Chapter 2: Conceptual Foundation and Structure of the FDES

1. Environmental Conditions and Quality

2. Environmental Resources and their Use

3. Residuals

4. Extreme Events and Disasters

5. Human Settlements and Environmental Health

6. Environment Protection, Management and Engagement

Workshop on Environment Statistics in support of the implementation of the Framework for the Development of Environment Statistics (FDES 2013) (Calodyne, Mauritius 26-29 January 2015)

Environment Statistics Section, United Nations Statistics Division

Contents

1. Need for a framework for developing environment statistics
2. Revision of the FDES
3. Description of the FDES
4. Conceptual foundation of the FDES
5. FDES structure and overview of its 6 components
6. Basic and Core Sets of Environment Statistics
7. Applications of the FDES to cross-cutting issues
8. Links between the FDES and social and economics statistics
9. Future work
10. Putting the FDES to work
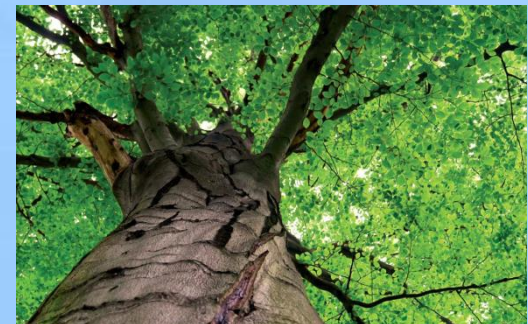
1. Need for a framework for developing environment statistics

- Environment statistics is multi- and interdisciplinary.

  - A framework marks out the areas and the corresponding statistics that fall into its scope.

- Sources of data can be statistical surveys, administrative records, measurements from monitoring stations and networks, remote sensing and field surveys, or scientific research.

  - A framework provides common tools (definitions, classifications) that bring the different data together in an integrative manner.

- The multitude of sources means a multitude of stakeholders.

  - A framework marks out the roles of the different stakeholders and brings them together to a common platform.

- Need an internationally recognized and recommended framework to guide the development, coordination and organization of environment statistics.

2. Revision of the 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 revised Framework (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 the FDES and development of a Core Set of Environment Statistics
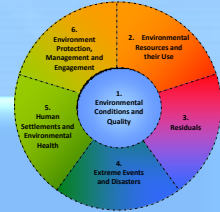
- 1984 – 2010: improved scientific knowledge and emerging environmental concerns called for a revision of the FDES 1984.
- Contents and structure of FDES required considerable work by EG and UNSD
- To develop the draft Core Set of Environment Statistics, more than 2,500 environmental indicators and statistics 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. Description of the FDES

- The resulting FDES 2013 is a flexible, multi-purpose conceptual and statistical framework that enables and facilitates the collection, compilation 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. Description of the FDES

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.
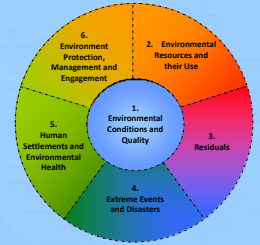
Audience of the FDES

- Primarily to guide the producers of statistics in countries at early stages of, or in the process of strengthening or further developing their environment statistics programmes.

3. Description of the FDES

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.
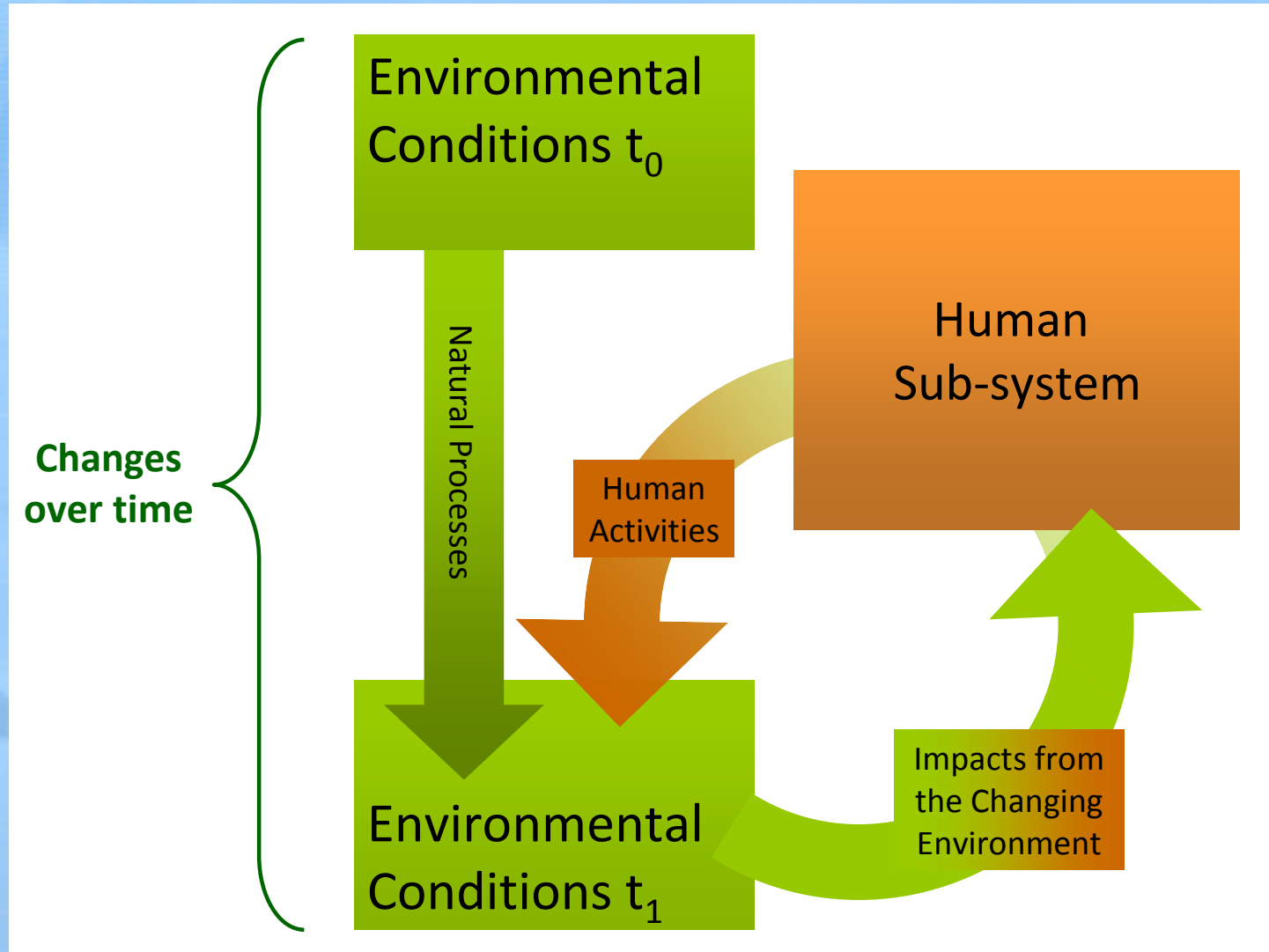
4. Conceptual foundation of the FDES

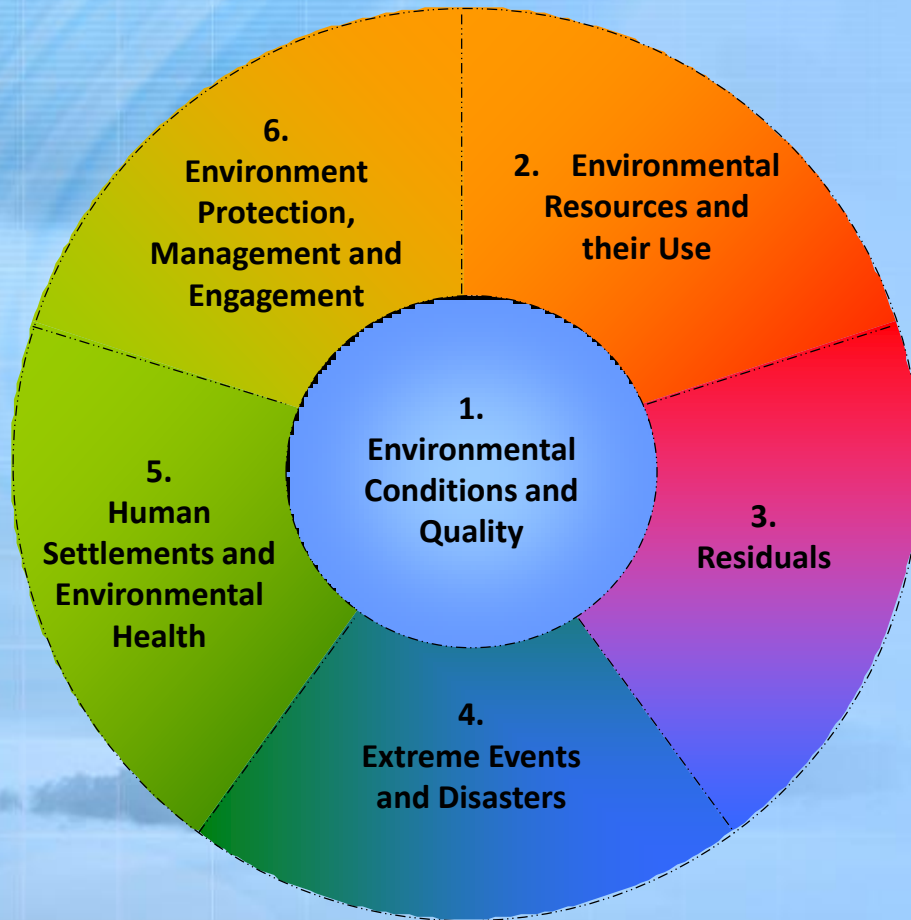*The environment, the human sub-system, and interactions between them*
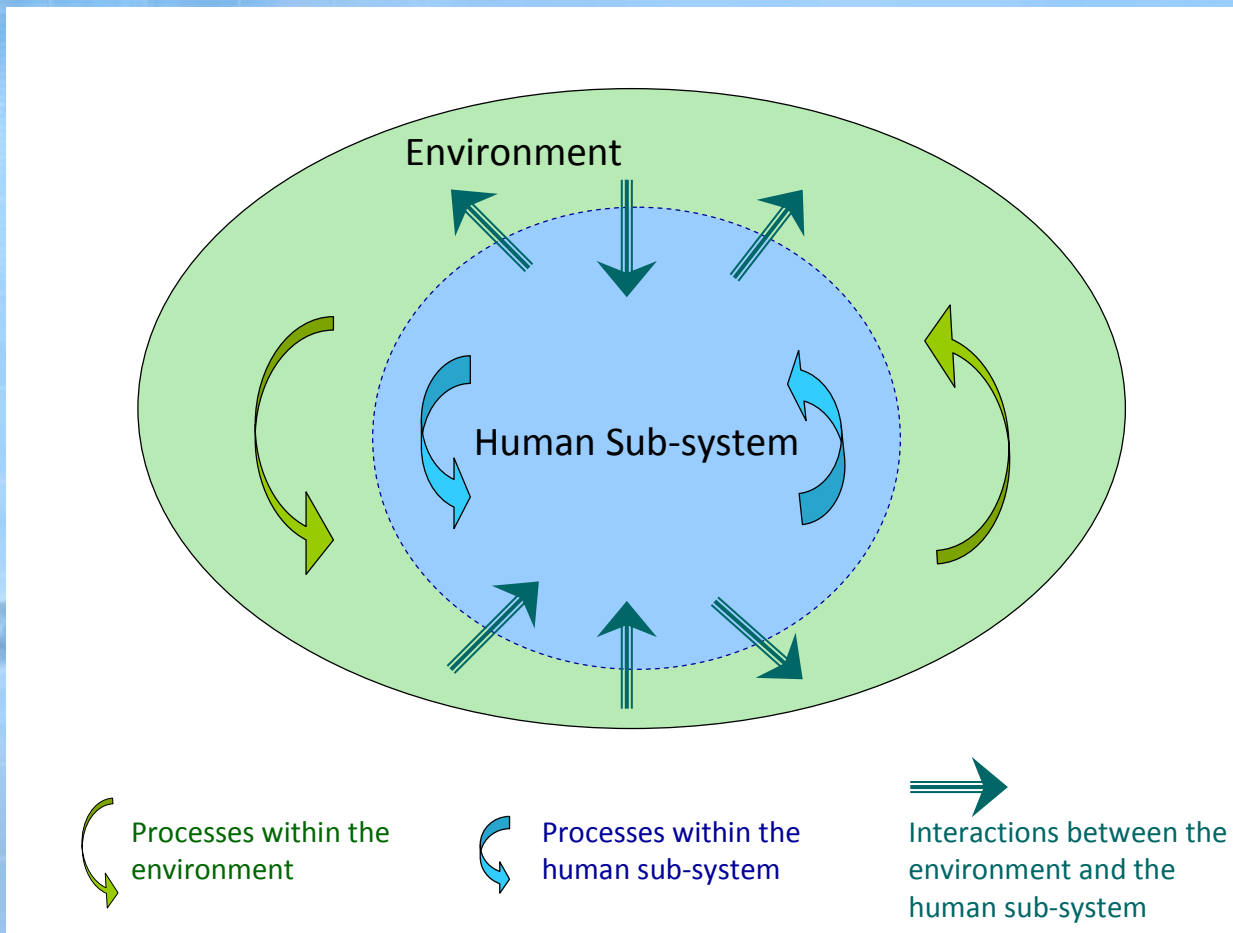
4. Conceptual foundation of the FDES

Environmental conditions and their changes

5. FDES structure and overview of its 6 components

- 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

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	Sub-components
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: 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
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 Sub-component 3.4: Release of Chemical Substances
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; *Italicized Text - Tier 3*)
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. *Habitat fragmentation*
	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. *Habitat fragmentation*

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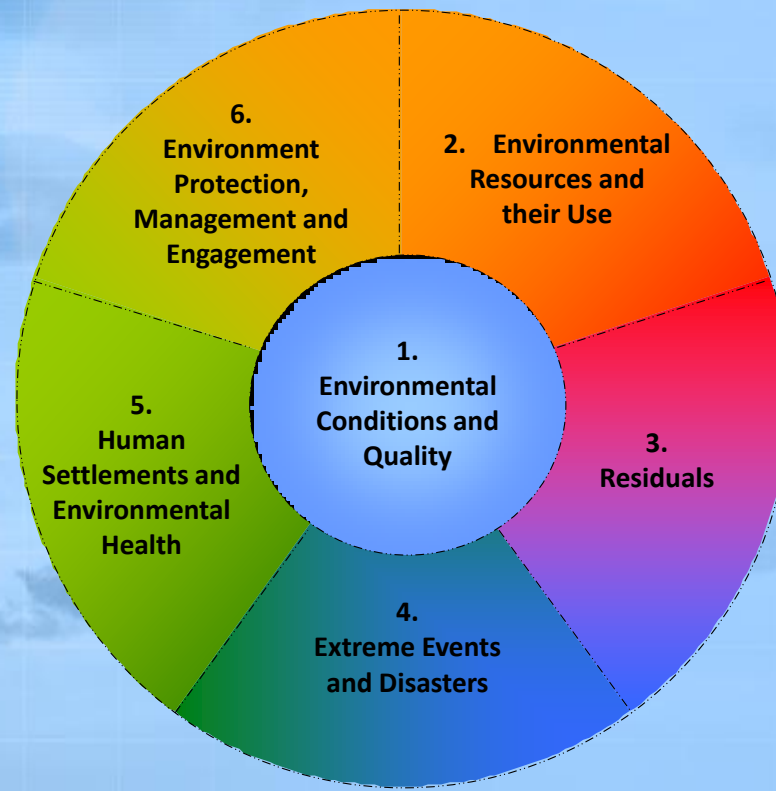
Flexibility and adaptability: tiers

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	· *Geospatial* · *Physical* · *Qualitative*	• Monitoring and remote sensing data • Environmental, meteorological, hydrological, • Geological and geographical authorities/ 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; as well as 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 national authorities, i.e. mining, energy, agriculture, water and forest	• *Driving force, Pressure and State elements in DPSIR* • *Asset and physical flow accounts of the SEEA Central Framework*
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 Central Framework*
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 working w/ hazardous substances and processes	• *Pressure, Impact and Response* •*Elements in DPSIR* • *Asset accounts of the SEEA Central Framework*

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 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 • Housing and urban planning and oversight authorities • Cartographic authorities • Transport authorities • For health, administrative records, the health Authority	• *Driving force, Pressure and Impact elements in DPSIR*
6 **Environment Protection, Management and 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	• *Monetary* • *Qualitative*	• 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	• *Response element in DPSIR* • *Environmental activity accounts and related flows of the SEEA Central Framework*

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. Number of known species by status category**

Component 2: Environmental Resources and their Use	Sub-component 2.1: 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. Amount of organic production	Mass
		5. Amount of genetically modified crops produced	Mass
	b.	Amount used of:	
		1. Natural fertilizers (e.g., manure, compost, lime) (also in 3.4.1.a)	Area, Mass, Volume
		2. Chemical fertilizers (also in 3.4.1.a)	Area, Mass, Volume
		3. Pesticides (also in 3.4.1.b)	Area, Mass, Volume
		4. Genetically modified seeds	Mass
	c.	Monoculture/resource-intensive farming systems	
		1. Area being used for production	Area
		2. Amount produced	Mass
		3. Amount of genetically modified crops produced	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
	Sub-component 3.4: Release of Chemical Substances

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_2O)
	b. Total emissions of indirect greenhouse gases (GHGs), by gas:	**1. Sulphur dioxide (SO_2)**
		2. Nitrogen oxides (NOx)

| 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.)	

Component 5: **Human Settlements and Environmental Health**	Sub-component 5.1: Human Settlements Sub-component 5.2: Environmental Health

Example of Core Set Statistics within a topic of Component 5:

Topic 5.1.2: Access to selected basic services	**a. Population using an improved drinking water source**
	b. Population using an improved sanitation facility
	c. Population served by municipal waste collection
	d. Population connected to wastewater collecting system
	e. Population connected to wastewater treatment

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 within a topic of Component 6:

| Topic 6.1.1: Government environment protection and resource management expenditure | a. Government environment protection and management expenditure
1. Annual government environment protection expenditure |

6. Basic and Core Sets 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 soundness of the statistics.

Tier 1
(Core Set)
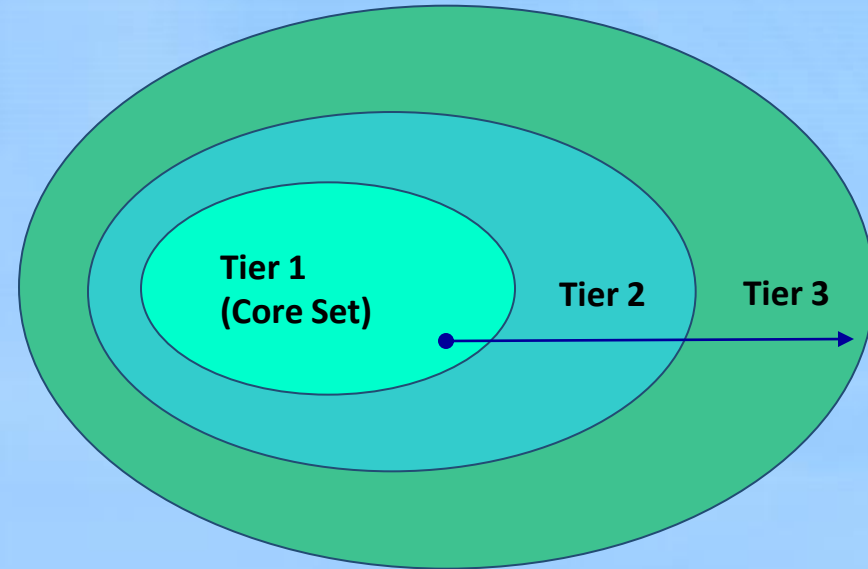
Tier 2

Tier 3

- 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 = 101
Basic Set = 456

Tier 1 (Core Set) | Tier 2 | Tier 3
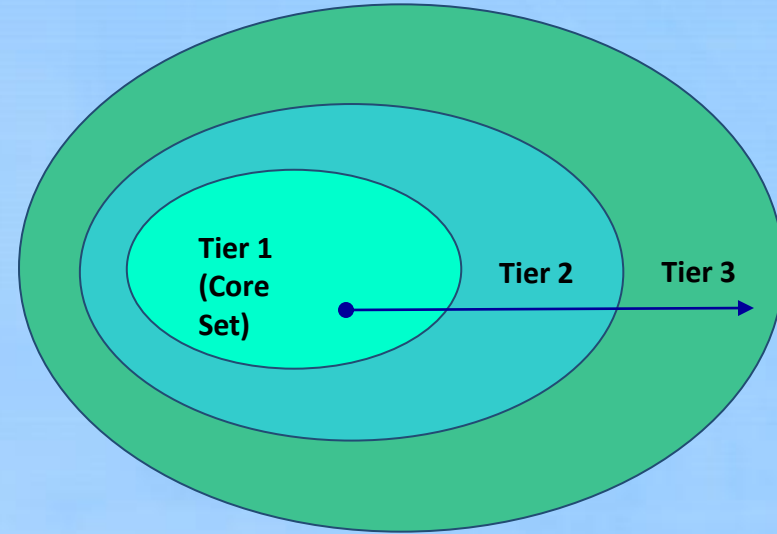
	Component 1	Component 2	Component 3	Component 4	Component 5	Component 6	Total
Tier 1	34	30	19	4	12	3	101
Tier 2	67	37	33	13	21	24	195
Tier 3	53	42	5	16	20	23	159
Total	154	109	57	33	53	50	456

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; *Italicized Text - 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		• By event • National • Sub-national	• Centre for Research on the Epidemiology of Disasters Emergency Events Database (CRED EMDAT) • UN 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)	Description		
	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 (also in 5.1.3.c)	Number		
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**	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	• By event • By 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, Description, Number		
	d. Effects of natural extreme events and disasters on integrity of ecosystems		• By event • By ecosystem • National • Sub-national	
	1. *Area affected by natural disasters*	Area		
	2. *Loss of vegetation cover*	Area		
	3. *Area of watershed affected*	Area		
	4. *Other*	Description		
	e. *External assistance received*	Currency	• 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 average
				2. Minimum monthly average
				3. Maximum monthly average
			b. Precipitation (also in 2.6.1.a)	1. Annual average
				2. Long-term annual average
		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 waters (includes area of coral reefs, mangroves, etc.) (also in 2.3.1.a)	
			c. Length of marine coastline	
			d. Coastal area	
		Topic 1.1.4: Soil characteristics	a. Soil characterization	1. Area of soil types
			b. Soil 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
		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. Number of known species by status category
		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
	Sub-component 1.3: Environmental Quality	Topic 1.3.1: Air quality	a. Breathable particles	1. Concentration levels of particulate matter (PM_{10})
				2. Concentration levels of particulate matter ($PM_{2.5}$)
			b. Breathable gases	1. Concentration levels of tropospheric ozone (O_3)
				2. Concentration levels of carbon monoxide (CO)
			c. Ambient concentrations of other relevant pollutants	1. Concentration levels of sulphur dioxide (SO_2)
				2. Concentration levels of nitrogen oxides (NO_X)
		Topic 1.3.2: Freshwater quality	a. Nutrients and chlorophyll	1. Concentration of nitrogen
				2. Concentration of phosphorous
			b. Organic matter	1. Biochemical oxygen demand (BOD)
			c. Pathogens	1. Concentration of faecal coliforms
		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

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.)	

…

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 selected basic services	a. **Population using an improved drinking water source**	
			b. **Population using an improved sanitation facility**	
			c. **Population served by municipal waste collection**	
			d. **Population connected to wastewater collecting system**	
			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	1. **Incidence**
				2. **Prevalence**
				3. **Mortality**
		Topic 5.2.3: Vector borne diseases	a. Vector borne diseases	1. **Incidence**
				2. **Prevalence**
				3. **Mortality**
Component 6: Environment Protection, Management and Engagement	Sub-component 6.1: Environment Protection and Resource Management Expenditure	Topic 6.1.1: Government environment protection and resource management expenditure	a. Government environment protection and management expenditure	1. **Annual government environment protection expenditure**
	Sub-component 6.2: Environmental Governance and Regulation	Topic 6.2.2: Environmental regulation and instruments	a. Direct regulation	1. **List of regulated pollutants and description** (e.g., by year of adoption and maximum allowable levels)
		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[a] of country) **of MEAs and other global environmental conventions**

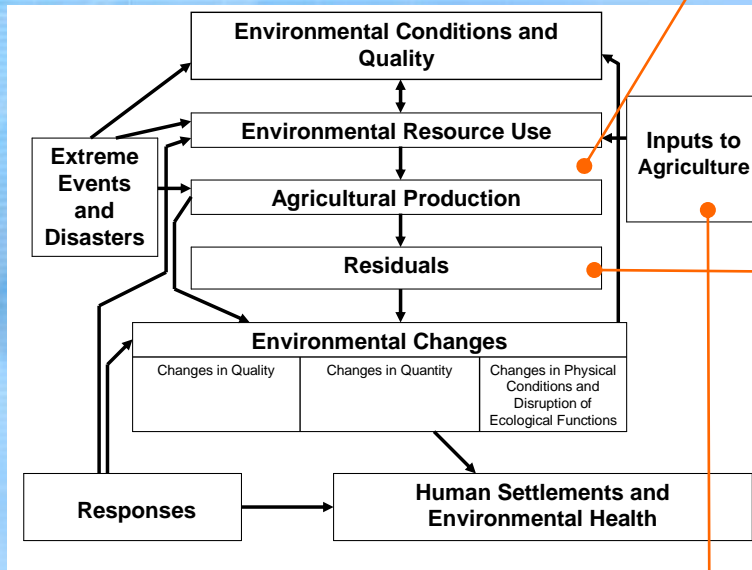# 7. Applications of the FDES to cross-cutting issues
(Chapter 5 FDES 2013)

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

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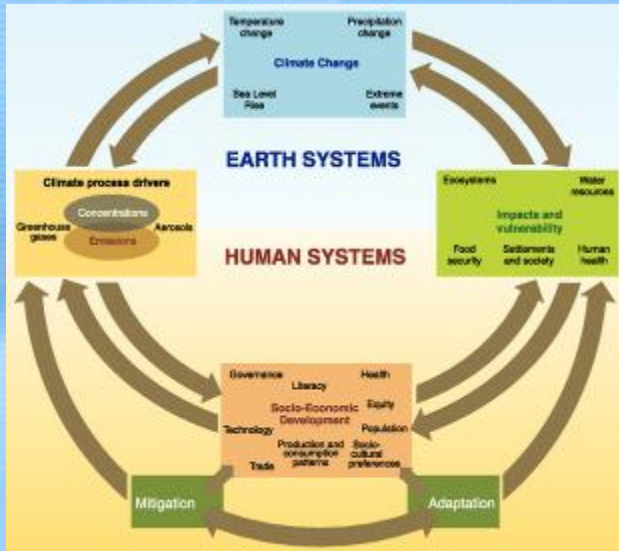
Agriculture and the environment

Environmental Conditions and Quality

Extreme Events and Disasters

Environmental Resource Use

Agricultural Production

Inputs to Agriculture

Residuals

Environmental Changes

| Changes in Quality | Changes in Quantity | Changes in Physical Conditions and Disruption of Ecological Functions |

Responses

Human Settlements and Environmental Health

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 farming systems 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

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 (CO_2)** **3.1.1.a.2: Methane (CH_4)**
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: Pollutant content of wastewater

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.: **Amount of hazardous waste generated** (by agriculture)

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) (also in 3.4.1.a) **2.5.3.b.2: Chemical fertilizers** (also in 3.4.1.a) **2.5.3.b.3: Pesticides** (also in 3.4.1.b) 2.5.3.b.4: Genetically modified seeds
Topic 2.5.4: Livestock	2.5.4.b: Amount used of: *2.5.4.b.1: Antibiotics (also in 3.4.1.f)* *2.5.4.b.2: Hormones (also in 3.4.1.d)*

Sub-component 3.4: Application of Biochemicals

Topic 3.4.1: Release of chemical substances	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: Total amount of hormones used (also in 2.5.2.e and 2.5.4.b)* *3.4.1.f: Total amount of antibiotics used (also in 2.5.2.e and 2.5.4.b)*

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 Global atmospheric concentrations of greenhouse gases (d)	3.1.1 Emissions of greenhouse gases (GHGs) 3.1.2 Consumption of ozone depleting substances (ODS)

Climate Change Evidence	
Sub-comp. 1.1: Physical Conditions	**Sub-comp. 4.1: Natural Extreme Events and Disasters**
1.1.1 Atmosphere, climate and weather (a, b) 1.1.2 Hydrographical characteristics (e)	4.1.1 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 Hydrographical characteristics (a-c, e, g) 1.1.4 Area affected by desertification (b)	1.2.1 Land cover 1.2.2 Ecosystems 1.2.3 Biodiversity (a-b) 1.2.4 Forests	1.3.3 Marine water quality (b, f, g)	2.3.1 Land use	4.1.2 Impact of natural extreme events and disasters (a-d)	5.2.3 Vector borne diseases 5.2.4 Health problems associated with excessive UV radiation exposure

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 Production of energy (a)	6.1.1 Government environment protection and resource management expenditure 6.1.2 Corporate, non-profit institution and household environment protection and resource management expenditure	6.2.2 Environmental regulation and instruments 6.2.3 Participation in MEAs and environmental conventions	6.3.1 Preparedness for natural extreme events and disasters

# 8. Links between the FDES and 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, or the Millennium Development Goals (MDGs) as well as the Sustainable Development Indicator frameworks. This compatibility allows that environment statistics from the FDES can feed into the SEEA or different 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

SEEA = System of Environmental-Economic Accounting
SNA = System of National Accounts
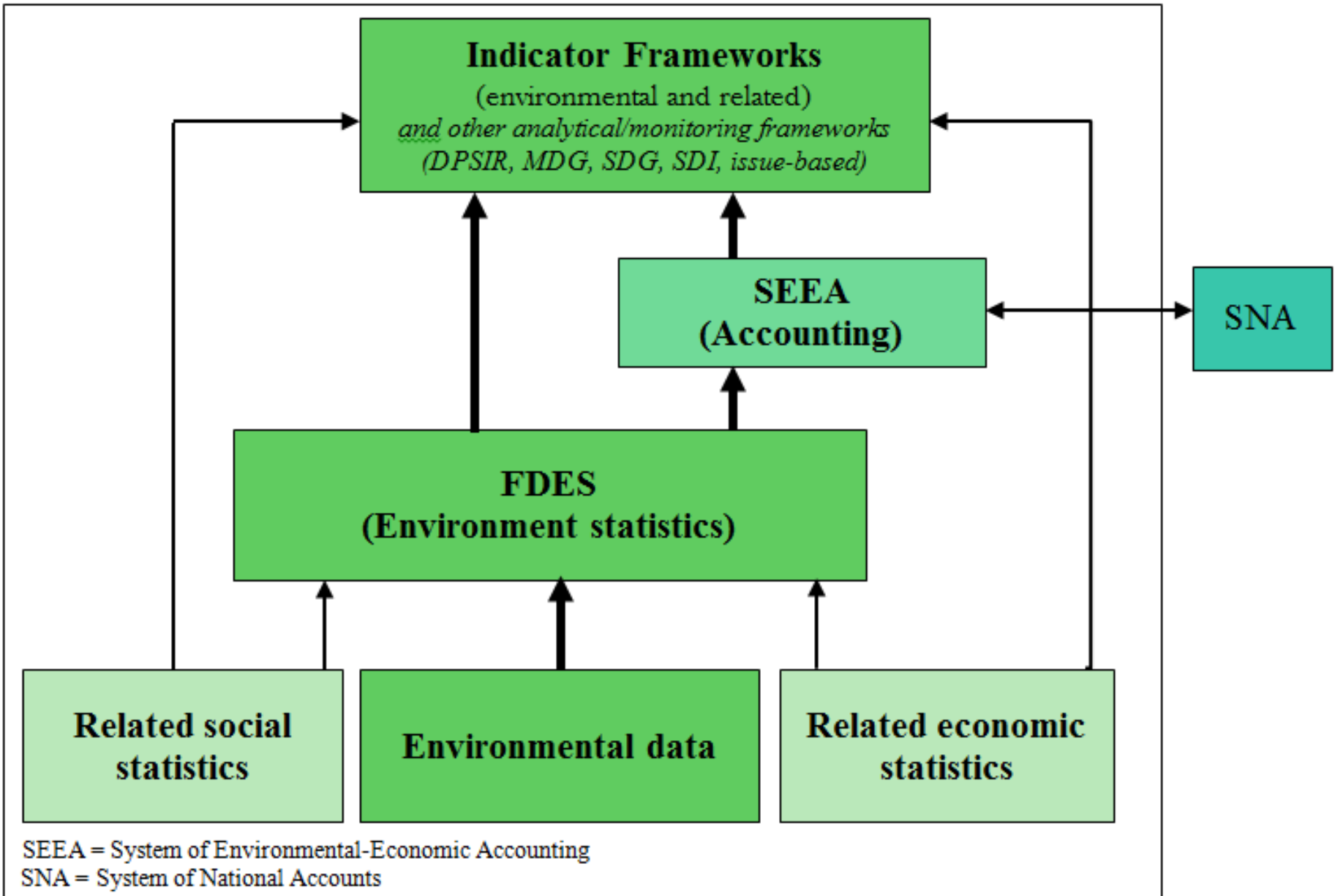
9. Future work
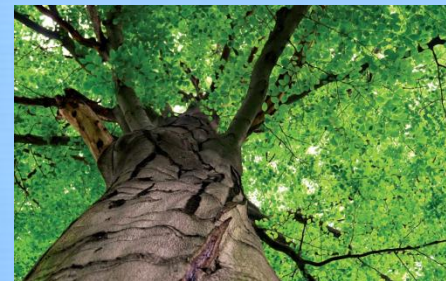
Following the endorsement of the FDES 2013, work focuses on:

- 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 builds 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 ->

10. Putting the FDES to work

- Plan of Work endorsed by SC February 2013.
- Objective of the Plan of Work is assisting countries most in need of developing and strengthening their environment statistics' production and dissemination.
- Strategies 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 United Nations Statistics Division:

E-mail: envstats@un.org
website: http://unstats.un.org/unsd/ENVIRONMENT/