International Requirements for Environmental Statistics and Indicators

Workshop on Environment Statistics in support of the implementation of the Framework for the Development of Environment Statistics (FDES 2013) (Arusha, Tanzania, 6-10 July 2015)

Environment Statistics Section, United Nations Statistics Division
Requirements for environment statistics

- Global
- International
- Regional
- National/sub-national

These requirements may overlap. We will focus on the international requirements.
Main types of international requirements

International requirements are for assessment, monitoring and planning (measurement in the past, current, future) for:

- Follow up on global conferences
- Reporting to international conventions
- Supporting thematic/topical international data collections
- Contributing to comprehensive international environment statistics data collections
- Can also provide a model for country collections
Advantages of identifying international requirements:

• Identifying what should be measured in different domains of environment statistics;
• Identifying the standards, concepts, classifications and definitions that will enable coordination and harmonization for international comparability;
• Allowing countries to see where there is need for improvement;
• Identifying data gaps.
Global versus International

• Global statistics: give a picture of the world as a whole (e.g. global environmental issues like climate change).

• International statistics: provide comparable country statistics that can be aggregated to regional/global level (e.g. contribution to pressures that cause the global concern).
Global reporting - follow up on global conferences

• Millennium Development Goals Indicators 2000-2015
• Indicators of Sustainable Development
• Indicators of the Sustainable Development Goals (2015-2030)
• Other Development Indicator sets

Objective: to monitor progress based on an agreed set of indicators

Level: global (MDGs, SDGs); national (ISD)
1. End poverty in all its forms everywhere;
2. End hunger, achieve food security and improved nutrition, and promote sustainable agriculture;
3. Ensure healthy lives and promote well-being for all at all ages;
4. Ensure inclusive and equitable quality education and promote life-long learning opportunities for all;
5. Achieve gender equality and empower all women and girls;
6. Ensure availability and sustainable management of water and sanitation for all;
7. Ensure access to affordable, reliable, sustainable, and modern energy for all;
8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all;
9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation;
10. Reduce inequality within and among countries;
11. Make cities and human settlements inclusive, safe, resilient and sustainable;
12. Ensure sustainable consumption and production patterns;
13. Take urgent action to combat climate change and its impacts;
14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development;
15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss;
16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels; and
17. Strengthen the means of implementation and revitalize the global partnership for sustainable development.
Proposed SDGs: goals and targets

- Proposed Goals 1-6 build on the advance of the core agenda of the MDGs, while goals 7-17 break new ground.
- The well-recognized defects of MDG 7, which only partially integrated the environmental dimension, have been corrected in the proposed SDGs. The environmental dimensions of sustainable development are fully fleshed out in the goals on oceans and marine resources, ecosystems and biodiversity including land degradation and desertification, and are also mainstreamed under all other goals.
- The need for improvements in the field of data and statistics to monitor progress on the SDGs and the associated need for statistical capacity building in developing countries have been highly recognized in the outcome document.
International Reporting - to International Conventions

Examples:
• United Nations Framework Convention on Climate Change
• Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal

Objective: to monitor compliance with regulations based on a prescribed set of data

Level: national (parties)
EAC countries’ participation in climate change and other international environmental agreements – as of 2014

|--------------------------|-------------|--------------------------------|-------|----------------------------|----------------------|-------------------|---------------|----------------|----------------|-----------------------------------|-----------------------------|
Thematic/topical international data collections

Objective: provide internationally comparable data based on standard questionnaires and methodology. The aim is not directly environmental but the data are used in environment statistics.

Examples:

- **UNSD**
  - Energy statistics, industrial statistics, trade statistics, national accounts, demographic statistics

- **FAO**
  - AQUASTAT (water)
  - FAOSTAT (agriculture, nutrition, fisheries, forestry, food aid, land use and population)
  - FISHSTAT (fisheries)
  - FORIS (forests)
  - GLIPHA (Global Livestock Production and Health Atlas)

- **UNEP**
  - World Conservation Monitoring Centre (protected areas)
  - GEMS-Water (water quality)

Level: national
Comprehensive international environment statistics data collections

- UNSD/UNEP Questionnaire on Environment Statistics
- OECD/Eurostat Questionnaire on the State of the Environment

Objective: to provide internationally comparable statistics on environmental issues based on standard questionnaires and methodology.

Level: national
UNSD/UNEP Questionnaire on Environment Statistics

- 2004 Questionnaire included: Air; Land; Waste; and Water sections
- 2006 Questionnaire included: Waste; and Water sections
- 2008 Questionnaire includes: Waste; and Water sections
- 2010 Questionnaire includes: Waste; and Water sections
- 2013 Questionnaire includes: Waste; and Water sections


All Questionnaires: http://unstats.un.org/unsd/environment/questionnaire.htm
UNSD/UNEP 2013 Questionnaire

Content

• Waste
  • R1: Generation of Waste by Source
  • R2: Management of Hazardous Waste
  • R3: Management of Municipal Waste
  • R4: Composition of Municipal Waste
  • R5: Management of Municipal Waste – City Data
  • R6: Supplementary information sheet

UNSD/UNEP 2013 Questionnaire

Content

• Water
  • W1 Renewable Freshwater Resources
  • W2 Freshwater Abstraction and Use
  • W3 Water Supply Industry (ISIC 36)
  • W4 Wastewater Generation and Treatment
  • W5 Population Connected to Wastewater Treatment
  • W6 Supplementary information sheet

UNSD/UNEP 2004 Questionnaire

Content

• Air
  • Emissions
    • A1 Emissions of Sulfur Dioxide (SO2)
    • A2 Emissions of Nitrogen Oxides (NOx)
    • A3 Emissions of Non-Methane Volatile Organic Compounds (NM-VOCs)
    • A4 Emissions of Carbon Dioxide (CO2)
    • A5 Emissions of Methane (CH4)
    • A6 Emissions of Nitrous Oxide (N2O)
    • A7 Emissions of Lead (Pb)
    • A8 Supplementary Information Sheet for Emissions Data
  • Ambient air quality
    • A9 Annual Mean Concentrations of Sulfur Dioxide (SO2) in Ambient Air
    • A10 Annual Mean Concentrations of Nitrogen Dioxide (NO2) in Ambient Air
    • A11 Annual Mean Concentrations of Suspended Particulate Matter (<10µm) (SPM10) in Ambient Air
    • A12 Supplementary Information Sheet for Ambient Air Quality Data

http://unstats.un.org/unsd/environment/q2004air.xls
UNSD/UNEP 2004 Questionnaire Content

• Land
  • L1 Land Use
  • L2 Area Affected by Soil Erosion
  • L3 Area Affected by Salinization
  • L4 Area Affected by Desertification
  • L5 Supplementary Information Sheet on the Land Section

UNSD Questionnaires: 1999-2013: Responses as of 6 January 2015

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No response received for Tanzania.
Responding to international data requests

In the questionnaires key guidance is provided in the area of environment statistics:

• Classifications to be used [e.g. ISIC]
• Definitions
• Concepts spelled out

But this is a two-way street:

• Through supplementary information provided by countries, information is also provided to international agencies on practices in the field. This informs on general availability of data and may influence future standards.
UNSD Data Dissemination

UNSD disseminates data through:

- Country Files (access to country files is restricted to countries and international organizations that participate in the data collection (http://unstats.un.org/unsd/environment/Questionnaires/index.asp)
- Country Snapshots (these include UNSD environmental indicators and other economic/demographic data (http://unstats.un.org/unsd/environment/Questionnaires/country_snapshots.htm)
- Environment statistics in UNData (http://data.un.org/)
UNSD Environmental Indicators

UNSD Environmental Indicators disseminate global environment statistics on ten indicator themes compiled from a wide range of data sources. The themes and indicator tables were selected based on the current demands for international environmental statistics and the availability of internationally comparable data. Indicator tables, charts and maps with relatively good quality and coverage across countries, as well as links to other international sources, are provided under each theme.

Statistics on Water and Waste are based on official statistics supplied by national statistical offices and/or ministries of environment (or equivalent institutions) in response to the biennial UNSD/UNEP Questionnaire on Environment Statistics, complemented with comparable statistics from OECD and Eurostat, and water resources data from FAO Aquastat. Statistics on other themes were compiled by UNSD from other international sources. In a few cases, UNSD has made some calculations in order to derive the indicators. However, generally no adjustments have been made to the values received from the source. UNSD is not responsible for the quality, completeness/availability, and validity of the data.

Environment statistics is still in an early stage of development in many countries, and data are often sparse. The indicators selected here are those of relatively good quality and geographic coverage. Information on data quality and comparability is given at the end of each table together with other important metadata.

- Air and Climate
- Biodiversity
- Energy and Minerals
- Forests
- Governance
- Inland Water Resources
- Land and Agriculture
- Marine and Coastal Areas
- Natural Disasters
- Waste
Environmental Indicators – Forest area
<table>
<thead>
<tr>
<th>Country Snapshot – Mauritius</th>
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**Mauritius**

### Environment Statistics Country Snapshot

#### Air and climate

<table>
<thead>
<tr>
<th>Emissions of</th>
<th>2006</th>
<th>2009</th>
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<tbody>
<tr>
<td>SO₂ (1000 t)</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>SO₂ per capita (kg)</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>NO₂ (1000 t)</td>
<td>15</td>
<td></td>
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<tr>
<td>NO₂ per capita (kg)</td>
<td>12</td>
<td></td>
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<tr>
<td>CO₂ (million tonnes)</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CO₂ per capita (tonnes)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>GHG (million tonnes CO₂ eq.)</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>GHG per capita (tonnes CO₂ eq.)</td>
<td>4</td>
<td></td>
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</tbody>
</table>

#### Biodiversity

<table>
<thead>
<tr>
<th>Proportion of terrestrial and marine areas protected (%)</th>
<th>2010</th>
</tr>
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<tbody>
<tr>
<td>Number of threatened species</td>
<td>224</td>
</tr>
<tr>
<td>Fish catch (tonnes)</td>
<td>7,786</td>
</tr>
<tr>
<td>Change in fish catch from previous year (%)</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Economy

<table>
<thead>
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<th>GDP growth rate from previous year (%)</th>
<th>2011</th>
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</thead>
<tbody>
<tr>
<td>GDP per capita (at current prices - $US)</td>
<td>6,659</td>
</tr>
<tr>
<td>% Value added: agriculture, hunting, forestry, fishing</td>
<td>4</td>
</tr>
<tr>
<td>% Value added: mining, manufacturing, utilities</td>
<td>20</td>
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</table>

#### Energy

<table>
<thead>
<tr>
<th>Energy consumption (1000 t oil eq.)</th>
<th>2009</th>
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</thead>
<tbody>
<tr>
<td>Energy consumption per capita (kg oil eq.)</td>
<td>909</td>
</tr>
<tr>
<td>Energy use intensity (kg oil eq.) per $1,000 GDP (Constant 2005 PPPS)</td>
<td>86</td>
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<tr>
<td>Renewable electricity production (%)</td>
<td>2009</td>
</tr>
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</table>

#### Land and agriculture

<table>
<thead>
<tr>
<th>Total area (sq km)</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural land (sq km)</td>
<td>1,969</td>
</tr>
<tr>
<td>Arable land (% of agric. land)</td>
<td>0</td>
</tr>
<tr>
<td>Permanent crops (% of agric. land)</td>
<td>4</td>
</tr>
</tbody>
</table>

#### Water and sanitation

<table>
<thead>
<tr>
<th>Long-term average renewable freshwater resources (m³ m⁻² yr⁻¹)</th>
<th>2,590</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban population with access to improved drinking water source (%)</td>
<td>100</td>
</tr>
<tr>
<td>Rural population with access to improved drinking water source (%)</td>
<td>99</td>
</tr>
<tr>
<td>Urban population with access to improved sanitation (%)</td>
<td>91</td>
</tr>
<tr>
<td>Rural population with access to improved sanitation (%)</td>
<td>88</td>
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</tbody>
</table>

For more details, visit [http://unstats.un.org/unsd/environment/Questionnaires/country_snapshots.htm](http://unstats.un.org/unsd/environment/Questionnaires/country_snapshots.htm)
Environment Statistics Country Snapshot

Last updated: February 2013

These snapshots provide data about the environment and other related statistics at a point in time that will allow comparison between countries. For up to date data, time series, downloadable data, and additional information, please visit original sources. UNSD is not responsible for the quality, completeness or availability, and validity of data obtained from other data providers. Original sources should be cited when Environment Statistics Country Snapshot data are referenced. A list of sources and corresponding URLs are shown below.

Data Sources

Food and Agriculture Organization of the United Nations (FAO) Database
Fish catch, Change in fish catch from previous year, Agricultural land, Arable land, Permanent crops, Permanent meadows and pastures, Change in agricultural land area since 1990, Forest area, Change in forest area since 1990, and some of Long-term average renewable freshwater resources data are extracted from FAO.

FAOSTAT: http://faostat.fao.org/
AQUASTAT: http://www.fao.org/h2o/aquastat/databases/index.stm

International Union for Conservation of Nature (IUCN)
Number of threatened species data are extracted from the IUCN.
http://www.iucnredlist.org/

UNstats
GDP growth rate from previous year, and GDP per capita (at current prices) data are retrieved from the UNstats portal. UNstats was launched by the United Nations Statistics Division (UNSD) of the Department of Economic and Social Affairs (DESA). It brings the various UN statistical databases within easy reach of users through a single entry point. Users can search and download a variety of statistical resources provided by the UN System.
http://unstats.un.org/

United Nations, Department of Economic and Social Affairs, Population Division, World Population Prospects
All per capita variables use population data obtained from this source. Population and Population growth rate from previous year data are also retrieved from this source.
http://www.un.org/esa/population/

United Nations Framework Convention on Climate Change (UNFCCC) Secretariat
SOx emissions, NOx per capita emissions, CO2 emissions, GDP per capita and GDP per capita emissions data are obtained from the UNFCCC Greenhouse Gas Emissions Database.
http://unfccc.int/ghg_emissions_data/items/3600.php

United Nations Statistics Division (UNSD) Demographic Statistics Yearbook
Total area data are extracted from this source.

United Nations Statistics Division (UNSD) Energy Statistics Database
Energy consumption, Energy consumption per capita, and Renewable electricity production figures are extracted from the UNSD Energy Statistics Database.
http://unstats.un.org/unsd/energy/default.htm

United Nations Statistics Division (UNSD) Environment Statistics Database
Total population served by municipal waste collection, Municipal waste collected, Hazardous waste generated and some of Long-term average renewable freshwater resources data are extracted from the UNSD Environment Statistics Database (note: database also includes data from OECD and Eurostat).

United Nations Statistics Division (UNSD) Millennium Development Goals (MDG) Indicators Database
Proportion of terminals and marine areas protected, CO2 emissions, CO2 emissions per capita, Consumption of ozone-depleting CFCs, Energy use intensity (kg oil eq.) per $1,000 (PPP) GDP, Urban population with access to improved drinking water source, Rural population with access to improved drinking water source. Urban population with access to improved sanitation, and Rural population with access to improved sanitation data are extracted from the MDG databases.

United Nations Statistics Division (UNSD) National Accounts Database
% value added - agriculture, hunting, forestry, fishing, and % value added - mining, manufacturing, utilities are obtained from the National Accounts Main Aggregates Database, according to the International Standard Industrial Classification of All Economic Activities (ISIC).
Environment statistics - UN Data
Responsibilities of International agencies – Addressing duplication of requests and related problems

• International organizations may ask for the same or similar data/indicators, creating unnecessary burden on countries;
• Equally, more than one national organization may collect (and provide to the international organizations) the same or similar data in parallel, ending up with diverging figures for the same country;
• International organizations use different concepts, definitions and classifications that end up with apparently duplicate data requests;
• Deviations from the international definitions motivate organizations to manipulate country data to ensure comparability and as a result, there will be differences between data from international and national sources.
Consistency Between Questionnaires

• UNSD/UNEP Questionnaire is consistent with the OECD/Eurostat Questionnaire.
  • The UNSD questionnaire asks for less detailed information than the OECD/Eurostat questionnaire.
  • The Water questionnaire is consistent with SEEA water accounts.
• Any regional questionnaires should be consistent with UNSD/UNEP and OECD/Eurostat questionnaires.
Coordination

• Efforts to avoid duplication by using data available at international sources instead of asking it from the countries (however, frequently countries revise data coming from international sources).

• Sometimes duplication is apparent and unavoidable (e.g. FAO land use statistics versus UNSD land use questionnaire).
International Coordination of Environment Statistics and minimization of reporting burden

• UNSD is actively promoting coordination between international and regional organizations through the Inter-secretariat Working Group on Environment Statistics (IWG-ENV).

• The main objective of the IWG-ENV is the harmonization of international data and their collection. It focuses on:
  – development and harmonization of
    ▪ methods
    ▪ concepts, definitions and classifications
  – coordination of data collection
  – coordination of training

Members include: UNSD, UN-ECE, UNEP, FAO, OECD, Eurostat
Thank you for your attention.