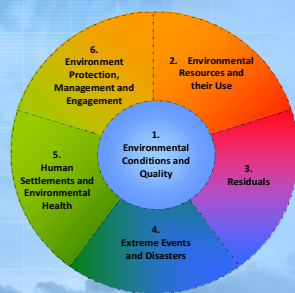


The Framework for the Development of Environment Statistics – FDES 2013



Environment and Energy Statistics
Workshop for the Arab Region

Amman, Jordan 8-12 September 2013

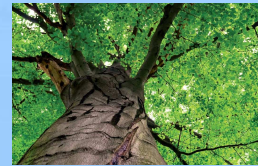
Environment and Energy Statistics Branch,
United Nations Statistics Division



- This presentation has been elaborated by the Environment Statistics Section of the United Nations Statistics Division.
- It is mainly based on Chapter 2 of the Framework for the Development of Environment Statistics (FDES) 2013 that can be downloaded here:
<http://unstats.un.org/unsd/statcom/doc13/BG-FDES-Environment.pdf>
- All presentations, handouts and background materials for the workshop can be downloaded here:
<http://unstats.un.org/unsd/ENVIRONMENT/otherworkshops.htm>

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1. Why we need a framework for ES
2. Revision and development process
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6. Basic and Core Sets of Environment Statistics
7. FDES applied to cross-cutting issues
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1. Need for a framework for developing environment statistics

- Need an internationally recommended Framework to guide the development, coordination and organization of Environment Statistics
- Many countries require substantial technical assistance and capacity building in this field of official statistics.
- To provide high quality environment statistics supporting evidence-based policy making
- Environmental pillar of Sustainable Development is the (weakest) most recent and least populated in terms of statistics
- To allow for identification and objective quantification of environmental policy issues
- Increasing environmental and sustainability concerns and policy issues everywhere -> demand for environment statistics



2. Revision of FDES and Development of a Core Set of Environment Statistics

Statistical Commission **mandate**: The 41st (2010) session of the UN Statistical Commission endorsed the revision of the 1984 FDES and the development of a Core Set of Environment Statistics.

Statistical Commission **endorsement**: The 44th (2013) session endorsed the FDES 2013 as the framework for strengthening environment statistics programmes in countries, and recognized it as a useful tool to adequately respond to the increasing demand for environmental information in the follow-up to Rio+20 and the Post-2015 Development Agenda.



2. Revision of FDES and development of the Core Set of Environment Statistics

- 1984 – 2010: improved scientific knowledge and emerging environmental concerns called for a revision of the FDES 1984.
- Contents and structure of FDES required considerable work by EG and UNSD
- To develop the draft Core Set of Environment Statistics, more than 2,500 environmental indicators and statistics were analyzed, in terms of relevance, statistical feasibility and methodological soundness.
- The draft Core Set was tested in 25 countries through a pilot exercise (August to September 2012): substantive improvement, prioritized statistics within Basic Set
- Both the revised FDES and the Basic Set were subjected to a Global Consultation process, 76 countries, areas and organizations provided feedback (September to November 2012).



Expert Group on the Revision of the FDES

Comprised of experts representing all regions, including developing (13) and developed (10) countries, as well as 7 international agencies and UNCEEA. It represented the interest of NSOs, environmental ministries and agencies, and academia.

EG and UNSD met four times and worked together remotely continually during the process.

3. What is the FDES 2013?



- The resulting FDES 2013 is a flexible, multi-purpose conceptual and statistical framework that enables and facilitates the compilation, collection and production of environment statistics.
- It provides an organizing structure to guide the collection and compilation of environment statistics at the national level, bringing together data from the various relevant subject areas and sources.
- It is broad, comprehensive and integrative. It covers the issues and aspects of the environment that are relevant for policy analysis and decision making and it can be applied to inform about cross-cutting issues such as climate change.

3. What is the FDES 2013?



Scope of the FDES

Covers biophysical aspects of the environment and those aspects of the human sub-system that directly influence and interact with the state and quality of the environment.

Objective of the FDES

- Primarily to guide countries at early stages in the development of their environment statistics programmes.
- Also applicable to countries in general, and at the regional and global levels.

3. What is the FDES 2013?



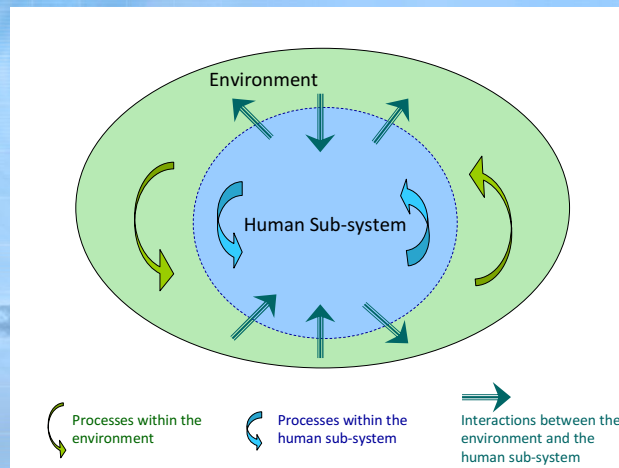
Users of the FDES

- Environment statisticians in NSOs, environmental administrations/authorities
- Other producers/users of environmental data and environment statistics in line ministries, sectoral authorities and other institutions.
- The FDES marks out the roles of the different data producers, thus facilitating inter-agency coordination within countries. It can be used by inter-institutional collaborating committees/round-tables participating in the production and dissemination of environment statistics.
- It can also be used by international and regional institutions to organize and strengthen their production and dissemination of environment statistics.



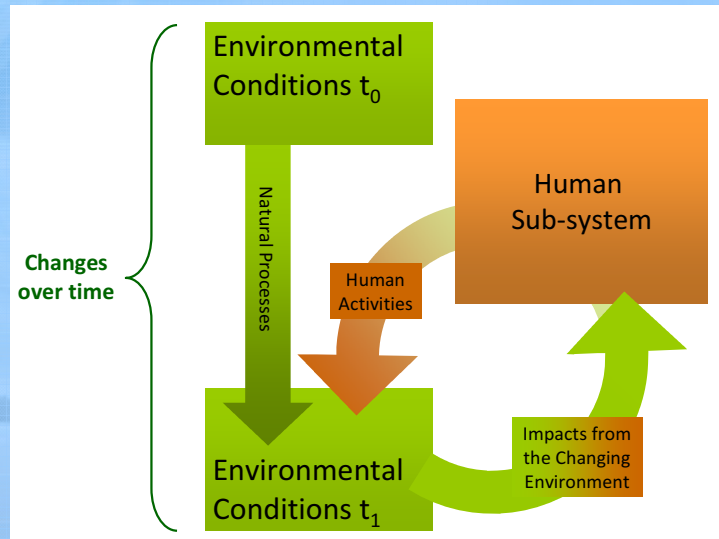
4. Conceptual foundation of the FDES

The environment, the human sub-system, and interactions between them



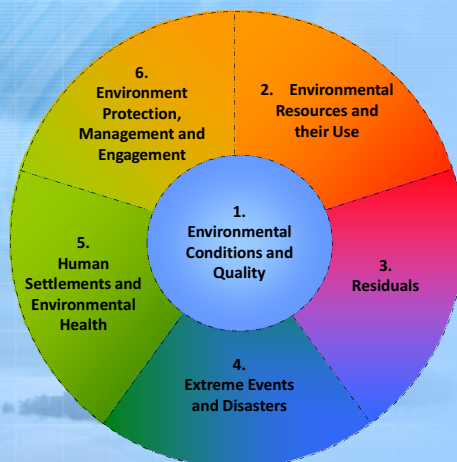
4. Conceptual foundation of FDES

Environmental conditions and their changes

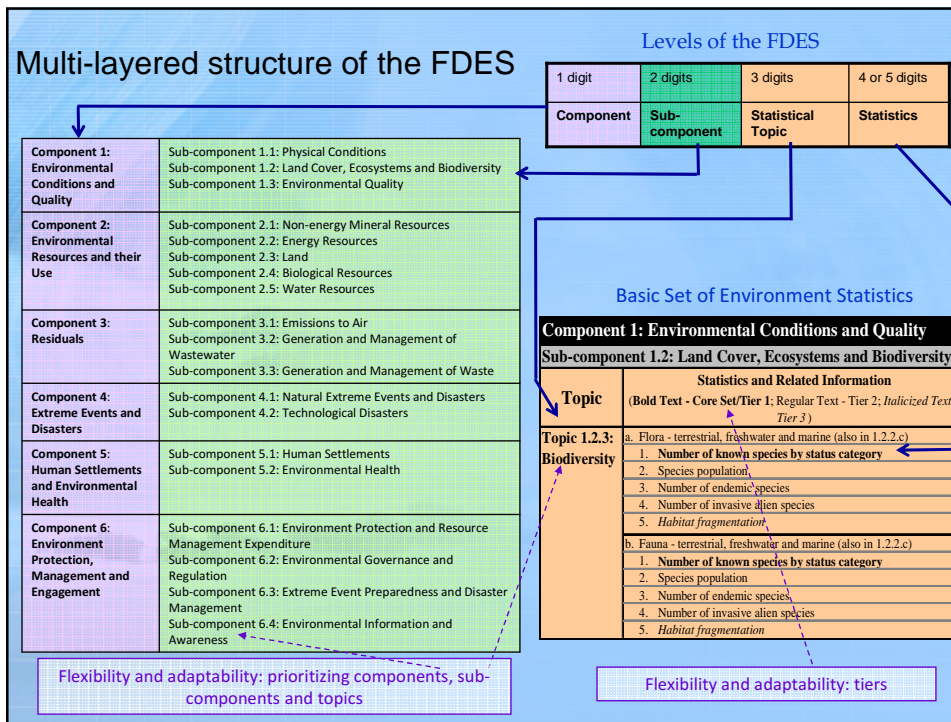


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5. The FDES 2013 structure



- Six components
- At the centre of the FDES: Environmental conditions and quality
- All of the components relate to each other
- Multi-layered (component, sub-component, topic, individual statistics)
- Flexible
- Adaptable



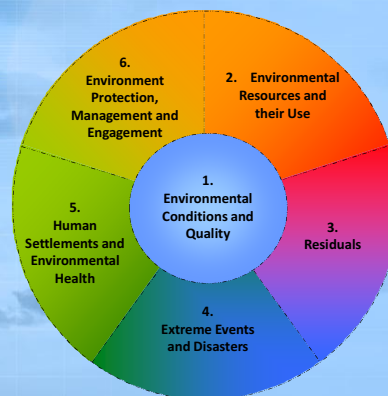
Main Attributes of the Components of the FDES

FDES Component	Description	Types of Data	Main Sources and Institutions	Relation to DPSIR and the SEEA
1 Environmental Conditions and Quality	Conditions/characteristics of the environment (meteorological, hydrographical, biological, physical and chemical, geological, geographical) that determine ecosystems and environmental quality	<ul style="list-style-type: none"> • <i>Geospatial</i> • <i>Physical</i> • <i>Qualitative</i> 	<ul style="list-style-type: none"> • Monitoring and remote sensing data • Environmental, meteorological, hydrological, • Geological and geographical authorities/ institutions 	<ul style="list-style-type: none"> • <i>State and Impact element in DPSIR</i> • <i>Experimental ecosystem accounts of the SEEA</i>
2 Environmental Resources & their Use	Quantities of environmental resources and their changes; as well as statistics on activities related to their use and management	<ul style="list-style-type: none"> • <i>Physical</i> • <i>Geospatial</i> 	<ul style="list-style-type: none"> • Statistical surveys, administrative records, field surveys, land registers • Sector statistics on production and consumption activities, infrastructure • Remote sensing data • Statistics databases of national authorities, i.e. mining, energy, agriculture, water and forest 	<ul style="list-style-type: none"> • <i>Driving force, Pressure and State elements in DPSIR</i> • <i>Asset and physical flow accounts of the SEEA Central Framework</i>
3 Residuals	Generation, management and discharge of residuals to air, water and soil	<ul style="list-style-type: none"> • <i>Physical</i> 	<ul style="list-style-type: none"> • Administrative records • Estimates based on activity statistics and technical coefficients • Sector statistics • Monitoring data 	<ul style="list-style-type: none"> • <i>Pressure and Response elements in DPSIR</i> • <i>Physical flow accounts of the SEEA Central Framework</i>
4 Extreme Events & Disasters	Occurrence and impact of natural extreme events and disasters, and technological disasters	<ul style="list-style-type: none"> • <i>Physical</i> • <i>Monetary</i> • <i>Geospatial</i> • <i>Qualitative</i> 	<ul style="list-style-type: none"> • Administrative records • Remote sensing • National emergency and disaster authorities • Seismic, meteorological monitoring and research centres • Industrial complexes working w/ hazardous substances and processes 	<ul style="list-style-type: none"> • <i>Pressure, Impact and Response</i> • <i>Elements in DPSIR</i> • <i>Asset accounts of the SEEA Central Framework</i>

Main Attributes of the Components of the FDES...continued

FDES Component	Description	Types of Data	Main Sources and Institutions	Relation to DPSIR and the SEEA
5 Human Settlements & Environmental Health	The built environment in which humans live, particularly with regard to population, housing, living conditions, basic services and environmental health	<ul style="list-style-type: none"> • <i>Geospatial</i> • <i>Physical</i> 	<ul style="list-style-type: none"> • Population and housing censuses, household surveys, administrative records, and remote sensing • Housing and urban planning and oversight authorities • Cartographic authorities • Transport authorities • For health, administrative records, the health Authority 	<ul style="list-style-type: none"> • <i>Driving force, Pressure and Impact elements in DPSIR</i>
6 Environment Protection, Management & Engagement	Environment protection and resource management expenditure; environment regulation both direct and via market instruments; disaster preparedness; environmental perception, awareness and engagement of the society	<ul style="list-style-type: none"> • <i>Monetary</i> • <i>Qualitative</i> 	<ul style="list-style-type: none"> • Administrative records • Surveys • The entity producing government expenditure statistics • The statistical entity in charge of national or sub-national surveys • The environmental authority and other sector authorities 	<ul style="list-style-type: none"> • <i>Response element in DPSIR</i> • <i>Environmental activity accounts and related flows of the SEEA Central Framework</i>

Overview of each Component of the FDES 2013



Component 1: Environmental Conditions and Quality

Sub-component 1.1: Physical Conditions
 Sub-component 1.2: Land Cover, Ecosystems and Biodiversity
 Sub-component 1.3: Environmental Quality

Example of Core Set Statistics within a topic of Component 1:


Topic 1.2.2: Ecosystems	a. General ecosystem characteristics, extent and pattern	1. Area of ecosystems
	c. Biological components of ecosystems (also in 1.2.3.a-b)	4. Threatened species

Component 2: Environmental Resources and their Use

Sub-component 2.1: Non-energy Mineral Resources
 Sub-component 2.2: Energy Resources
 Sub-component 2.3: Land
 Sub-component 2.4: Soil Resources
 Sub-component 2.5: Biological Resources
 Sub-component 2.6: Water Resources

Example of Basic Set Statistics within a topic of Component 2:


Topic 2.5.3: Crops	a. Main annual and perennial crops	
	1. Area harvested	Area
	2. Area planted	Area
	3. Amount produced	Mass
	4. <i>Amount of organic production</i>	Mass
	5. <i>Amount of genetically modified crops produced</i>	Mass
	b. Amount used of	
	1. Natural fertilizers (e.g., manure, compost, lime)	Area, Mass, Volume
	2. Chemical fertilizers	Area, Mass, Volume
	3. Pesticides	Area, Mass, Volume
	c. Monoculture / resource-intensive crops	
	1. Area being used for production	Area
	2. Amount produced	Mass
	3. <i>Amount of genetically modified crops produced</i>	Mass
	d. Imports of crops	Currency, Mass
	e. Exports of crops	Currency, Mass



Component 3: Residuals	Sub-component 3.1: Emissions to Air
	Sub-component 3.2: Generation and Management of Wastewater
	Sub-component 3.3: Generation and Management of Waste

Example of Core Set Statistics within a topic of Component 3:

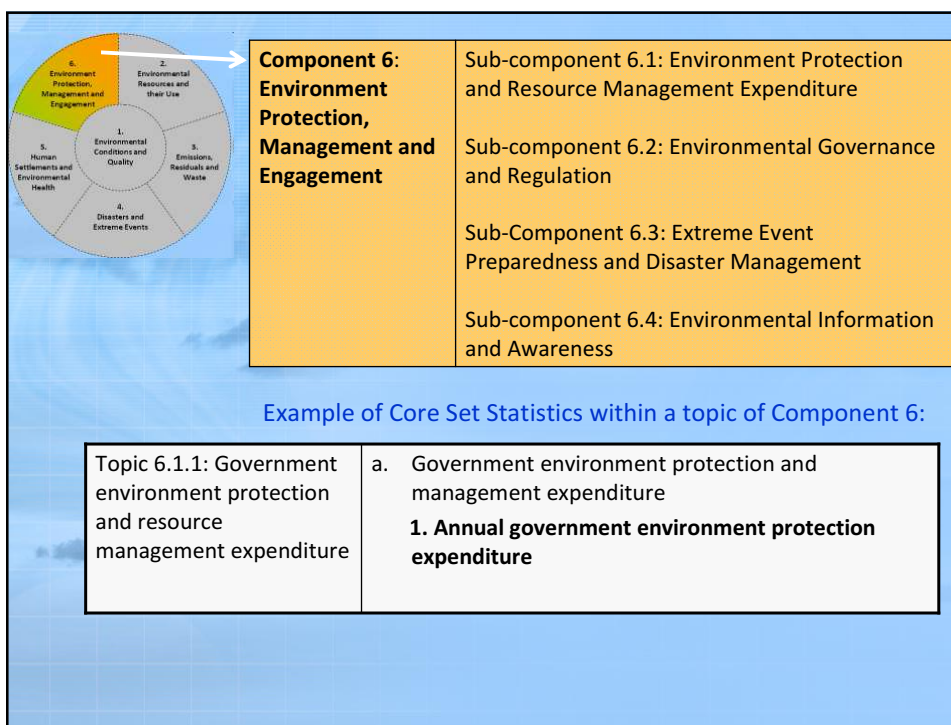
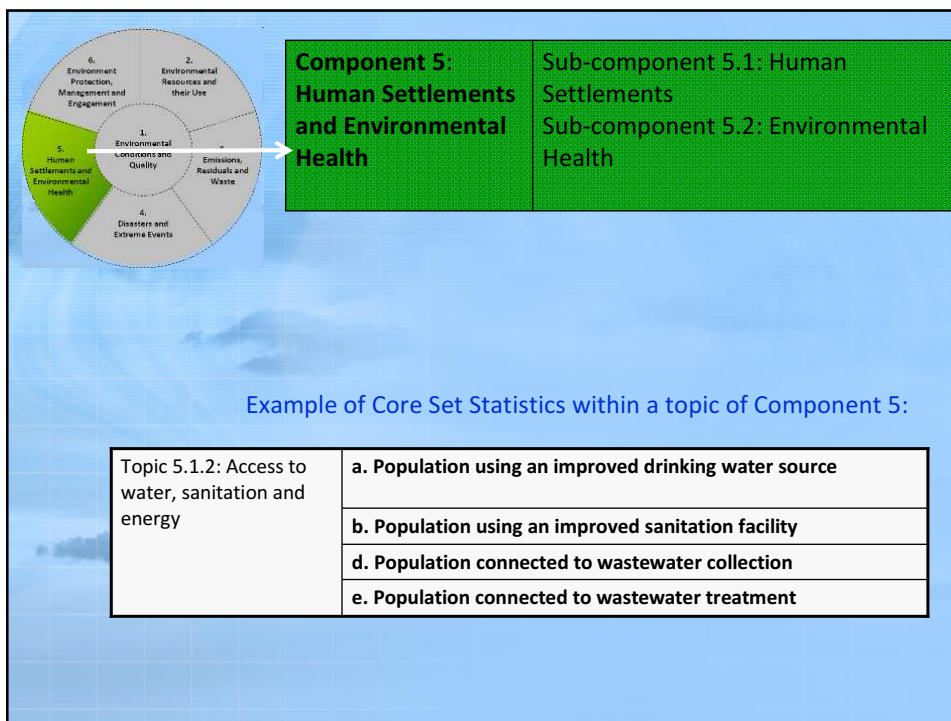
Topic 3.1.1: Emissions of greenhouse gases	a. Total emissions of direct greenhouse gases (GHGs), by gas:	1. Carbon dioxide (CO ₂)
		2. Methane (CH ₄)
		3. Nitrous oxide (N ₂ O)
	b. Total emissions of indirect greenhouse gases (GHGs), by gas:	1. Sulphur dioxide (SO ₂)
2. Nitrogen oxides (NO _x)		



Component 4: Extreme Events and Disasters	Sub-component 4.1: Natural Extreme Events and Disasters
	Sub-component 4.2: Technological Disasters

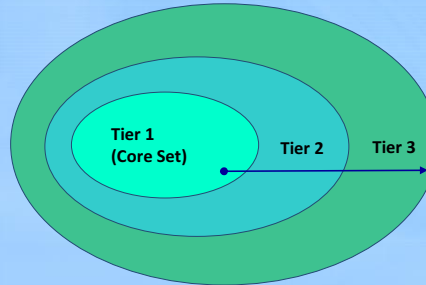
Example of Core Set Statistics within a topic of Component 4:

Topic 4.1.1: Occurrence of natural extreme events and disasters	a. Occurrence of natural extreme events and disasters:	1. Type of natural disaster (geophysical, meteorological, hydrological, climatological, biological)
		2. Location
Topic 4.1.2: Impact of natural extreme events and disasters	a. People affected by natural extreme events and disasters	1. Number of people killed
	b. Economic loss due to natural extreme events and disasters (e.g., damage to buildings, transportation networks, loss of revenue for businesses, utility disruption, etc.)	



6. The Basic Set of Environment Statistics

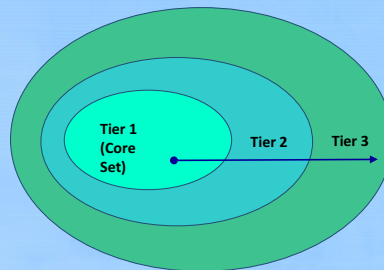
- The **Basic Set of Environment Statistics** organizes a comprehensive (though not exhaustive) list of environment statistics
- The Basic Set is organized in **three tiers**, based on the level of relevance, availability and methodological development of the statistics.



- The **Core Set of Environment Statistics** correspond to **Tier 1**
- **Tier 2** includes environment statistics that are of priority and relevance to most countries but need more investment in time, resources or methodological development.
- **Tier 3** includes environment statistics which are either of less priority or require significant methodological development.

Number of environment statistics in the Basic and Core Set

Core Set or Tier 1 = 107
Basic Set = 492



	Component 1	Component 2	Component 3	Component 4	Component 5	Component 6	Total
Tier 1	35	35	19	4	11	3	107
Tier 2	83	46	33	12	17	21	212
Tier 3	64	43	5	17	21	23	173
Total	182	124	57	33	49	47	492

The Basic Set is presented into the FDES structure, supplemented with additional guidance

Component 4: Extreme Events and Disasters				
Sub-component 4.1: Natural Extreme Events and Disasters				
Topic	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
Topic 4.1.1: Occurrence of natural extreme events and disasters	a. Occurrence of natural extreme events and disasters:		<ul style="list-style-type: none"> By event National Sub-national 	<ul style="list-style-type: none"> Centre for Research on the Epidemiology of Disasters Emergency Events Database (CRED EM-DAT) Economic Commission for Latin America and the Caribbean (ECLAC) Handbook for Estimating the Socio-economic and Environmental Effects of Disasters
	1. Type of natural disaster (geophysical, meteorological, hydrological, climatological biological)	Descriptive		
	2. Location	Location		
	3. Magnitude (where applicable)	Intensity		
	4. Date of occurrence	Date		
	5. Duration	Time period		
	6. Hazard prone areas	Area		
Topic 4.1.2: Impact of natural extreme events and disasters	7. Population living in hazard prone areas	Number		
	b. People affected by natural extreme events and disasters		<ul style="list-style-type: none"> By event By International Standard Industrial Classification of all Economic Activities (ISIC) economic activity National Sub-national By direct and indirect damage 	
	1. Number of people killed	Number		
	2. Number of people injured	Number		
	3. Number of people homeless	Number		
	4. Number of people affected	Number		
	c. Economic loss due to natural extreme events and disasters (e.g., damage to buildings, transportation networks, loss of revenue for businesses, utility disruption, etc.)	Currency	<ul style="list-style-type: none"> By event By ecosystem National Sub-national 	
	d. Physical loss/damage due to natural extreme events and disasters (e.g., area and amount of crops, livestock, aquaculture, biomass etc.)	Area, Descriptive, Number		
	e. Effects of natural extreme events and disasters on integrity of ecosystems			
	1. Area affected by natural disasters	Area	<ul style="list-style-type: none"> By event By ecosystem National Sub-national 	
	2. Loss of vegetation cover	Area		
	3. Area of watershed affected	Area		
	4. Other	Descriptive		
5. External assistance received	Currency	<ul style="list-style-type: none"> By event National 		

Sample of the Core Set of Environment Statistics

Component	Sub-component	Topic	Core Set / Tier 1 Statistics	
Component 1: Environmental Conditions and Quality	Sub-component 1.1: Physical Conditions	Topic 1.1.1: Atmosphere, climate and weather	a. Temperature	1. Monthly averages
			b. Precipitation (also in 2.6.1.a)	2. Minimum monthly average
				3. Maximum monthly average
				1. Annual averages
				2. Long-term annual averages
		Topic 1.1.2: Hydrographical characteristics	d. Watersheds	1. Description of main watersheds
		Topic 1.1.3: Geological and geographical information	a. Geological, geographical and geomorphological conditions of terrestrial areas and islands	2. Area of country or region
	b. Coastal area (includes area of coral reefs, mangroves, etc.) (also in 2.3.1.c)			
	c. Length of marine coastline			
	Topic 1.1.4: Soil characteristics	a. Soil characterization	1. Area of soil types	
		b. Degradation	1. Area affected by soil erosion	
			2. Area affected by desertification	
	Sub-component 1.2: Land Cover, Ecosystems and Biodiversity	Topic 1.2.1: Land cover	a. Extent and spatial distribution of main land cover categories	1. Area of land cover
				2. Location of land cover
Topic 1.2.2: Ecosystems		a. General ecosystem characteristics, extent and pattern	1. Area of ecosystems	
		c. Biological components of ecosystems (also in 1.2.3.a-b)	4. Threatened species	
Topic 1.2.3: Biodiversity		a. Flora - terrestrial, freshwater and marine (also in 1.2.2.c)	1. Number of known species by status category	
		b. Fauna - terrestrial, freshwater and marine (also in 1.2.2.c)	1. Number of known species by status category	
		c. Protected areas	1. Protected terrestrial (including inland water) and marine area (also in 1.2.4.a)	
Topic 1.2.4: Forests		a. Forest area (also in 1.2.1.a and 1.2.2.a)	1. Total	
		5. Area deforested		

Sample of the Core Set of Environment Statistics

Component	Sub-component	Topic	Core Set / Tier 1 Statistics
Component 4: Extreme Events and Disasters	Sub-component 4.1: Natural Extreme Events and Disasters	Topic 4.1.1: Occurrence of natural extreme events and disasters	a. Occurrence of natural extreme events and disasters: 1. Type of natural disaster (geophysical, meteorological, hydrological, climatological, biological) 2. Location
		Topic 4.1.2: Impact of natural extreme events and disasters	a. People affected by natural extreme events and disasters 1. Number of people killed b. Economic loss due to natural extreme events and disasters (e.g., damage to buildings, transportation networks, loss of revenue for businesses, utility disruption, etc.)

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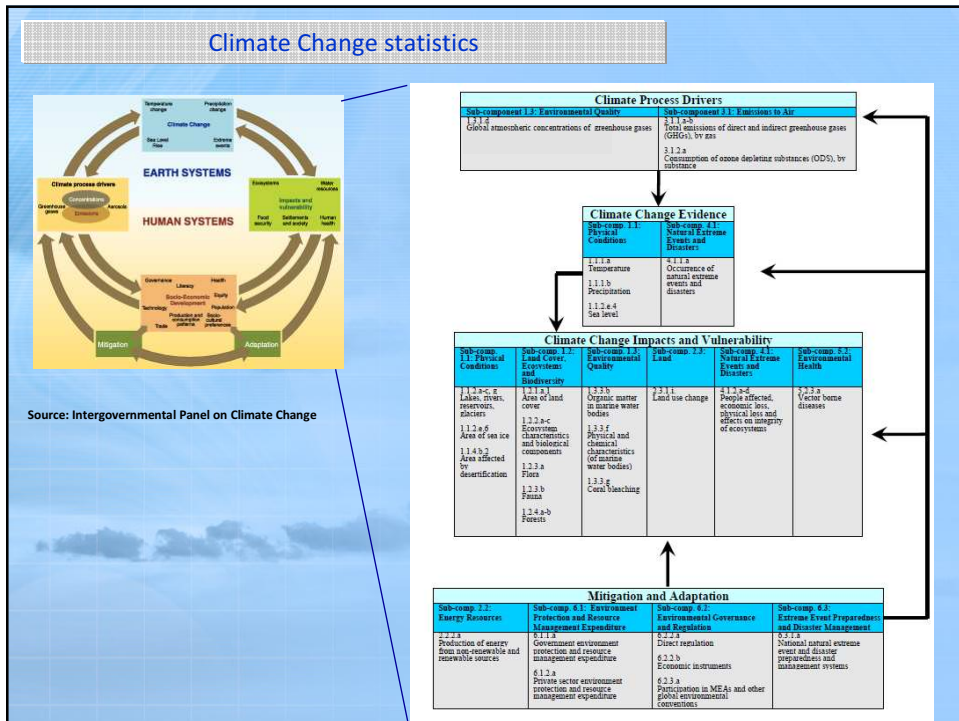
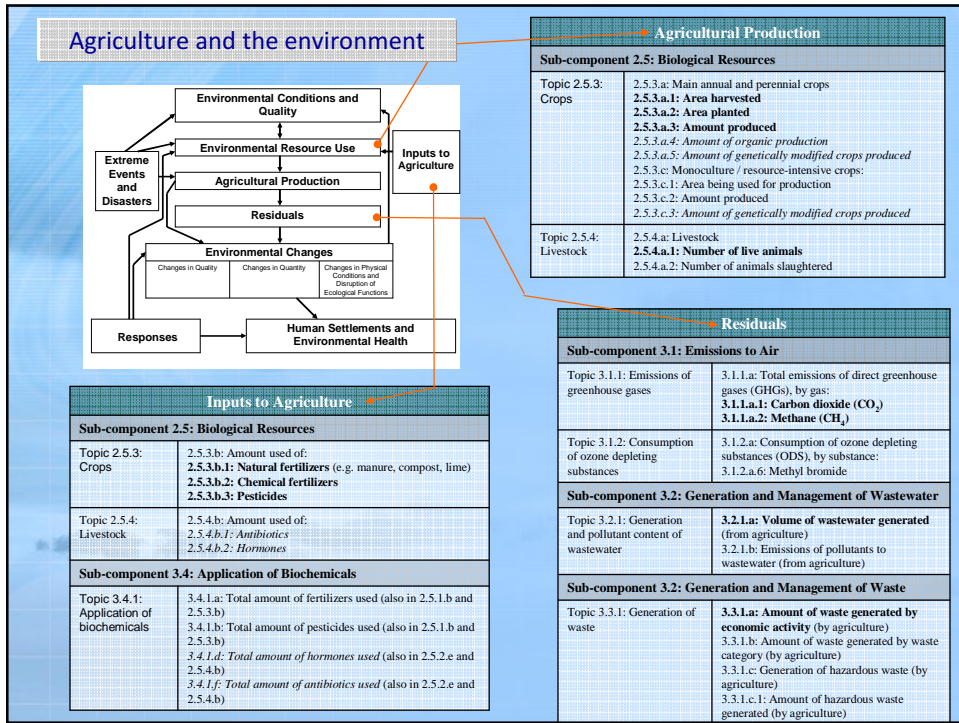
Component	Sub-component	Topic	Core Set / Tier 1 Statistics
Component 5: Human Settlements and Environmental Health	Sub-component 5.1: Human Settlements	Topic 5.1.2: Access to water, sanitation and energy	a. Population using an improved drinking water source b. Population using an improved sanitation facility d. Population connected to wastewater collection e. Population connected to wastewater treatment
		Topic 5.1.5: Environmental concerns specific to urban settlements	c. Number of private and public vehicles
	Sub-component 5.2: Environmental Health	Topic 5.2.2: Water-related diseases and conditions	a. Water-related diseases and conditions (e.g., diarrhoeal disease, gastroenteritis and water borne parasite infections): 1. Incidence 2. Prevalence 3. Mortality
		Topic 5.2.3: Vector borne diseases	a. Vector borne diseases (e.g., malaria, dengue fever, yellow fever and Lyme disease): 1. Incidence 2. Prevalence 3. Mortality

7. Applications of the FDES to cross-cutting issues (Chapter 5 FDES 2013)

The FDES can be applied to inform about cross-cutting policy issues important to countries at any given time:

- Climate change
- Energy and the environment
- Agriculture and the environment
- Water and the environment



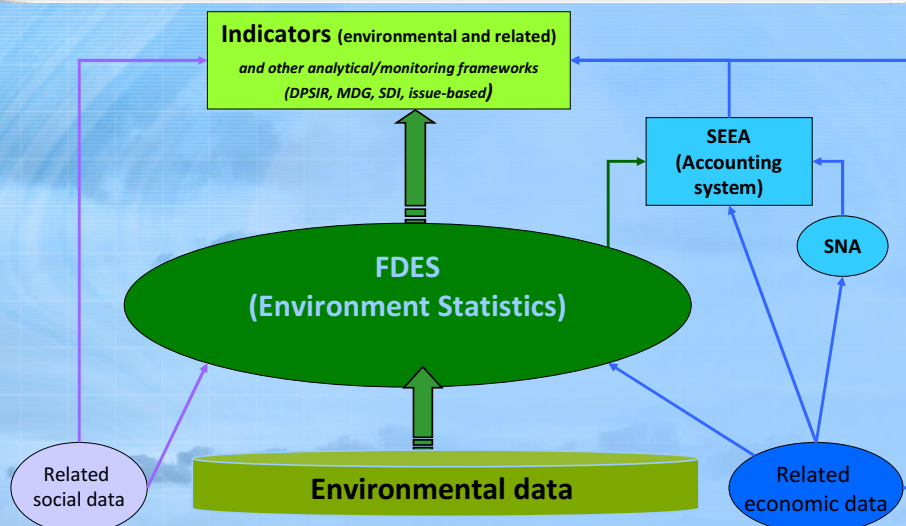


8. Links to social and economic statistics

- The FDES 2013 is structured in a way that allows links to economic and social domains.
- It seeks to be compatible with other frameworks and systems, both statistical and analytical, such as the System of Environmental-Economic Accounting (SEEA), the Driving force – Pressure – State – Impact – Response (DPSIR) framework, and the Millennium Development Goals (MDGs) as well as the Sustainable Development Indicator frameworks.
- It uses existing concepts and relies on existing statistical classifications (when applicable).
- As such, the FDES facilitates data integration within environment statistics and with economic and social statistics.



Relationship of the FDES to other frameworks, systems and indicator sets



Note: Size of figures does not correlate to volume of data, statistics, indicators, etc.
DPSIR = Driving force-Pressure-State-Impact-Response
SEEA = System of Environmental-Economic Accounting
SNA = System of National Accounts

9. FDES Future Work



Following the endorsement of the FDES 2013, work will focus on:

- Programme of technical assistance and capacity building to member States using the FDES 2013 and associated tools
- Development of detailed methodological guidance for the Core Set of Environment Statistics and the Basic Set of Environment Statistics, including classifications, definitions and data collection and compilation methods. It will build on existing methodologies as well as on ongoing methodological work in the field of environment statistics and environmental-economic accounting.
- Expert Group on Environment Statistics 2013 ->

9. Putting the FDES to work



- Plan of Work endorsed by SC February 2013
- Objective of the Plan of Work is focused on assisting countries most in need of developing and strengthening their environment statistics' production and dissemination.
- Way forward for making the FDES and the CSES operational in countries that need guidance in their environment statistics' programmes.
- It is applicable to countries at preparatory, foundational, operational and consolidation stages of their environment statistics programmes.

Thank you for your attention!

For more information please contact the Environment Statistics Section
at the Statistics Division of the UN:

E-mail: envstats@un.org

website: <http://unstats.un.org/unsd/ENVIRONMENT/>

