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 Saint Kitts and Nevis 22 - 24 June 2022
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

- Burkina Faso
- Botswana
- Burundi
- Cabo Verde
- Ethiopia
- The Gambia
- Ghana
- Guinea
- Madagascar
- Mali
- Mauritius
- Namibia
- Rwanda
- Tanzania
- Zambia
- Zimbabwe
- Bangladesh
- India
- Indonesia
- Philippines
- Nepal
- Jordan
- UAE
- Curacao
- Grenada
- Guatemala
- Jamaica
- Montserrat
- Suriname
- Forthcoming: Kenya
- Uganda

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-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>
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<th>Main Sources and Institutions</th>
<th>Relation to DPSIR and the SEEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Extreme Events and Disasters</td>
<td>Occurrence and impact of natural extreme events and disasters, and technological disasters</td>
<td>• Physical &lt;br&gt; • Monetary &lt;br&gt; • Geospatial &lt;br&gt; • Qualitative</td>
<td>• Administrative records &lt;br&gt; • Remote sensing &lt;br&gt; • National emergency and disaster authorities &lt;br&gt; • Seismic, meteorological monitoring and research centres &lt;br&gt; • Industrial complexes that work with hazardous substances and processes &lt;br&gt; • Insurance companies</td>
<td>• Pressure, Impact and Response elements in DPSIR &lt;br&gt; • Asset accounts of the SEEA-CF</td>
</tr>
<tr>
<td>5 Human Settlements and Environmental Health</td>
<td>The built environment in which humans live, particularly with regard to population, housing, living conditions, basic services and environmental health</td>
<td>• Geospatial &lt;br&gt; • Physical</td>
<td>• Population and housing censuses, household surveys, administrative records, and remote sensing &lt;br&gt; • Health and administrative records &lt;br&gt; • Housing and urban planning and oversight authorities &lt;br&gt; • Cartographic authorities &lt;br&gt; • Transport authorities &lt;br&gt; • Health authority</td>
<td>• Driving force, Pressure and Impact elements in DPSIR</td>
</tr>
<tr>
<td>6 Environmental Protection, Management and Engagement</td>
<td>Environmental protection and resource management expenditure, environmental regulation, both direct and via market instruments, disaster preparedness, environmental perception, awareness and engagement of the society</td>
<td>• Monetary &lt;br&gt; • Qualitative</td>
<td>• Administrative records &lt;br&gt; • Surveys &lt;br&gt; • Entity producing government expenditure statistics &lt;br&gt; • Statistical entity in charge of national or sub-national surveys &lt;br&gt; • Environment authority and other sector authorities</td>
<td>• Response element in DPSIR &lt;br&gt; • Environmental activity accounts and related flows of the SEEA-CF</td>
</tr>
</tbody>
</table>
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.

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.

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.

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

Featured Database

- 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

https://unstats.un.org/unsd/envstats/fdes.cshml
**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

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**Number of Statistics**

<table>
<thead>
<tr>
<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>
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</thead>
<tbody>
<tr>
<td>Tier 1</td>
<td>32</td>
<td>30</td>
<td>19</td>
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<td>12</td>
<td>3</td>
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<tr>
<td>Tier 2</td>
<td>58</td>
<td>51</td>
<td>34</td>
<td>11</td>
<td>22</td>
<td>24</td>
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<tr>
<td>Tier 3</td>
<td>51</td>
<td>43</td>
<td>5</td>
<td>16</td>
<td>20</td>
<td>23</td>
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<tr>
<td>Total</td>
<td><strong>141</strong></td>
<td><strong>124</strong></td>
<td><strong>58</strong></td>
<td><strong>31</strong></td>
<td><strong>54</strong></td>
<td><strong>50</strong></td>
</tr>
</tbody>
</table>

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- generating national sets or databases of environment statistics.
- reporting on environment (MEAs) or sustainable development (SDGs).
- calculating environmental indicators.
- generating environmental-economic accounts.
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 (new)
- 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>Sub-component Details</th>
<th>Details</th>
<th>Details</th>
<th>Details</th>
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<th>Details</th>
<th>Details</th>
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</tr>
</thead>
<tbody>
<tr>
<td>a. Temperature</td>
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<tr>
<td>b. Precipitation</td>
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<td>c. Relative humidity</td>
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<tr>
<td>d. Pressure</td>
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</tr>
</tbody>
</table>

**Check Box**

- X
- High
- Medium
- Low
- Not Relevant
- Not Applicable
- Other (specify)
- High
- Medium
### SDG indicators + Basic Set (FDES) matrix


<table>
<thead>
<tr>
<th>SDGs Target</th>
<th>SDG indicators</th>
<th>FDES Location in the FDES: Component Sub-Component and Topic</th>
<th>Statistics used in the SDG Indicator corresponding to BSES (SDG indicator can be compiled either fully or partially from BSES statistics)</th>
<th>Statistics related to but not directly used in SDG Indicators OR Statistics related to Tier III indicators (either fully or partially linked to BSES)</th>
<th>Supporting Information</th>
</tr>
</thead>
</table>
| 15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world | 15.3.1 Proportion of land that is degraded over total land area (Tier I) | Component 1: Environmental Conditions and Quality, Sub-component 1.1: Physical Conditions, Topic 1.1.4: Soil characteristics | 1.1.4.a. Soil characterization  
1.1.4.a.1. Area by soil types  
1.1.4.a.2. 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 | | The indicator proposes sub-indicators of land cover and land cover change; land productivity and carbon stocks above and below ground. |
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:

1. Total greenhouse gas emissions per year

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code</td>
<td>1020</td>
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<tr>
<td></td>
<td>1021</td>
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<tr>
<td></td>
<td>1022</td>
</tr>
<tr>
<td></td>
<td>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>$3.1_{1a}$</td>
</tr>
<tr>
<td></td>
<td>Total emissions of indirect greenhouse gases (GHGs) (FDES 3.1.1.b)</td>
</tr>
<tr>
<td></td>
<td>$3.1_{1b}$</td>
</tr>
<tr>
<td></td>
<td>Greenhouse gas emissions from land use, land use change and forestry (LULUCF) (UN-ECE 11)</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,
- 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/