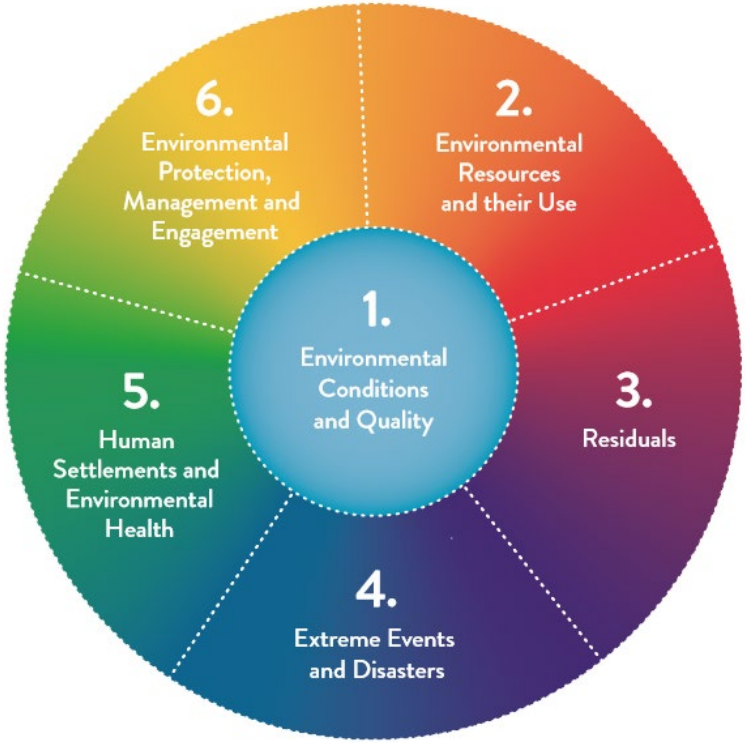
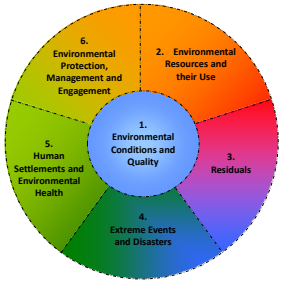
Session 3.1: Application of the FDES 2013 to Water Statistics



Regional Workshop on Environment Statistics and Climate Change Statistics for the Caribbean Community (CARICOM) Region

St. George's, Grenada, 4-8 November 2019



- This presentation has been elaborated by the Environment Statistics Section of the United Nations Statistics Division.

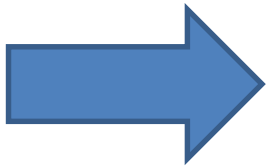
- It is based on Chapters 3 and 5 of the Framework for the Development of Environment Statistics (FDES 2013).

Water is fundamental to every form of life and critical role in human development

Increasing scarcity impedes development, compromises ecosystem functions, undercut human health and contribute to conflicts

Water and the Environment: Issues

- Quality and access to potable water
- Pressures on water supply
- Water-borne diseases
- Stress on ecosystems
- Loss of natural and human habitats
- Reduction of fish and aquatic plants productivity
- Waterlogging and salinization of soils
- Conflicts between users



Need to monitor the sustainable management of water resources

Water and the Environment: Water Use and Returns

Abstraction → Distribution → Use → Returns

Water and the Environment: Water Quality

- Importance for:
  - Ecosystems
  - Drinking water supply
  - Food production
  - Recreational water use

- Causes of degradation:
  - Elevated levels of salinity
  - Suspended matter
  - Nutrients
  - Toxins and odour compounds
  - Pesticides and other contaminants
  - Water temperature
  - Dissolved oxygen and pH outside natural range
  - Radiological hazards

Topics in the FDES that relate to water

Component 1: Environmental Conditions and Quality		
Subcomponent 1.1: Physical Conditions	**Subcomponent 1.2: Land Cover, Ecosystems and Biodiversity**	**Subcomponent 1.3: Environmental Quality**
1.1.1 Atmosphere, climate and weather	1.2.1 Land cover	1.3.2 Freshwater quality
1.1.2 Hydrographical characteristics	1.2.2 Ecosystems and biodiversity	1.3.3 Marine water quality
1.1.3 Geological and geographical information		

Component 2: Environmental Resources and their Use		
Subcomponent 2.3: Land	**Subcomponent 2.5: Biological Resources**	**Subcomponent 2.6: Water Resources**
2.3.1 Land use	2.5.2 Aquatic resources	2.6.1 Water resources
		2.6.2 Abstraction, use and returns of water

Component 3: Residuals
Subcomponent 3.2: Generation and Management of Wastewater
3.2.1 Generation and pollutant content of wastewater
3.2.2 Collection and treatment of wastewater
3.2.3 Discharge of wastewater to the environment

Component 4: Extreme Events and Disasters	
Subcomponent 4.1: Natural Extreme Events and Disasters	**Subcomponent 4.2: Technological Disasters**
4.1.1 Occurrence of natural extreme events and disasters	4.2.1 Occurrence of technological disasters
4.1.2 Impact of natural extreme events and disasters	4.2.2 Impact of technological disasters

Component 5: Human Settlements and Environmental Health	
Subcomponent 5.1: Human Settlements	**Subcomponent 5.2: Environmental Health**
5.1.2 Access to selected basic services	5.2.2 Water-related diseases and conditions
5.1.3 Housing conditions	

Component 6: Environmental Protection, Management and Engagement		
Subcomponent 6.1: Environmental Protection and Resource Management Expenditure	**Subcomponent 6.2: Environmental Governance and Regulation**	**Subcomponent 6.3: Extreme Event Preparedness and Disaster Management**
6.1.1 Government environmental protection and resource management expenditure	6.2.1 Institutional strength	6.3.1 Preparedness for natural extreme events and disasters
6.1.2 Corporate, non-profit institution and household environmental protection and resource management expenditure	6.2.2 Environmental regulation and instruments	6.3.2 Preparedness for technological disasters
	6.2.3 Participation in MEAs and environmental conventions	

FRAMEWORK FOR THE DEVELOPMENT OF ENVIRONMENT STATISTICS (FDES 2013)

Component 1: Environmental Conditions and Quality

- It includes statistics about the physical, biological and chemical characteristics of the environment and their changes over time.
- These fundamental background conditions are strongly interrelated and determine the types, extent, conditions and health of ecosystems.
- The source of the data is usually remote sensing and monitoring by environmental, meteorological, hydrological, geological and geographical authorities or institutions.

- Relationship with other frameworks:
  - Component 1 includes statistics relevant to the State and Impact elements of the DPSIR framework.
  - It also provides basic statistics for the SEEA Experimental Ecosystem Accounting.
- *Exclusions: Stocks and flows of environmental resources are discussed in Component 2.*




Component 1: Overview

Component 1 **Environmental Conditions and Quality**	**Sub-Component 1.1** **Physical Conditions** (4 topics, 62 statistics)	**Topic 1.1.1:** Atmosphere, climate and weather **Topic 1.1.2:** Hydrographical characteristics **Topic 1.1.3**: Geological and geographical information **Topic 1.1.4**: Soil characteristics
	Sub-Component 1.2 **Land Cover, Ecosystems and Biodiversity** (3 topics, 20 statistics)	**Topic 1.2.1: Land cover** **Topic 1.2.2: Ecosystems and biodiversity** **Topic 1.2.3**: Forests
	Sub-Component 1.3 **Environmental Quality** (5 topics, 59 statistics)	**Topic 1.3.1:** Air quality **Topic 1.3.2: Freshwater quality** **Topic 1.3.3: Marine water quality** **Topic 1.3.4**: Soil pollution **Topic 1.3.5**: Noise

Sub-Component 1.1: Physical Conditions

Sub-Component 1.1
Physical Conditions

Topic 1.1.1

Atmosphere, climate and weather

Topic 1.1.2

Hydrographical characteristics

Topic 1.1.3

Geological and geographical information

Topic 1.1.4

Soil characteristics

Sub-Component 1.1: Physical Conditions

- It was designed to capture those physical aspects of the environment which change relatively slowly due to human influence.
- It contains statistics on meteorological, hydrographical, geological and geographical conditions, and soil characteristics.

Sub-Component 1.1: Physical Conditions

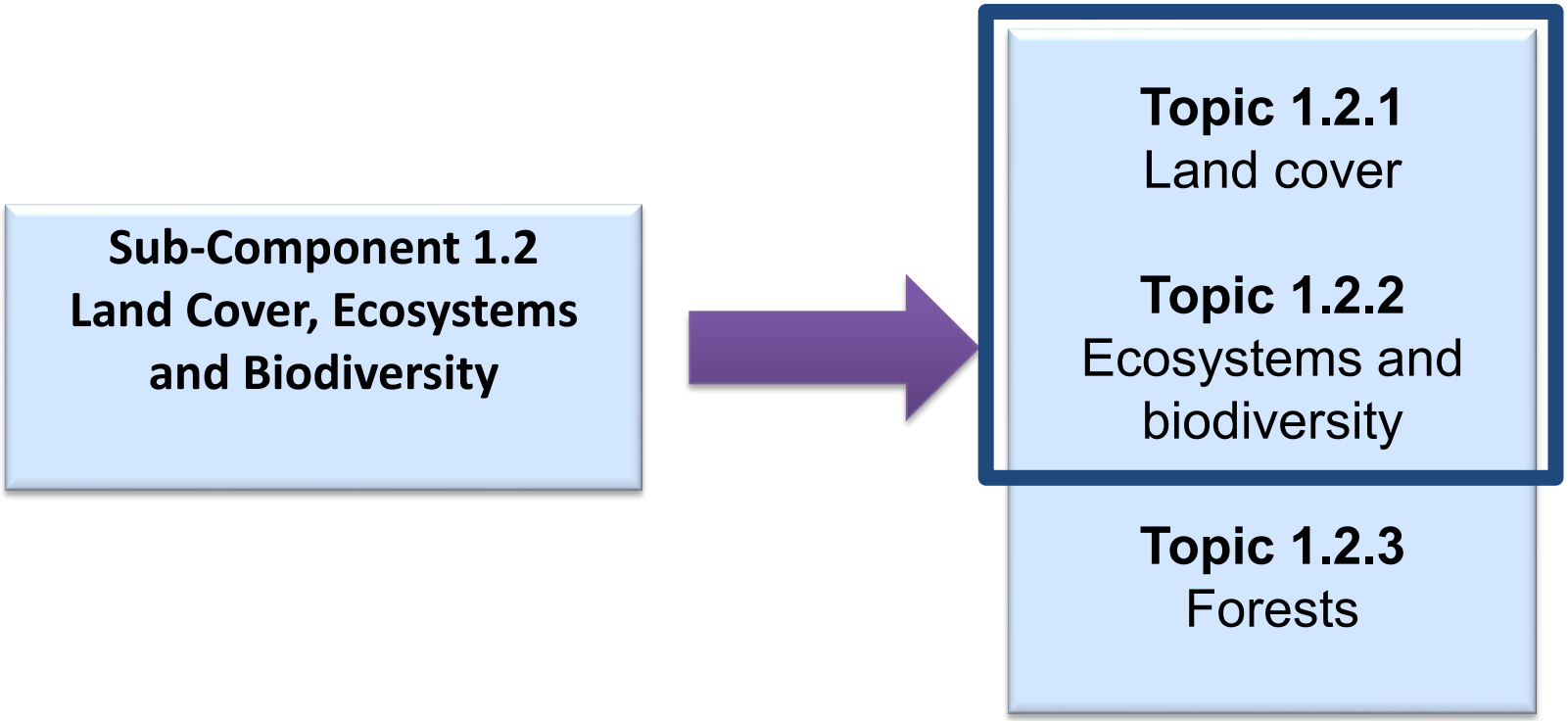
Topic 1.1.1: Atmosphere, climate and weather

- This topic covers data on atmospheric, climatic and weather conditions across territories and over time.
- Weather information describes the atmosphere's behaviour over a given territory in the short term. It is recorded by countries through a network of monitoring stations. Climate is determined by long-term weather conditions over that territory.
- Relevant data usually include aspects such as temperature, precipitation, humidity, pressure, wind speed, solar radiation, ultraviolet (UV) radiation and the occurrence of El Niño and La Niña events.
- In most countries, atmospheric, weather and climate authorities monitor and record these types of environmental data over long periods using a network of monitoring stations scattered throughout the country.
- *Statistics on air quality are covered under Sub-component 1.3: Environmental Quality.*

Sub-Component 1.1: Physical Conditions
Topic 1.1.2: Hydrographical characteristics

- This topic includes hydrographical information on the extent, location and characteristics of lakes, rivers and streams, artificial reservoirs, watersheds, seas, aquifers and glaciers.
- This information is best presented in map form.
- The main sources are hydrographical and hydrological monitoring and information systems that are usually managed by national geographical, hydrological institutions and water authorities.
- *Statistics on water quality are covered in Topic 1.3.2 and Topic 1.3.3. Statistics on water resources and their use are covered under Component 2.*

Sub-Component 1.2: Land Cover, Ecosystems and Biodiversity



Sub-Component 1.2: Land Cover, Ecosystems and Biodiversity

- Organizes environment statistics on land cover, ecosystems and biodiversity, as well as their recordable changes over time and across locations.

Exclusions

- Because of the importance of forests worldwide, the most important aspects and statistics required to describe them are organized under a separate topic, Topic 1.2.3: Forests.
- Statistics on biological resources (such as timber and fish) and their harvesting are contained in Component 2: Environmental Resources and their Use.

Sub-Component 1.2: Land Cover, Ecosystems and Biodiversity

Topic 1.2.1: Land Cover

- This topic includes statistics on the extent, and the physical and spatial characteristics of land cover.
- The main source of land cover information is remote sensing data that maps the different categories of land cover.
- Land cover is “the observed (bio) physical cover on the earth's surface”. (FAO)
- The Land Cover Classification System (LCCS) was developed by FAO. An interim classification composed of 14 classes was developed in the SEEA-CF following a comprehensive global consultation process. These 14 classes were generated using the LCCS approach and thus provide a comprehensive set of land cover types, all of which are mutually exclusive and unambiguous, with clear boundaries and systematic definitions.
  - The aim of the classification is to provide a common framework to compile and aggregate land cover information available at the national level and enabling its comparability at the international level, and to provide a structure to guide data collection and the creation of land cover databases for countries that are developing land cover statistics.

Sub-Component 1.2: Land Cover, Ecosystems and Biodiversity

Topic 1.2.2: Ecosystems and biodiversity

Ecosystems

- This topic covers physical quantitative as well as qualitative information and statistics about a country's main ecosystems, including the extent, chemical and physical characteristics, and biological components (biodiversity) of the ecosystems.
- Ecosystems are dynamic complexes of plant, animal and microorganism communities and the non-living environment interacting as a functional unit.
- The extent and conditions of the ecosystems determine their capacity to produce ecosystem services.
- For the purposes of characterizing the ecosystems of a country, in the absence of an internationally agreed ecosystem classification, national classifications may be used and fully described for statistical purposes. Alternatively, the country may follow and adapt other ecosystem categories used internationally, such as the Millennium Ecosystem Assessment reporting categories.

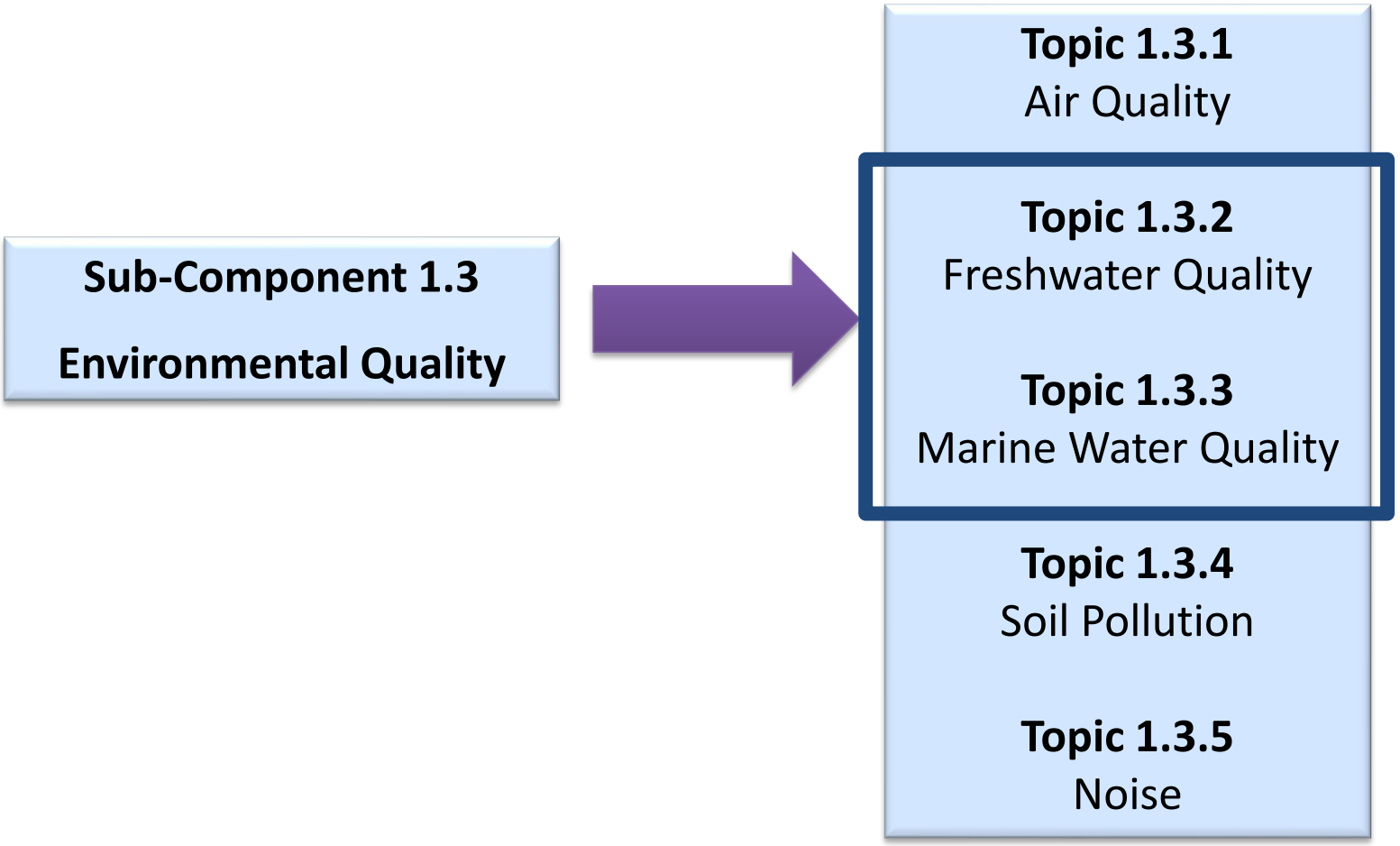
Sub-Component 1.2: Land Cover, Ecosystems and Biodiversity

Topic 1.2.2: Ecosystems and biodiversity (cont.)

Biodiversity

- Statistics on biodiversity include the diversity of flora and fauna species, protected areas and protected species. To be specific for each category:
  - Flora & fauna species: typical themes include the number and population trends of known species of flora and fauna (terrestrial, freshwater and marine) and their vulnerability status category.
  - Protected areas: physical and descriptive information and statistics on protected terrestrial and marine areas within the country.
  - Protected species: includes the number of protected species and their vulnerability status category.
- Sources of data:
  - Data on species populations are often obtained from expert and ad-hoc scientific studies and assessments, as well as research conducted by NGOs and civil society.
  - Data on protected areas and species are provided mainly by administrative records. Data may also be found in secondary databases and reports on the status of ecosystems or the state of the environment. They usually fall under the responsibility of environmental authorities and are frequently produced for the national and sub-national levels.

Sub-Component 1.3: Environmental Quality



Sub-Component 1.3: Environmental Quality

- This sub-component organizes statistics on the concentration of pollutants in the air, freshwater and marine water, and on soil pollution and noise levels.
- This pollution impacts both the human sub-system and ecosystems.
- Policy makers, analysts and civil society require statistics on environmental quality to monitor and make evidence-based policies to maintain and improve environmental quality globally and in each country.
- The spatial implications of pollutant concentration statistics are particularly important because of the fluidity of the environmental media (e.g., fresh and marine water and air). This underscores the need for collaboration between statistical offices and environmental agencies on the design (sampling pattern) of monitoring networks.

Exclusions

It should be noted that the emissions of these pollutants are not included here but, rather, in Component 3: Residuals.

Sub-Component 1.3: Environmental Quality

Topic 1.3.2: Freshwater Quality

- Without sufficient quantities of good quality freshwater, ecosystems and humans cannot survive. Precipitation, aquifers, lakes, rivers, coastal zones and oceans are all interconnected in the water cycle, so the choice of where to measure or monitor pollutants and which pollutants to monitor will depend on local and national priorities, ecosystem characteristics and resources available.

- The quality of freshwater can be described based on concentrations of nutrients and chlorophyll, organic matter, pathogens, metals and organic contaminants, and by physical and chemical characteristics in surface water and groundwater.

- Data for water quality statistics are produced primarily by monitoring stations.

Sub-Component 1.3: Environmental Quality

Topic 1.3.3: Marine Water Quality

- Relevant statistics about marine and coastal water quality and pollutant concentrations may include, but are not limited to, nutrients and chlorophyll, organic matter, pathogens, metals, organic contaminants, physical and chemical characteristics, and coral bleaching.
- The most commonly monitored marine pollutants and associated phenomena, such as eutrophication and red tide, can be analysed as relevant in local, national or supranational terms, based on the type of pollution and effect.
- Data sources for marine water quality statistics are typically either national or international monitoring stations, associated with scientific research or compliance with policy objectives and targets.
- Spatial and temporal considerations are very important when constructing statistics on this topic.

Component 2: Environmental Resources and their Use

- In Component 2, statistics on environmental resources and their use focus on measuring stocks and changes in stocks of these resources and their use for production and consumption.

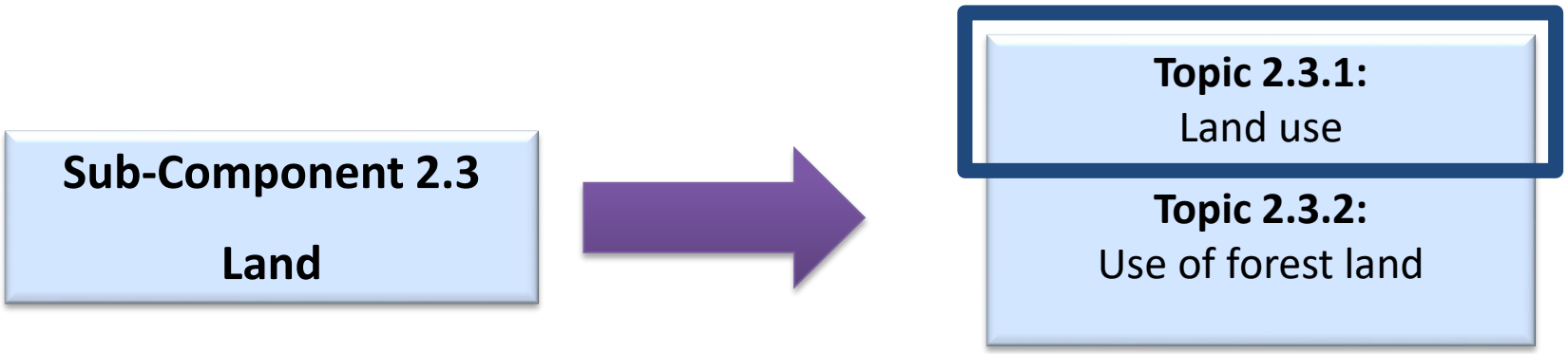
- Statistics regarding the most important human activities related to the use of environmental resources help identify the possibilities for policy intervention. The activities that directly extract, abstract, harvest or restructure individual environmental resources are included under Component 2.

- The use of products originating from environmental resources in the economy and by households can be captured in physical and monetary supply and use tables originating from national accounts and also from sectoral statistics. The SEEA-CF links environmental resources after their extraction from the environment to their use as products in the economy and to the SNA.

Component 2: Overview

Component 2 Environmental Resources and Their Use	**Sub-Component 2.1 Mineral Resources** (2 topics, 13 statistics)	**Topic 2.1.1:** Stocks and changes of mineral resources **Topic 2.1.2:** Production and trade of minerals
	Sub-Component 2.2 Energy Resources (2 topics, 19 statistics)	**Topic 2.2.1:** Stocks and changes of energy resources **Topic 2.2.2:** Production, trade and consumption of energy
	Sub-Component 2.3 Land (2 topics, 11 statistics)	**Topic 2.3.1:** Land use **Topic 2.3.2:** Use of forest land
	Sub-Component 2.4 Soil Resources	**Topic 2.4.1:** Soil resources
	Sub-Component 2.5 Biological Resources (5 topics, 53 statistics)	**Topic 2.5.1:** Timber resources **Topic 2.5.2:** Aquatic resources **Topic 2.5.3:** Crops **Topic 2.5.4:** Livestock **Topic 2.5.5:** Other non-cultivated biological resources
	Sub-Component 2.6: Water Resources (2 topics, 28 statistics)	**Topic 2.6.1**: Water resources **Topic 2.6.2**: Abstraction, use and returns of water

Sub-Component 2.3: Land



Sub-Component 2.3: Land

- Land is a unique environmental resource that delineates the space in which economic activities and environmental processes take place and within which environmental resources and economic assets are located.
- The two primary aspects of land are land cover and land use. They are closely related: while land cover describes the biophysical aspects of land, land use refers to the functional aspects of land. Land cover is discussed under Component 1.
- The total area of a country is the area enclosed by its inland borders and, if applicable, the sea. While inland waters (e.g., rivers, lakes and ponds) are included in land use, marine water areas may be included only in a broader concept of land use.

Sub-Component 2.3: Land

Topic 2.3.1: Land Use

- Land use reflects both the activities undertaken and the institutional arrangements put in place for a given area for the purposes of economic production, or the maintenance and restoration of environmental functions. Land being "used" means the existence of some kind of human activity or management.
- Consequently, there are areas of land that are "not in use" by human activities. These areas are important from an ecological point of view.

- Land use statistics cover both land in use and land not in use.
- Statistics on land use are usually obtained through the combination of field surveys and remote sensing (mostly satellite images). Land use data may also be obtained from administrative land registers where available.
- A reference framework for the interim classification of land use is provided in the SEEA-CF as agreed after a comprehensive global consultation process.

Sub-Component 2.5: Biological Resources

Sub-Component 2.5

Biological Resources

Topic 2.5.1
Timber resources

Topic 2.5.2
Aquatic resources

Topic 2.5.3:
Crops

Topic 2.5.4:
Livestock

Topic 2.5.5:
Other non-cultivated biological resources

Sub-Component 2.5: Biological Resources

- Biological resources:
  - are renewable resources that are capable of regeneration through natural (non-managed or managed) processes.
  - form an important part of biodiversity and ecosystems.
  - include timber and aquatic resources and a range of other animal and plant resources (such as livestock, orchards, crops and wild animals), fungi and bacteria.
  - can be natural (non-cultivated) or cultivated.

- Cultivated biological resources may impact the environment differently than natural ones. This is quite evident in the case of mono-cultivated, intensive crops that use irrigation and increasing amounts of fertilizers and pesticides.

Sub-Component 2.5: Biological Resources
Topic 2.5.2: Aquatic resources

- Aquatic resources:
  - comprise fish, crustaceans, molluscs, aquatic mammals and other aquatic organisms.
  - may be either cultivated or natural biological resources. Aquatic resources produced within aquaculture facilities (for breeding or for harvest) are considered cultivated biological resources. All other aquatic resources harvested as part of capture production processes are considered natural biological resources.
- Changes in the stocks of aquatic resources are the result of growth in stocks, total removals, and natural and catastrophic losses.
- Aquaculture is the farming of aquatic organisms, including fish, molluscs, crustaceans and aquatic plants. Aquaculture activities may also include the application of colorants, pellets, antibiotics, fungicides, hormones and other substances. Statistics on these aspects of aquaculture are very important to assess their impact on the environment.
- The FAO International Standard Statistical Classification of Aquatic Animals and Plants (ISSCAAP) is commonly used for statistics on aquatic resources.
- The use of aquatic products in the economy and by households can be captured in physical and monetary supply and use tables originating from national accounts.

Sub-Component 2.6: Water Resources

Sub-Component 2.6

Water Resources

Topic 2.6.1
Water resources

Topic 2.6.2
Abstraction, use and returns of water

Sub-Component 2.6: Water Resources

- Policy makers need statistics on water resources, their abstraction, use and returns for many reasons, including to:
  - estimate the amount of available water resources;
  - monitor abstraction from key water bodies to prevent overutilization;
  - ensure equitable usage of abstracted water; and
  - track the volume of water returned to the environment.
- International Recommendations for Water Statistics (IRWS) provides the definitions and groupings for the purposes of statistics on water resources and their use.

Sub-Component 2.6: Water Resources

Topic 2.6.1: Water Resources

- Water resources consist of fresh and brackish water, regardless of their quality, in inland water bodies, including surface water, groundwater and soil water.
- Inland water stocks are the volume of water contained in surface water and groundwater bodies and in the soil at a point in time.
  - Surface water comprises all water that flows over or is stored on the ground's surface, regardless of its salinity levels.
  - Groundwater comprises water that collects in porous layers of underground formations known as aquifers.
- Statistics on water resources include the volume of water generated within the country or territory as the result of precipitation, the volume of water lost to evapotranspiration, the inflow of water from neighbouring territories, and the outflow of water to neighbouring territories or the sea.
- The statistics are sourced from hydrometeorological and hydrological monitoring, measurements and models.
- *Statistics on the quality of water in water bodies are discussed under Topic 1.3.2: Freshwater quality and Topic 1.3.3: Marine water quality.*

Sub-Component 2.6: Water resources
Topic 2.6.2: Abstraction, use and returns of water

- Abstraction, use and returns of water are the flows of water between the environment and the human sub-system and within the human sub-system.
- Water abstraction is the amount of water that is removed from any source, either permanently or temporarily, in a given period of time. Water is abstracted from surface water and groundwater resources by economic activities and households. It can be abstracted for own use or for distribution to other users.
- After abstraction and distribution, water is used in the economy in production and consumption activities. Water can be recycled and reused several times before it is returned to the environment. Statistics on water use can be obtained from statistical surveys of primary users, household surveys and administrative records of the water supply industry.
- A large part of the water used in economic activities and by households is returned to the environment after or without treatment.

- *Statistics on the generation, treatment and pollutant content of wastewater are discussed under Sub-component 3.2: Generation and Management of Wastewater.*

Component 3: Residuals

- The FDES covers the main groups of residuals that are emissions of substances to air, water or soil, wastewater and waste, and the release of residuals from the application of chemical substances.
- Generally, emissions are analysed by the type of receiving environment (air, water or soil) and type of substance.
- Statistics on residuals must be broken down according to the economic activity that generated them, based on ISIC.

Component 3: Overview

Component 3 **Residuals**	**Sub-Component 3.1** **Emissions to Air** (3 topics, 20 statistics)	**Topic 3.1.1:** Emissions of greenhouse gases **Topic 3.1.2:** Consumption of ozone depleting substances **Topic 3.1.3:** Emissions of other substances
	Sub-Component 3.2 **Generation and Management of Wastewater** (3 topics, 11 statistics)	**Topic 3.2.1:** Generation and pollutant content of wastewater **Topic 3.2.2:** Collection and treatment of wastewater **Topic 3.2.3:** Discharge of wastewater to the environment
	Sub-Component 3.3 **Generation and Management of Waste** (2 topics, 20 statistics)	**Topic 3.3.1:** Generation of waste **Topic 3.3.2:** Management of waste
	Sub-Component 3.4 **Release of Chemical Substances** (1 topic, 7 statistics)	**Topic 3.4.1:** Release of chemical substances

Sub-Component 3.2: Generation and Management of Wastewater

Sub-Component 3.2

Generation and Management of Wastewater

Topic 3.2.1

Generation and pollutant content of wastewater

Topic 3.2.2

Collection and treatment of wastewater

Topic 3.2.3

Discharge of wastewater to the environment

Sub-Component 3.2: Generation and Management of Wastewater

- Contains statistics on the generation, management and discharge of wastewater, as well as the pollutant content of wastewater (emissions of substances to water).
- Other policy relevant wastewater statistics include a disaggregation by economic activity of responsibility for its generation, whether the wastewater is being treated, and what is being emitted to the country's water bodies.

Sub-Component 3.2: Generation and Management of Wastewater

Topic 3.2.1: Generation and pollutant content of wastewater

- Includes statistics on the volume of water that is no longer required and is thus discarded by the user and statistics on the amount of pollutants contained in wastewater (emissions to water) before any collection or treatment.
- Statistics on the generation of wastewater and emissions to water should be broken down by the economic activity and households that generate them.
- Wastewater generation is usually estimated based on the volume of water used.
- The pollutant content of wastewater (emissions to water) can usually be obtained from monitoring at the place of generation or from estimates based on technological parameters.

Sub-Component 3.2: Generation and Management of Wastewater

Topic 3.2.2: Collection and treatment of wastewater

- Wastewater may be discharged directly to the environment by the generator or may be collected in sewerage systems and treated in wastewater treatment plants.

- Include statistics describing:
  - (i) volumes of wastewater collected and transported to its final place of discharge or treatment facilities;
  - (ii) volume of wastewater treated by type of treatment (primary, secondary and tertiary);
  - (iii) physical infrastructure related to wastewater collection and treatment (e.g., number of treatment plants, capacities of plants);
  - (iv) pollutant content extracted in the treatment facilities; and
  - (v) other relevant information.

- Establishments that collect and treat wastewater are grouped under ISIC Rev.4, Section E, Division 37 Sewerage.

Sub-Component 3.2: Generation and Management of Wastewater

Topic 3.2.3: Discharge of wastewater to the environment

- This topic captures information at the stage of final discharge of wastewater to the environment. It includes:
  - (i) volume of wastewater discharged to the environment without treatment,
  - (ii) volume of wastewater discharged to the environment after treatment, by type of treatment (primary, secondary and tertiary) and type of treatment facility (public, private, municipal, industrial), and
  - (iii) effluent quality.

- Sources of data:
  - Statistics on the volume of wastewater discharged after treatment can be obtained from administrative records of the treatment plants.
  - Statistics on the volume of wastewater released without treatment can be obtained from economic units and records of sewerage companies or estimated on the basis of water use. The volume of discharged wastewater should also be disaggregated by recipient water body.

Sub-Component 3.2: Generation and Management of Wastewater

Topic 3.2.3: Discharge of wastewater to the environment

Emissions of pollutants to water bodies:

- In addition to the volume of wastewater returned to the environment, it is also important to measure or estimate the volumes of different pollutants emitted with the wastewater or otherwise released to water bodies.
- Emissions to water are the substances released to water resources by establishments and households as a result of production, consumption and accumulation processes.
- Emissions to water should be disaggregated according to the releasing economic activities and should cover the most important substances.

Component 4: Extreme Events and Disasters

- This component organizes statistics on the occurrence of extreme events and disasters and their impacts on human well-being and the infrastructure of the human sub-system.
- The most common data providers are:
  - national and sub-national authorities responsible for disaster management and assistance;
  - emergency management and response agencies;
  - insurance companies;
  - optical and radar satellite operators for satellite information;
  - seismic monitoring and research centres.

Component 4: Overview

Component 4 **Extreme Events and Disasters**	**Sub-Component 4.1** **Natural Extreme Events and Disasters** (2 topics, 16 statistics)	**Topic 4.1.1:** Occurrence of natural extreme events and disasters **Topic 4.1.2:** Impact of natural extreme events and disasters
	Sub-Component 4.2 **Technological Disasters** (2 topics, 15 statistics)	**Topic 4.2.1:** Occurrence of technological disasters **Topic 4.2.2:** Impact of technological disasters

Sub-Component 4.1:
Natural Extreme Events and Disasters

Sub-Component 4.1

Natural Extreme Events and Disasters

Topic 4.1.1
Occurrence of natural extreme events and disasters

Topic 4.1.2
Impact of natural extreme events and disasters

Component 5: Human Settlements and Environmental Health

- Contains statistics on the environment in which humans live and work, particularly with regard to living conditions and environmental health.
- These statistics are important for the management and improvement of conditions related to human settlements, shelter conditions, safe water, sanitation and health, particularly in the context of rapid urbanization, increasing pollution, environmental degradation, disasters, extreme events, and climate change.

Component 5: Overview

Component 5 Human Settlements and Environmental Health	**Sub-Component 5.1** **Human Settlements** (5 topics, 31 statistics)	**Topic 5.1.1:** Urban and rural population **Topic 5.1.2:** Access to selected basic services **Topic 5.1.3:** Housing conditions **Topic 5.1.4:** Exposure to ambient pollution **Topic 5.1.5:** Environmental concerns specific to urban settlements
	Sub-Component 5.2 **Environmental Health** (5 topics, 23 statistics)	**Topic 5.2.1:** Airborne diseases and conditions **Topic 5.2.2:** Water-related diseases and conditions **Topic 5.2.3:** Vector-borne diseases **Topic 5.2.4:** Health problems associated with excessive UV radiation exposure **Topic 5.2.5:** Toxic substance- and nuclear radiation- related diseases and conditions

Sub-Component 5.1: Human Settlements

Sub-Component 5.1 Human Settlements

Topic 5.1.1: Urban and rural population

Topic 5.1.2: Access to selected basic services

Topic 5.1.3: Housing conditions

Topic 5.1.4: Exposure to ambient pollution

Topic 5.1.5: Environmental concerns specific to urban settlements

Sub-Component 5.1: Human Settlements

Topic 5.1.2: Access to selected basic services

- This topic includes information about access to water, sanitation, waste removal services and energy in urban and rural areas.
- Access to these basic services can have a positive effect on human health and well-being, thereby contributing to improved environmental quality.
- Relevant statistics on this topic include:
  - population using an improved drinking water source;
  - population using an improved sanitation facility;
  - population supplied by the water supply industry;
  - price of water;
  - population connected to wastewater collecting system;
  - population connected to wastewater treatment;
  - population served by municipal waste collection;
  - population with access to electricity; and
  - price of electricity.

Sub-Component 5.1: Human Settlements

Topic 5.1.3: Housing conditions

- This topic includes information on the sufficiency of housing in terms of the following characteristics: population access to an adequate dwelling; the characteristics of the houses in which both rural and urban population live, including the quality of the houses (e.g., building materials) and location in a safe or a hazard-prone area.
- Housing access and conditions have a direct effect on human well-being and health, and these data serve as critical measures of those attributes.
- Housing condition statistics need to be described according to national conditions and priorities. Income distribution directly influences access to housing, the quality of homes accessible to different social groups, and their location.

- Depending on the country, common statistics describing the quality and location of houses in either safe or hazard-prone areas include the urban population living in slums, area of slums, population living in informal settlements, homeless population, and the number of dwellings with adequate building materials as defined by national or local standards.

- Sources of data:
  - Censuses
  - Household surveys

Sub-Component 5.2: Environmental Health

Sub-Component 5.2
Environmental Health

Topic 5.2.1
Airborne diseases and conditions

Topic 5.2.2
Water-related diseases and conditions

Topic 5.2.3
Vector-borne diseases

Topic 5.2.4
Health problems associated with excessive UV radiation exposure

Topic 5.2.5
Toxic substance- and nuclear radiation- related diseases and conditions

Sub-Component 5.2: Environmental Health

Topic 5.2.2: Water-related diseases and conditions

- This topic includes all water-related diseases and conditions that result from micro-organisms and chemicals in the water that humans drink.
- Water-related diseases and conditions are still significant public health problems in developing countries. They include, but are not limited to, diseases caused by biological contamination, such as gastroenteritis infections caused by bacteria, viruses and protozoa, and water-borne parasite infections.
- This topic may also include diseases and health problems associated with the (organic or inorganic) chemical contamination of water (e.g., from arsenic, cadmium, chromium or copper) as prolonged exposure to these chemicals can provoke health problems including:
  - increased risk of cancer
  - organ damage and malfunction
  - increased blood cholesterol and blood pressure
- Statistics include morbidity (incidence and prevalence) and mortality of these diseases or conditions, as well as measures of the associated impact on the labour force and on the economic costs.

Component 6: Environmental Protection, Management and Engagement

- This component organizes information on environmental protection and resource management expenditure to improve the environment and maintain ecosystem health.
- Statistics on environmental governance, institutional strength, enforcement of regulations and extreme event preparedness are also considered.
- This component also includes information on a wide variety of programmes and actions to increase awareness, including environmental information and education, as well as private and community activities aimed at diminishing environmental impacts and improving the quality of local environments.

Component 6: Overview

Component 6 **Environmental Protection, Management and Engagement**	**Sub-Component 6.1** **Environmental Protection and Resource Management Expenditure** (2 topics, 8 statistics)	**Topic 6.1.1:** Government environmental protection and resource management expenditure **Topic 6.1.2:** Corporate, non-profit institution and household environmental protection and resource management expenditure
	Sub-Component 6.2 **Environmental Governance and Regulation** (3 topics, 19 statistics)	**Topic 6.2.1:** Institutional strength **Topic 6.2.2:** Environmental regulation and instruments **Topic 6.2.3:** Participation in MEAs and environmental conventions
	Sub-Component 6.3 **Extreme Event Preparedness and Disaster Management** (2 topics, 10 statistics)	**Topic 6.3.1:** Preparedness for natural extreme events and disasters **Topic 6.3.2:** Preparedness for technological disasters
	Sub-Component 6.4 **Environmental Information and Awareness** (4 topics, 13 statistics)	**Topic 6.4.1:** Environmental information **Topic 6.4.2:** Environmental education **Topic 6.4.3:** Environmental perception and awareness **Topic 6.4.4:** Environmental engagement

Thank you for your attention!

For more information please contact the Environment Statistics Section at the United Nations Statistics Division:

E-mail: envstats@un.org

Website: https://unstats.un.org/unsd/envstats/