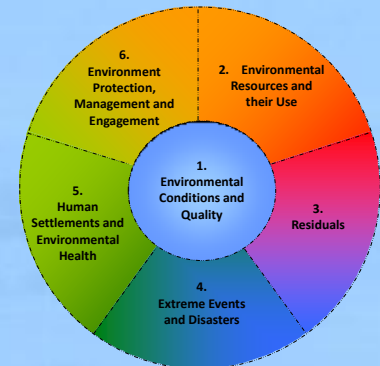# Strengthening Environment Statistics for Monitoring the SDGs

How the FDES can help countries compile environmentally-related SDG indicators

Environment Statistics Section

United Nations Statistics Division (UNSD)

Side Event SC. New York, 2 March 2015

Outline

- Environment Statistics:

  - State of the art

  - FDES 2013 and the Basic Set of Environment Statistics

  - The need to develop ES to monitor environmentally-related SDG targets

- Examples of FDES- BSES correspondence with SDGs

- Countries using/implementing FDES to develop their environment statistics

State of the art of environment statistics

- Environment statistics are multi-disciplinary, cross-cutting, and involve numerous stakeholders, actors and producers.
- **Insufficiency** of timely and reliable environment statistics worldwide
- Development of environment statistics **has advanced** over the past decades, although very heterogeneously.
- Economic, social, demographic statistics have been regularly produced for longer periods of time.
- Environment statistics is **an emerging** and still underdeveloped domain within sustainable development, limiting monitoring and assessment capabilities.
- Meanwhile, **demand** for robust environment statistics keeps **growing**.

- The SDGs include many goals that are environmentally-related.

Environment statistics: weakest pillar of SD

- Of the three pillars of sustainable development, monitoring/measurement of progress towards **environmental** sustainability is the weakest.

- Our capacity to inform about environmental sustainability is severely curtailed by the insufficient production of environment statistics.

- To inform about sustainable development, certain **environmental data** must be collected and **statistics need to be produced regularly**, as a key part of official statistics.

- Statistics can be further processed into indicators that support environment and sustainable development goals at the national level, as well as the emerging SDGs.

Contribution of environment statistics to sustainable development monitoring
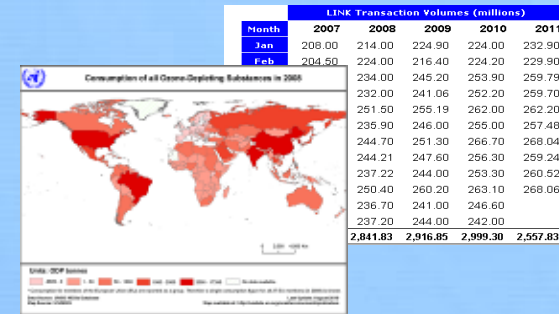
- Any measure of **sustainable development** requires strong foundation in **environment statistics**

- More importantly, given the **deterioration of environmental issues** (climate change, biodiversity loss, soil/land degradation, ecosystem health, natural disaster frequency and intensity, urban environment, pollution, and environmental health issues).

- Both **statistical and institutional capacities** for systematic production of environment statistics needs to be strengthened

- Securing the **political will and resources** necessary to ensure the production of these statistics is a clear signal of determined intent to measure and monitor progress in sustainable development.

- **FDES** and its **Basic Set of Environment Statistics** are **tools** for developing/strenghtening environment statistics at the national level

What is the FDES 2013?

- The FDES 2013 is **a flexible, multi-purpose conceptual and statistical framework** that enables and facilitates the **compilation, collection and production of environment statistics.**

- It marks out the **scope of environment statistics** providing guidance on what statistics to collect and compile.

- 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.
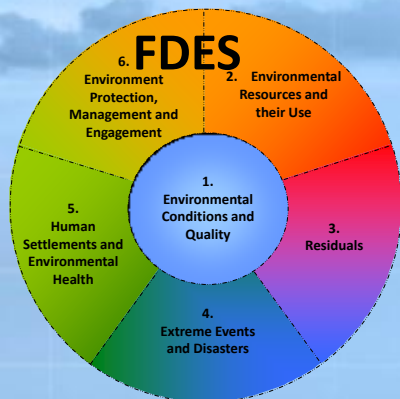
FDES: guidance for environment statistics development

The UN Statistical Commission endorsed the revised FDES 2013 at its forty-fourth session in 2013 as the **framework for strengthening environment statistics programmes** in countries.
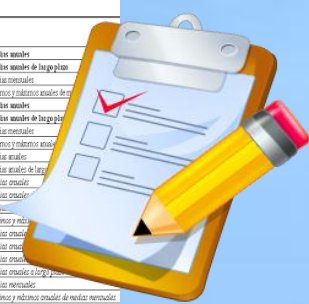
The Statistical Commission also recognized the FDES 2013 as a **useful tool** in the context of Sustainable Development Goals and the post-2015 development agenda.

The FDES and the BSES contribute to the production of environment statistics needed for compiling SDG and other indicators.
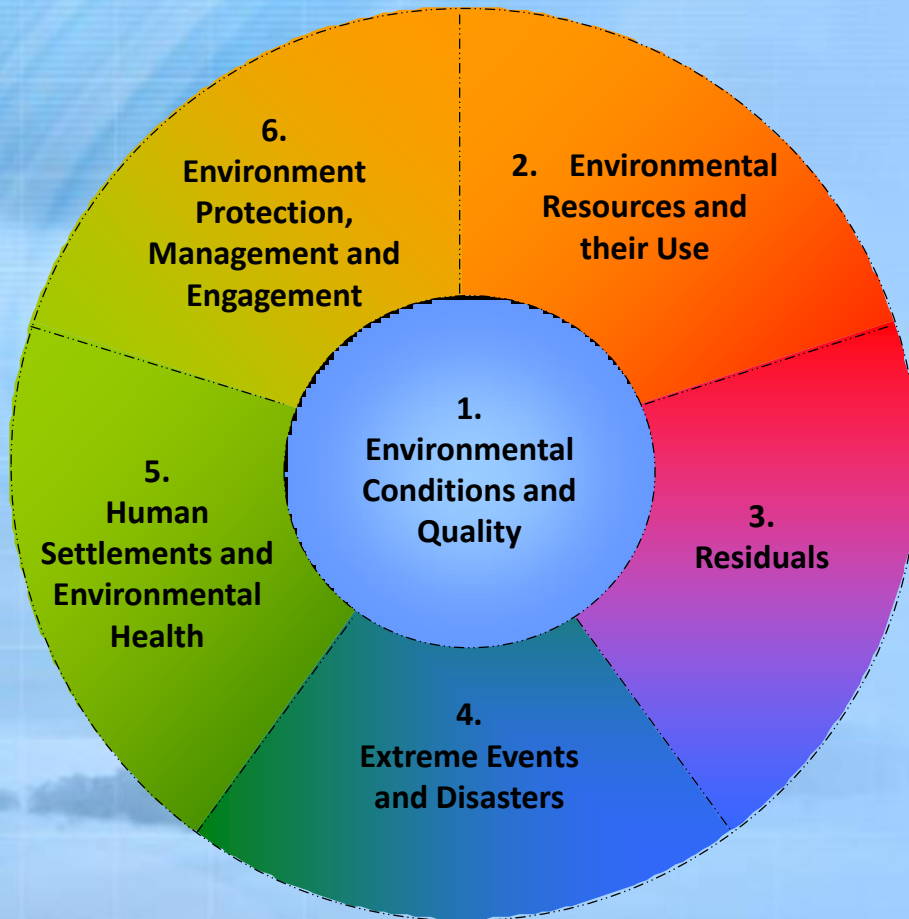
The BSES is a reference set of environment statistics corresponding to the 6 FDES components and its 60 statistical topics.

The FDES 2013 structure

- Based on conceptual foundation

- 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	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: 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

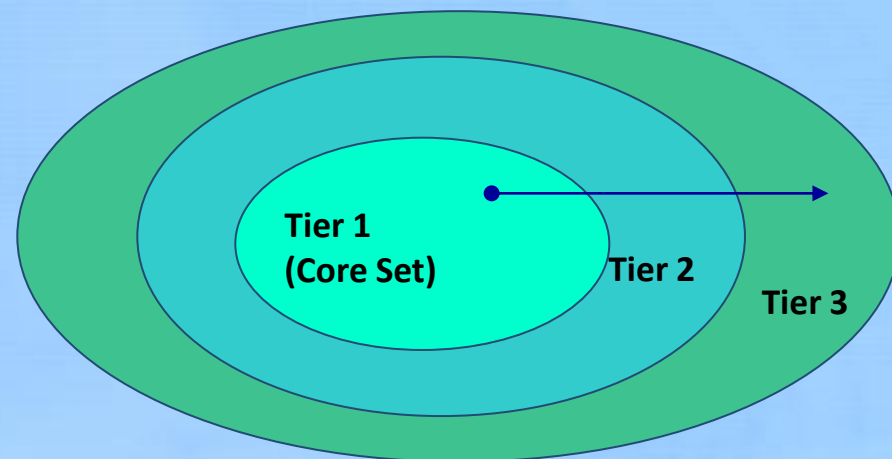## Basic Set of Environment Statistics

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; *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

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.

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.

	Component 1	Component 2	Component 3	Component 4	Component 5	Component 6	Total
Tier 1	34	27	19	4	12	3	**99**
Tier 2	66	66	33	13	22	24	**224**
Tier 3	53	42	5	16	19	23	**158**
Total	153	135	57	33	53	50	**481**

**Number of Statistics
Core Set or Tier 1 = 99
Basic Set = 481**

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 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				
	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 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			• 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*		Descriptive		
	e. *External assistance received*		Currency	• By event • National	

FDES tools

FDES

BSES

ESSAT

Manual BSES - metadata

Under development

Planned: *Handbook on how to set up/strengthen environment statistics units/programmes in countries*

Methodology Sheets for the FDES environment statistics

- Guide countries in the data collection, compilation and transformation of series into environment statistics

- Includes: definition, sources, international recommendations, classifications, methods collection/compilation, disaggregation, uses and dissemination

FDES 2013 Methodological Manual on the Basic and Core Sets of Environment Statistics

Template of Methodology Sheets (as of 21 April, 2014)

[As discussed in the EGES meeting, the general contents of each of the fields of this template are illustrated in the example for Waste, please refer to it. Additional suggestions are presented in red between brackets]

Code and location in the FDES 2013			
Component	Sub-Component	Topic	Code and Environment Statistic

[In general, where there is more than one option (i.e. for definitions, sources, international recommendations and classifications), they can all be referenced and/or described providing the source, usefulness, and value added by each choice; but whenever possible, these methodology sheets should make a choice and recommend one of the options, since it is important to provide proper guidance to countries]

1. Introduction/ Relevance
[Please explain the context and the importance of the cluster of statistics described in this methodology sheet. When appropriate, mention the environmental international agreement and convention relating to the statistics. When important, please identify and explain why the methodology sheet does not include some statistics that someone would expect to be included in this topic/sub-component]

2. Definitions and description of the statistics
[whenever possible, provide internationally agreed/accepted definitions, otherwise describe the statistics to the extent possible]

2A.   Definition of the statistics
[please list the definitions of statistics preceded by its FDES code and present the Core Set statistics in bold]

3. International sources and recommendations
[In general, whenever possible, link should be made to specific chapters/sections of the referenced documents. When the international environmental agreements and convention provide methods/ classifications to produce the statistics, please make reference to them.]

3A.   Classifications and groupings
[Please refer to all relevant statistical classifications and commonly used groupings for the statistics of this methodology sheet, include relevant groupings and taxonomies originated in scientific or policy arenas. Please include non- environmental but relevant classifications such as ISIC (see chapter 1.6 and Annex D of the FDES), explain the value of each and which one is recommended and for what purpose.]

3B.   Reference to international statistical recommendations, frameworks and standards
[Please refer to all relevant statistical recommendations, frameworks and standards for the statistics of this methodological sheet, explain the value of each and its applicability to the statistics contained in this sheet.]

3C.   Sources of global and regional environment statistics and indicators series
[Please refer to all relevant sources of data, statistics and indicators series containing the statistics of this methodology sheet, explain the value of each and when possible what regions/countries are included and for what period of time]

4.   Transforming data into environment statistics

4A.   Data collection and sources of data
[Please describe how primary data are produced, the usual source type, the institutional partners, the general availability of data sets and quality issues. Please use FDES source typology, i.e Censuses and Sample Surveys, Administrative Records, Monitoring Systems, Remote Sensing, Scientific Research, and combination of the foregoing methods]

> Source type
> Institutional partners
> Availability of data
> Data quality
> Temporal and Spatial considerations

4B.   Data compilation (procedures and instruments) and transformation into environment statistics series
[Please describe the methods for compiling the data and transforming them into environment statistics mentioning procedures, instruments, aggregation/disaggregation, validation, structuring, and description in metadata, that are commonly used/recommended to produce environment statistics series]
[When appropriate, use decision trees and provide examples and good practices to illustrate]

> Processing of data into statistics
> Statistical unit
> Measurement category and unit
> Statistical population
> Validation
> Periodicity and seasonal variations
> Aggregation/disaggregation
> Metadata

5. Uses and dissemination

5A.   Potential presentation/dissemination formats
[please provide examples of tables, charts or map from countries or links to them, to illustrate potential formats for dissemination]

5B.   Commonly used indicators that incorporate this statistic
[please provide a list of the commonly used indicators and specify how this statistics feeds into its calculation]

5C. SEEA accounts/tables that use this statistic
[when applicable, identify the SEEA Central Framework account and when possible table that use this statistic]

Examples: Waste, Energy Resources

Methodological Manual
Core Set / Basic Set of Environment Statistics
FDES 2013

Draft Methodological Sheets

Example "WASTE"

Waste

Component	Sub-Component	Topic	Environment Statistic Codes
3. Residuals	3.3 Generation and Management of Waste	3.3.1 Generation of waste	**3.3.1.a** Amount of waste generated by economic activity
			3.3.1.b Amount of waste generated by waste category
			3.3.1.c Amount of hazardous waste generated
		3.3.2 Management of waste	3.3.2.a Municipal waste
			3.3.2.a.1 Total municipal waste collected
			3.3.2.a.2 Amount of municipal waste treated by type of treatment
			3.3.2.a.3 Number of municipal waste treatment and disposal facilities
			3.3.2.a.4 Capacity of municipal waste treatment and disposal facilities
			3.3.2.b Hazardous waste
			3.3.2.b.1 Total hazardous waste collected
			3.3.2.b.2 Amount of hazardous waste treated by type of treatment
			3.3.2.b.3 Number of hazardous waste treatment and disposal facilities
			3.3.2.b.4 Capacity of hazardous waste treatment and disposal facilities
			3.3.2.c Other/industrial waste
			3.3.2.c.1 Total other/industrial waste collected
			3.3.2.c.2 Amount of other/industrial waste treated by type of treatment
			3.3.2.c.3 Number of other/industrial waste treatment and disposal facilities
			3.3.2.c.4 Capacity of industrial waste treatment and disposal facilities
			3.3.2.d Amount of recycled waste
			3.3.2.e Imports of waste
			3.3.2.f Exports of waste
			3.3.2.g Imports of hazardous waste
			3.3.2.h Exports of hazardous waste

1. Introduction

Environment statistics on Waste provide important information to policymakers to support the protection of the environment, which may be compromised by waste generation and treatment. Understanding the quantity of waste generated and, importantly, whether the waste is hazardous or not, is required to plan for present and future waste management, in terms of transportation and treatment facilities required. More importantly, waste can also be a resource when recycled or used as a fuel source.

Statistics on waste generation and management allow for the preparation of environmental impact assessments and are useful in developing strategies to encourage waste prevention, reduction, reuse and recycling. Statistics on municipal waste, already produced by many countries for many years, allow for the monitoring of household consumption patterns and management practices by municipalities.

2

FDES 2013 Methodological Manual on the Basic and Core Sets of Environment Statistics

Methodology Sheet for 2.2 Energy Resources

UNSD Draft Oct 8 2014

Code and location in the FDES 2013			
Component	**Sub-Component**	**Topic**	**Code and Environment Statistic**
2. Environmental Resources and their Use	2.2 Energy Resources	2.2.1 Stocks and changes of energy resources	a. Energy resources
			1. **Stocks of commercially recoverable resources**
			2. New discoveries
			3. *Upward reappraisals*
			4. *Upward reclassifications*
			5. **Extraction**
			6. *Catastrophic losses*
			7. *Downward reappraisals*
			8. *Downward reclassifications*
			9. Stocks of potentially commercially recoverable resources
			10. *Stocks of non-commercial and other known resources*
			11. **Imports of energy minerals**
			12. **Exports of energy minerals**
		2.2.2 Production and consumption of energy from non-renewable and renewable sources	a. Production of energy from non-renewable and renewable sources
			1. **Total**
			2. **Non-renewable sources**
			3. **Renewable sources**
			b. Production of energy
			1. **Primary energy production**
			2. **Secondary energy production**
			c. **Total consumption of energy**
			d. Electric energy
			1. **Electricity production**
			2. **Installed capacities**

(BSES legend: **Bold Text - Core Set/Tier 1**; Regular Text - Tier 2; *Italicized Text - Tier 3*)

1. Introduction/ Relevance

Energy resources and their use are key to development and also to sustainability. Energy is indispensable to all ecosystems and is a necessary input for human controlled processes. In physical terms, energy is always being transformed, from "available energy" to "unavailable energy" (e.g., burning of hydrocarbons) and conversion from an "unusable" to a "usable" form (e.g., hydropower to electricity). Energy, unlike all other natural resources, is not a material substance but instead is the capacity of a physical system to perform work.

For statistical purposes, energy is measured in its "usable form" embedded in energy products. Although physically speaking there would be no such thing as "energy production" or "energy consumption", in statistics these terms refer to the extraction/manufacturing and use of energy products, respectively.

1

...rk and thus to make them comparable and compatible. (UNFC 2009) ...tal initial resources in a country include the produced, the remaining ...ies of the resource remaining in place:

...quantities + remaining recoverable quantities + additional quantities

...resources initially in-place is constant. In inventories, material balance ...appears, this must be explained by a re-evaluation. (ECE 2009)

...and energy resources by looking at whether, and to what extent, ...ration of the resources have been confirmed, developed or planned. ...the underlying resources are classified. The UNFC-2009 is based on ...to three criteria affecting their extraction:

...(E)

...bility (F)

...favourability of economic and social conditions in establishing the ...erion F designates the maturity of studies and commitments necessary ...opment projects, extending from early exploration efforts occurring ...osit or accumulation exists, to projects involving extraction and sale of ...evel of certainty of geologic knowledge and of potential recoverability ...d.[30]"

...FC-2009 categories and sub-categories [31]
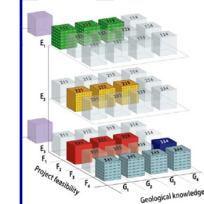
UNFC Definition of Categories and Sub-categories[32]

[30] UN, EC, FAO, IMF, OECD and WB (2014). *System of Environmental-Economic Accounting 2012- Central Framework*, page 161. Available from http://unstats.un.org/unsd/envaccounting/seeaRev/SEEA_CF_Final_en.pdf
[31] United Nations, Economic Commission for Europe (2010). *United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009*. Available from http://www.unece.org/fileadmin/DAM/energy/se/pdfs/UNFC/unfc2009/UNFC2009_ES39_ep.pdf
[32] Ibid, Annex I and Annex II

Proposed SDGs: goals and targets
(indicators pending)

- SDG Goals & Targets proposed by OWG's outcome document

- Proposed Goals 1-6 build on the agenda of the MDGs, while goals 7-17 break new ground.

- MDG 7 was only partially integrated the environmental dimension.

- Environment domain is expanded in the proposed SDGs: environmental dimension of SD is fully fleshed out in the goals on oceans and marine resources, ecosystems and biodiversity, land degradation and desertification, and are also mainstreamed/embedded under all other goals.

- The need for improvement in the field of data and statistics to monitor progress on the SDGs and the associated need for statistical capacity building in developing countries have been highly recognized in the Report.

http://sustainabledevelopment.un.org/sdgsproposal.html

Proposed SDGs 2015 – 2030:

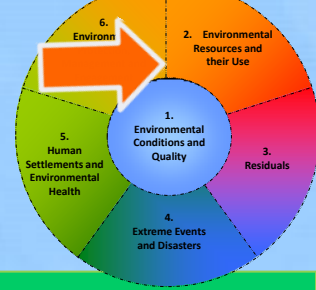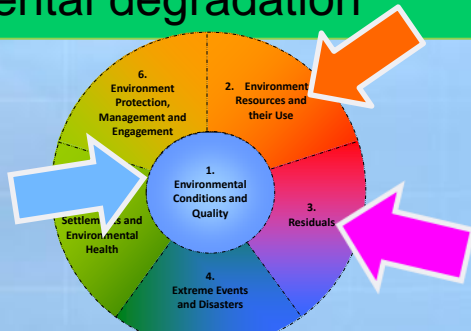| Goal 1	End poverty in all its forms everywhere
Goal 2	End hunger, achieve food security and improved nutrition and promote **sustainable** agriculture
Goal 3	Ensure **healthy** lives and promote well-being for all at all ages
Goal 4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
Goal 5	Achieve gender equality and empower all women and girls
Goal 6	**Ensure availability and sustainable management of water and sanitation for all**
Goal 7	**Ensure access to affordable, reliable, sustainable and modern energy for all**
Goal 8	Promote sustained, inclusive and **sustainable** economic growth, full and productive employment and decent work for all
Goal 9	Build resilient infrastructure, promote inclusive and **sustainable** industrialization and foster innovation
Goal 10	Reduce inequality within and among countries
Goal 11	**Make cities and human settlements inclusive, safe, resilient and sustainable**
Goal 12	**Ensure sustainable consumption and production patterns**
Goal 13	**Take urgent action to combat climate change and its impacts**
Goal 14	**Conserve and sustainably use the oceans, seas and marine resources for sustainable development**
Goal 15	**Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss**
Goal 16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
Goal 17	Strengthen the means of implementation and revitalize the global partnership for sustainable development

GOAL 1

END POVERTY IN ALL ITS FORMS EVERYWHERE

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgsproposal

GOAL 2

END HUNGER, ACHIEVE FOOD SECURITY AND IMPROVED NUTRITION AND PROMOTE SUSTAINABLE AGRICULTURE

SDG Tg 2.4: By 2030, ensure sustainable food production … implement resilient agriculture… that helps maintain ecosystems … strengthens capacities for adaptation to CC, extreme weather, drought, flooding and other disasters and…improve land and soil quality

GOAL 3

ENSURE HEALTHY LIVES AND PROMOTE WELL-BEING FOR ALL AT ALL AGES

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgsproposal

GOAL 4

ENSURE INCLUSIVE AND EQUITABLE QUALITY EDUCATION AND PROMOTE LIFELONG LEARNING OPPORTUNITIES FOR ALL

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgsproposal

GOAL 5

ACHIEVE GENDER EQUALITY AND EMPOWER ALL WOMEN AND GIRLS

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgsproposal

SDG Tg 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination

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

GOAL 8 — PROMOTE SUSTAINED, INCLUSIVE AND SUSTAINABLE ECONOMIC GROWTH, FULL AND PRODUCTIVE EMPLOYMENT AND DECENT WORK FOR ALL

SUSTAINABLE DEVELOPMENT
More at sustainabledevelopment.un.or

SDGTg 9.4: By 2030 upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and … clean and environmentally sound technologies…

SDGTg8.4: Improve…resource efficiency in consumption and production and … decouple economic growth from environmental degradation

GOAL 9 — BUILD RESILIENT INFRASTRUCTURE, PROMOTE INCLUSIVE AND SUSTAINABLE INDUSTRIALIZATION AND FOSTER INNOVATION
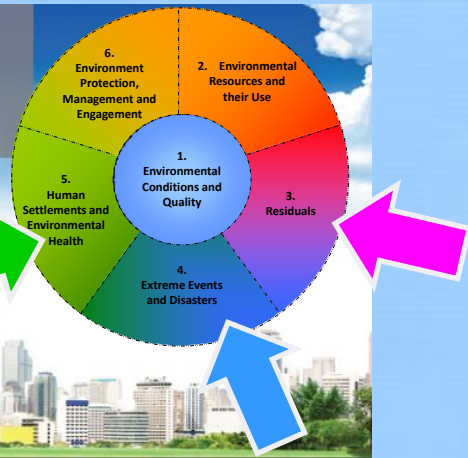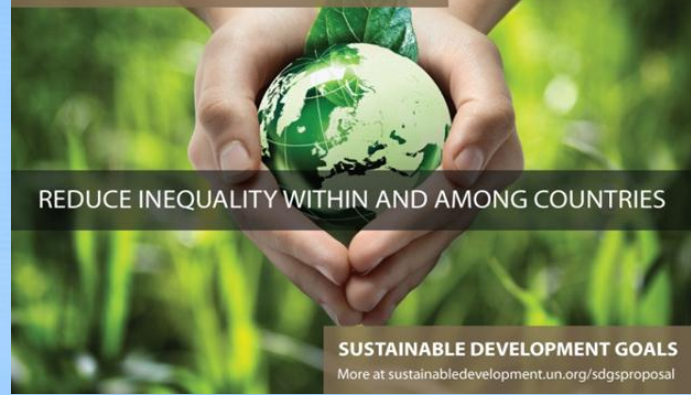
SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgsproposal

GOAL 13
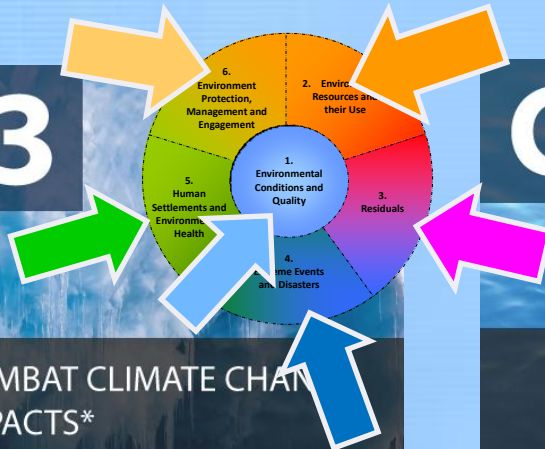
TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS*

Acknowledging that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the global response to climate change

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgsproposal

GOAL 14

CONSERVE AND SUSTAINABLY USE THE OCEANS, SEAS AND MARINE RESOURCES FOR SUSTAINABLE DEVELOPMENT

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgsproposal

GOAL 15
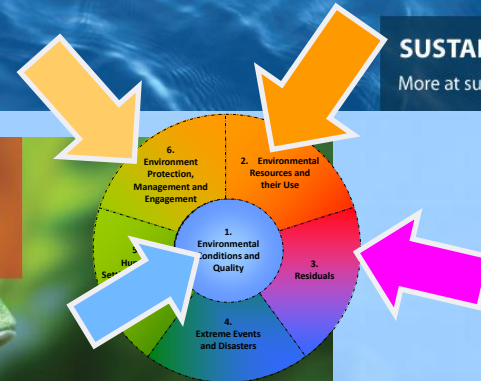
PROTECT, RESTORE AND PROMOTE SUSTAINABLE USE OF TERRESTRIAL ECOSYSTEMS, SUSTAINABLY MANAGE FORESTS, COMBAT DESERTIFICATION, AND HALT AND REVERSE LAND DEGRADATION AND HALT BIODIVERSITY LOSS

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgsproposal

GOAL 16

PROMOTE PEACEFUL AND INCLUSIVE SOCIETIES FOR SUSTAINABLE DEVELOPMENT, PROVIDE ACCESS TO JUSTICE FOR ALL AND BUILD EFFECTIVE, ACCOUNTABLE AND INCLUSIVE INSTITUTIONS AT ALL LEVELS

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgsproposal

GOAL 17

STRENGTHEN THE MEANS OF IMPLEMENTATION AND REVITALIZE THE GLOBAL PARTNERSHIP FOR SUSTAINABLE DEVELOPMENT

SUSTAINABLE DEVELOPMENT GOALS
More at sustainabledevelopment.un.org/sdgsproposal

Sequence FDES Component…Topic …Statistics

Sub-component 4.1: Natural Extreme Events and Disasters	Component 4: Extreme Events and Disasters
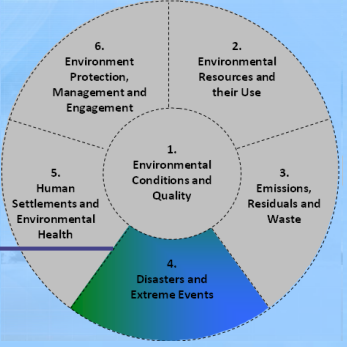
Topic	Environment Statistic
Topic 4.1.1: **Occurrence** of natural extreme events and disasters	a. Occurrence of natural extreme events and disasters:
	1. Type of natural disaster (geophysical, meteorological, hydrological, climatological, biological)
	2. Location
	3. Magnitude, 4. Date of Occurrence, 5. Duration, 6. Hazard prone areas 7. Population living in hazard prone areas
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
	2. Number of people injured 3. Number of people homeless 4. Number of people affected
	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.)
	c. Physical loss/damage due to natural extreme events and disasters (e.g. area and amount of crops, livestock, aquaculture, biomass, etc.)

Matching SDG targets with BSES of the FDES, example 1: disasters

SDGs			FDES	
SDGoal	**SDG Target**	SDG Indicator -pending-	**Location in the FDES**: Component Sub-Component and Topic	**Underlying statistics needed to compile the indicator FDES – Basic Set of Environment Statistics**
Goal 11 Make cities and human settlements inclusive, safe, resilient and sustainable	**Target 11.5** By 2030, significantly reduce the number of **deaths** and the number of people **affected** and decrease by [x] per cent the **economic losses** relative to gross domestic product caused by **disasters**, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations		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**	4.1.1.a. Occurrence of natural extreme events and disasters 4.1.1.a.1. **Type of natural disaster** (geophysical, meteorological, hydrological, climatological, biological) 4.1.1.a.2. **Location** 4.1.1.a.3. Magnitude (where applicable) 4.1.1.a.4. Date of occurrence 4.1.1.a.5. Duration 4.1.1.a.6. Hazard prone areas 4.1.1.a.7. Population living in hazard prone areas
			Topic 4.1.2: Impact of natural extreme events and disasters	4.1.2.a. People affected by natural extreme events and disasters 4.1.2.a.1. **Number of people killed** 4.1.2.a.2. Number of people injured 4.1.2.a.3. Number of people homeless 4.1.2.a.4. Number of people affected 4.1.2.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 **Topic 5.1.3: Housing conditions**	5.1.3.c. *Population living in hazard prone areas* 5.1.3.f. *Number of dwellings with adequacy of building materials defined by national or local standards*
			Component 6: Environment Protection, Management and Engagement Sub-component 6.3: Extreme Event Preparedness and Disaster Management **Topic 6.3.1: Preparedness for natural extreme events and disasters**	6.3.1.a. National natural extreme event and disaster preparedness and management systems 6.3.1.a.1. Existence of national disaster plans/programmes 6.3.1.a.2. Description (e.g., number of staff) of national disaster plans/programmes 6.3.1.a.3. Number and type of shelters in place or able to be deployed 6.3.1.a.4. *Number and type of internationally certified emergency and recovery management specialists* 6.3.1.a.5. *Number of volunteers* 6.3.1.a.6. *Quantity of first aid, emergency supplies and equipment stockpiles* 6.3.1.a.7. *Existence of early warning systems for all major hazards* 6.3.1.a.8. *Expenditure on disaster prevention, preparedness, clean-up and rehabilitation*

example 2: waste generation and management

SDGs			FDES	
SDGoal	**SDG Target**	**SDG Indicator -pending-**	**Location in the FDES:** Component Sub-Component and Topic	**Underlying statistics needed to compile the indicator** **FDES – Basic Set of Environment Statistics**
Goal 12 Ensure sustainable consumption and production patterns	**Target 12.5** By 2030, substantially reduce **waste generation** through prevention, **reduction, recycling** and **reuse**		Component 3: Residuals Sub-component 3.3: Generation and Management of Waste **Topic 3.3.1: Generation of waste**	3.3.1.a. **Amount of waste generated by source** 3.3.1.b. Amount of waste generated by waste category 3.3.1.c. **Amount of hazardous waste generated**
			Topic 3.3.2: Management of waste	3.3.2.a. Municipal waste 3.3.2.a.1. **Total municipal waste collected** 3.3.2.a.2. **Amount of municipal waste treated by type of treatment and disposal** 3.3.2.a.3. **Number of municipal waste treatment and disposal facilities** 3.3.2.a.4. Capacity of municipal waste treatment and disposal facilities 3.3.2.b. Hazardous waste 3.3.2.b.1. **Total hazardous waste collected** 3.3.2.b.2. **Amount of hazardous waste treated by type of treatment and disposal** 3.3.2.b.3. **Number of hazardous waste treatment and disposal facilities** 3.3.2.b.4. Capacity of hazardous waste treatment and disposal facilities 3.3.2.c. Other/industrial waste 3.3.2.c.1. Total other/industrial waste collected 3.3.2.c.2. Amount of other/industrial waste treated by type of treatment and disposal 3.3.2.c.3. Number of treatment and disposal facilities 3.3.2.c.4. Capacity of industrial waste treatment and disposal facilities 3.3.2.d. **Amount of recycled waste** 3.3.2.g. Imports of hazardous waste

example 3: terrestrial and freshwater ecosystems

SDGs			FDES	
SDGoal	**SDG Target**	**SDG Indicator -pending-**	**Location in the FDES: Component Sub-Component and Topic**	**Underlying statistics needed to compile the indicator FDES – Basic Set of Environment Statistics**
Goal 15 Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	Target 15.1 By 2020, ensure the **conservation, restoration** and **sustainable use** of **terrestrial** and **inland freshwater ecosystems** and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements		Component 1: Environmental Conditions and Quality Sub-component 1.2: Land Cover, Ecosystems and Biodiversity **Topic 1.2.2: Ecosystems**	1.2.2.a. General ecosystem characteristics, extent and pattern [mountains, forests, wetlands, rivers, aquifers and lakes] 1.2.2.a.1. **Area of ecosystems** 1.2.2.a.2. *Proximity of relevant ecosystem to urban areas and cropland* 1.2.2.c. Biological components of ecosystems 1.2.2.c.1. Flora and fauna species 1.2.2.c.2. Number of endemic species 1.2.2.c.3. **Number of known species by status category**
			Topic 1.2.3: Biodiversity	1.2.3.b. Fauna- terrestrial, freshwater and marine 1.2.3.b.1. **Number of known species by status category** 1.2.3.b.2. Species population 1.2.3.b.3. Number of endemic species 1.2.3.b.4. Number of invasive alien species 1.2.3.b.5. *Habitat fragmentation*
			Component 2: Environmental Resources and their Use Sub-component 2.3: Land **Topic 2.3.1: Land use**	2.3.1.a. **Area under land use categories** 2.3.1.a.5. Land used for maintenance and restoration of environmental functions 2.3.1.a.9. Inland waters used for maintenance and restoration of environmental functions

example 4: forest

SDGs			FDES	
SDGoal	**SDG Target**	**SDG Indicator -pending-**	**Location in the FDES: Component Sub-Component and Topic**	**Underlying statistics needed to compile the indicator FDES – Basic Set of Environment Statistics**
Goal 15 Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	Target 15.2 By 2020, promote the implementation of **sustainable management** of all types of **forests**, halt **deforestation**, restore **degraded** forests and increase **aff-orestation** and **reforestation** by [x] per cent globally		Component 1: Environmental Conditions and Quality Sub-component 1.2: Land Cover, Ecosystems and Biodiversity **Topic 1.2.4: Forests**	1.2.4.a. Forest area 1.2.4.a.1. **Total** 1.2.4.a.2. Natural 1.2.4.a.3. Planted 1.2.4.a.4. Protected forest area 1.2.4.a.5. Forest area affected by fire 1.2.4.b. Forest biomass 1.2.4.b.1. Total 1.2.4.b.2. *Carbon storage in living forest biomass*
			Component 2: Environmental Resources and their Use Sub-component 2.3: Land **Topic 2.3.2: Use of forest land**	2.3.2.a. Use of forest land 2.3.2.a.1. **Area deforested** 2.3.2.a.2. Area reforested 2.3.2.a.3. Area afforested 2.3.2.a.4. *Natural growth* 2.3.2.b. Forest area by main designated function
			Sub-component 2.5: Biological Resources **Topic 2.5.1: Timber resources**	2.5.1.a. Timber resources 2.5.1.a.1. **Stocks of timber resources** 2.5.1.c. Forest production 2.5.1.d. Fuelwood production

example 5: water quality, wastewater

SDGs			FDES	
SDGoal	**SDG Target**	**SDG Indicator -pending-**	**Location in the FDES: Component Sub-Component and Topic**	**Underlying statistics needed to compile the indicator FDES – Basic Set of Environment Statistics**
Goal 6 Ensure availability and sustainable management of water and sanitation for all	**Target 6.3** By 2030, improve **water quality** by **reducing pollution**, eliminating dumping and minimizing release of **hazardous chemicals** and materials, halving the proportion of untreated **wastewater** and increasing recycling and safe reuse by [x] per cent globally		Component 1: Environmental Conditions and Quality Sub-component 1.3: Environmental Quality **Topic 1.3.2: Freshwater quality**	1.3.2.a. Nutrients and chlorophyll 1.3.2.a.1. **Concentration of nitrogen** 1.3.2.a.2. **Concentration of phosphorous** 1.3.2.a.3. Concentration of chlorophyll A 1.3.2.b. Organic matter 1.3.2.b.1. **Biochemical oxygen demand (BOD)** 1.3.2.b.2. Chemical oxygen demand (COD) 1.3.2.c. Pathogens 1.3.2.c.1. **Concentration of faecal coliforms** 1.3.2.d. Metals (e.g., mercury, lead, nickel, arsenic, cadmium) 1.3.2.d.1. Concentrations in the sediment and freshwater 1.3.2.d.2. Concentrations in freshwater organisms 1.3.2.e. Organic contaminants (e.g., PCBs, DDT, pesticides, furans, dioxins, phenols, and radioactive waste) 1.3.2.e.1. Concentrations in the sediment and freshwater 1.3.2.e.2. Concentrations in freshwater organisms 1.3.2.f. Physical and chemical characteristics 1.3.2.f.1. pH/Acidity/Alkalinity 1.3.2.f.2. Temperature 1.3.2.f.3. *Total suspended solids (TSS)* 1.3.2.f.4. Salinity 1.3.2.f.5. Dissolved oxygen (DO) 1.3.2.g. Plastic waste and other freshwater debris 1.3.2.g.1. Amount of plastic waste and other debris
			Component 3: Residuals 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**
			Topic 3.2.2: Collection and treatment of wastewater	3.2.2.a. **Volume of wastewater collected** 3.2.2.b. **Volume of wastewater treated** 3.2.2.c. Total urban wastewater treatment capacity
			Topic 3.2.3: Discharge of wastewater to the environment	3.2.3.a. Wastewater discharge 3.2.3.a.1. **Total volume of wastewater discharged to the environment after treatment** 3.2.3.a.2. **Total volume of wastewater discharged to the environment without treatment** 3.2.3.b. Pollutant content of discharged wastewate
			Sub-component 3.4: Release of Chemical Substances **Topic 3.4.1: Release of chemical substances**	3.4.1.a: Total amount of fertilizers used 3.4.1.b: Total amount of pesticides used 3.4.1.c: *Total amount of pellets used* 3.4.1.d: *Total amount of hormones used* 3.4.1.e: *Total amount of colourants used* 3.4.1.f: *Total amount of antibiotics used*
			Component 5: Human Settlements and Environmental Health Sub-component 5.1: Human Settlements **Topic 5.1.2: Access to selected basic services**	5.1.2.d. **Population connected to wastewater collecting system** 5.1.2.e. **Population connected to wastewater treatment** 5.1.2.f. Population supplied by water supply industry

SDGs			FDES	
SDGoal	**SDG Target**	**SDG Indicator -pending-**	**Location in the FDES:** Component Sub-Component and Topic	**Underlying statistics needed to compile the indicator** **FDES – Basic Set of Environment Statistics**
Goal 3 **Ensure healthy lives and promote well-being for all at all ages**	**Target 3.9** By 2030, substantially reduce the number of **deaths and illnesses** from **hazardous chemicals** and **air**, **water** and **soil pollution** and contamination		Component 1: Environmental Conditions and Quality Sub-component 1.3: Environmental Quality **Topic 1.3.1: Air quality**	1.3.1.a. Breathable particles 1.3.1.a.1. **Concentration levels of particulate matter (PM10)** 1.3.1.a.2. **Concentration levels of particulate matter (PM2.5)** 1.3.1.a.3. Number of days where maximum allowable levels were surpassed per year 1.3.1.b. Breathable gases 1.3.1.b.1. **Concentration levels of tropospheric ozone (O3)** 1.3.1.b.2. **Concentration levels of carbon monoxide (CO)** 1.3.1.b.3. Number of days where maximum allowable levels were surpassed per year 1.3.1.c. Ambient concentrations of other relevant pollutants 1.3.1.c.1. **Concentration levels of sulphur dioxide (SO2)** 1.3.1.c.2. **Concentration levels of nitrogen oxides (NOX)** 1.3.1.c.3. Concentration levels of heavy metals 1.3.1.c.4. Concentration levels of non-methane volatile organic compounds (NMVOCs) 1.3.1.c.5. *Concentration levels of dioxins* 1.3.1.c.6. *Concentration levels of furans* 1.3.1.c.7. Concentration levels of other pollutants 1.3.1.c.8. Number of days where maximum allowable levels were surpassed per year
			Topic 1.3.2: Freshwater quality	1.3.2.a. Nutrients and chlorophyll 1.3.2.a.1. **Concentration of nitrogen** 1.3.2.a.2. **Concentration of phosphorous** 1.3.2.b. Organic matter 1.3.2.b.1. **Biochemical oxygen demand (BOD)** 1.3.2.d. Metals (e.g., mercury, lead, nickel, arsenic, cadmium) 1.3.2.d.1. Concentrations in the sediment and freshwater 1.3.2.d.2. Concentrations in freshwater organisms 1.3.2.e. Organic contaminants (e.g., PCBs, DDT, pesticides, furans, dioxins, phenols, and radioactive waste) 1.3.2.e.1. Concentrations in the sediment and freshwater 1.3.2.e.2. Concentrations in freshwater organisms
			Topic 1.3.3: Marine water quality	1.3.3.d. Metals (e.g., mercury, lead, nickel, arsenic, cadmium) 1.3.3.d.1. Concentrations in the sediment and marine water 1.3.3.d.2. Concentrations in marine organisms 1.3.3.e. Organic contaminants (e.g., PCBs, DDT, pesticides, furans, dioxins, phenols, and radioactive waste) 1.3.3.e.1. *Concentrations in the sediment and marine water* 1.3.3.e.2. *Concentrations in marine organisms*

SDGs			FDES	
SDGoal	**SDG Target**	**SDG Indicator -pending-**	**Location in the FDES:** Component Sub-Component and Topic	**Underlying statistics needed to compile the indicator** **FDES – Basic Set of Environment Statistics**
Goal 3 Ensure healthy lives and promote well-being for all at all ages	**Target 3.9** By 2030, substantially reduce the number of **deaths and illnesses** from **hazardous chemicals** and **air, water** and **soil pollution** and contamination		Topic 1.3.4: Soil pollution	1.3.4.a. Sites affected by pollution 1.3.4.a.1. Contaminated sites 1.3.4.a.2. Potentially contaminated sites 1.3.4.a.3. Remediated sites 1.3.4.a.4. Other sites
			Component 5: Human Settlements and Environmental Health Sub-component 5.1: Human Settlements **Topic 5.1.4: Exposure to ambient pollution**	5.1.4.a. Population exposed to air pollution in main cities 5.1.4.b. *Population exposed to noise pollution in main cities*
			Sub-component 5.2: Environmental Health **Topic 5.2.1: Airborne diseases and conditions**	5.2.1.a. Airborne diseases and conditions 5.2.1.a.1. Incidence 5.2.1.a.2. Prevalence 5.2.1.a.3. Mortality 5.2.1.a.4. *Loss of work days* 5.2.1.a.5. *Estimates of economic cost in monetary terms*
			Topic 5.2.2: Water-related diseases and conditions	5.2.2.a. Water-related diseases and conditions 5.2.2.a.1. **Incidence** 5.2.2.a.2. **Prevalence** 5.2.2.a.3. **Mortality** 5.2.2.a.4. *Loss of work days* 5.2.2.a.5. *Estimates of economic cost in monetary terms*
			Topic 5.2.5: Toxic substance- and nuclear radiation-related diseases and conditions	5.2.5.a. Toxic substance- and nuclear radiation-related diseases and conditions 5.2.5.a.1. Incidence 5.2.5.a.2. Prevalence 5.2.5.a.3. *Loss of work days* 5.2.5.a.4. *Estimates of economic cost in monetary terms*
			Component 6: Environment Protection, Management and Engagement Sub-component 6.2: Environmental Governance and Regulation **Topic 6.2.2: Environmental regulation and instruments**	6.2.2.a. Direct regulation 6.2.2.a.1. **List of regulated pollutants and description** (e.g., by year of adoption and maximum allowable levels) 6.2.2.a.5. Budget and number of staff dedicated to enforcement of environmental regulations

Countries that have used/piloted the FDES tools:

- **Piloted the BSES**:

Developing: Belize, Botswana, Brazil, Cameroon, China, Costa Rica, Cote d'Ivoire, Cuba, Ecuador, India, Jamaica, Mauritius, Mexico, Nigeria, Philippines, Qatar, Sri Lanka, Venezuela, Viet Nam, United Arab Emirates

Developed: Hungary, Italy, Netherlands, Sweden, USA

International organizations – Eurostat, UNEP

- **Used the FDES and BSES:**

  Botswana, Chile, Colombia, Ecuador, Mauritius, Philippines, Viet Nam.

- **Used ESSAT tool:**

  Ecuador, Colombia, Indonesia, Philippines, Mongolia, Arab countries in 2013 (workshop); Latin American and Caribbean countries in 2014 through IDB/INEGI/ECLAC Public Goods Project on Environment Statistics

Countries using the FDES for environment statistics development
(expressed interest/requested technical assistance to implement FDES)

Latin America and the Caribbean	Asia-Pacific	Africa	Western Asia
Brazil	Australia	Botswana	Qatar
Bolivia	Bhutan	Mauritius	UAE
Chile	India	Nigeria	Gulf Cooperation Council (GCC) member states
Colombia	Indonesia	Common Market for Eastern and Southern Africa (COMESA) member states	
Costa Rica	Sri Lanka	East African Community (EAC) member states	
Ecuador	Nepal		
El Salvador	Pakistan		
Guatemala	Philippines		
Jamaica	Thailand		
Mexico	Viet Nam		
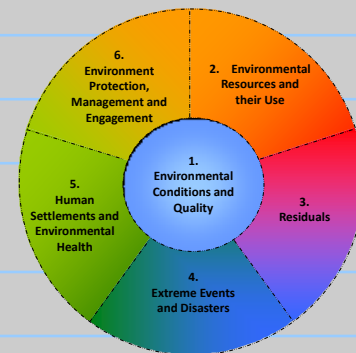
Thank you for your attention!

… let's now hear from key countries that have used/implemented the FDES to develop/ strengthen their environment statistics programmes …

Please contact us:
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website: http://unstats.un.org/unsd/ENVIRONMENT/