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

DA12 project national online workshop:
Generating climate change and disasters indicators for policy decision making in Saint Lucia

16-18 November 2021

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
- 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.

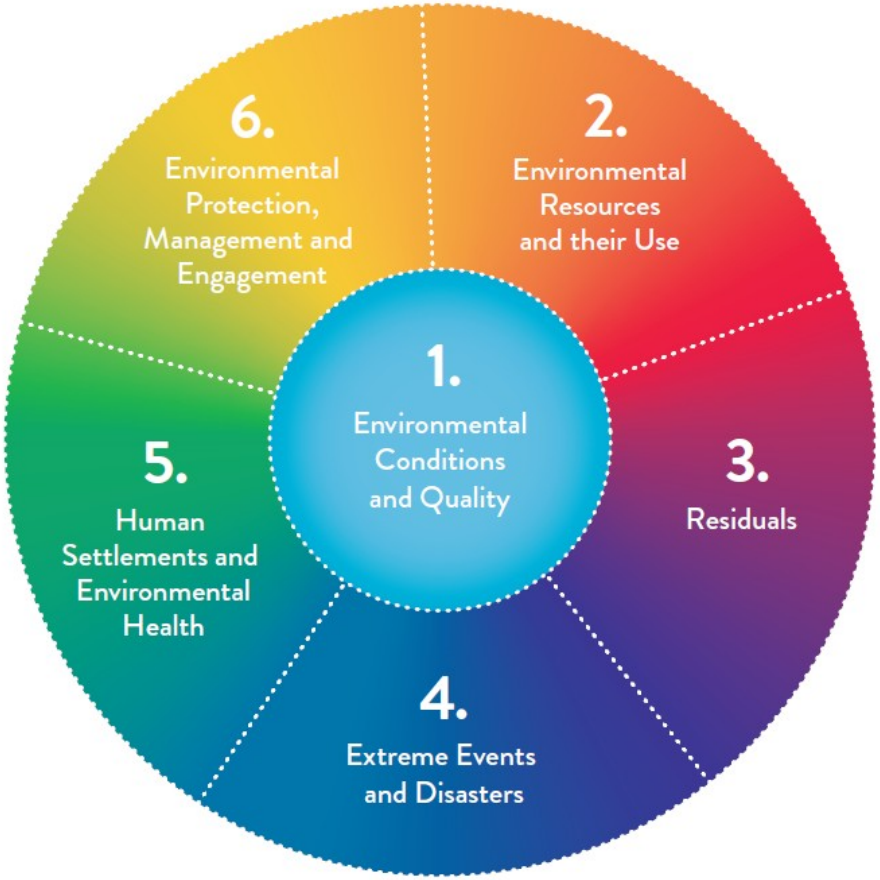
- The objectives are:
  - Help international and regional institutions to support strengthening capacity in countries to develop environment statistics
  - Enhance comparability and availability of environment statistics using a common framework
  - Better inform policy making decisions

Download FDES 2013 at https://unstats.un.org/unsd/envstats/fdes.cshtml in English, Spanish, Arabic, Portuguese, Russian.

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

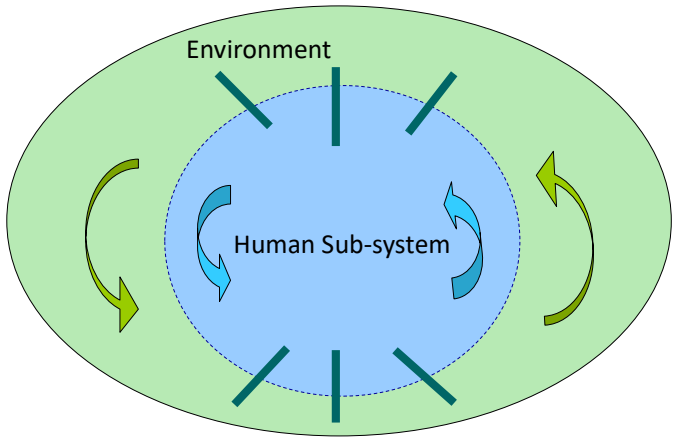
All compendia available at https://unstats.un.org/unsd/envstats/fdescompendia.cshtml

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

FDES Component	Description	Types of Data	Main Sources and Institutions	Relation to DPSIR and the SEEA
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*

Main Attributes of the Components of the FDES (cont.)

FDES Component	Description	Types of Data	Main Sources and Institutions	Relation to DPSIR and the SEEA
4 Extreme Events and Disasters	Occurrence and impact of natural extreme events and disasters, and technological disasters	• ***Physical*** • ***Monetary*** • ***Geospatial*** • ***Qualitative***	• Administrative records • Remote sensing • National emergency and disaster authorities • Seismic, meteorological monitoring and research centres • Industrial complexes that work with hazardous substances and processes • Insurance companies	• *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***	• Population and housing censuses, household surveys, administrative records, and remote sensing • Health and administrative records • Housing and urban planning and oversight authorities • Cartographic authorities • Transport authorities • Health authority	• *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***	• Administrative records • Surveys • Entity producing government expenditure statistics • Statistical entity in charge of national or sub-national surveys • Environmental authority and other sector authorities	• *Response element in DPSIR* • *Environmental activity accounts and related flows of the SEEA-CF*

Methodological Development and Dissemination of Know-how on UNSD website

Climate Change Statistics

- Global Set of Climate Change Statistics and Indicators
- UNSD activities on Climate Change Statistics: Documents
  Conferences | Side Events | Workshops
- Statistical Commission report on climate change statistics:
  Documents
- National Climate Change Statistics Reports: Jamaica | Tanzania
- Regional Climate Change Statistics Reports: CARICOM | ESCWA

Climate change remains one of the most important challenges facing humanity. It affects every country and disrupts national economies and affects lives, costing people, communities and countries significantly today and in the future. In addition, there is also a significant inequity between countries' emissions and impacts, meaning that often those who contribute to climate change the least, suffer from it the most. People are experiencing the growing impacts of climate change, which include changing weather patterns, rising sea level, and more extreme weather events.

It is now accepted unequivocally that climate change takes place and is caused by the greenhouse gas (GHG) emissions released to the atmosphere as a result of human activities (Inter-governmental Panel on Climate Change [IPCC],Climate Change 2013: The Physical Science Basis. These emissions are changing the

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

Climate Change Statistics

- Climate Change and the FDES
- Global Consultation on Climate Change Statistics and Indicators new
- Global Set of Climate Change Statistics and Indicators
- Areas and topics included in the draft Global Set

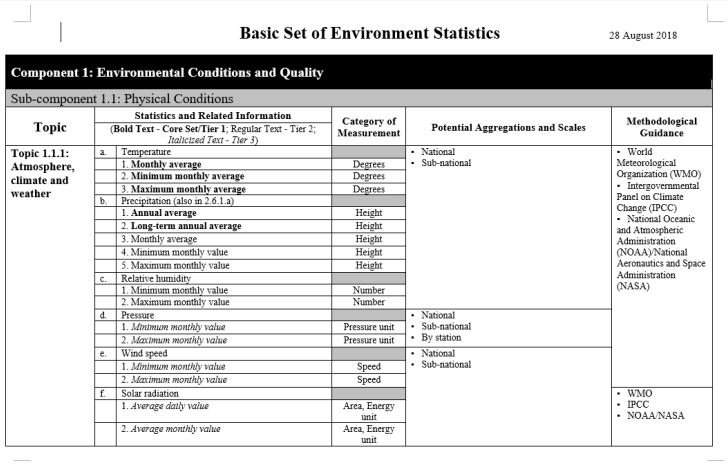
FDES 2013

- 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

Basic Set of Environment Statistics

- BSES is available in all UN official languages: 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



Basic Set of Environment Statistics 28 August 2018

Component 1: Environmental Conditions and Quality

Sub-component 1.1: Physical Conditions

Topic		Statistics and Related Information (**Bold Text - Core Set/Tier 1**; Regular Text - Tier 2; *Italicized Text - Tier 3*)	Category of Measurement	Potential Aggregations and Scales	Methodological Guidance
Topic 1.1.1: Atmosphere, climate and weather	a.	Temperature		• National • Sub-national	• World Meteorological Organization (WMO) • Intergovernmental Panel on Climate Change (IPCC) • National Oceanic and Atmospheric Administration (NOAA)/National Aeronautics and Space Administration (NASA)
		1. **Monthly average**	Degrees		
		2. **Minimum monthly average**	Degrees		
		3. **Maximum monthly average**	Degrees		
	b.	Precipitation (also in 2.6.1.a)			
		1. **Annual average**	Height		
		2. **Long-term annual average**	Height		
		3. Monthly average	Height		
		4. Minimum monthly value	Height		
		5. Maximum monthly value	Height		
	c.	Relative humidity			
		1. Minimum monthly value	Number		
		2. Maximum monthly value	Number		
	d.	Pressure		• National • Sub-national • By station	
		1. *Minimum monthly value*	Pressure unit		
		2. *Maximum monthly value*	Pressure unit		
	e.	Wind speed		• National • Sub-national	
		1. *Minimum monthly value*	Speed		
		2. *Maximum monthly value*	Speed		
	f.	Solar radiation			• WMO • IPCC • NOAA/NASA
		1. *Average daily value*	Area, Energy unit		
		2. *Average monthly value*	Area, Energy unit		

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

Number of Statistics	Component 1	Component 2	Component 3	Component 4	Component 5	Component 6	Total
Tier 1	32	30	19	4	12	3	100
Tier 2	58	51	34	11	22	24	200
Tier 3	51	43	5	16	20	23	158
Total	**141**	**124**	**58**	**31**	**54**	**50**	**458**

Manual on the Basic Set of Environment Statistics

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

- 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 new
- MS 1.3.3 Marine Water Quality Statistics new
- MS 2.1 Mineral Resources
- MS 2.2 Energy Resources
- MS 2.5 Crops and Livestock Statistics
- MS 2.6 Water Resources
- MS 3.3.1 & 3.3.2 Generation and Management of Waste
- MS 5.1 Human Settlements
- MS 6.1.1 Environmental Protection Expenditures


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

Water Resources Statistics

(Sub-component 2.6 Water Resources 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 in Environment Statistics.

Version 1.0
7 June 2017

Methodology sheet of the Basic Set of Environment Statistics of the FDES:

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

Forthcoming: Wastewater, 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

ESSAT Part II

Component 1: Environmental Conditions and Quality

	Statistics and Related Information **Bold Text - Core Set/Tier 1** Regular Text - Tier 2 *Italicized Text - Tier 3*	Category of Measurement	Potential Aggregations and Scales	Relevance of Statistic at the National Level (High /Medium /Low/Not Relevant/Not Applicable)	Priority for National Data Collection (High /Medium /Low/Not a Priority)	Availability of Statistic at the National Level (Identical/Similar/Not Available)	Primary Institution(s) Responsible for Collecting Statistic Check all that apply: NSO	Ministry of Environment or equivalent institution	Other (specify):	Type of Data Source	Requirements or User Requests for Collection/ Reporting on this Statistic Check all that apply: Sub-national	National	Regional	International	Periodicity (Annual/Monthly/Daily/Hourly/Other [specify])	Earliest Year Available	Latest Year Available	Format of Statistic (Publication/Excel/Database/Website/Individual records)	Unit of Measurement	Main Reasons why Statistic is not Available Check all that apply: Resource constraints	Methodological/Technical difficulty in data collection	Insufficient quality	Inaccessibility	Lack of institutional set-up/coordination	Other (specify):
Sub-component 1.1: Physical Conditions																									
Topic 1.1.1: Atmosphere, climate and weather																									
a. Temperature	**1. Monthly average**	Degrees	• National • Sub-national																						
	2. Minimum monthly average	Degrees																							
	3. Maximum monthly average	Degrees																							
b. Precipitation (also in 2.6.1.a)	**1. Annual average**	Height																							
	2. Long-term annual	Height																							
	3. Monthly average	Height																							
	4. Minimum monthly value	Height																							
	5. Maximum monthly value	Height																							
c. Relative humidity	1. Minimum monthly value	Number																							
	2. Maximum monthly value	Number																							
d. Pressure	*1. Minimum monthly value*	Pressure unit	• National • Sub-national																						

Check Box	X
High	H
Medium	M
Low	L
Not Relevant	NR
Not Applicable	NAp
High	H

Instructions | Identification | Index | **Component 1** | Component 2 | Component 3 | Component 4 | Component 5 | C ...

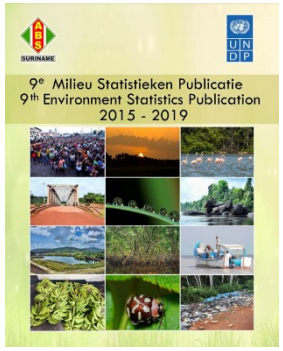
SDG indicators + Basic Set (FDES) matrix

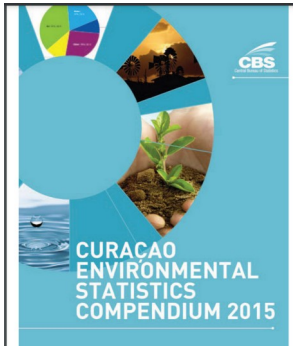
https://unstats.un.org/unsd/envstats/fdes/SDGsInd_BasicSetMatrix.pdf

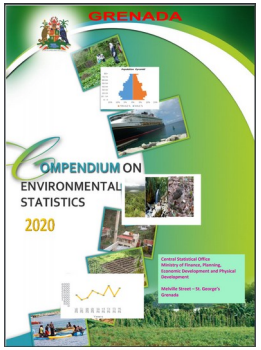
SDG Indicators	Location in the FDES: Component Sub-Component and Topic	Statistics used in the SDG Indicator corresponding to BSES (SDG Indicator can be compiled either fully or partially from BSES statistics)	Statistics related to but not directly used in SDG Indicators OR Statistics related to Tier III indicators (either fully or partially linked to BSES)	Supporting Information
15.3.1 Proportion of land that is degraded over total land area (Tier I~~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.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. Phosphorous (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.
	Component 1: Environmental Conditions and Quality, Sub-component 1.2: Land Cover, Ecosystems and Biodiversity, Topic 1.2.1: Land cover	1.2.1.a. **Area under land cover categories**		

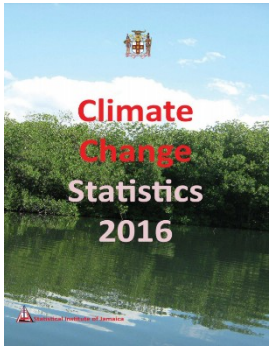
Concluding Remarks

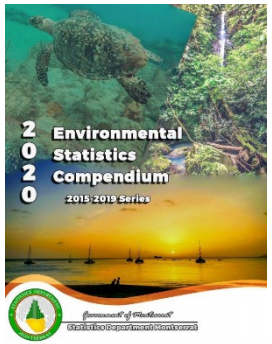
- FDES offers guidance to countries to develop standalone environment statistics, which
  - applied to support national policies on environmental management,
  - assisted international reporting requirements (MEA, SDGs, Sendai Framework).
- Countries have developed their own frameworks based on the FDES.
- Countries are encouraged to publish compendia and dissemination outputs according to the FDES.
  - 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
- 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/