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)

SDGs

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 SDG goals and targets by the OWG in its outcome document. http://sustainabledevelopment.un.org/owg.html
- 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

Country	Basel Conv.	Conv. on Biological Diversity	CITES	Conv. on Migratory Species	World Heritage Conv.	Montreal Protocol	Ramsar Conv.	Rotterdam Conv.	Stockholm Conv.	UN Conv. to Combat Desertification	UN Conv. on the Law of the Sea
Burundi	1997	1997	1988	...	1982	1997	2002	2003	2005	1997	...
Kenya	2000	1994	1978	1999	1991	1988	1990	2004	2004	1997	1989
Rwanda	2004	1996	1980	2005	2000	2001	2006	2003	2002	1998	...
Uganda	1999	1993	1991	2000	1987	1988	1988	2007	2004	1997	1990
United Rep. of Tanzania	1993	1996	1979	1999	1977	1993	2000	2001	2004	1997	1985

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

2004 Questionnaires: http://unstats.un.org/unsd/environment/questionnaire2004.htm
2006 Questionnaires: http://unstats.un.org/unsd/environment/questionnaire2006.htm
2008 Questionnaires: http://unstats.un.org/unsd/environment/questionnaire2008.htm
2010 Questionnaires: http://unstats.un.org/unsd/environment/questionnaire2010.htm
2013 Questionnaires: http://unstats.un.org/unsd/environment/questionnaire2013.html

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

http://unstats.un.org/unsd/environment/Questionnaires/q2013Waste_French.pdf
http://unstats.un.org/unsd/environment/Questionnaires/q2013Waste_English.pdf

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

http://unstats.un.org/unsd/environment/Questionnaires/q2013Water_French.pdf
http://unstats.un.org/unsd/environment/Questionnaires/q2013Water_English.pdf

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

http://unstats.un.org/unsd/environment/q2004land.xls

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

Country (current name)	1999	2001	2004	2006	2008	2010	2013
Burundi							Burundi
Kenya		Kenya		Kenya	Kenya		Kenya
Rwanda							Rwanda
Uganda		Uganda	Uganda		Uganda	Uganda	

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.

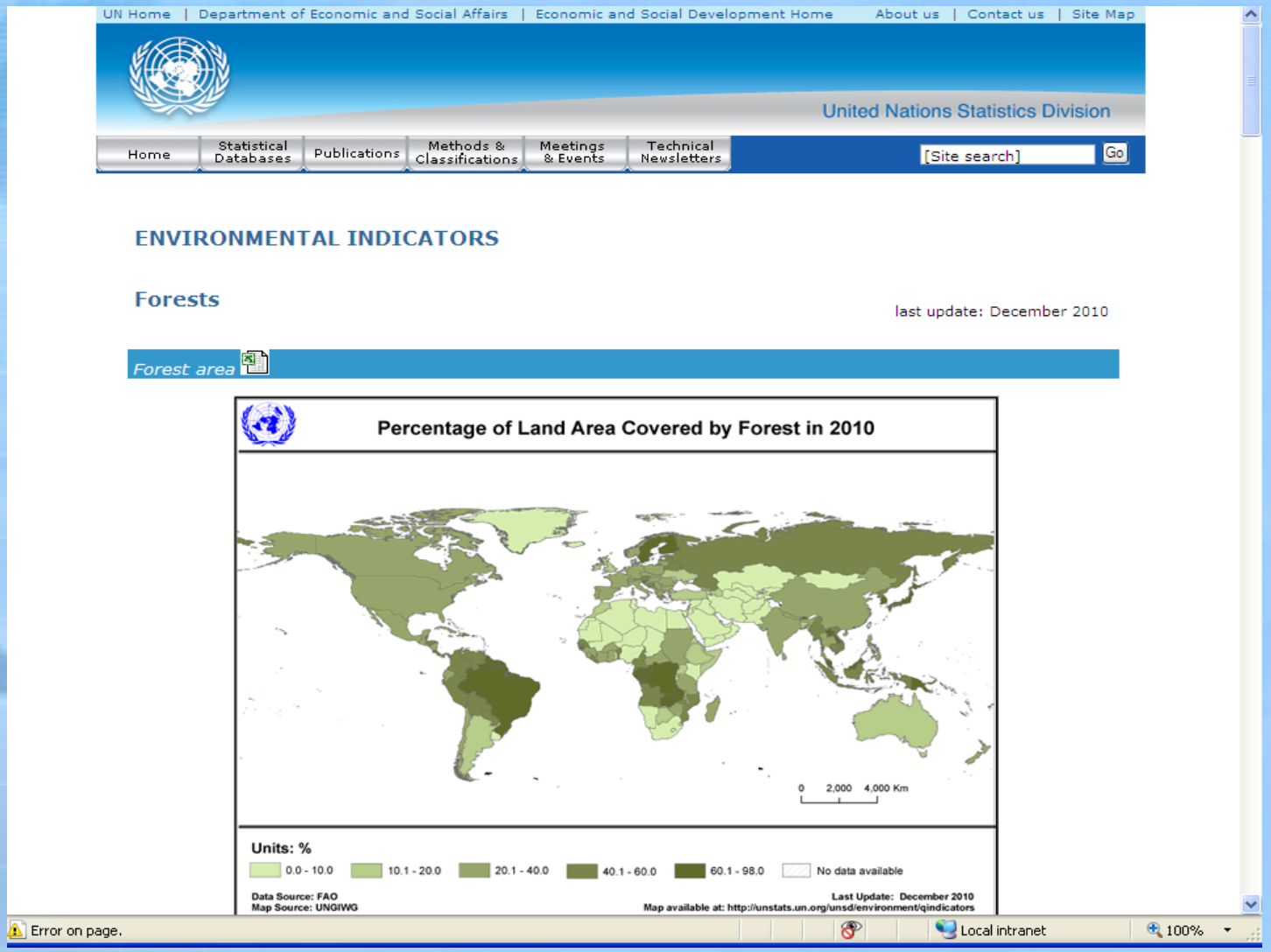
UNSD Data Dissemination

UNSD disseminates data through:

- UNSD Environmental Indicators (Air and climate, Biodiversity, Energy and minerals, Forests, Governance, Inland water resources, Land and agriculture, Marine and coastal areas, Natural disasters, and Waste) (http://unstats.un.org/unsd/environment/qindicators.htm)
- 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

Environmental Indicators – Forest area



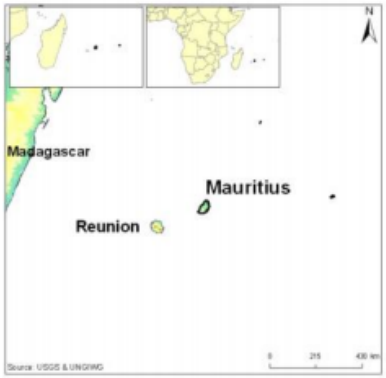
Country Snapshot – Mauritius

Environment Statistics Country Snapshot

Mauritius

Air and climate

Emissions of:		Year
SO_2 (1000t)	11	2006
SO_2 per capita (kg)	9	2006
NO_x (1000t)	15	2006
NO_x per capita (kg)	12	2006
CO_2 (million tonnes)	4	2009
CO_2 per capita (tonnes)	3	2009
GHG (million tonnes CO_2 eq.)	5	2006
GHG per capita (tonnes CO_2 eq.)	4	2006
Consumption of ozone depleting CFCs (ODP t)	0	2009



Note: The boundaries, the names shown, and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Biodiversity

		Year
Proportion of terrestrial and marine areas protected (%)	1	2010
Number of threatened species	224	2011
Fish catch (tonnes)	7 786	2010
Change in fish catch from previous year (%)	1	2010

Economy

GDP growth rate from previous year (%)	4	2011
GDP per capita (at current prices - $US)	8 659	2011
% Value added: agriculture, hunting, forestry, fishing	4	2011
% Value added: mining, manufacturing, utilities	20	2011

Energy

Energy consumption (1000t oil eq.)	1 174	2009
Energy consumption per capita (kg oil eq.)	909	2009
Energy use intensity (kg oil eq.) per $1,000 GDP (Constant 2005 PPP$)	86	2007
Renewable electricity production (%)	5	2009

Land and agriculture

Total area (sq km)	1 969	2011
Agricultural land (sq km)	890	2011
Arable land (% of agric. land)	0	2011
Permanent crops (% of agric. land)	4	2011
Permanent meadows and pastures (% of agric. land)	8	2011
Change in agricultural land area since 1990 (%)	-20	2011
Forest area (sq km)	350	2011
Change in forest area since 1990 (%)	-10	2011

Population

Population (1000)	1 299	2010
Population growth rate from previous year (%)	1	2010

Waste

Total population served by municipal waste collection (%)	98	2009
Municipal waste collected (1000t)	408	2009
Hazardous waste generated (1000t)	4	2008

Water and sanitation

Long-term average renewable freshwater resources (mio m^3/yr)	2 590	N / A
Urban population with access to improved drinking water source (%)	100	2010
Rural population with access to improved drinking water source (%)	99	2010
Urban population with access to improved sanitation (%)	91	2010
Rural population with access to improved sanitation (%)	88	2010

http://unstats.un.org/unsd/environment/Questionnaires/country_snapshots.htm

Snapshot – Mauritius

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 / 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/nr/water/aquastat/dbase/index.stm

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

UNdata
GDP growth rate from previous year, and *GDP per capita (at current prices)* data are retrieved from the UNdata portal. UNdata 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://data.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
SO_2 emissions, SO_2 per capita emissions, NO_x emissions, NO_x per capita emissions, GHG emissions and GHG per capita are obtained from the UNFCCC Greenhouse Gas Emissions Database.
http://unfccc.int/ghg_emissions_data/items/3800.php

United Nations Statistics Division (UNSD) Demographic Statistics Yearbook
Total area data are extracted from this source.
http://unstats.un.org/unsd/demographic/products/dyb/default.htm

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).
http://unstats.un.org/unsd/environment/qindicators.htm

United Nations Statistics Division (UNSD) Millennium Development Goals (MDG) Indicator Database
Proportion of terrestrial and marine areas protected, CO_2 emissions, CO_2 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 database.
http://mdgs.un.org/unsd/mdg/Data.aspx

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).
http://unstats.un.org/unsd/snaama/introduction.asp

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.