Strengthening Environment Statistics for Monitoring the SDGs

How the FDES and its accompanying tools can help countries compile environmentally-related SDG indicators

Environment Statistics Section, United Nations Statistics Division

Outline

I. Environment statistics
II. FDES 2013, Basic Set of Environment Statistics (BSES), Environment Statistics Self-Assessment Tool (ESSAT) and the Manual on the Basic Set of Environment Statistics
III. Sustainable Development Goal (SDG) indicators
IV. Challenges in SDG monitoring

I. Environment statistics

- Environment statistics are multi-disciplinary, cross-cutting, and involve numerous stakeholders, actors and producers.
- The scope of environment statistics covers biophysical aspects of the environment and those aspects of the socio-economic system that directly influence and interact with the environment.
- The objective of environment statistics is to provide information about the environment, its most important changes over time and across locations and the main factors that influence them.
- Environment statistics seek to provide high quality statistical information to improve knowledge of the environment, support evidence-based policy and decision making, and provide information for the general public and specific user groups.

Environment statistics (cont.)

- **Insufficiency** of timely and reliable environment statistics worldwide.
- Development of environment statistics **has advanced** over the past decades, though 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.
- Meanwhile, **demand** for robust environment statistics keeps growing.
- The SDGs include many goals that are environmentally-related.

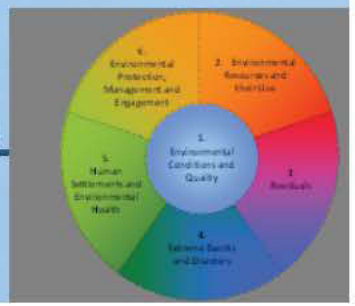
Environment statistics: weakest pillar of sustainable development

- 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 SDGs.

Contribution of environment statistics to sustainable development monitoring

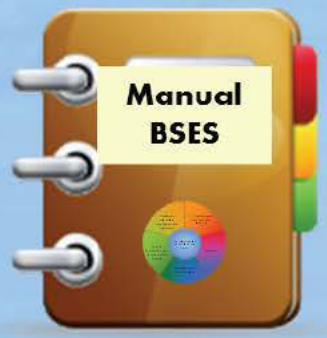
LDNE Transaction Volumes (millions)					
Month	2007	2008	2009	2010	2011
Jan	206.00	214.00	224.90	224.00	232.90
Feb	204.50	224.00	216.40	224.20	229.90
			245.20	253.90	259.79
			241.06	252.20	259.70
			255.19	262.00	262.20
			246.00	255.00	257.46
			251.30	266.70	268.04
			247.60	256.30	259.24
			244.00	253.30	260.52
			260.20	263.10	268.06
			241.00	246.60	
			244.00	242.00	
			2,916.85	2,999.30	2,557.83

- Any measure of **sustainable development** requires a strong foundation in **environment statistics.**
- More importantly, given the **importance of environmental issues**, both **statistical and institutional capacities** for the 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.
- **Framework for the Development of Environment Statistics (FDES 2013),** its **Basic Set of Environment Statistics (BSES),** the **Environment Statistics Self-Assessment Tool (ESSAT)**, and the **Manual on the Basic Set of Environment Statistics** (forthcoming) are **tools** for developing/ strengthening environment statistics at the national level.
- Russian version of FDES flyer:
- http://unstats.un.org/unsd/environment/FDES/FDES%20Flyer%20Russian_3July2013_



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, the BSES and the ESSAT contribute to the production of environment statistics needed for compiling environmental indicators, SDG indicators and environmental-economic accounts.
- The Manual on the BSES, consisting of methodology sheets, will be a practical and detailed guide to each Basic Set theme - includes variable definitions, description of sources and data collection, methods of data compilation/processing, methods of dissemination and other information.



III. Sustainable Development Goal (SDG) indicators

- The 2030 Agenda for Sustainable Development includes 17 goals and 169 targets that were adopted by member States in the UN Summit 25-27 September 2015, convened as a high-level plenary meeting of the General Assembly. https://sustainabledevelopment.un.org/post2015/transformingourworld
- The Statistical Commission mandated the formation of the IAEG-SDGs at its 46th session to develop an indicator framework for the monitoring of the goals and targets of the 2030 Agenda for Sustainable Development at the global level, and to support its implementation.
- IAEG-SDGs, with UNSD as Secretariat held its 1st meeting in New York in June 2015 and 2nd meeting in Bangkok in Oct 2015. http://unstats.un.org/sdgs
- The Statistical Commission, at its 47th session, "agreed as a practical starting point with the proposed global indicator framework for the Goals and targets of the 2030 Agenda for Sustainable Development as reflected in the list of indicators presented in Annex IV of the report, subject to future technical refinement". http://unstats.un.org/unsd/statcom/47th-session/documents/Decisions_final_unedited.pdf
- The 3rd IAEG-SDGs meeting was held from 30 March - 1 April 2016 in Mexico City to: establish a tier system for indicators; establish procedures for the methodological review of indicators; develop global reporting mechanisms; and discuss the work plan and next steps.

Environment statistics and the SDGs

- Environment domain is **expanded** in the SDGs: environmental dimension of sustainable development 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. [MDG 7 only partially integrated the environmental dimension]
- Almost **half of the SDG targets require environment statistics** in order to be able to compile their indicators and enable regular monitoring of progress.
- Need for **improvement in data and statistics** to monitor progress on the SDGs and the associated need for statistical capacity building is key for developing countries.

SDGs 2015 – 2030

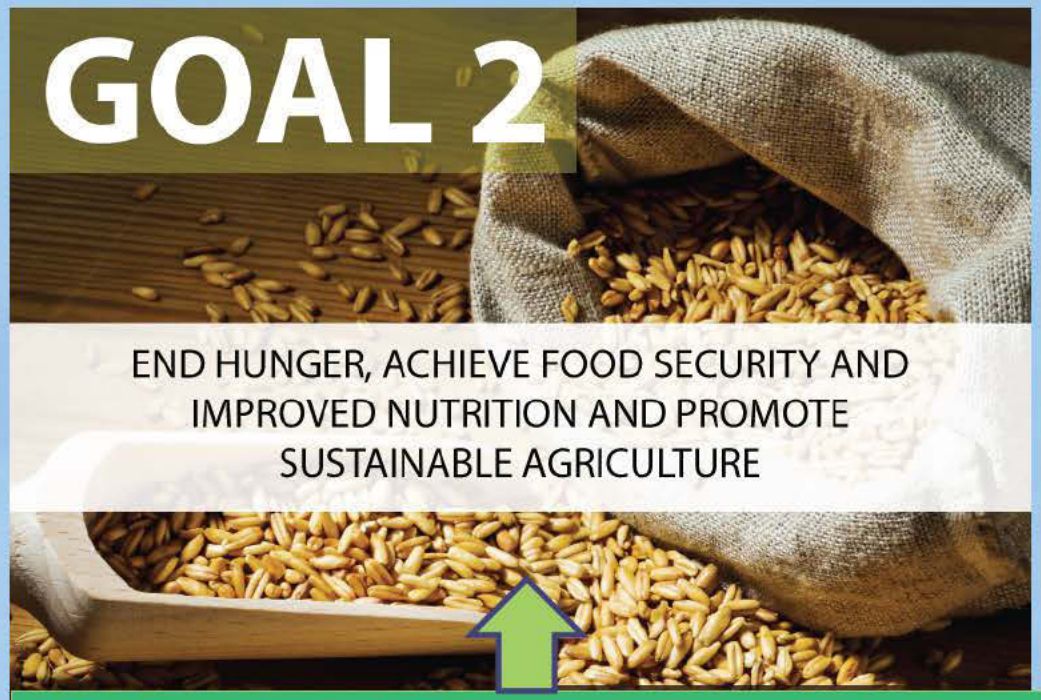
Goal 1	End poverty in all its forms everywhere
Goal 2	End hunger, achieve food security and improved nutrition and promote sustainable agriculture
Goal 3	Ensure healthy lives and promote well-being for all at all ages
Goal 4	Ensure inclusive and equitable quality education and promote lifelong learning 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

green (Goals 6 and 7) - entire goal is environmental
orange (Goals 2, 3, 8 and 9) - selected targets are environmental

SDGs 2015 – 2030 (cont.)

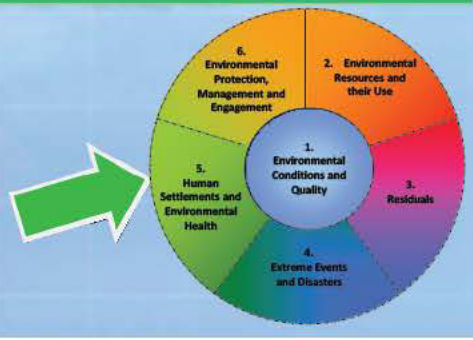
Goal 11	Make cities and human settlements inclusive, safe, resilient and sustainable
Goal 12	Ensure sustainable consumption and production patterns
Goal 13	Take urgent action to combat climate change and its impacts
Goal 14	Conserve and sustainably use the oceans, seas and marine resources for sustainable 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

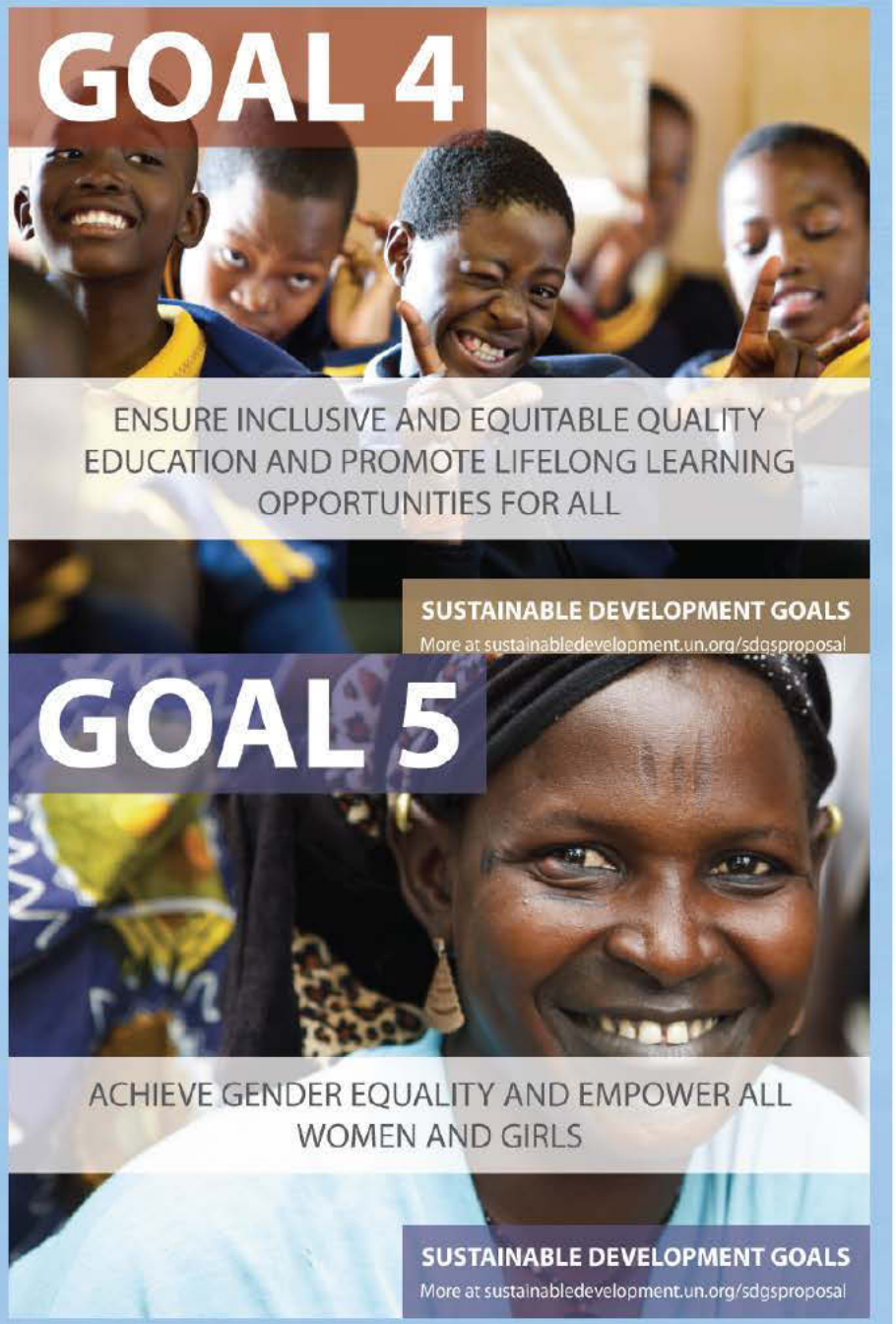
green (Goals 11, 12, 13, 14 and 15) - entire goal is environmental



SDG Tg 2.4: By 2030, ensure sustainable food production … implement resilient agriculture… that help maintain ecosystems … strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and…improve land and soil quality

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






GOAL 6
6. Environmental Protection, Management and Engagement
2. Environmental Resources and their Use
1. Environmental Conditions and Quality
5. Human Settlements and Environmental Health
3. Residuals
4. Extreme Events and Disasters
ENSURE AVAILABILITY AND SUSTAINABLE MANAGEMENT OF WATER AND SANITATION FOR ALL
SUSTAINABLE DEVEL
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GOAL 7
6. Environmental Protection, Management and Engagement
2. Environmental Resources and their Use
1. Environmental Conditions and Quality
5. Human Settlements and Environmental Health
3. Residuals
4. Extreme Events and Disasters
ENSURE ACCESS TO AFFORDABLE, RELIABLE, SUSTAINABLE AND MODERN ENERGY FOR ALL
SUSTAINABLE DEVELOPMENT GOALS
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GOAL 8

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

SUSTAINABLE DEVELOPMI

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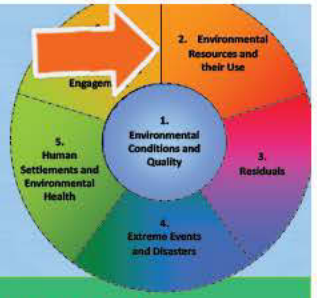
SDG Tg 8.4: Improve…resource efficiency in consumption and production and … decouple economic growth from environmental degradation…



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

GOAL 9

BUILD RESILIENT INFRASTRUCTURE, PROMOTE INCLUSIVE AND SUSTAINABLE INDUSTRIALIZATION AND FOSTER INNOVATION

SUSTAINABLE DEVELOPMENT GOALS

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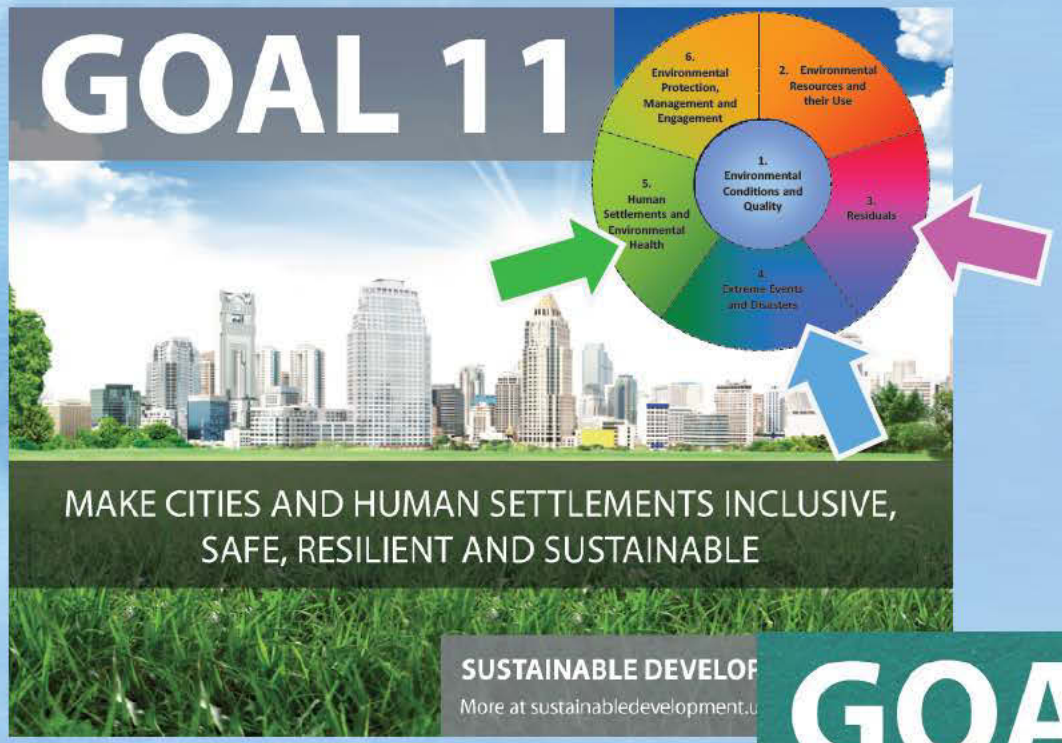
GOAL 11
6. Environmental Protection, Management and Engagement
2. Environmental Resources and their Use
1. Environmental Conditions and Quality
5. Human Settlements and Environmental Health
3. Residuals
4. Extreme Events and Disasters
MAKE CITIES AND HUMAN SETTLEMENTS INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE
SUSTAINABLE DEVELOP
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GOAL 10
REDUCE INEQUALITY WITHIN AND AMONG COUNTRIES
SUSTAINABLE DEVELOPMENT GOALS
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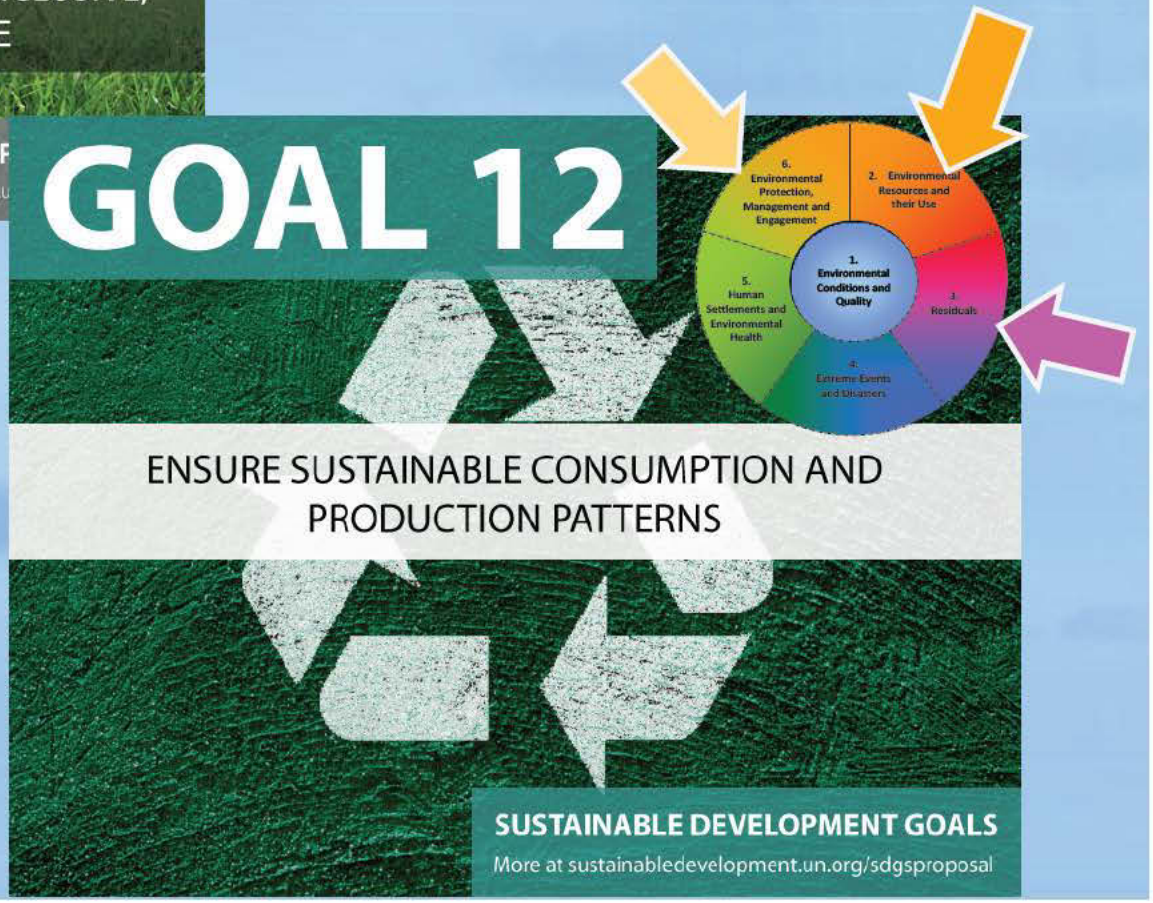
GOAL 12
6. Environmental Protection, Management and Engagement
2. Environmental Resources and their Use
1. Environmental Conditions and Quality
5. Human Settlements and Environmental Health
3. Residuals
4. Extreme Events and Disasters
ENSURE SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS
SUSTAINABLE DEVELOPMENT GOALS
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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

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GOAL 14

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

SUSTAINABLE DEVELOPMENT GOALS

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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

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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
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GOAL 17
STRENGTHEN THE MEANS OF IMPLEMENTATION AND REVITALIZE THE GLOBAL PARTNERSHIP FOR SUSTAINABLE DEVELOPMENT
SUSTAINABLE DEVELOPMENT GOALS
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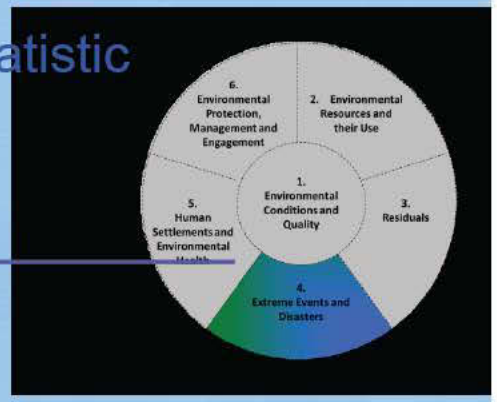
Sequence FDES Component…Sub-component…Topic…Statistic

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 extreme event and disaster** (geophysical, meteorological, hydrological, climatological, biological)
		2. **Location**
		3. Magnitude (where applicable)
		4. Date of occurrence
		5. Duration
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 losses due to natural extreme events and disasters** (e.g., damage to buildings, transportation networks, loss of revenue for businesses, utility disruption, etc.)
	c.	Physical losses/damages due to natural extreme events and disasters (e.g., area and amount of crops, livestock, aquaculture, biomass etc.)
	d.	Effects of natural extreme events and disasters on integrity of ecosystems
		1. *Area affected by natural disasters*
		2. *Loss of vegetation cover*
		3. *Area of watershed affected*
		4. *Other*
	e.	*External assistance received*

Matching SDG targets/indicators with BSES of FDES example 1: disasters

	SDGs		FDES	
GOAL	Target	Final list of proposed SDG indicators (wider UN System)	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 **aff-ected** and substantially decrease 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	Proposed Indicator 1: Number of deaths, missing and persons affected by disaster per 100,000 people Proposed Indicator 2: Direct disaster economic loss in relation to global GDP, including disaster damage to critical infrastructure and disruption of basic services	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 extreme event and 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
			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 losses due to natural extreme events and disasters** (e.g., damage to buildings, transportation networks, loss of revenue for businesses, utility disruption)
			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.d. Hazard-prone areas 5.1.3.g. *Number of dwellings with adequacy of building materials defined by national or local standards*
			Component 6: Environmental 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	
GOAL	Target	Final list of proposed SDG indicators (wider UN System)	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**	Proposed Indicator 1: National recycling rate, tons of material recycled	Component 3: Residuals	3.3.1.a. **Amount of waste generated by source**
			Sub-component 3.3: Generation and Management of Waste	3.3.1.b. Amount of waste generated by waste category
			Topic 3.3.1: Generation of waste	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 other/industrial treatment and disposal facilities
				3.3.2.c.4. Capacity of other/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	
GOAL	**Target**	**Final list of proposed SDG indicators** (wider UN System)	**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	Proposed Indicator 1: Forest area as a proportion of total land area Proposed Indicator 2: Proportion o important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type	Component 1: Environmental Conditions and Quality Sub-component 1.2: Land Cover, Ecosystems and **Topic 1.2.2: Ecosystems and biodiversity**	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 ecosystem to urban areas and cropland* 1.2.2.b. Ecosystems' chemical and physical characteristics 1.2.2.b.1. *Nutrients* 1.2.2.b.2. *Carbon* 1.2.2.b.3. *Pollutants* 1.2.2.c. Biodiversity 1.2.2.c.1. **Known flora and fauna species** 1.2.2.c.2. Endemic flora and fauna species 1.2.2.c.3. Invasive alien flora and fauna species 1.2.2.c.4. Species population 1.2.2.c.5. *Habitat fragmentation* 1.2.2.d. Protected areas and species 1.2.2.d.1. **Protected terrestrial and marine area** 1.2.2.d.2. Protected flora and fauna species
			Topic 1.2.3: Forests	1.2.3.a. Forest area 1.2.3.a.1. **Total** 1.2.3.a.2. Natural 1.2.3.a.3. Planted 1.2.3.a.4. Protected forest area 1.2.3.a.5. Forest area affected by fire
			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** [e.g., agriculture; forestry; land used for aquaculture; use of built-up and related areas; land used for maintenance and restoration of environmental functions; other uses of land not elsewhere classified; land not in use; inland waters used for aquaculture or holding facilities; inland waters used for maintenance and restoration of environmental functions; other uses of inland waters not elsewhere classified; inland water not in use; coastal waters (includes area of coral reefs and mangroves); Exclusive Economic Zone (EEZ)] 2.3.1.b. Other aspects of land use 2.3.1.b.1. *Area of land under organic farming* 2.3.1.b.2. Area of land under irrigation 2.3.1.b.4. *Area of land under agroforestry*

example 4: forest

GOAL	SDGs: Target	SDGs: Final list of proposed SDG indicators (wider UN System)	FDES: Location in the FDES: Component Sub-Component and Topic	FDES: 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 substantially increase **aff-orestation** and **reforestation** globally	Proposed Indicator 1: Progress towards sustainable forest management	Component 1: Environmental Conditions and Quality Sub-component 1.2: Land Cover, Ecosystems and Biodiversity **Topic 1.2.3: Forests**	1.2.3.a. Forest area 1.2.3.a.1. **Total** 1.2.3.a.2. Natural 1.2.3.a.3. Planted 1.2.3.a.4. Protected forest area 1.2.3.a.5. Forest area affected by fire 1.2.3.b. Forest biomass 1.2.3.b.1. Total 1.2.3.b.2. *Carbon storage in living forest biomass*
			Component 2: Environmental Resources and their Use Sub-component 2.3: Land **Topic 2.3.1: Land use**	2.3.1.b. Other aspects of land use 2.3.1.b.3. Area of land under sustainable forest management
			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 primary 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	
GOAL	Target	Final list of proposed SDG indicators (wider UN System)	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 substantially increasing recycling and safe reuse globally	Proposed Indicator 1: Proportion of wastewater safely treated Proposed Indicator 2: Proportion of bodies of water with good ambient water quality	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 level of nitrogen** 1.3.2.a.2. **Concentration level of phosphorous** 1.3.2.a.3. Concentration level 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 levels of faecal coliforms** 1.3.2.d. Metals (e.g., mercury, lead, nickel, arsenic, cadmium) 1.3.2.d.1. Concentration levels in the sediment and freshwater 1.3.2.d.2. Concentration levels in freshwater organisms 1.3.2.e. Organic contaminants (e.g., PCBs, DDT, pesticides, furans, dioxins, phenols, radioactive waste) 1.3.2.e.1. Concentration levels in the sediment and freshwater 1.3.2.e.2. Concentration levels 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** 3.2.3.a.2. **Total volume of wastewater discharged to the environment without** 3.2.3.b. Pollutant content of discharged wastewater
			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.a.1. Natural fertilizers 3.4.1.a.2. Chemical fertilizers 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**	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**

example 6: pollution/environmental health 1/2

GOAL	SDGs: Target	SDGs: Final list of prepared SDG indicators (under UN System)	FDES: Location in the FDES: Component	FDES: 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	Prepared Indicator 1: Mortality rate attributed to household and ambient air pollution Prepared Indicator 2: Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe WASH services) Prepared Indicator 3: Mortality rate attributed to unintentional poisoning	Component 1: Environmental Conditions and Quality Sub-component 1.3: Environmental Quality Topic 1.3.1: Air quality	1.3.1.a. Local air quality 1.3.1.a.1. **Concentration level of particulate matter (PM_{10})** 1.3.1.a.2. **Concentration level of particulate matter ($PM_{2.5}$)** 1.3.1.a.3. **Concentration level of tropospheric ozone (O_3)** 1.3.1.a.4. **Concentration level of carbon monoxide (CO)** 1.3.1.a.5. **Concentration level of sulphur dioxide (SO_2)** 1.3.1.a.6. **Concentration levels of nitrogen oxides (NO_X)** 1.3.1.a.7. Concentration levels of heavy metals 1.3.1.a.8. Concentration levels of non-methane volatile organic compounds (NMVOCs) 1.3.1.a.9. *Concentration levels of dioxins* 1.3.1.a.10. *Concentration levels of furans* 1.3.1.a.11. Concentration levels of other pollutants 1.3.1.a.12. Number of days when maximum allowable levels were exceeded per year
			Topic 1.3.2: Freshwater quality	1.3.2.a. Nutrients and chlorophyll 1.3.2.a.1. **Concentration level of nitrogen** 1.3.2.a.2. **Concentration level 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 levels of faecal coliforms** 1.3.2.d. Metals (e.g., mercury, lead, nickel, arsenic, cadmium) 1.3.2.d.1. Concentration levels in the sediment and freshwater 1.3.2.d.2. Concentration levels in freshwater organisms 1.3.2.e. Organic contaminants (e.g., PCBs, DDT, pesticides, furans, dioxins, phenols, radioactive waste) 1.3.2.e.1. Concentration levels in the sediment and freshwater 1.3.2.e.2. Concentration levels 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
			Topic 1.3.3: Marine water quality	1.3.3.a. Nutrients and chlorophyll 1.3.3.a.1. **Concentration level of nitrogen** 1.3.3.a.2. **Concentration level of phosphorous** 1.3.3.a.3. Concentration level of chlorophyll A 1.3.3.b. Organic matter 1.3.3.b.1. **Biochemical oxygen demand (BOD)** 1.3.3.b.2. Chemical oxygen demand (COD) 1.3.3.c. Pathogens 1.3.3.c.1. Concentration levels of faecal coliforms in recreational marine water 1.3.3.d. Metals (e.g., mercury, lead, nickel, arsenic, cadmium) 1.3.3.d.1. Concentrations levels in the sediment and marine water 1.3.3.d.2. Concentrations levels in marine organisms 1.3.3.e. Organic contaminants (e.g., PCBs, DDT, pesticides, furans, dioxins, phenols, radioactive waste) 1.3.3.e.1. *Concentrations levels in the sediment and marine water* 1.3.3.e.2. *Concentrations levels in marine organisms* 1.3.3.i. Red tide 1.3.3.i.1. *Occurrence* 1.3.3.i.2. *Impacted area* 1.3.3.i.3. *Duration*

example 6: pollution/environmental health 2/2

	SDGs		FDES	
GOAL	Target	Final list of prepared SDG indicators (under UN System)	Location in the FDES: Component	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	Prepared Indicator 1: Mortality rate attributed to household and ambient air pollution	**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
		Prepared Indicator 2: Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe WASH services)	Component 5: Human Settlements and Environmental Health Sub-component 5.1: Human Settlements **Topic 5.1.4: Exposure to ambient**	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**	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*
		Prepared Indicator 3: Mortality rate attributed to unintentional poisoning	**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: Environmental 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

IV. Challenges in SDG monitoring

- Lack of capacity and/or finance to obtain or disseminate data.
- Overlapping mandates across institutions, ministries.
- New data sources required (e.g. new question(s) to be added to existing surveys; certain kinds of administrative data to be used for statistical compilation for the first time).
- Establishment of tighter inter-institutional arrangements within countries.
- More expanded use of remote sensing, satellite imagery and GPS technologies to complement census data.

Main conclusions

- Environment statistics is still a relatively new domain which relates to the environmental pillar being the weakest of the three pillars in sustainable development in terms of monitoring and measurability.
- Environment statistics are multi-purpose and serve many fundamental needs and uses, including environmental indicators, SDG indicators and environmental-economic accounts, so perseverance is important.
- With direct relevance to the SDGs, existing and future data collected by UNSD will be invaluable, in particular for the SDG targets that require environment statistics.
- Focus should be given to developing/strengthening underlying or basic environment statistics to firmly anchor environment statistics in national statistical systems before expanding further.
- More emphasis should be given to the implementation of the FDES, the BSES, the ESSAT and the forthcoming Manual on the BSES.

Thank you for your attention!

Please contact us:
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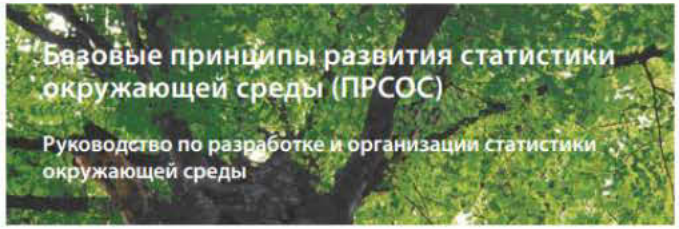


Базовые принципы развития статистики окружающей среды (ПРСОС)

Руководство по разработке и организации статистики окружающей среды

На сорок четвертой сессии Статистической комиссии были приняты Базовые принципы развития статистики окружающей среды 2013 года, включающие набор ключевых показателей статистики окружающей среды, а также план действий по практическому внедрению ПРСОС (Нью-Йорк, 26 февраля — 1 марта 2013 года)*

Статистика окружающей среды как важный фактор принятия политических решений

По мере обострения экологических проблем, с которыми сталкивается современное общество возрастает спрос на статистику окружающей среды. Признание того, что благополучие человечества зависит от состояния окружающей среды, обусловило повышенное внимание к проблемам окружающей среды и обеспечения устойчивого развития, которые требуют принятия решений и мер. Для осуществления этих мер первостепенное значение имеет регулярная подготовка высококачественных данных статистики окружающей среды, которые будут способствовать разработке основанной на фактических данных политики и поддержку директивных решений, принимаемых на основе имеющихся данных с тем, чтобы можно было определить вопросы экологической политики и дать им объективную количественную оценку.

Статистические данные по окружающей среде отражают основную информацию о состоянии окружающей среды и о его наиболее важных изменениях, происходящих в пространстве и во времени. Они способствуют повышению качества оценки за счет использования количественного метода, обеспечивающего проведение более эффективного, своевременного и более согласованного на международном уровне анализа. Статистика окружающей среды необходима для проведения экологических оценок, подготовки отчетов о состоянии окружающей среды и разработки справочников по экологическим вопросам, экологических по-

многочисленные ссылки на деятельность Статистического отдела Организации Объединенных Наций (СОООН) в этой области. В этом документе неоднократно упоминается о важности наличия данных, в частности экологических данных, а также соответствующей информации и показателей. Базовые принципы развития статистики окружающей среды (ПРСОС 2013), включающие набор ключевых показателей статистики окружающей среды, служат адекватным инструментом для удовлетворения этих потребностей в информации, поскольку они касаются экологического аспекта устойчивого развития. На сорок четвертой сессии Статистической комиссии ПРСОС были признаны полезным инструментом, позволяющим адекватно реагировать на возрастающий спрос на информацию при проведении последующих мероприятий по итогам конференции «Рио+20» и осуществлении повестки дня в области развития после 2015 года (включая цели в области устойчивого развития).

Проблема подготовки статистических данных по окружающей среде

Статистика окружающей среды охватывает широкий набор данных и носит междисциплинарный характер. Данные поступают из самых разнообразных источников, и их сбор осуществляется с использованием столь же разнообразных и многочисленных методик. Для эффективной подготовки статистических данных по окружающей среде в равной степени необходимы конкретные статистические и экологические знания и опыт, научные знания, институциональный

Framework for the Development of Environment Statistics

A guide for the development and organization of environment statistics

The Framework for the Development of Environment Statistics (FDES) 2013, including the Core Set of Environment Statistics, as well as an Action Plan for putting the FDES to work, were endorsed by the 44th session of the Statistical Commission (New York, 26 February–1 March 2013)*

Environment statistics for policymaking

The demand for environment statistics is increasing in step with the continued environmental challenges faced by modern society. The recognition that human well-being depends on the environment has led to an increasing emphasis on environmental and sustainability concerns on which decisions and actions need to be taken. Paramount to these actions is the regular production of environment statistics of the highest possible quality to support evidence-based policymaking by enabling the identification of environmental policy issues and allowing their objective quantification.

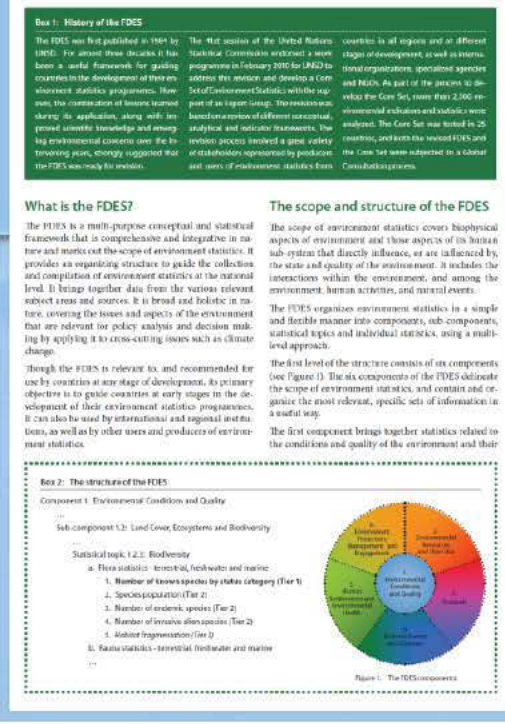
Environment statistics portray key information about the state of the environment and its most relevant changes through space and time. They strengthen assessments through quantitative techniques, making analyses more robust, timely and progressively harmonized at the international level. Environment statistics are necessary for producing environmental assessments, state of the environment reports, environmental compendia, environmental indicators, indicators of sustainable development, as well as to facilitate environmental-economic accounting.

The member States of the United Nations have addressed this challenging area during the Rio+20 Conference in June 2012. The outcome document, "The Future We Want," contains various references that are relevant to the work of the United Nations Statistics Division (UNSD) in this regard. This document frequently mentions the importance of data, in particular, environmental data, as well as information and indicators. The Framework for the Development of Environment Statistics (FDES 2013), including the Core Set of Environment Statistics, provides an appropriate means for addressing these information needs as they relate to the environmental dimension of sustainable development. The FDES has been recognized by the 44th session of the Statistical Commission as a useful tool to adequately respond to the increasing demand for information in the follow-up to Rio+20 and the post-2015 development agenda (including Sustainable Development Goals).

The challenge of producing environment statistics

Environment statistics cover a wide range of information and are interdisciplinary in nature. Their sources are dispersed over a variety of data producers, and similarly numerous methods are applied in their compilation. To effectively produce environment statistics, specific statistical and environmental expertise, scientific knowledge, institutional development capabilities, and adequate resources are equally necessary. Many countries still require substantial technical assistance and capacity building. Environment statistics therefore require a proper framework to guide their development, coordination and organization at all levels.

* The United Nations Statistical Commission is the apex entity of the global statistical system bringing together the Chief Statisticians from member states from around the world. It is the highest decision making body for international statistical activities especially the setting of statistical standards, the development of concepts and methods and their implementation at the national and international level.



Box 1: History of the FDES

The FDES was first published in 1984 by UNSD. For almost three decades it has been a useful framework for guiding countries in the development of their environment statistics programmes. However, the combination of lessons learned during its application, along with improved scientific knowledge and emerging environmental concerns over the intervening years, strongly suggested that the FDES was ready for revision.

The 41st session of the United Nations Statistical Commission endorsed a work programme in February 2010 for UNSD to address this revision and develop a Core Set of Environment Statistics with the support of an Expert Group. The revision was based on a review of different conceptual, analytical and indicator frameworks. The revision process involved a great variety of stakeholders represented by producers and users of environment statistics from countries in all regions and at different stages of development, as well as international organizations, specialized agencies and NGOs. As part of the process to develop the Core Set, more than 2,000 environmental indicators and statistics were analyzed. The Core Set was tested in 25 countries, and both the revised FDES and the Core Set were subjected to a Global Consultation process.

What is the FDES?

The FDES is a multi-purpose conceptual and statistical framework that is comprehensive and integrative in nature and marks out the scope of environment statistics. It provides an organizing structure to guide the collection and compilation of environment statistics at the national level. It brings together data from the various relevant subject areas and sources. It is broad and holistic in nature, covering the issues and aspects of the environment that are relevant for policy analysis and decision making by applying it to cross-cutting issues such as climate change.

Though the FDES is relevant to, and recommended for use by countries at any stage of development, its primary objective is to guide countries at early stages in the development of their environment statistics programmes. It can also be used by international and regional institutions, as well as by other users and producers of environment statistics.

The scope and structure of the FDES

The scope of environment statistics covers biophysical aspects of environment and those aspects of its human sub-system that directly influence, or are influenced by, the state and quality of the environment. It includes the interactions within the environment, and among the environment, human activities, and natural events.

The FDES organizes environment statistics in a simple and flexible manner into components, sub-components, statistical topics and individual statistics, using a multi-level approach.

The first level of the structure consists of six components (see Figure 1). The six components of the FDES delineate the scope of environment statistics, and contain and organize the most relevant, specific sets of information in a useful way.

The first component brings together statistics related to the conditions and quality of the environment and their

Box 2: The structure of the FDES

Component 1: Environmental Conditions and Quality

...

Sub-component 1.2: Land Cover, Ecosystems and Biodiversity

...

Statistical topic 1.2.1: Biodiversity

a. Flora statistics - terrestrial, freshwater and marine

1. **Number of known species by status category (Tier 1)**
2. Species population (Tier 2)
3. Number of endemic species (Tier 2)
4. Number of invasive alien species (Tier 2)
5. *Habitat fragmentation (Tier 2)*

b. Fauna statistics - terrestrial, freshwater and marine

...

Figure 1: The FDES components