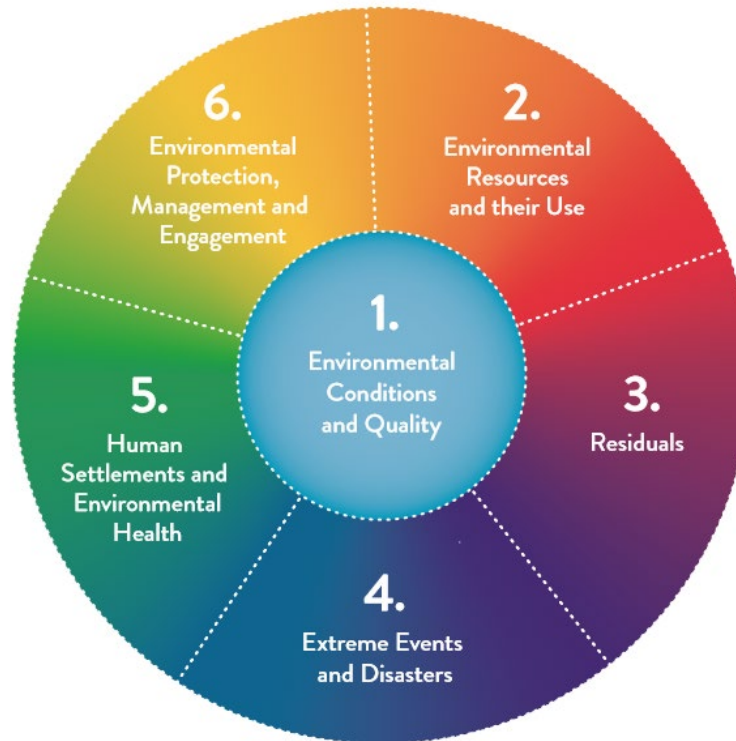


Session 1.2: Manual on the Basic Set of Environment Statistics



Regional Workshop on Environment Statistics and Climate Change Statistics for the Caribbean Community (CARICOM) Region

St. George's, Grenada, 4-8 November 2019





The Manual on the Basic Set of Environment Statistics



- What it is
- The audience
- The method of work
- The template of the methodology sheets
- What we have done and learned so far
- Examples



Reason

FRAMEWORK FOR THE DEVELOPMENT OF ENVIRONMENT STATISTICS (FDES 2013)

- **Scope of environment statistics**
- **Organizing structure**
- **Comprehensive, though not extensive, list of statistics (Basic Set of Environment Statistics)**
- **Relevance of the statistical topics, the typical data sources and institutional partners and information on the most important aspects of temporal and spatial aggregation, as well as on existing methodology**



FDES 2013 does **not include**:

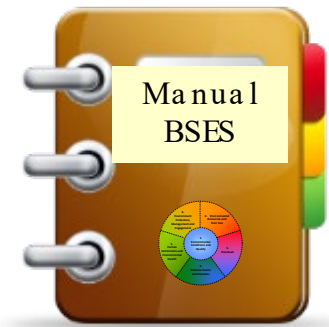
- Methodological guidance with regard to the collection and compilation of environmental data and its transformation into statistics.
- Practical and detailed guide to many of the **Basic Set themes**, including:
 - variable definitions,
 - description of sources and data collection,
 - methods of data compilation/processing for environment statistics production,
 - quality control and validation
 - methods of presentation and dissemination and
 - Applications in SDGs, SEEA, common indicators, etc.



Objective and contents

- Produce and disseminate a set of **methodology sheets** and metadata for the collection and compilation of **all environment statistics of the Basic Set** of Environment Statistics embedded in the FDES 2013 based on a **template** agreed by the Expert Group on Environment Statistics.
- Methodology sheets offer:
 - 1. BSES table (from FDES, but indicating updates where relevant/needed)**
 - 2. Introduction to context and policy links**
 - 3. Definitions of statistics**
 - 4. International sources and recommendations**
 - Classifications and groupings
 - International guidance, recommendations and standards
 - Reference to data/indicators/statistics from international sources
 - 5. Data collection and sources of data:** scope, units, methods, scaling, quality and validation
 - 6. Uses and dissemination**
 - Common dissemination formats (tables, graphs, maps)
 - Applications in common indicators
 - SEEA accounts/tables using the statistics
 - Links to SDG indicators
- Aspects provided by the standards and guidelines established by lead agencies in the relevant fields, such as FAO, UNFCCC and UN-HABITAT, which ensures that the methodology sheets utilize established international best practices. The references can be found with the respective definitions and classifications.

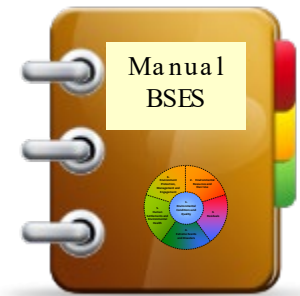




Audience

- Practitioners working in environment statistics programmes or within specific areas of environment statistics.
- They may work at NSOs, Ministries of Environment or other relevant line ministries 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.
- The main target audience of the Manual are environmental statisticians and environmental specialists who work in data analysis and reporting.





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.

As there are 458 environment statistics identified in the Basic Set of Environment Statistics, their methodology sheets are being developed in a modular and progressive manner.

Expert Group on Environment Statistics:

https://unstats.un.org/unsd/envstats/fdes/fdes_eges.cshtml





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 is carried out on a continuous basis as drafts become available. Both national and international experts are called upon to review submitted methodology/metadata sheets before their finalization.

4. Dissemination

- The methodology sheets when finalized is disseminated through the website.

https://unstats.un.org/unsd/envstats/fdes/manual_bses.cshtml

Topics covered by Methodology Sheets

Component 1: Environmental Conditions and Quality	Component 2: Environmental Resources and their Use	Component 3: Residuals
Sub-component 1.1: Physical Conditions	Sub-component 2.1: Mineral Resources	Sub-component 3.1: Emissions to Air
Topic 1.1.1: Atmosphere, climate and weather	Topic 2.1.1: Stocks and changes of mineral resources	Topic 3.1.1: Emissions of greenhouse gases
Topic 1.1.2: Hydrographical characteristics	Topic 2.1.2: Production and trade of minerals	Topic 3.1.2: Consumption of ozone depleting substances
Topic 1.1.3: Geological and geographical information	Sub-component 2.2: Energy Resources	Topic 3.1.3: Emissions of other substances
Topic 1.1.4: Soil characteristics	Topic 2.2.1: Stocks and changes of energy resources	Sub-component 3.2: Generation and Management of Wastewater
Sub-component 1.2: Land Cover, Ecosystems and Biodiversity	Topic 2.2.2: Production, trade and consumption of energy	Topic 3.2.1: Generation and pollutant content of wastewater
Topic 1.2.1: Land cover	Sub-component 2.3: Land	Topic 3.2.2: Collection and treatment of wastewater
Topic 1.2.2: Ecosystems and biodiversity	Topic 2.3.1: Land use	Topic 3.2.3: Discharge of wastewater to the environment
Topic 1.2.3: Forests	Topic 2.3.2: Use of forest land	Sub-component 3.3: Generation and Management of Waste
Sub-component 1.3: Environmental Quality	Sub-component 2.4: Soil Resources	Topic 3.3.1: Generation of waste
Topic 1.3.1: Air quality	Topic 2.4.1: Soil resources	Topic 3.3.2: Management of waste
Topic 1.3.2: Freshwater quality	Sub-component 2.5: Biological Resources	Sub-component 3.4: Release of Chemical Substances
Topic 1.3.3: Marine water quality	Topic 2.5.1: Timber resources	Topic 3.4.1: Release of chemical substances
Topic 1.3.4: Soil pollution	Topic 2.5.2: Aquatic resources	
Topic 1.3.5: Noise	Topic 2.5.3: Crops	
	Topic 2.5.4: Livestock	
	Topic 2.5.5: Other non-cultivated biological resources	
	Sub-component 2.6: Water Resources	
	Topic 2.6.1: Water resources	
	Topic 2.6.2: Abstraction, use and returns of water	

Complete
Draft under review
Not started

Topics covered by Methodology Sheets

Component 4: Extreme Events and Disasters	Component 5: Human Settlements and Environmental Health	Component 6: Environmental Protection, Management and Engagement
Sub-component 4.1: Natural Extreme Events and Disasters	Sub-component 5.1: Human Settlements	Sub-component 6.1: Environmental protection and resource management expenditure
Topic 4.1.1: Occurrence of natural extreme events and disasters	Topic 5.1.1: Urban and rural population	Topic 6.1.1: Government environmental protection and resource management expenditure
Topic 4.1.2: Impact of natural extreme events and disasters	Topic 5.1.2: Access to selected basic services	Topic 6.1.2: Corporate, non-profit institution and household environmental protection and resource management expenditure
Sub-component 4.2: Technological Disasters	Topic 5.1.3: Housing conditions	Sub-component 6.2: Environmental Governance and Regulation
Topic 4.2.1: Occurrence of technological disasters	Topic 5.1.4: Exposure to ambient pollution	Topic 6.2.1: Institutional strength
Topic 4.2.2: Impact of technological disasters	Topic 5.1.5: Environmental concerns specific to urban settlements	Topic 6.2.2: Environmental regulation and instruments
	Sub-component 5.2: Environmental Health	Topic 6.2.3: Participation in MEAs and environmental conventions
	Topic 5.2.1: Airborne diseases and conditions	Topic 6.3.1: Preparedness for natural extreme events and disasters
	Topic 5.2.2: Water-related diseases and conditions	Topic 6.3.2: Preparedness for technological disasters
	Topic 5.2.3: Vector-borne diseases	Sub-component 6.4: Environmental Information and Awareness
	Topic 5.2.4: Health problems associated with excessive UV radiation exposure	Topic 6.4.1: Environmental Information
	Topic 5.2.5: Toxic substance- and nuclear radiation-related diseases and conditions	Topic 6.4.2: Environmental Education
Complete		Topic 6.4.3: Environmental Perception and Awareness
Draft under review		Topic 6.4.4: Environmental engagement
Not started		



Example: 1.2.1 & 2.3.1 Land Cover and Land Use

Manual of the Basic Set of Environment Statistics
of the FDES 2013



Land Cover and Land Use Statistics

(Topics 1.2.1 Land Cover and 2.3.1 Land Use of the Basic Set of Environment Statistics of the FDES 2013)

Elaborated by the Environment Statistics Section
of the United Nations Statistics Division,
in collaboration with the
Expert Group on Environment Statistics

Version 1.0
31 January 2018

Methodology sheet of the Basic Set of Environment Statistics of the FDES:
https://unstats.un.org/unsd/envstats/fdes/manual_bses.cshml
<https://unstats.un.org/unsd/envstats/fdes.cshml>

1. Statistics in Topics 1.2.1 Land Cover and 2.3.1 Land Use

Component 1: Environmental Conditions and Quality			
Sub-component 1.2: Land Cover, Ecosystems and Biodiversity			
Topic 1.2.1: Land cover			
Statistics and Related Information (Bold Text - Core Set/Tier 1; Regular Text - Tier 2; <i>Italicized Text</i> - Tier 3)	Category of Measurement	Potential Aggregations and Scales	Methodological Guidance
a. Area under land cover categories	Area	<ul style="list-style-type: none"> By location By type of land cover (e.g., artificial surfaces including urban and associated areas; herbaceous crops; woody crops; multiple or layered crops; grassland; tree-covered areas; mangroves; shrub-covered areas; shrubs and/or herbaceous vegetation, aquatic or regularly flooded; sparsely natural vegetated areas; terrestrial barren land; permanent snow and glaciers; inland water bodies; and coastal water bodies and inter-tidal areas)^(a) National Sub-national 	<ul style="list-style-type: none"> FAO Land Cover Classification System System of Environmental-Economic Accounting (SEEA) Central Framework (2012) land cover categories European Environment Agency (EEA)
(a) SEEA land cover categories, based on FAO Land Cover Classification System (http://unstats.un.org/unsd/envaccounting/seeaRev/SEEA_CF_Final_en.pdf)			



3. Key definitions

- Area under land cover categories (FDES 1.2.1.a): The area of land cover is the area under each land cover category of the classification used. Land cover change is an equally important statistic and indicates the changes occurring to the land cover over time
- Area under land use categories (FDES 2.3.1.a): The area of land use is the area under each land use category of the classification used. Land use change is an equally important statistic and indicates the changes occurring to the land use over time.
- Area of land under organic farming (FDES 2.3.1.b.1): Organic agriculture (farming) is a specific and precise standard of production which aims at achieving optimal agroecosystems that are socially, ecologically and economically sustainable.
- Area of land under irrigation (FDES 2.3.1.b.2) ...
- Area of land under sustainable forest management (FDES 2.3.1.b.3)
- Area of land under agroforestry (FDES 2.3.1.b.4)
- Land ownership (FDES 2.3.1.c)





4. Classifications

- ❖ Land use or land cover products develop their legends based on a classification. There is often a lack of comparability between products as land use or land cover classification definitions can vary between dataset or map

- ❖ A legend is the a mapping scale a

- ❖ Most relevant c

SEEA CF Land cover classification

- 1 Artificial surfaces (including urban and associated areas)
- 2 Herbaceous crops
- 3 Woody crops
- 4 Multiple or layered crops
- 5 Grassland
- 6 Tree-covered areas
- 7 Mangroves
- 8 Shrub-covered areas
- 9 Shrubs and/or herbaceous vegetation, aquatic or regularly flooded
- 10 Sparsely natural vegetated areas
- 11 Terrestrial barren land
- 12 Permanent snow and glaciers
- 13 Inland water bodies
- 14 Coastal water bodies and intertidal areas

1. Land Cover Classi
cover classificatio



5. Data collection and sources of data

Input data

- Land use or land cover products are typically produced from aerial photos, ground surveys, cadastral surveys or remotely sensed data, together with directly observed data for ground truthing.
- For land use, remotely sensed data is combined with expert knowledge or interviews with land managers to determine the human activities occurring in the same part of the landscape.

Geographic Scope

- Includes all land in the selected area of the country being covered, including vegetation and man-made features, including bare rock or bare soil and water surfaces, including inland water (e.g., rivers, lakes and ponds), coastal water bodies and inter-tidal areas but not marine water





6. Presentation examples

EnviStats India 2018

Compendium of Environment Statistics; Ethiopia, 2016

Statement 1.23 : Land use and land cover classes - India

S. No.	L 1	L 2	Area (Sq. Kms.)		
			1985	1995	2005
1	Agriculture	Crop land	1,558,712	1,556,346	1,614,921
		Current Shifting cultivation			
		Fallow	252,073	266,671	221,136
		Plantation	77,493	77,956	78,560
		Sub Total -1	1,888,278	1,900,973	1,914,617
2	Barren/unculturable/Wastelands	Barren Rocky	65,484	71,250	69,855
		Gullied / Ravinous Land	84,414	78,649	74,355
		Rann			
		Salt Affected Land			
		Sandy Area			
		Scrub Land	182,860	188,342	192,873
		Sub Total-2	332,758	338,241	337,083
3	Builtup	Mining			
		Rural			
		Urban	34,019	40,090	47,239
		Sub Total-3	34,019	40,090	47,239
4	Forest	Deciduous	317,429	294,777	280,684
		Evergreen/Semi evergreen	208,063	205,160	197,992
		Forest Plantation	150,163	149,523	147,284
		Scrub Forest	84,368	91,188	98,723
		Swamp / Mangroves	4120	4525	4579
		Sub Total-4	764,143	745,173	729,262
5	Grass / Grazing	Grass / Grazing	54,553	56,604	61,595
		Sub Total-5	54,553	56,604	61,595
6	Snow and Glacier ²	Snow and Glacier	97,152	91,636	92,522
		Sub Total-6	97,152	91,636	92,522
7	Wet lands / Water bodies ¹	Inland Wetland			
		Coastal Wetland			
		River/Stream/Canals			
		Water bodies	116,119	121,148	114,856
		Sub Total-7	116,119	121,148	114,856
Grand Total			3,287,022	3,293,865	3,297,174

¹ Includes Aqua Culture, Water bodies, and Permanent Wetlands;

² Includes Salt Pan, Snow and Ice.

Source: Remote Sens. 2015, 7(3), 2401-2430; doi:10.3390/rs70302401 Article "Development of Decadal (1985-1995-2005) Land Use and Land Cover Database for India"

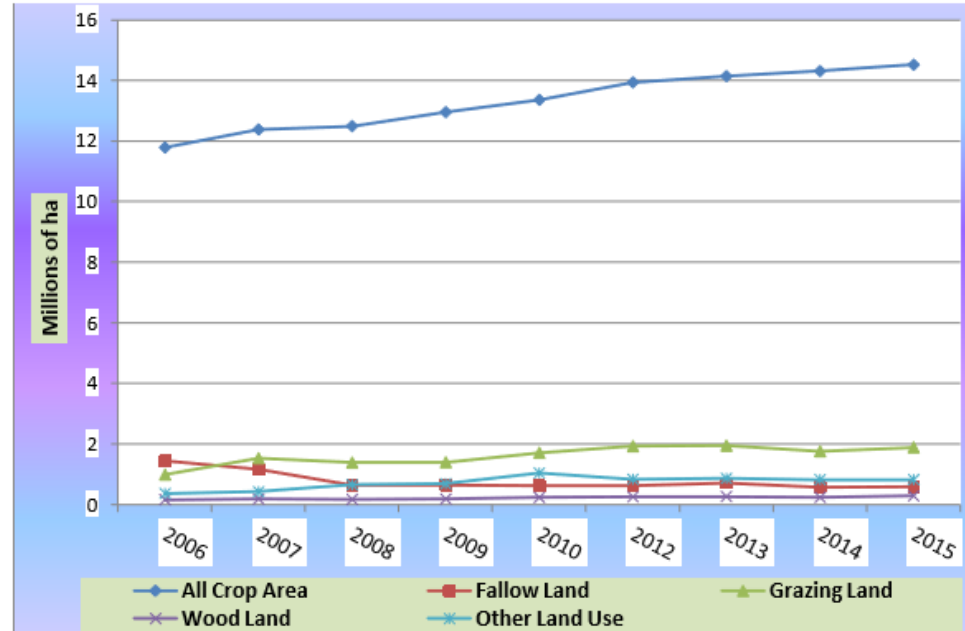


Figure 17: Land Use Area and Category by Year

Source: AgSS main season reports of CSA 2006/07-2015/16



Thank you for your attention!

For more information please contact the Environment Statistics Section
at the United Nations Statistics Division:

E-mail: envstats@un.org

Website: <https://unstats.un.org/unsd/envstats/>

