FDES toolkit
Tool 1: Manual of the Basic Set of Environment Statistics

Workshop on Environment Statistics in support of the implementation of the Framework for the Development of Environment Statistics (FDES 2013) (Calodyne, Mauritius 26-29 January 2015)

Environment Statistics Section, United Nations Statistics Division
FDES Toolkit

• Tool 1  Manual of the Basic Set of Environment Statistics
• Tool 2  ESSAT
• Tool 3  Handbook for producing/strengthening environment statistics programmes
• Tool 4  Training and capacity building tools
Tool 1: The Manual of the Basic and Core Set of Environment Statistics

What it is, audience
The method of work
The template of the methodological sheets
What we have done and learned so far
Examples
Manual of the Basic Set of Environment Statistics

What?

• The manual will provide methodological guidance for developing countries with regard to the compilation and collection of environmental data and its transformation into statistics.

• The manual is a practical and detailed guide to each of the BCSES themes, including variable definitions, description of sources and data collection, methods of data compilation/processing for environment statistics production, dissemination and other relevant information. The manual will include boxes, diagrams and good practices.

For who?

• Practitioners working in environment statistics programmes or within specific areas of environment statistics. They may work at NSOs, Environmental Ministry or other relevant line ministry at the national and sub-national levels. This manual can also serve sub-regional and regional agencies working or planning to work in environment statistics production and dissemination.
Proposed outline of Manual

Introduction
• Present the main objective and audience of the Manual and briefly describe how it can be used.

The Basic and Core Set of the FDES 2013
• Describe what are the BSES and the CSES, what are their main objectives and how were they built and structured according to the FDES 2013.
• Describe how the BCSES can be adapted and completed according to each country’s priorities, data availability and developmental path.

Methodology and metadata sheets for the BCSES statistics
• Brief Introduction about how the template works, describing the fields, and its organization
• Collection of methodological sheets following the template (see later).

Compilation of good practices
• A selection of national practices used in the collection/compilation of environment statistics.
Objective
To develop a set of methodological and metadata sheets in support of the collection/compilation of the variables included in the Basic and Core Sets of Environment Statistics contained in the FDES 2013. (i.e.: definitions, classifications, the most important attributes, data sources, data collection methods, etc.).

Method
This work is being coordinated by UNSD and being carried out in a collaborative way with the Expert Group on Environment Statistics (EGES) and other thematic experts from specialized agencies as needed, using a common template.
Concept of manual

Time Frame 2014-2015

The aim is to complete the set of methodological sheets or metadata for the Basic and Core Set of Environment Statistics by the end of 2015. Previously, sets of methodological sheets that are ready will be disseminated through the webpage of UNSD on a first come first uploaded basis.

Partners
UNSD Section of Environment Statistics, EGES members, Experts from other specialized agencies as needed.
Plan of Work

1. Preparation
This stage includes the preparatory work to be carried out by UNSD, including the following tasks:
• Prepare work programme, metadata template
• Discuss with experts
• Distribute work among experts

2. Elaboration of draft methodology/metadata sheets
• Elaboration of methodology/metadata sheets (filling all fields of template) for the topics/statistics by responsible experts: UNSD, EGES, other experts from specialized agencies as needed.

3. Review and finalization
• The peer review of the drafts of the methodological sheets will be carried out on a continuous basis as drafts become available. Both national and international experts will be called upon to review submitted methodology/metadata sheets before their finalization.

4. Dissemination
• Those methodology sheets that have been finalized will be disseminated through the webpage and finally all will be part of the Manual which, after editing, will also be disseminated electronically and in hard copy.
Process to develop the Methodology Sheet

1. Developed and improved the template for the methodological sheets reviewing many other available ones. - 2013

2. Worked in filling in the template for 9 individual variables - 2013
   • Found lot of redundancy for fields other than definitions (for example extreme events and disasters, waste, water, environmental conditions).
   • Difficulty with describing only core set statistics, since some closely related variables were tier 2 (basic set).

3. More effective to develop the methodology sheet grouping variables at the topic or sub-component level as appropriate, including tier 1-3 statistics, in one single methodological sheet (e.g. this work better in waste and water examples). - 2013-2014

4. Currently working on 10 methodology sheets: water, waste, energy resources, mineral resources, air/atmosphere emissions, disasters, land cover, biodiversity, environment protection expenditure, human settlements. - 2014
FDES 2013 Methodological Manual on the Basic and Core Sets of Environment Statistics

Template of Methodology Sheets (as of 21 April, 2014)

[As discussed in the FDES meeting, the general contents of each of the fields of this template are illustrated in the example for Waste. Please refer to it. Additional suggestions are presented in red between brackets]

<table>
<thead>
<tr>
<th>Code and location in the FDES 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component</td>
</tr>
</tbody>
</table>

[In general, where there is more than one option (i.e., for definitions, sources, international recommendations and classifications), they can all be referenced and/or described providing the source, usefulness, and value added by each choice; but whenever possible, these methodology sheets should make a choice and recommend one of the options, since it is important to provide specific guidance to countries]

1. Introduction/Relevance

[Please explain the context and the importance of the cluster of statistics described in this methodology sheet. When appropriate, mention the environmental international agreement and convention relating to the statistics. When important, please identify and explain why the methodology sheet does not include some statistics that someone would expect to be included in this topic/sub-component]

2. Definitions and description of the statistics

[Whenever possible, provide internationally agreed/accepted definitions, otherwise describe the statistics to the extent possible]

2A. Definition of the statistics

[Please list the definitions of statistics preceded by its FDES code and present the Core Set statistics in bold]

3. International sources and recommendations

[In general, whenever possible, link should be made to specific chapters/sections of the referenced documents. When the international environmental agreements and convention provide methods/classifications to produce the statistics, please make reference to them]

3A. Classifications and groupings

[Please refer to all relevant statistical classifications and commonly used groupings for the statistics of this methodology sheet, include relevant groupings and taxonomies originated in scientific or policy arenas. Please include non-environmental but relevant classifications such as ISIC (see chapter 1.6 and Annex D of the FDES), explain the value of each and which one is recommended and for what purpose]

3B. Reference to international statistical recommendations, frameworks and standards

[Please refer to all relevant statistical recommendations, frameworks and standards for the statistics of this methodology sheet, explain the value of each and its applicability to the statistics contained in this sheet]

3C. Sources of global and regional environment statistics and indicators series

[Please refer to all relevant sources of data, statistics and indicators series containing the statistics of this methodology sheet, explain the value of each and when possible what regions/countries are included and for what period of time]

4. Transforming data into environment statistics

4A. Data collection and sources of data

[Please describe how primary data are produced, the usual source type, the institutional partners, the general availability of data sets and quality issues. Please use FDES source typology, I.e. Censuses and Sample Surveys, Administrative Records, Monitoring Systems, Remote Sensing, Scientific Research, and combination of the foregoing methods]

- Source type
- Institutional partners
- Availability of data
- Data quality
- Temporal and spatial considerations

4B. Data compilation (procedures and instruments) and transformation into environment statistics series

[Please describe the methods for compiling the data and transforming them into environment statistics mentioning procedures, instruments, aggregation/disaggregation, validation, structuring, and description in metadata, that are commonly used/recommended to produce environment statistics series]

[When applicable, use decision trees and provide examples and good practices to illustrate]

- Processing of data into statistics
  - Statistical unit
  - Measurement category and unit
  - Statistical population
  - Validation
  - Periodicity and seasonal variations
  - Aggregation/disaggregation
  - Metadata

5. Uses and dissemination

5A. Potential presentation/dissemination formats

[Please provide examples of tables, charts or maps from countries or links to them, to illustrate potential formats for dissemination]

5B. Commonly used indicators that incorporate this statistic

[Please provide a list of the commonly used indicators and specify how this statistic feeds into its calculation]

5C. SEEA accounts/tables that use this statistic

[When applicable, identify the SEEA Central Framework account and when possible table that use this statistic]
1. Introduction/Relevance

2. Definitions and description of the statistics
2A. Definition of the statistics

3. International sources and recommendations
3A. Classifications and groupings
3B. Reference to international recommendations, frameworks and standards
3C. Sources of global and regional environment statistics and indicators series

4. Transforming data into environment statistics
4A. Data collection and sources of data
Source type, Institutional partners, Availability of data, Data quality, Temporal and Spatial considerations
4B. Data compilation (procedures and instruments) and transformation into environment statistics series
   Processing of data into statistics, Statistical unit, Measurement unit, Statistical population, Validation,
   Periodicity and seasonal variation, Aggregation/dissaggregation, Metadata

5. Uses and dissemination
5A. Potential presentation/dissemination formats
5B. Commonly used indicators that incorporate this statistic
5C. SEEA accounts/tables that use this statistic
Examples: Waste, Energy Resources

### 3. Introduction

Environmental statistics on waste provide important information to policymakers to support the protection of the environment, which may be compromised by waste generation and treatment. Understanding the quantity of waste generated and, importantly, whether the waste is hazardous or not, is critical to plan for proper and safe waste management. In terms of transportation and treatment facilities required. More importantly, waste can also be a resource when required and used as a fuel source. Statistics on waste generation and management are used for the preparation of environmental impact assessments and are useful in developing strategies to encourage waste prevention, reduction, reuse and recycling policies at community levels, widely produced by many countries for many years, also for the monitoring of household consumption patterns and management practices by households.

### FDES 2013 Methodological Manual on the Basic and Core Sets of Environment Statistics

#### Methodology Sheet for 2.2 Energy Resources

#### Code and location in the FDES 2013

<table>
<thead>
<tr>
<th>Component</th>
<th>Sub-Component</th>
<th>Topic</th>
<th>Code and Environment Statistic</th>
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</thead>
<tbody>
<tr>
<td>2. Environmental Resources and their Use</td>
<td>2.2 Energy Resources</td>
<td>2.2.1 Stocks and changes of energy resources</td>
<td>a. Energy resources</td>
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<td>1. Stocks of commercially recoverable resources</td>
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<td>2. New discoveries</td>
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<td>3. Upward revisions</td>
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<td>4. Upward revisions of stocks</td>
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<td>5. Extraction</td>
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<td>6. Catastrophic losses</td>
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<td>7. Downward revisions</td>
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<td>8. Downward revisions of stocks</td>
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<td>9. Stocks of potentially commercially recoverable resources</td>
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<td>10. Stocks of non-commercial and other known resources</td>
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<td>11. Imports of energy minerals</td>
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<td>12. Exports of energy minerals</td>
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<td>a. Production of energy from non-renewable and renewable sources</td>
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<td>1. Total</td>
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<td>2. Non-renewable sources</td>
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<td>3. Renewable sources</td>
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<td>b. Production of energy</td>
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<td>1. Primary energy production</td>
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<td>2. Secondary energy production</td>
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<td>c. Total consumption of energy</td>
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<td>2. Electricity production</td>
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<td>3. Installed capacities</td>
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#### 1. Introduction/ Relevance

Energy resources and their use are key to development and also to sustainability. Energy is indispensable to all ecosystems and is necessary input for human controlled processes. In physical terms, energy is always being transformed, from "available energy" to "useable energy" (e.g., burning of hydrocarbons) and conversion from an "available" to a "useable" form (e.g., hydrocarbons to electricity). Energy, unlike all other natural resources, is not a material substance but instead is the capacity of a physical system to perform work.

For statistical purposes, energy is measured in its "useable form" embedded in energy products. Although physically speaking there would be no such thing as "energy production" or "energy consumption," in statistics these terms refer to the extraction and manufacturing and use of energy products, respectively.
Examples: Water Resources

Statistical unit
The statistical units of the environment are the parts of the environment about which information is collected and statistics are compiled. In the case of water in the environment, these units are the inland water resources or water bodies (the areas or spaces that contain the water).

For the purposes of IWRM, the statistical units of the environment for inland waters are classified as surface water bodies (including artificial reservoirs) and aquifers, with a number of divisions below these levels. For example, a river may be divided into stretches or segments and a large lake may be divided into parts.

Information may be collected and compiled regarding river basins or sub-basins (for example, resident population, land cover, land use or economic activities in these areas) and therefore such river basins and sub-basins may constitute statistical units. Water is also contained in soils and although they are also part of water resources, it is not necessary to include soils as a statistical unit for the purposes of water statistics.

It is essential to understand and define the statistical units of the economy as they interact with water. The economy abstracts water from the environment. Water is exchanged and used within the economy and discharged into the environment. The statistical units of the economy about which information is sought (e.g., how much water they abstract from the environment) and from which this information may be collected (e.g., via surveys) are the establishments and households. These are referred to as economic units in IWRM (e.g., in the definition of data items). Economic units are units which can also report information about environment units.

Reporting unit
The reporting unit is the unit of the economy that reports information about the statistical unit. For example, a lake can be a statistical unit but any information about the lake will have to be reported by a unit of the economy that owns, manages, or monitors the lake or any part thereof. Reporting units are public and private enterprises and establishments, or parts of thereof, and municipalities that abstract and/or use water. (Source: UNESCO: International recommendations for Water Statistics - WIS)