reporting

49. Data on land use in EECCA countries are generally available from government authorities responsible for cadastres and land-use planning and environmental protection and from statistical agencies and local authorities. Data on land uptake off productive function are published in annual environmental reports and/or in statistical yearbooks in a number of countries. Statistical agencies report data to the UNSD Environment Statistics Database. FAO also collects data from its member countries.

E. References at the international level

http://www.un.org/esa/sustdev/natlinfo/indicators/isd.htm

http://www.fao.org

http://themes.eea.eu.int/Environmental_issues/waste/indicators

http://themes.eea.eu.int/IMS/CSI

http://unstats.un.org/unsd/environment/

http://epa.gov/ncea/ROE Indicators/

V. Waste reuse and recycling

A. General description

1. Brief definition

50. Waste reused or recycled as a share of the total waste in a country – in total, by waste type (industrial and municipal solid waste), by economic activities in which industrial waste is generated (mining and quartering, manufacturing, construction, trade and public catering, transport and communication, forestry, housing and public utilities, etc.), and by negative impact (hazardous waste).

2. Unit of measurement

51. Percentage.

B. Relevance for environmental policy

1. Purpose

52. Waste reuse and recycling represents a response type indicator and shows the proportion of total waste, or of the specific category of waste, that is recycled.

2. Issue

53. Waste reuse and recycling is an important component of sustainable use of resources in general and sustainable solid waste management in particular. As the population continues to grow, the amount of land available for waste disposal is reduced, and waste has to be transported longer distances. When waste reuse and recycling are stimulated, landfill capacity is conserved and solid waste management expenditures are reduced. Increased reuse and recycling leads to a reduction in the environmental impacts of waste final disposal, such as methane and carbon dioxide gas emissions from landfill sites, and preserves natural resources. Reuse and recycling also tend to increase the population's income through employment in the waste reuse and recycling sector.

3. International agreements and targets

54. The EECCA Environment Strategy calls for the development of inter-sector waste management action plans and government support for waste treatment facilities.

55. In the EU, the Directive on packaging and packaging waste requires member countries to reuse and recycle a minimum of 55% and a maximum of 80% of packaging waste by 2008. The waste framework directive provides for increased efforts to prevent and reduce waste generation, recover wastes and develop new techniques for final disposal of waste. EU targets for recycling and re-use also cover end-of-life vehicles and waste from electrical and electronic equipment.

C. Methodology and guidelines

1. Data collection and calculations

56. "Reuse and recycling" is defined as any reprocessing of waste material in a production process that diverts it from the waste stream, except reuse as fuel (energy recovery). Reprocessing (whether into the same type of product or for different purposes) should be included. Reuse and recycling in industrial plants (i.e. at the place of generation) should be excluded. Assessment of reused and recycled waste requires precise assessment of total waste and the specific category of waste (industrial, municipal or hazardous). The indicator of waste reuse and recycling is derived by dividing the quantity of total and specific-category waste reused and recycled by the total quantity of waste and specific-category waste generated and expressing the result as a percentage. In addition, for municipal waste the proportion of reused and recycled waste may be presented as a percentage of reused and recycled components, such as metals, plastic, paper, glass, textiles or organic materials.

2. Internationally agreed methodology and standards

57. The UNSD/UNEP Questionnaire on Environment Statistics provides a methodology for calculating waste reuse and recycling. In the EU, waste statistics, including waste generation and waste disposal, are covered by a specialized regulation (2150/2002).

D. Data sources and reporting

58. In EECCA, data on reuse and recycling of waste are collected by ministries responsible for urban affairs and the environment and by state statistical agencies.

E. References at the international level

European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste.

Regulation (EC) No 2150/2002 of the European Parliament and of the Council of 25 November 2005 on waste statistics.

Directive 2006/12/EC of the European Parliament and of the Council of 5 April 2006 on waste.

Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on end-of life vehicles.

Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment (WEEE).

http://www.un.org/esa/sustdev/natlinfo/indicators/isd.htm

http://unstats.un.org/unsd/environment/datacollect.htm

http://europa.eu.int/comm/eurostat/

http://waste.eionet.eu.int/

http://themes.eea.eu.int/Environmental_issues/waste/indicators