



Environment Statistics Programme

I. Methodological development

II. Data collection and dissemination

III. Coordination

IV. Technical cooperation and capacity building

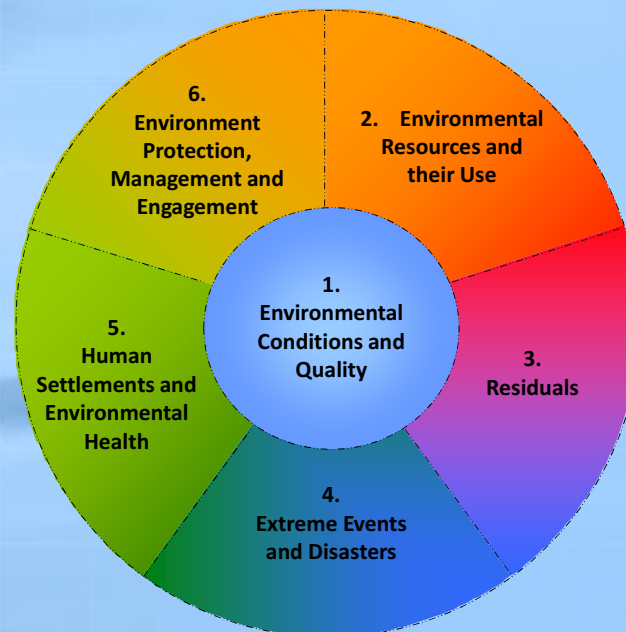
Ms. Reena Shah
Chief, Environment Statistics Section
United Nations Statistics Division (UNSD)

Expert Group Meeting
Implementing Rio+20: Integrated Planning for Sustainable Coastal Area
Management in the Caribbean Region
Port of Spain, 17-18 March 2014



I. Methodological development

The Framework for the Development of Environment Statistics (FDES 2013)



Why we need a framework for developing environment statistics

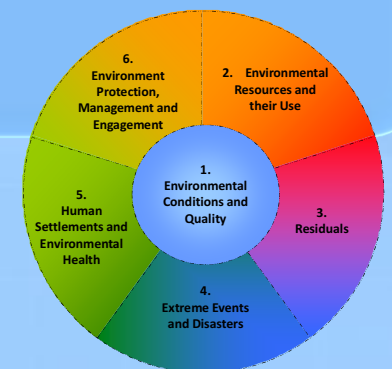
- Need for an internationally recommended Framework to guide the development, coordination and organization of environment statistics
- Many countries require substantial technical assistance and capacity building in this field of official statistics
- To provide high quality environment statistics supporting 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 statistics



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

SC mandate: The 41st (2010) session of the United Nations Statistical Commission endorsed a work programme for the revision of the 1984 FDES and the development of a Core Set of Environment Statistics.

SC endorsement: The 44th (2013) session endorsed the FDES 2013 as the framework for strengthening environment statistics programmes 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.



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

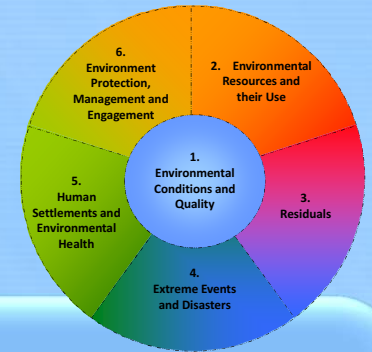
- 1984-2010: improved scientific knowledge and emerging environmental concerns called for a revision of the 1984 FDES.
- Contents and structure of FDES required considerable work by Expert Group and UNSD.
- To develop the draft Core Set of Environment Statistics, more than 2,500 environmental indicators and statistics (37 sources and 65 lists/sets) 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

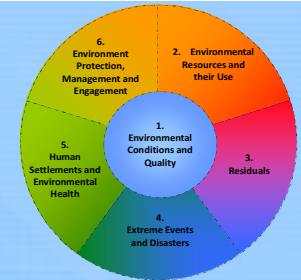
Comprised of experts representing all regions, including developing (13) and developed (10) countries, as well as 7 international agencies and UNCEEA. It represented the interest of NSOs, environmental ministries and agencies, and academia.

Expert Group and UNSD met four times, worked together remotely on a continual basis during the process.

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.



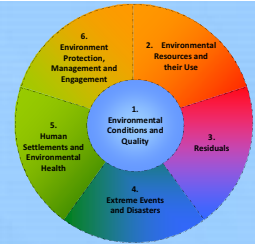
Scope of the FDES

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

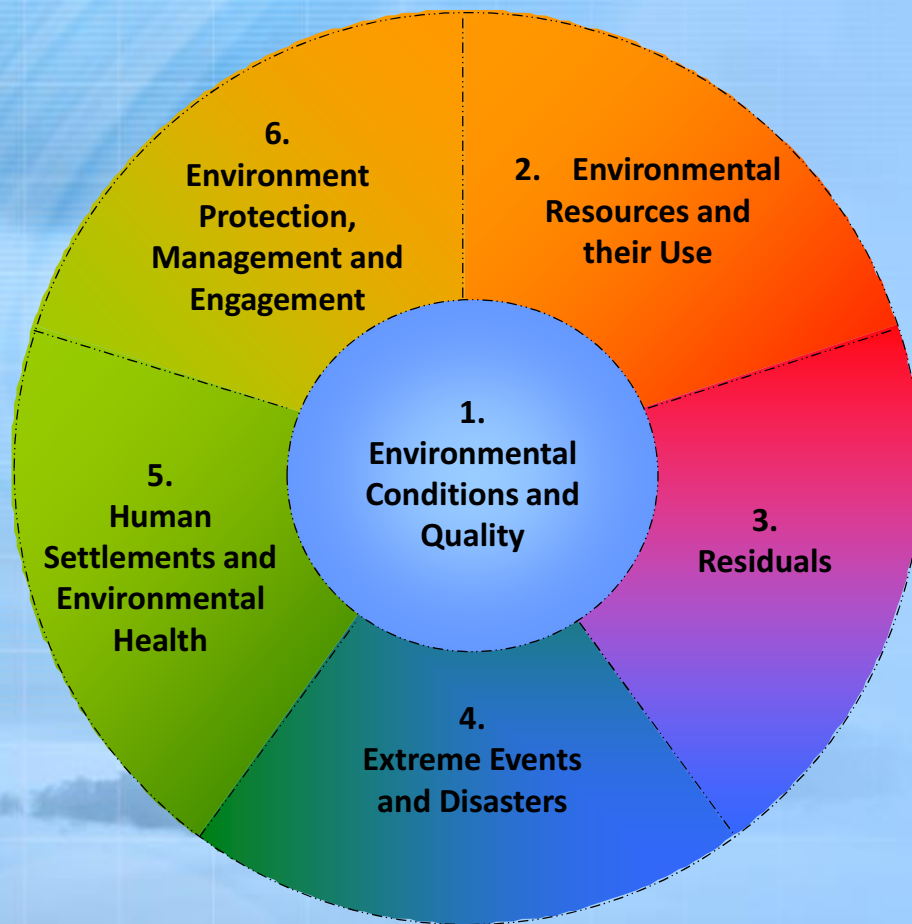
- Primarily to guide countries at early stages in the development of their environment statistics programmes.
- Also applicable to countries in general, and regional and global levels.

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/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.

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
- Flexible
- Adaptable

Multi-layered structure of the FDES

Levels of the FDES

1 digit	2 digits	3 digits	4 or 5 digits
Component	Sub-component	Statistical Topic	Statistics

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
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: Biological Resources Sub-component 2.5: Water Resources
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
Component 4: Extreme Events and Disasters	Sub-component 4.1: Natural Extreme Events and Disasters Sub-component 4.2: Technological Disasters
Component 5: Human Settlements and Environmental Health	Sub-component 5.1: Human Settlements Sub-component 5.2: Environmental Health
Component 6: Environment Protection, Management and Engagement	Sub-component 6.1: Environment Protection and Resource Management Expenditure Sub-component 6.2: Environmental Governance and Regulation Sub-component 6.3: Extreme Event Preparedness and Disaster Management Sub-component 6.4: Environmental Information and Awareness

Basic Set of Environment Statistics

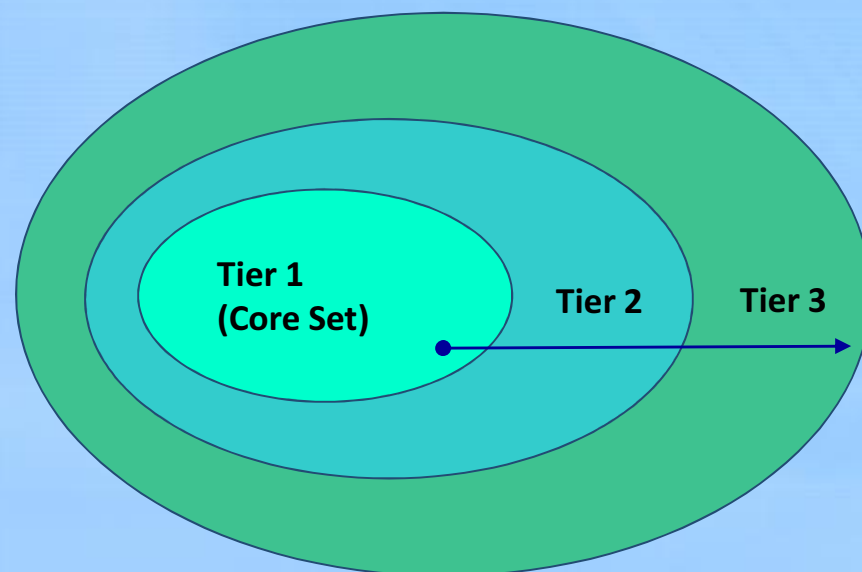
Component 1: Environmental Conditions and Quality	
Sub-component 1.2: Land Cover, Ecosystems and Biodiversity	
Topic	Statistics and Related Information (Bold Text - Core Set/Tier 1 ; Regular Text - Tier 2; <i>Italicized Text - Tier 3</i>)
Topic 1.2.3: Biodiversity	a. Flora - terrestrial, freshwater and marine (also in 1.2.2.c)
	1. Number of known species by status category
	2. Species population
	3. Number of endemic species
	4. Number of invasive alien species
	5. <i>Habitat fragmentation</i>
	b. Fauna - terrestrial, freshwater and marine (also in 1.2.2.c)
	1. Number of known species by status category
	2. Species population
	3. Number of endemic species
4. Number of invasive alien species	
5. <i>Habitat fragmentation</i>	

Flexibility and adaptability: prioritizing components, sub-components and topics

Flexibility and adaptability: tiers

The Basic Set of Environment Statistics

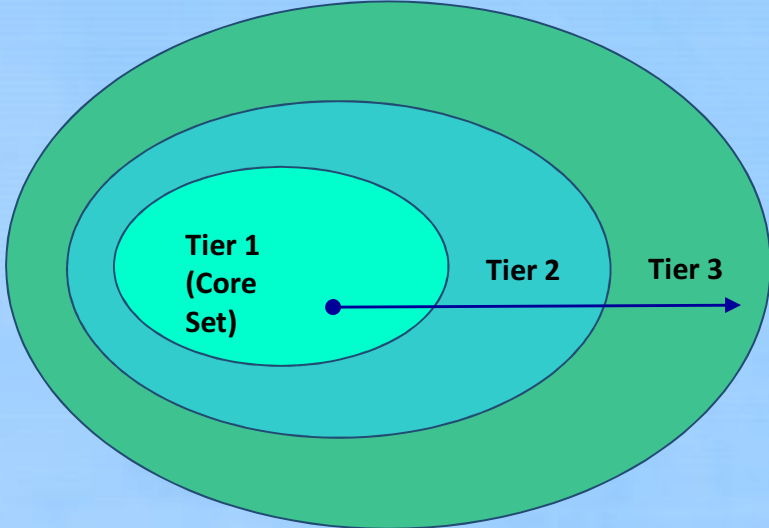
- The **Basic Set of Environment Statistics** organizes a comprehensive (though not exhaustive) list of environment statistics
- The Basic Set is organized in **three tiers**, based on the level of relevance, availability and methodological development of the statistics.



- 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 statistics in the Basic and Core Set of Statistics

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

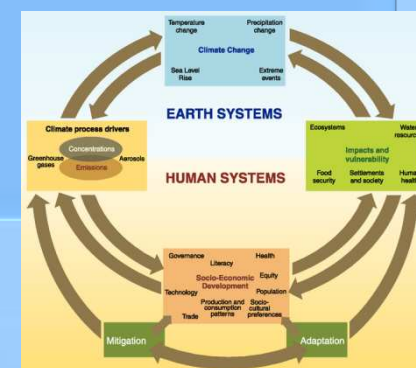
Sub-component 4.1: Natural Extreme Events and Disasters

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		
7. Population living in hazard prone areas	Number			
Topic 4.1.2: Impact of natural extreme events and disasters	a. People affected by 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. Number of people killed	Number		
	2. Number of people injured	Number		
	3. Number of people homeless	Number		
	4. Number of people affected	Number		
	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.)	Currency	<ul style="list-style-type: none"> ▪ By International Standard Industrial Classification of all Economic Activities (ISIC) economic activity • National • Sub-national ▪ By direct and indirect damage 	
	c. Physical loss/damage due to natural extreme events and disasters (e.g., area and amount of crops, livestock, aquaculture, biomass etc.)	Area, Descriptive, Number		
	d. Effects of natural extreme events and disasters on integrity of ecosystems		<ul style="list-style-type: none"> ▪ By event ▪ By ecosystem • National • Sub-national 	
	1. <i>Area affected by natural disasters</i>	Area		
	2. <i>Loss of vegetation cover</i>	Area		
	3. <i>Area of watershed affected</i>	Area		
	4. <i>Other</i>	Descriptive		
	e. <i>External assistance received</i>	Currency	<ul style="list-style-type: none"> ▪ By event • National 	

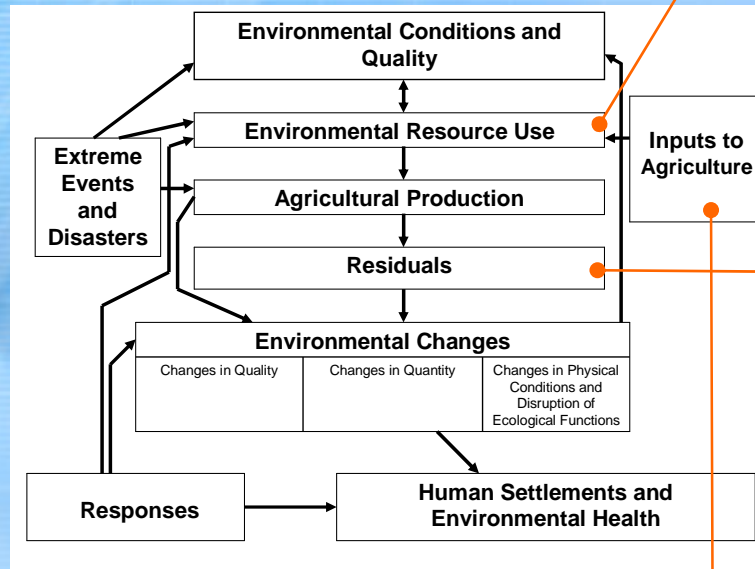
Applications of the FDES to cross-cutting issues:

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



Agriculture and the environment

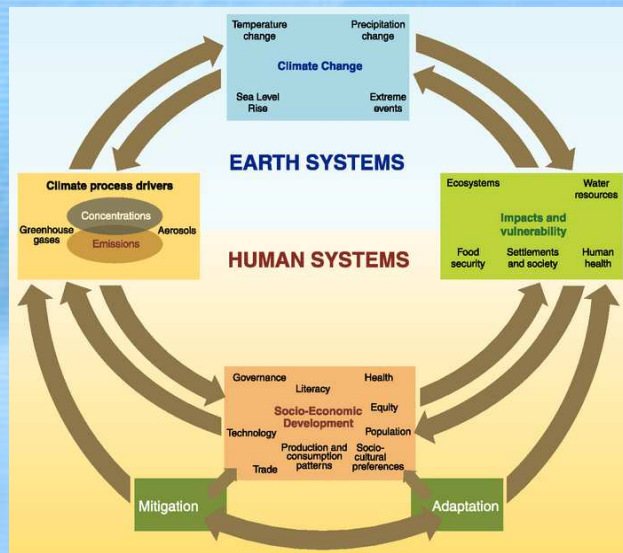


Agricultural Production	
Sub-component 2.5: Biological Resources	
Topic 2.5.3: Crops	2.5.3.a: Main annual and perennial crops 2.5.3.a.1: Area harvested 2.5.3.a.2: Area planted 2.5.3.a.3: Amount produced 2.5.3.a.4: Amount of organic production 2.5.3.a.5: Amount of genetically modified crops produced 2.5.3.c: Monoculture / resource-intensive crops: 2.5.3.c.1: Area being used for production 2.5.3.c.2: Amount produced 2.5.3.c.3: Amount of genetically modified crops produced
Topic 2.5.4: Livestock	2.5.4.a: Livestock 2.5.4.a.1: Number of live animals 2.5.4.a.2: Number of animals slaughtered

Inputs to Agriculture	
Sub-component 2.5: Biological Resources	
Topic 2.5.3: Crops	2.5.3.b: Amount used of: 2.5.3.b.1: Natural fertilizers (e.g. manure, compost, lime) 2.5.3.b.2: Chemical fertilizers 2.5.3.b.3: Pesticides
Topic 2.5.4: Livestock	2.5.4.b: Amount used of: 2.5.4.b.1: <i>Antibiotics</i> 2.5.4.b.2: <i>Hormones</i>
Sub-component 3.4: Application of Biochemicals	
Topic 3.4.1: Application of biochemicals	3.4.1.a: Total amount of fertilizers used (also in 2.5.1.b and 2.5.3.b) 3.4.1.b: Total amount of pesticides used (also in 2.5.1.b and 2.5.3.b) 3.4.1.d: <i>Total amount of hormones used</i> (also in 2.5.2.e and 2.5.4.b) 3.4.1.f: <i>Total amount of antibiotics used</i> (also in 2.5.2.e and 2.5.4.b)

Residuals	
Sub-component 3.1: Emissions to Air	
Topic 3.1.1: Emissions of greenhouse gases	3.1.1.a: Total emissions of direct greenhouse gases (GHGs), by gas: 3.1.1.a.1: Carbon dioxide (CO₂) 3.1.1.a.2: Methane (CH₄)
Topic 3.1.2: Consumption of ozone depleting substances	3.1.2.a: Consumption of ozone depleting substances (ODS), by substance: 3.1.2.a.6: Methyl bromide
Sub-component 3.2: Generation and Management of Wastewater	
Topic 3.2.1: Generation and pollutant content of wastewater	3.2.1.a: Volume of wastewater generated (from agriculture) 3.2.1.b: Emissions of pollutants to wastewater (from agriculture)
Sub-component 3.2: Generation and Management of Waste	
Topic 3.3.1: Generation of waste	3.3.1.a: Amount of waste generated by economic activity (by agriculture) 3.3.1.b: Amount of waste generated by waste category (by agriculture) 3.3.1.c: Generation of hazardous waste (by agriculture) 3.3.1.c.1: Amount of hazardous waste generated (by agriculture)

Climate Change statistics



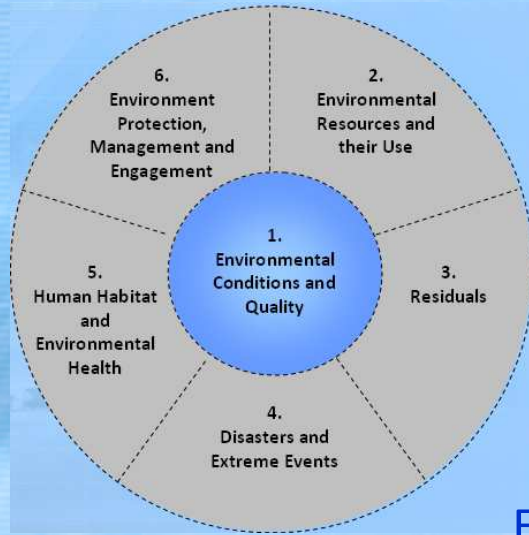
Source: Intergovernmental Panel on Climate Change

Climate Process Drivers	
Sub-component 1.3: Environmental Quality	Sub-component 3.1: Emissions to Air
1.3.1.d Global atmospheric concentrations of greenhouse gases	3.1.1.a-b Total emissions of direct and indirect greenhouse gases (GHGs), by gas 3.1.2.a Consumption of ozone depleting substances (ODS), by substance

Climate Change Evidence	
Sub-comp. 1.1: Physical Conditions	Sub-comp. 4.1: Natural Extreme Events and Disasters
1.1.1.a Temperature 1.1.1.b Precipitation 1.1.2.e.4 Sea level	4.1.1.a Occurrence of natural extreme events and disasters

Climate Change Impacts and Vulnerability					
Sub-comp. 1.1: Physical Conditions	Sub-comp. 1.2: Land Cover, Ecosystems and Biodiversity	Sub-comp. 1.3: Environmental Quality	Sub-comp. 2.3: Land	Sub-comp. 4.1: Natural Extreme Events and Disasters	Sub-comp. 5.2: Environmental Health
1.1.2.a-c, e Lakes, rivers, reservoirs, glaciers 1.1.2.e.6 Area of sea ice 1.1.4.b.2 Area affected by desertification	1.2.1.a.1 Area of land cover 1.2.2.a-c Ecosystem characteristics and biological components 1.2.3.a Flora 1.2.3.b Fauna 1.2.4.a-b Forests	1.3.3.b Organic matter in marine water bodies 1.3.3.f Physical and chemical characteristics (of marine water bodies) 1.3.3.g Coral bleaching	2.3.1.1 Land use change	4.1.2.a-d People affected, economic loss, physical loss and effects on integrity of ecosystems	5.2.3.a Vector borne diseases

Mitigation and Adaptation			
Sub-comp. 2.2: Energy Resources	Sub-comp. 6.1: Environment Protection and Resource Management Expenditure	Sub-comp. 6.2: Environmental Governance and Regulation	Sub-comp. 6.3: Extreme Event Preparedness and Disaster Management
2.2.2.a Production of energy from non-renewable and renewable sources	6.1.1.a Government environment protection and resource management expenditure 6.1.2.a Private sector environment protection and resource management expenditure	6.2.2.a Direct regulation 6.2.2.b Economic instruments 6.2.3.a Participation in MEAs and other global environmental conventions	6.3.1.a National natural extreme event and disaster preparedness and management systems



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
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Examples of Core Set Statistics for Oceans and Coastal areas
within topics of Component 1:

Topic 1.1.3: Geological and geographical information	b. Coastal waters (area) (also in 2.3.1.c)	
	c. Length of marine coastline	
	d. Coastal area	
Topic 1.2.2: Ecosystems	a. General ecosystem characteristics, extent and pattern	1. Area of ecosystems (marine, coastal)
Topic 1.2.3: Biodiversity	c. Protected areas	1. Protected marine area
Topic 1.3.3: Marine water quality	a. Nutrients and chlorophyll	1. Concentration of nitrogen
		2. Concentration of phosphorous
	b. Organic matter	1. Biochemical oxygen demand (BOD)
	g. Coral bleaching	1. Area affected by coral bleaching



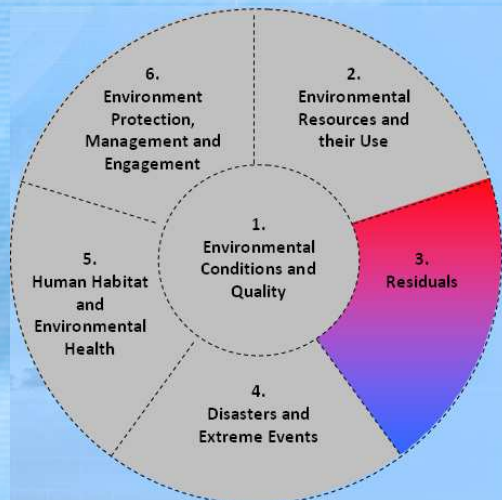


Component 2: Environmental Resources and their Use	Sub-component 2.1: Non-energy Mineral Resources Sub-component 2.2: Energy Resources Sub-component 2.3: Land Sub-component 2.4: Soil Resources Sub-component 2.5: Biological Resources Sub-component 2.6: Water Resources
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Example of Core Set Statistics for Oceans and Coastal areas within topics of Component 2:

Topic 2.2.1: Stocks and changes of energy resources	a. Mineral energy resources	1. Stocks of commercially recoverable resources (oil from the sea)
		5. Extraction (oil from the sea)
Topic 2.2.2: Production and consumption of energy from non-renewable and renewable sources	a. Production of energy from non-renewable and renewable sources	3. Renewable sources (e.g. ocean resources)
Topic 2.3.1: Land use	c. Coastal waters (area) (also in 1.1.3.b)	
Topic 2.5.2: Aquatic resources	a. Fish capture production	
	b. Aquaculture production	





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 for Oceans and Coastal areas within a topic of Component 3:

Topic 3.2.3: Discharge of wastewater to the environment	a. Wastewater discharge	1. Total volume of wastewater discharged to the environment after treatment (to the sea)
		2. Total volume of wastewater discharged to the environment without treatment (to the sea)





<p>Component 4: Extreme Events and Disasters</p>	<p>Sub-component 4.1: Natural Extreme Events and Disasters</p> <p>Sub-component 4.2: Technological Disasters</p>
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Example of Core Set Statistics within topics of Component 4:

<p>Topic 4.1.1: Occurrence of natural extreme events and disasters</p>	<p>a. Occurrence of natural extreme events and disasters:</p>	<p>1. Type of natural disaster</p>
<p>Topic 4.1.2: Impact of natural extreme events and disasters</p>	<p>a. People affected by natural extreme events and disasters</p>	<p>1. Number of people killed</p>
	<p>b. Economic loss due to natural extreme events and disasters</p>	





Component 5: Human Settlements and Environmental Health

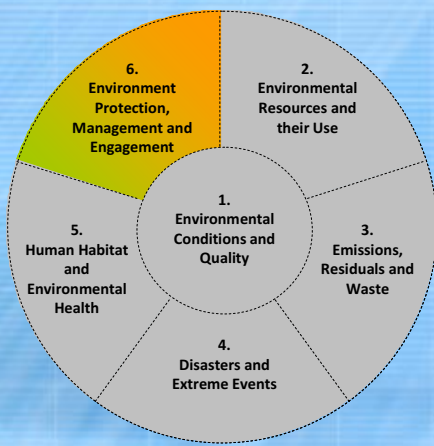
Sub-component 5.1: Human
Settlements

Sub-component 5.2: Environmental
Health

Example of Core Set Statistics for Oceans and Coastal areas
within topics of Component 5:

Topic 5.1.2: Access to water, sanitation and energy	a. Population using an improved drinking water source (in coastal areas)	
	b. Population using an improved sanitation facility (in coastal areas)	
	d. Population connected to wastewater collecting system (in coastal areas)	
	e. Population connected to wastewater treatment (in coastal areas)	
Topic 5.2.2: Water-related diseases and conditions	a. Water-related diseases and conditions (in coastal areas)	1. Incidence
		2. Prevalence
		3. Mortality
Topic 5.2.3: Vector borne diseases	a. Vector borne diseases (in coastal areas)	1. Incidence
		2. Prevalence
		3. Mortality





Component 6: Environment Protection, Management and Engagement

Sub-component 6.1: Environment Protection and Resource Management Expenditure

Sub-component 6.2: Environmental Governance and Regulation

Sub-Component 6.3: Extreme Event Preparedness and Disaster Management

Sub-component 6.4: Environmental Information and Awareness

Example of Core Set Statistics for Oceans and Coastal areas within topics of Component 6:

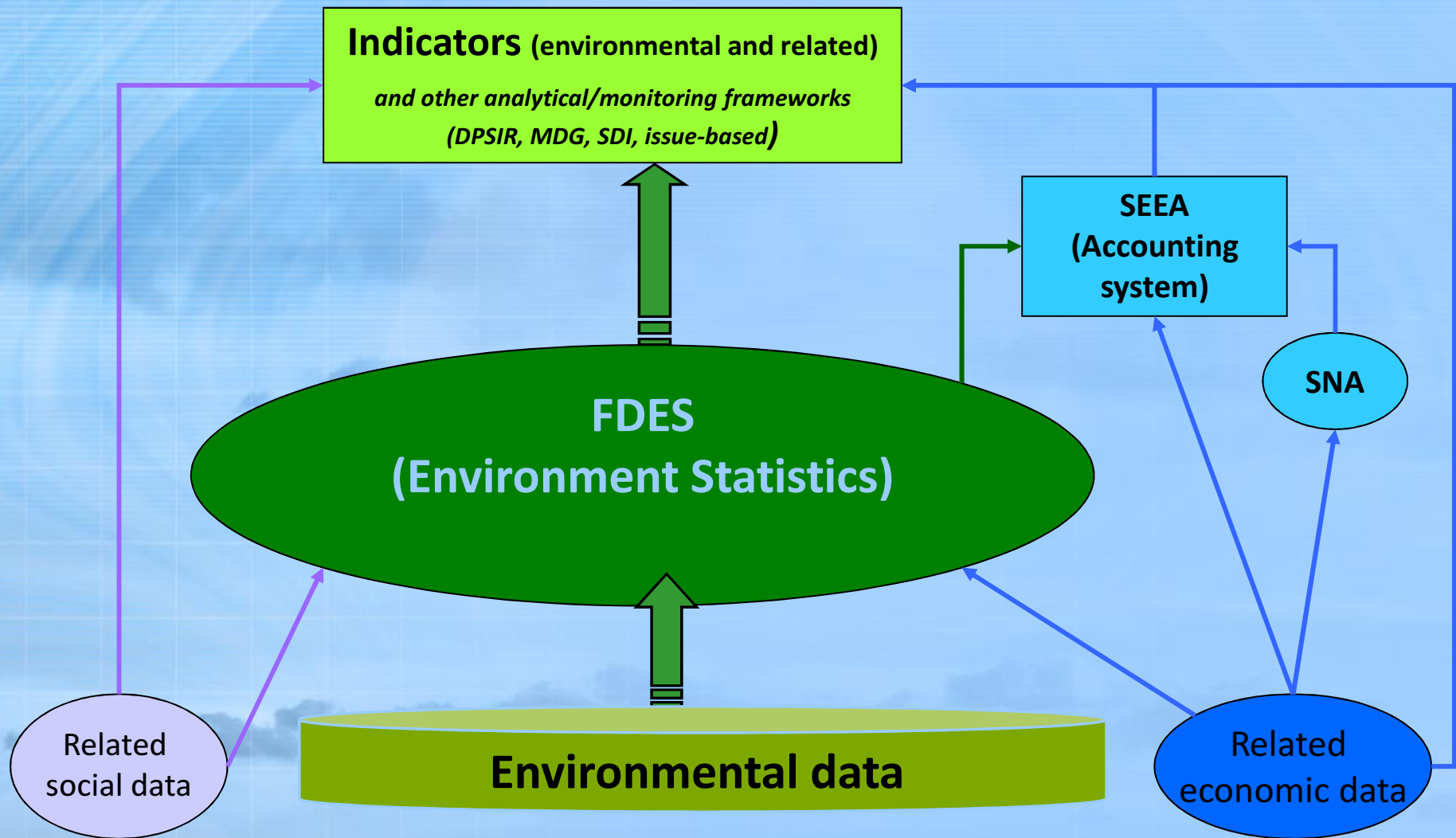
Topic 6.2.2: Environmental regulation and instruments	a. Direct regulation	1. List of regulated pollutants and description (for oceans)
Topic 6.2.3: Participation in MEAs and environmental conventions	a. Participation in MEAs and other global environmental conventions	1. List and description (e.g., year of participation of country) of MEAs and other global environmental conventions (for oceans)



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) and 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

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, 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 (New York, 26-28 March 2014)

II. Data collection and dissemination

- Biennial data collection from over 170 non-OECD and non-EU countries/areas. Questionnaire to be sent out in March 2014.
- Two sections covered: water and waste statistics which are harmonized (concepts and definitions) with the OECD/Eurostat Joint Questionnaire to promote international comparability of data.
- Dissemination on UNSD website through indicator tables, charts and maps, as well as Country Snapshots.



III. Coordination

- Intersecretariat Working Group on Environment Statistics
 - UNSD, Eurostat, OECD, FAO, UN-ECE, UNEP..
 - Focus on coordination of methodological development, data collection and capacity building



IV. Technical cooperation and capacity building

- Conduct or participate in regional/sub-regional workshops on environment statistics – e.g. CARICOM Workshop on Environment Statistics (April 2014).
- Conduct limited number of national workshops/country visits on environment statistics, e.g. St. Vincent & the Grenadines in 2011.
- Implement regional/sub-regional projects on environment statistics, such as CARICOM, ECOWAS, and plans for more in 2014-2015. A regional list of environmental indicators for the CARICOM region was agreed upon.



Contact and further information

- Email address: shahr@un.org or envstats@un.org
- Main web page:
<https://unstats.un.org/unsd/environment/default.htm>
- UNSD environmental indicators:
<https://unstats.un.org/unsd/environment/qindicators.htm>
- UNSD Country Snapshots:
https://unstats.un.org/unsd/environment/Questionnaires/country_snapshots.htm

