FRAMEWORK FOR THE DEVELOPMENT OF ENVIRONMENT STATISTICS (FDES) AND ITS IMPLEMENTATION TOOLS

National workshop: Generating climate change and disasters indicators for policy decision-making in Dominica
(19-21 July 2022)

United Nations Statistics Division
OUTLINE

- Framework for the Development of Environment Statistics (FDES 2013)
- Basic Set of Environment Statistics (BSES) and BSES manual
- Environment Statistics Self-Assessment Tool (ESSAT)
- SDG indicators + Basic Set (FDES) matrix
- FDES and the Global Set of Climate Change Statistics and Indicators
- Concluding remarks
The UN Statistical Commission endorsed the revised FDES 2013 at its 44th session in 2013 as the framework for strengthening environment statistics programmes in countries.

The Statistical Commission also recognized the FDES 2013 as a useful tool in the context of sustainable development goals (SDGs) and the post-2015 development agenda.

The objectives are:
- Help international and regional institutions to support strengthening capacity in countries to develop environment statistics
- Enhance comparability and availability of environment statistics using a common framework
- Better inform policy making decisions

Countries applying the FDES to environment statistics and climate change statistics compendia

All compendia available at https://unstats.un.org/unsd/envstats/fdescompendia.cshtml
FDES is structured into 6 components

- FDES covers biophysical aspects of the environment; aspects of the human sub-system that directly influence the state and quality of the environment, and the impacts of the changing environment on the human sub-system.
- It includes interactions within and among the environment, human activities and natural events.

- The FDES can be applied to inform about cross-cutting policy issues important to countries at any given time.
- Examples:
  - Water and the environment
  - Energy and the environment
  - Climate change
  - Agriculture and the environment
## Main Attributes of the Components of the FDES

<table>
<thead>
<tr>
<th>FDES Component</th>
<th>Description</th>
<th>Types of Data</th>
<th>Main Sources and Institutions</th>
<th>Relation to DPSIR and the SEEA</th>
</tr>
</thead>
</table>
| 1 Environmental Conditions and Quality | Meteorological, hydrographical, geological, geographical, biological, physical and chemical conditions and characteristics of the environment that determine ecosystems and environmental quality | • Geospatial  
• Physical  
• Qualitative | • Monitoring and remote sensing data  
• Environmental, meteorological, hydrological, geological and geographical authorities or institutions | • State and Impact element in DPSIR  
• Experimental ecosystem accounts of the SEEA |
| 2 Environmental Resources and their Use | Quantities of environmental resources and their changes, and statistics on activities related to their use and management | • Physical  
• Geospatial | • Statistical surveys, administrative records, field surveys, land registers  
• Sector statistics on production and consumption activities, infrastructure  
• Remote sensing data  
• Statistics databases of respective national authorities and institutions such as mining, energy, agriculture, water and forest | • Driving force, Pressure and State elements in DPSIR  
• Asset and physical flow accounts of the SEEA-SEEA-CF |
| 3 Residuals | Generation, management and discharge of residuals to air, water and soil | • Physical | • Administrative records  
• Estimates based on activity statistics and technical coefficients  
• Sector statistics  
• Monitoring data | • Pressure and Response elements in DPSIR  
• Physical flow accounts of the SEEA-CF |
<table>
<thead>
<tr>
<th>FDES Component</th>
<th>Description</th>
<th>Types of Data</th>
<th>Main Sources and Institutions</th>
<th>Relation to DPSIR and the SEEA</th>
</tr>
</thead>
</table>
| 4              | Extreme Events and Disasters | Occurrence and impact of natural extreme events and disasters, and technological disasters | • **Physical**  
• **Monetary**  
• **Geospatial**  
• **Qualitative** | • Pressure, Impact and Response elements in DPSIR  
• Asset accounts of the SEEA-CF |
| 5              | Human Settlements and Environmental Health | The built environment in which humans live, particularly with regard to population, housing, living conditions, basic services and environmental health | • **Geospatial**  
• **Physical** | • Driving force, Pressure and Impact elements in DPSIR |
| 6              | Environmental Protection, Management and Engagement | Environmental protection and resource management expenditure, environmental regulation, both direct and via market instruments, disaster preparedness, environmental perception, awareness and engagement of the society | • **Monetary**  
• **Qualitative** | • Response element in DPSIR  
• Environmental activity accounts and related flows of the SEEA-CF |
Methodological Development and Dissemination of Know-how on UNSD website

Work Programme

The Environment Statistics Section of the United Nations Statistics Division (UNSD) is engaged in the development of methodology, data collection, capacity development, and coordination in the fields of environmental statistics and indicators.

Methodology

Methodological work includes the elaboration of frameworks, concepts, methods, definitions, and data compilation guidelines to support the development and harmonization of national and international statistics on the environment.

- FDES 2013
- Basic Set of Environment Statistics
- Environment Statistics Self-Assessment Tool
- Expert Group on Environment Statistics
- Manual on the Basic Set of Environment Statistics
- International Recommendations for Water Statistics
- Environmental surveys
- Concepts and Methods of Environment Statistics
- Glossary

Data

Data collection is implemented through the biennial Questionnaire on Environment Statistics. Data collection started in 1999. UNSD environmental indicators derived from these data, as well as for the eight other themes, are now available.

- UNSD environmental indicators
- Country Snapshots
- Country Files (waste and water)
- Questionnaires (waste and water)

Capacity Development

Technical cooperation, training and capacity development is provided through regional and sub-regional projects, international training workshops, fellowships arrangements and assistance to countries. Recent projects covered the countries of the CARICOM, ESCWA, ECOWAS and EAC regions.

- COMESA
- EAC project
- ECOWAS project
- ESCWA project
- CARICOM project

Coordination

Coordination of international activities in the field of environmental statistics and indicators is provided through the Intersecretariat Working Group on Environment Statistics (IWG-Env) with UNSD as the Secretariat.

- Intersecretariat Working Group on Environment Statistics
- Inventory of environmental data collection, reporting and dissemination
- Inventory of capacity development events and activities in the area of Environment Statistics

Quick links

- Basic Set of Environment Statistics
- FDES 2013 brochure
- Blueprint for Action
- Environment statistics compendia applying FDES 2013
- Environment Statistics Self-Assessment Tool
- Framework for the Development of Environment Statistics (FDES 2013)
- SDG indicators + Basic Set (FDES) matrix
- Manual on the Basic Set of Environment Statistics
- Expert Group on Environment Statistics
- ENVSTATS newsletters
- Brochure on Environment Statistics
- Climate Change Statistics
- Frequently asked questions
- Reports to the Statistical Commission
- Environmental accounting
- National data sources
- International and regional data sources

Featured Database

Basic Set of Environment Statistics

- BSES is available in all UN official languages: [https://unstats.un.org/unsd/envstats/fdes/basicset.cshtml](https://unstats.un.org/unsd/envstats/fdes/basicset.cshtml)
- All statistical tables from chapter 3 included, on 44 pages document
- From Basic set to core set in chapter 4

- generating national sets or databases of environment statistics.
- reporting on environment (MEAs) or sustainable development (SDGs).
- calculating environmental indicators.
- generating environmental-economic accounts.

<table>
<thead>
<tr>
<th>Number of Statistics</th>
<th>Component 1</th>
<th>Component 2</th>
<th>Component 3</th>
<th>Component 4</th>
<th>Component 5</th>
<th>Component 6</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 1</td>
<td>32</td>
<td>30</td>
<td>19</td>
<td>4</td>
<td>12</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>Tier 2</td>
<td>58</td>
<td>51</td>
<td>34</td>
<td>11</td>
<td>22</td>
<td>24</td>
<td>200</td>
</tr>
<tr>
<td>Tier 3</td>
<td>51</td>
<td>43</td>
<td>5</td>
<td>16</td>
<td>20</td>
<td>23</td>
<td>158</td>
</tr>
<tr>
<td>Total</td>
<td>141</td>
<td>124</td>
<td>58</td>
<td>31</td>
<td>54</td>
<td>50</td>
<td>458</td>
</tr>
</tbody>
</table>
Manual on the Basic Set of Environment Statistics


- MS 1.1.4 Soils
- MS 1.2.2 Ecosystems and Biodiversity Statistics
- MS 1.2.1 & 2.3.1 Land Cover and Land Use
- MS 1.2.3, 2.3.2, 2.5.1 & 2.5.5 Forests
- MS 1.3.1 Air Quality
- MS 1.3.1 and 3.1.1 GHG Statistics
- MS 1.3.3 Marine Water Quality Statistics
- MS 2.1 Mineral Resources
- MS 2.2 Energy Resources
- MS 2.5 Crops and Livestock Statistics
- MS 2.6 Water Resources
- MS 3.2 Wastewater
- MS 3.3.1 & 3.3.2 Generation and Management of Waste
- MS 5.1 Human Settlements
- MS 6.1.1 Environmental Protection Expenditures

Includes: definitions, classifications, statistical methods for collection and/or compilation, dissemination and main uses of the sets of the respective environment statistics.

Forthcoming: Freshwater quality, Environmental Health, Disasters
Environment Statistics Self-Assessment Tool

- **Introduction**
  English, Arabic*, Chinese*, French*, Portuguese* (new), Russian*, Spanish*

- **Part I: Institutional dimension of Environment Statistics**
  English, Arabic*, Chinese*, French*, Portuguese* (new), Russian*, Spanish*

- **Part II: Statistics Level Assessment**
  English, Arabic*, Chinese*, French*, Portuguese* (new), Russian*, Spanish*
ESSAT Part I

A. Identification of institutions
B. Existing national policies relevant to the environment
C. Mandate and organization of national statistics
D. Mandate and organization of environment statistics
E. Production of environment statistics
F. Uses of environment statistics
G. Inter-institutional collaboration for the production of environment statistics
H. Existing and required resources for environment statistics
I. International and regional network
J. Technical assistance and training
K. The way forward in environment statistics
## Component 1: Environmental Conditions and Quality

### Sub-component 1.1: Physical Conditions

#### Topic 1.1.1: Atmosphere, climate, and weather

<table>
<thead>
<tr>
<th>a. Temperature</th>
<th>1. Monthly average</th>
<th>Degrees</th>
<th>National</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. Minimum monthly average</td>
<td>Degrees</td>
<td>Sub-national</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Maximum monthly average</td>
<td>Degrees</td>
<td>Sub-national</td>
<td></td>
</tr>
<tr>
<td>b. Precipitation (also in 2.6.1.a)</td>
<td>1. Annual average</td>
<td>Height</td>
<td>National</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Long-term annual</td>
<td>Height</td>
<td>Sub-national</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Monthly average</td>
<td>Height</td>
<td>Sub-national</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Minimum monthly, value</td>
<td>Height</td>
<td>Sub-national</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Maximum monthly, value</td>
<td>Height</td>
<td>Sub-national</td>
<td></td>
</tr>
<tr>
<td>c. Relative humidity</td>
<td>1. Precipitation-type, value</td>
<td>Number</td>
<td>National</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Maximum monthly, value</td>
<td>Number</td>
<td>Sub-national</td>
<td></td>
</tr>
</tbody>
</table>

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**Main Reasons why Statistic is not Available**
- Check Box: X
- High: H
- Medium: M
- Low: L
- Not Relevant: NR
- Not Applicable: NA

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*United Nations Statistics Division*
# SDG indicators + Basic Set (FDES) matrix


<table>
<thead>
<tr>
<th>SDGs</th>
<th>Target</th>
<th>SDG indicators</th>
<th>FDES</th>
<th>Supporting Information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15.3.1 Proportion of land that is degraded over total land area (Tier I)</td>
<td>Component 1: Environmental Conditions and Quality, Sub-component 1.1: Physical Conditions, Topic 1.1.4: Soil characteristics</td>
<td>1.1.4.a. Soil characterization 1.1.4.a.1. Area by soil types 1.1.4.b. Soil degradation 1.1.4.b.1. Area affected by soil erosion 1.1.4.b.2. Area affected by desertification 1.1.4.b.3. Area affected by salinization 1.1.4.b.4. Area affected by waterlogging 1.1.4.b.5. Area affected by acidification 1.1.4.b.6. Area affected by compaction 1.1.4.c. Nutrient content of soil, measured in levels of: 1.1.4.c.1. Nitrogen (N) 1.1.4.c.2. Phosphorus (P) 1.1.4.c.3. Calcium (Ca) 1.1.4.c.4. Magnesium (Mg) 1.1.4.c.5. Potassium (K) 1.1.4.c.6. Zinc (Zn) 1.1.4.c.7. Other</td>
<td>The indicator proposes sub-indicators of land cover and land cover change, land productivity and carbon stocks above and below ground.</td>
</tr>
</tbody>
</table>
FDES and the Global Set of Climate Change Statistics and Indicators

Main decisions of the UN Statistical Commission, 47th session, March 2016:
For countries: Use the FDES 2013 to guide the development of climate change statistics and indicators given the close interrelationship between environment statistics and climate change statistics.

In UNSD’s global consultation to countries, every statistic and indicator that had metadata applicable to the Basic Set of Environment Statistics of the Framework for the Development of Environment Statistics was referenced as such. For example:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code</td>
<td>1020 1021 1022 1023</td>
</tr>
<tr>
<td>Indicator</td>
<td>Total greenhouse gas emissions per year (SDG 13.2.2)</td>
</tr>
<tr>
<td>Statistics</td>
<td>Total emissions of direct greenhouse gases (GHGs, excluding LULUCF) (FDES 3.1.1.a)</td>
</tr>
<tr>
<td>FDES</td>
<td>3.1.1.a 3.1.1.b</td>
</tr>
</tbody>
</table>

United Nations Statistics Division
Concluding Remarks

- FDES offers guidance to countries to develop standalone environment statistics, which
  - applied to support national policies on environmental management,
  - assisted international reporting requirements (MEA, SDGs, Sendai Framework).
- Countries have developed their own frameworks based on the FDES.
- Countries are encouraged to publish compendia and dissemination outputs according to the FDES to help policy makers address policy questions.
  - In the region: Suriname, Curaçao, Grenada, Jamaica, Montserrat, etc.

- Component 4 (on disasters) remains challenging to complete, because of very dynamic developments on terminology and classifications.
  - Disasters: Hazard Definition Classification Review has been launched, [https://www.undrr.org/publication/hazard-definition-and-classification-review](https://www.undrr.org/publication/hazard-definition-and-classification-review)
- Cross cutting themes, as climate change (in chapter 5) are continuously evolving therefore UNSD initiated its work on the Global Set.
Thank You!

- envstats@un.org
- https://unstats.un.org/unsd/envstats/