Climate change statistics and the FDES

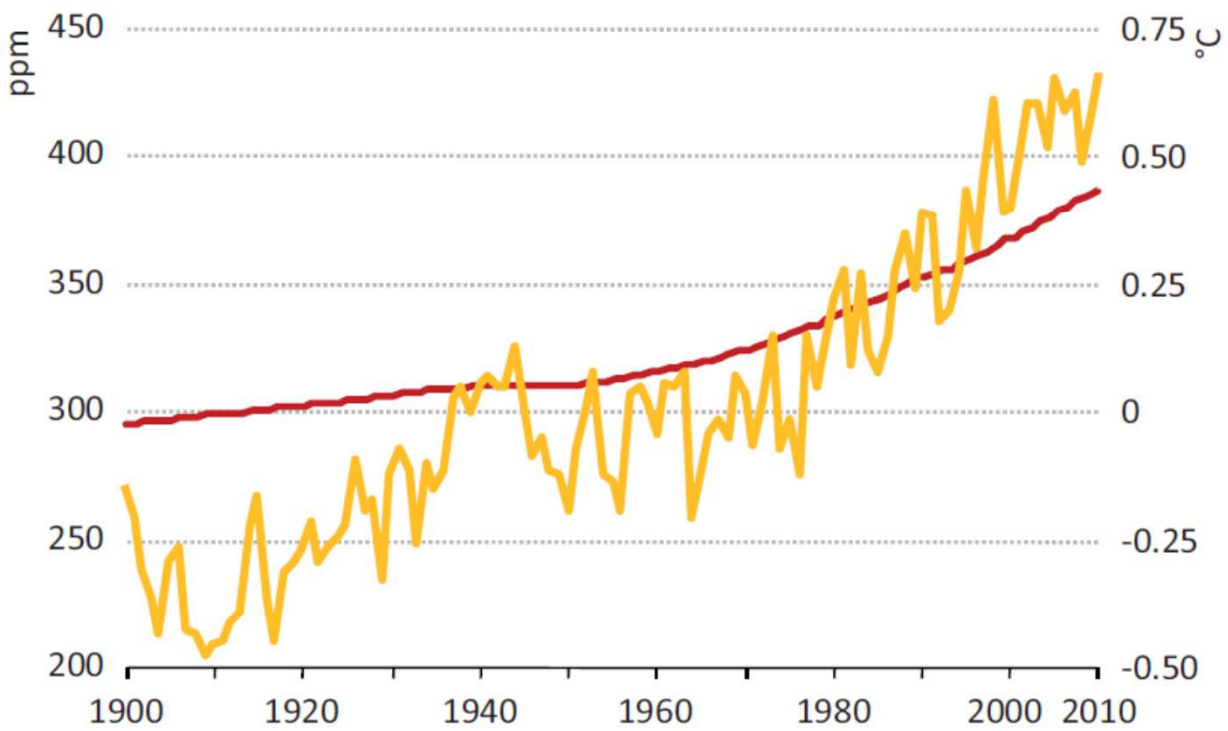
Workshop on Environment Statistics for the East African Community Region

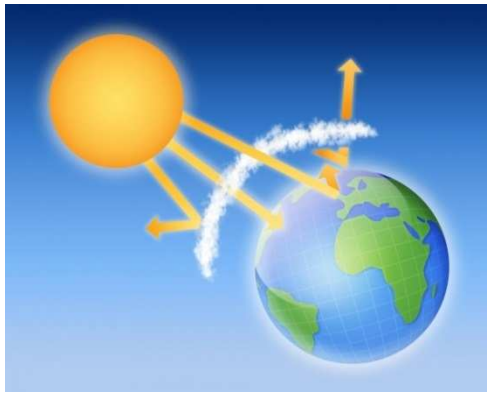
(Arusha, Tanzania, 27-31 March 2017)

Environment Statistics Section, United Nations Statistics Division

Evidence of climate change

Figure 1.1 ▷ World atmospheric concentration of CO_2 and average global temperature change



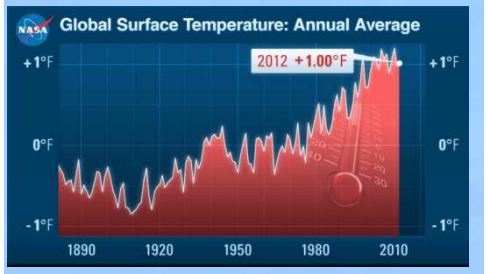


Note: The temperature refers to the NASA Global Land-Ocean Temperature Index in degrees Celsius, base period: 1951-1980. The resulting temperature change is lower than the one compared with pre-industrial levels.

Sources: Temperature data are from NASA (2013); CO_2 concentration data from NOAA Earth System Research Laboratory.

Reality Check

1. **Carbon dioxide** concentration is 40% higher than in pre-industrial times.
2. **Human activity** caused most of the warming between 1951 and 2010.
3. Earth's surface **warmed 0.85°C** over the period 1880 to 2012.
4. **Heatwaves and heavy rains** have become more frequent since the 1950s.
5. Arctic sea **ice has declined** on average 3.8% per decade since 1979.
6. Global **sea level is expected to rise** between 26 and 82 cm by 2100.
7. Only an **aggressive mitigation scenario** can keep temperature rise below 2°C.



Source: IPCC Working Group I - Fifth Assessment Report

The importance of climate change

- Climate change is one of the **greatest challenges** of our time. Climate change is a change of climate which is attributed directly or indirectly **to human activity** that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.

- Climate change **affects all countries** and remains one of the most important development challenges facing humanity.

- Climate change disrupts national economies and affects lives, costing people, communities and countries significantly today and in the future.

- The main impacts of climate change:

  - **slow onset events** (e.g., sea level rise, increasing temperatures, ocean acidification, glacial retreat, salinization, land and forest degradation, loss of biodiversity and desertification)

  - sudden **extreme weather events** that can result in disasters

Growing demand for climate change statistics

- Climate change poses a considerable challenge with regard to **statistical measurement** for both countries and agencies
- The statistical community faces **increasing demands for data** from diverse stakeholders
  - **Paris Agreement**: A new universal agreement was reached in Paris in 2015 to:
    - reduce emissions
    - keep global warming below 2°C compared with the preindustrial era (about 1850)
    - mobilize resources to finance adaptation, as societies move towards a low-carbon economy base.
  - **Sustainable Development Goals:**
    - Climate change is addressed in Goal 13: Take urgent action to combat climate change and its impacts - 5 targets that will be monitored through indicators that require statistics for their measurement
    - Several other SDGs and targets are also climate change-related.
  - **Regional climate change policies**: EAC climate change policy (2011), climate change strategy (2011) and master plan
  - **National climate change policies:** emissions, mitigation, adaptation
- Need to develop/strengthen national capacities to statistically describe climate change

Climate change statistics: where are we?

- Demand for data on climate change is greater than its supply, particularly with regard to its **environment** aspects.
- This gap is evidently deeper in **developing and least developed countries** that face critical resource constraints, limited technical capacities, institutional weakness and lack of coordination among national institutions.
- Most of the literature about climate change is focused on analytical and policy aspects.
- Statistical guidance and good practices are **available** for the measurement of climate change mainly focuses on estimating GHG emissions and observing its global concentrations.
- However, work is increasingly being conducted to **develop methodologies** on the other aspects. They include climate change evidence and impacts, quantification of the occurrence of disasters, their magnitude and different impacts, as well as adaptation efforts.

The sequence of climate change

Climate change

Climate Process Drivers

Include GHG emissions and use of ozone depleting substances (ODSs)

Climate Change Evidence

Include slow and rapid onset events on the atmosphere, climate and weather as well as occurrence of extreme weather events

Climate Change Impacts and Vulnerability

Include impact of extreme events and disasters (resulting from extreme event and vulnerability) on humans, its settlements and the environment

Mitigation and Adaptation

~ human response to climate change

Include changes in energy renewability/carbon intensity, C&P patterns, levels of environmental protection expenditure, existence of regulation and instruments and level of disaster preparedness

The sequence of climate change and its measurement

- Climate change is a cross-cutting issue involving complex dynamics (including economic, social and environmental factors that affect each other). Statistically describing the environmental dimension of climate change is the least developed.
- Sequence of events:

  Climate process **drivers** (GHG emissions) -> increase CO_2 global concentrations

  -> **Evidence** of climate change:

  - occurrence of slow onset events (e.g., desertification)
  - occurrence of extreme weather events

  [depending on the country's disaster preparedness and risk reduction infrastructure]

  -> Disasters -> **Impacts** on people, human settlements, economic assets and ecosystems.

  <-> **Mitigation**

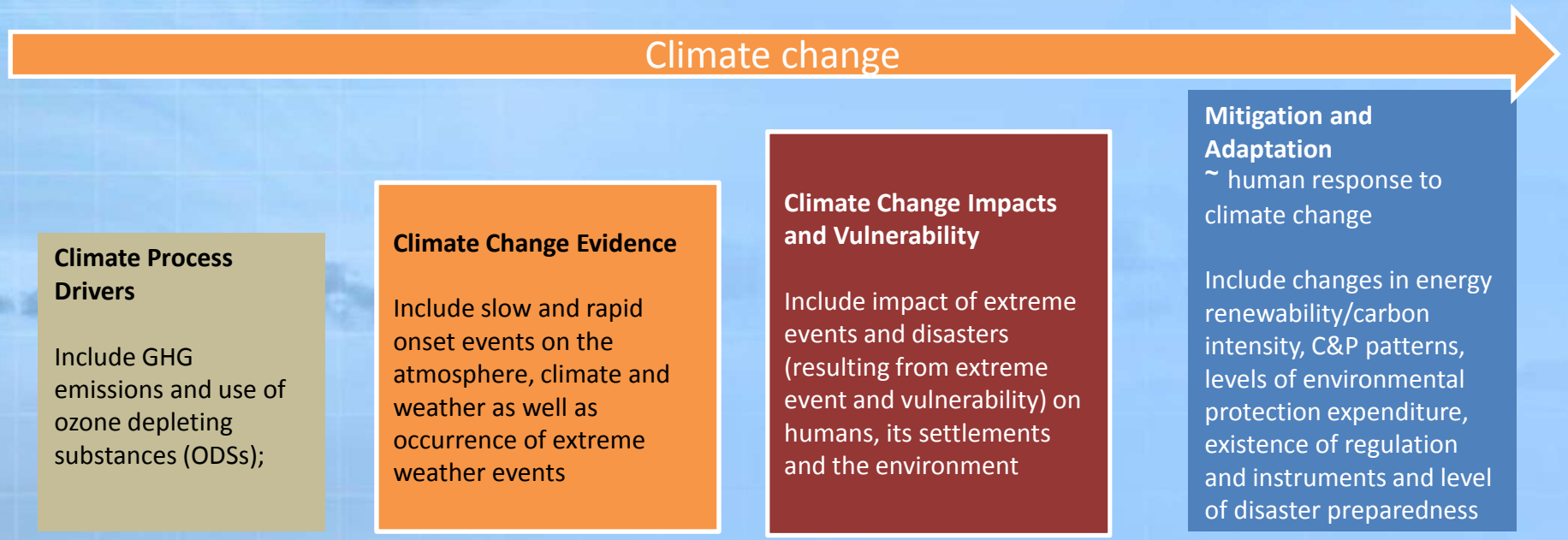
  -> **Adaptation**

- Although these events are continuous, for statistical purposes each part can be described and measured separately.
- Following international definitions, recommendations, and methods existing for part of the sequence while others require new methodologies to be developed.
- Because of the different importance and resources allocated in each country and international agency, available statistics and indicators on climate change vary.

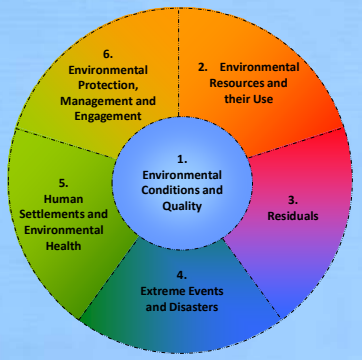
Sequence of climate change

The IPCC framework was the basis upon which the stages of the sequence of climate change were constructed to substantiate the application of the FDES to climate change statistics.

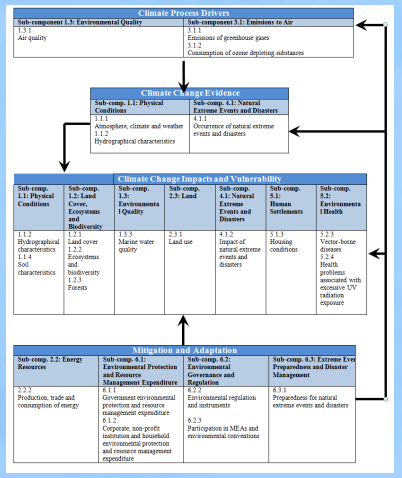
The FDES application to climate change statistics identifies the components, topics and individual statistics that are needed to inform about each of the stages of the sequence of climate change:



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



- Chapter 5 of the FDES presents 4 cross-cutting applications of the FDES:
  - ✓ Water and the environment
  - ✓ Energy and the environment
  - ✓ Agriculture and the environment
  - ✓ Climate Change

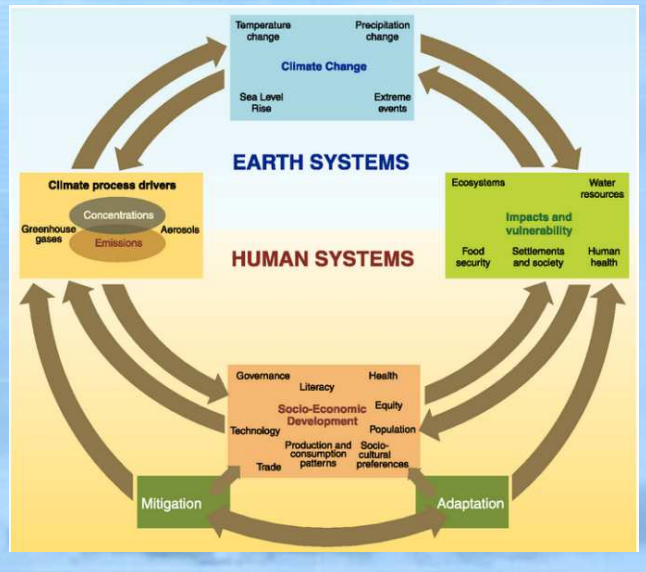


- The FDES 2013 is a flexible, multi-purpose conceptual and statistical framework that marks out the scope of environment statistics.
- It provides an organizing structure to guide the collection and compilation of environment statistics at the national level, bringing together data from the various relevant subject areas and sources.
- It is broad, comprehensive and integrative. It covers the issues and aspects of the environment that are relevant for policy analysis and decision making and it can be applied to inform about cross-cutting issues such as climate change.

- Download the FDES 2013 here: http://unstats.un.org/unsd/environment/fdes.htm

Climate change statistics in the FDES

IPCC framework



Source: Intergovernmental Panel on Climate Change

Climate Process Drivers	
Sub-component 1.3: Environmental Quality	**Sub-component 3.1: Emissions to Air**
1.3.1 Air quality	3.1.1 Emissions of greenhouse gases 3.1.2 Consumption of ozone depleting substances

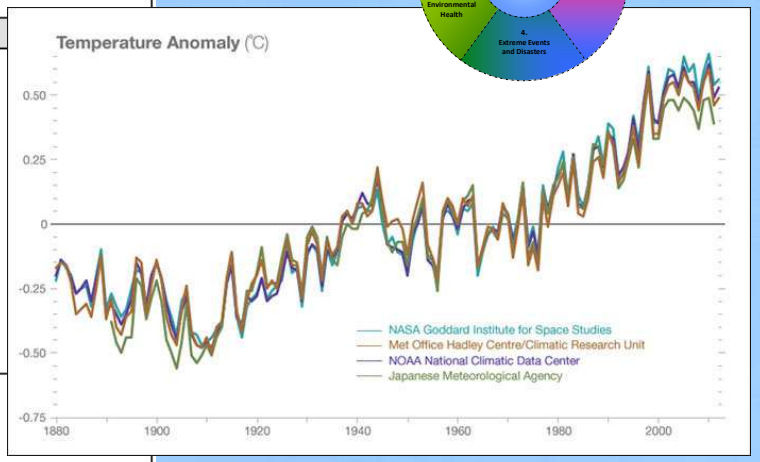
Climate Change Evidence	
Sub-comp. 1.1: Physical Conditions	**Sub-comp. 4.1: Natural Extreme Events and Disasters**
1.1.1 Atmosphere, climate and weather 1.1.2 Hydrographical characteristics	4.1.1 Occurrence of natural extreme events and disasters

Climate Change Impacts and Vulnerability						
Sub-comp. 1.1: Physical Conditions	**Sub-comp. 1.2: Land Cover, Ecosystems and Biodiversity**	**Sub-comp. 1.3: Environmental Quality**	**Sub-comp. 2.3: Land**	**Sub-comp. 4.1: Natural Extreme Events and Disasters**	**Sub-comp. 5.1: Human Settlements**	**Sub-comp. 5.2: Environmental Health**
1.1.2 Hydrographical characteristics 1.1.4 Soil characteristics	1.2.1 Land cover 1.2.2 Ecosystems and biodiversity 1.2.3 Forests	1.3.3 Marine water quality	2.3.1 Land use	4.1.2 Impact of natural extreme events and disasters	5.1.3 Housing conditions	5.2.3 Vector-borne diseases 5.2.4 Health problems associated with excessive UV radiation exposure

Mitigation and Adaptation			
Sub-comp. 2.2: Energy Resources	**Sub-comp. 6.1: Environmental Protection and Resource Management Expenditure**	**Sub-comp. 6.2: Environmental Governance and Regulation**	**Sub-comp. 6.3: Extreme Event Preparedness and Disaster Management**
2.2.2 Production, trade and consumption of energy	6.1.1 Government environmental protection and resource management expenditure 6.1.2 Corporate, non-profit institution and household environmental protection and resource management expenditure	6.2.2 Environmental regulation and instruments 6.2.3 Participation in MEAs and environmental conventions	6.3.1 Preparedness for natural extreme events and disasters

Climate Process Drivers

Sub-component 1.3: Environmental Quality	
Topic 1.3.1: Air quality	1.3.1.b: Global atmospheric concentrations of greenhouse gases 1.3.1.b.1 Global atmospheric concentration level of carbon dioxide (CO_2) 1.3.1.b.2 Global atmospheric concentration level of methane (CH_4)
Sub-component 3.1: Emissions to Air	
Topic 3.1.1: Emissions of greenhouse gases	3.1.1.a: Total emissions of direct greenhouse gases (GHGs), by gas: **3.1.1.a.1: Carbon dioxide (CO_2)** **3.1.1.a.2: Methane (CH_4)** **3.1.1.a.3: Nitrous oxide (N_2O)** 3.1.1.a.4: Perfluorocarbons (PFCs) 3.1.1.a.5: Hydrofluorocarbons (HFCs) 3.1.1.a.6: Sulphur hexafluoride (SF_6) 3.1.1.b: Total emissions of indirect greenhouse gases (GHGs), by gas: **3.1.1.b.1: Sulphur dioxide (SO_2)** **3.1.1.b.2: Nitrogen oxides (NO_x)** 3.1.1.b.3: Non-methane volatile organic compounds (NM-VOCs) 3.1.1.b.4: Other
Topic 3.1.2: Consumption of ozone depleting substances	3.1.2.a: Consumption of ozone depleting substances (ODSs), by substance: 3.1.2.a.1: Chlorofluorocarbons (CFCs) 3.1.2.a.2: Hydrochlorofluorocarbons (HCFCs) 3.1.2.a.3: Halons 3.1.2.a.4: Methyl chloroform 3.1.2.a.5: Carbon tetrachloride 3.1.2.a.6: Methyl bromide 3.1.2.a.7: Other



Climate Change Evidence

Sub-component 1.1: Physical Conditions	
Topic 1.1.1: Atmosphere, climate and weather	1.1.1.a: Temperature **1.1.1.a.1: Monthly average** **1.1.1.a.2: Minimum monthly average** **1.1.1.a.3: Maximum monthly average** 1.1.1.b: Precipitation (also in 2.6.1.a) **1.1.1.b.1: Annual average** **1.1.1.b.2: Long-term annual average** 1.1.1.b.3: Monthly average 1.1.1.b.4: Minimum monthly value 1.1.1.b.5: Maximum monthly value
Topic 1.1.2: Hydrographical characteristics	1.1.2.e: Seas *1.1.2.e.4: Sea level*
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

Climate Change Impacts and Vulnerability

Sub-component 1.1: Physical Conditions

Topic 1.1.2: Hydrographical characteristics	1.1.2.a: Lakes 1.1.2.a.1: Surface area *1.1.2.a.2: Maximum depth* 1.1.2.b: Rivers and streams 1.1.2.b.1: Length 1.1.2.c: Artificial reservoirs *1.1.2.c.1: Surface area* *1.1.2.c.2: Maximum depth* 1.1.2.e: Seas *1.1.2.e.5: Area of sea ice* 1.1.2.g: Glaciers
Topic 1.1.4: Soil characteristics	1.1.4.b: Soil degradation **1.1.4.b.2: Area affected by desertification**

Sub-component 1.2: Land Cover, Ecosystems and Biodiversity

Topic 1.2.1: Land cover	**1.2.1.a: Area under land cover categories**
Topic 1.2.2: Ecosystems and biodiversity	1.2.2.a: General ecosystem characteristics, extent and pattern **1.2.2.a.1: Area of ecosystems** 1.2.2.b: Ecosystems' chemical and physical characteristics *1.2.2.b.2: Carbon* 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*
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 (also in 1.2.2.d) 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*

Sub-component 1.3: Environmental Quality

Topic 1.3.3: Marine water quality	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.f: Physical and chemical characteristics [of marine water bodies] *1.3.3.f.1: pH/Acidity/Alkalinity* 1.3.3.f.2: Temperature *1.3.3.f.3: Total suspended solids (TSS)* *1.3.3.f.4: Salinity* 1.3.3.f.5: Dissolved oxygen (DO) *1.3.3.f.6: Density* 1.3.3.g: Coral bleaching **1.3.3.g.1: Area affected by coral bleaching**

Sub-component 2.3: Land

Topic 2.3.1: Land use	**2.3.1.a: Area under land use categories**
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*

Sub-component 4.1: Natural Extreme Events and Disasters

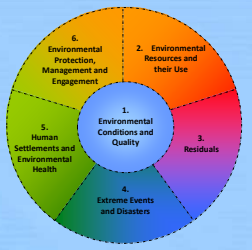
Topic 4.1.2: Impact of natural extreme events and disasters	4.1.2.a: People affected by natural extreme events and disasters **4.1.2.a.1: Number of people killed** 4.1.2.a.2: Number of people injured 4.1.2.a.3: Number of people homeless 4.1.2.a.4: Number of people affected **4.1.2.b: Economic losses due to natural extreme events and disasters** 4.1.2.c: Physical losses/damages due to natural extreme events and disasters 4.1.2.d: Effects of natural extreme events and disasters on integrity of ecosystems *4.1.2.d.1: Area affected by natural disasters* *4.1.2.d.2: Loss of vegetation cover* *4.1.2.d.3: Area of watershed affected* *4.1.2.d.4: Other*

Sub-component 5.1: Human Settlements

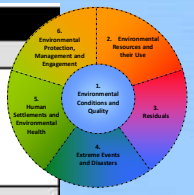
Topic 5.1.3: Housing conditions	5.1.3.c: Population living in hazard-prone areas 5.1.3.d: Hazard-prone areas

Sub-component 5.2: Environmental Health

Topic 5.2.3: Vector-borne diseases	5.2.3.a: Vector-borne diseases **5.2.3.a.1: Incidence** **5.2.3.a.2: Prevalence** **5.2.3.a.3: Mortality** *5.2.3.a.4: Loss of work days* *5.2.3.a.5: Estimates of economic cost in monetary terms*
Topic 5.2.4: Health problems associated with excessive UV radiation exposure	5.2.4.a: Problems associated with excessive UV radiation exposure *5.2.4.a.1: Incidence* *5.2.4.a.2: Prevalence* *5.2.4.a.3: Loss of work days* *5.2.4.a.4: Estimates of economic cost in monetary terms*



Mitigation and Adaptation	
Sub-component 2.2: Energy Resources	
Topic 2.2.2: Production, trade and consumption of energy	2.2.2.a: Production of energy **2.2.2.a.3: Production from renewable sources**
Sub-component 6.1: Environmental Protection and Resource Management Expenditure	
Topic 6.1.1: Government environmental protection and resource management expenditure	6.1.1.a: Government environmental protection and resource management expenditure [on climate change mitigation activities] **6.1.1.a.1: Annual government environmental protection expenditure** 6.1.1.a.2: Annual government resource management expenditure
Topic 6.1.2: Corporate, non-profit institution and household environmental protection and resource management expenditure	6.1.2.a: Private sector environmental protection and resource management expenditure [on climate change mitigation activities] 6.1.2.a.1: Annual corporate environmental protection expenditure *6.1.2.a.2: Annual corporate resource management expenditure* *6.1.2.a.3: Annual non-profit institution environmental protection expenditure* *6.1.2.a.4: Annual non-profit institution resource management expenditure* *6.1.2.a.5: Annual household environmental protection expenditure* *6.1.2.a.6: Annual household resource management expenditure*
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) [related to climate change] 6.2.2.a.2: Description (e.g., name, year established) of licensing system to ensure compliance with environmental standards for businesses or other new facilities [related to climate change] 6.2.2.a.3: Number of applications for licences received and approved per year [related to climate change] 6.2.2.a.4: List of quotas for biological resource extraction 6.2.2.a.5: Budget and number of staff dedicated to enforcement of environmental regulations [related to climate change] 6.2.2.b: Economic instruments [related to climate change] *6.2.2.b.1: List and description (e.g., year of establishment) of green/environmental taxes* *6.2.2.b.2: List and description (e.g., year of establishment) of environmentally relevant subsidies* *6.2.2.b.3: List of eco-labelling and environmental certification programmes* 6.2.2.b.4: Emission permits traded
Topic 6.2.3: Participation in MEAs and other global environmental conventions	6.2.3.a: Participation in MEAs and other global environmental conventions **6.2.3.a.1: List and description (e.g., country's year of participation[a]) of MEAs and other global environment conventions** [related to climate change]
	(a) Participation means that the country or area has become party to the agreements under the treaty or convention, which is achieved through various means, depending on the country's circumstances, namely: accession, acceptance, approval, formal confirmation, ratification and succession. Countries or areas that have signed but not become party to the agreements under a given convention or treaty are not considered to be participating.
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



Available and needed statistics and guidance

The availability of climate change statistics varies depending on the stage of the sequence of climate change and on the level of statistical development at the national level.

- Data on **climate process drivers** and on **climate change evidence** are relatively more available.
  - **Greenhouse gas** (GHG) **emissions** transform into global concentrations -> Climate change
  - Globally the shares of GHG emissions are: **Energy 35%**, **industrial** production **18%**, **transport 14%**, **agriculture 14%**, tropical **deforestation 10%**, residential and commercial buildings 6%, and waste and water treatment 3% (IPCC 2014). It varies for each country and region.
  - Global concentration of CO_2 and temperatures are also available over long periods of time.
- Some statistics are produced, but more is needed to analyse the **impacts** of climate change.
  - With the increase in frequency and intensity of **extreme** climate-related meteorological **events** and **natural disasters** there are emerging data needs.
- **Mitigation** statistics are less often produced and more difficult to capture statistically, because of the insufficient resources invested in their measurement and the lack of methodological guidance.
- Despite their importance, statistics on **vulnerability and adaptation** (as well as resilience) are still in a developmental stage and require investment in methodological development and capacities to be produced (more relevant to be captured locally).

Climate change and environment statistics

- Countries and international organizations need to strengthen the production of environment statistics and promote them to the same status as economic and social statistics.
- Countries have expressed that, in order to produce more and better statistical evidence about both climate change and sustainable development, they need further statistical capacity-building and training, according to their priorities and circumstances.
- Countries and agencies need to regularly invest adequate resources to sustain production of these statistics as part of national statistical systems.

What UNSD is doing to support climate change statistics

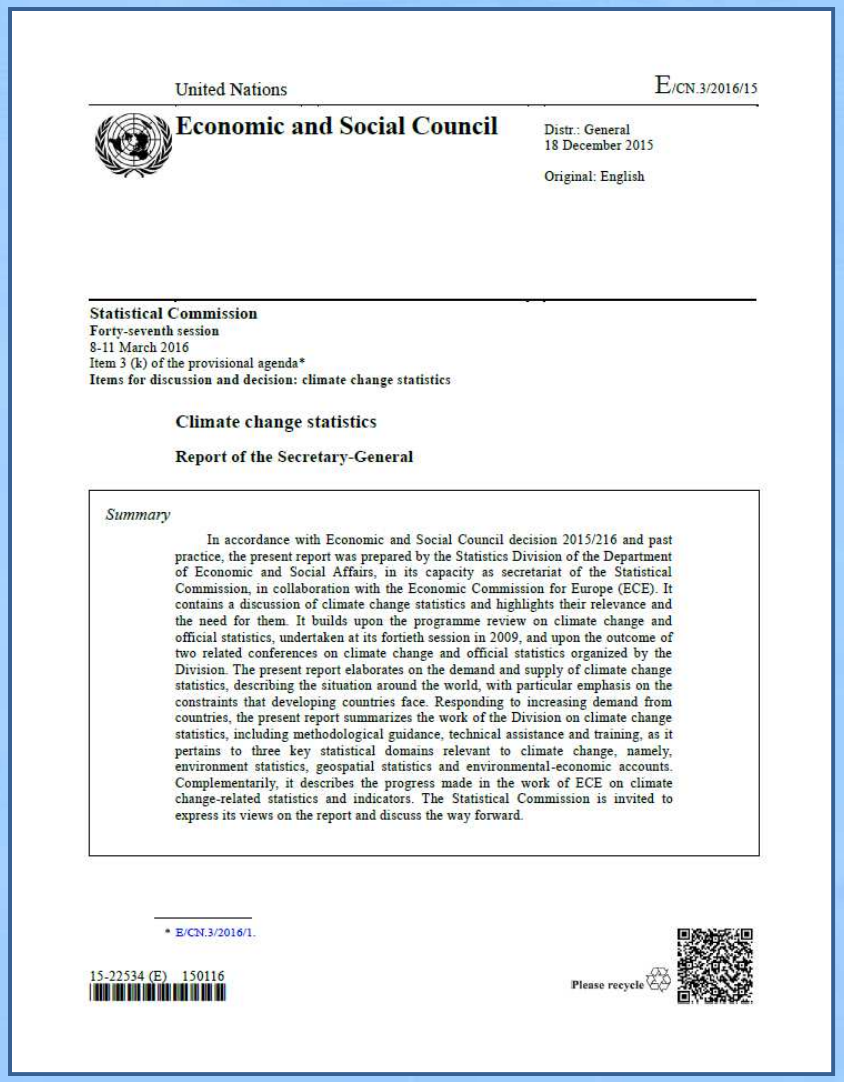
- Prepared, in collaboration with UN-ECE, the Secretary-General's report on climate change statistics for the 47th session of the Statistical Commission in 2016.
  - The Commission, at its 40th session, in 2009, launched a programme review on climate change and official statistics carried out by the Australian Bureau of Statistics. The objective of the review was to specify how official statistics may be used for climate change measurement and analysis and to identify recommendations and actions to mainstream the climate change aspect in official statistics.
  - The Commission took into consideration the recommendations of the two conferences organized by UNSD on climate change and official statistics.
    - Oslo, 14-16 April 2008 (http://unstats.un.org/unsd/climate_change/default.htm)
    - Seoul, 11- 12 December 2008 (http://unstats.un.org/unsd/climate_change/Korea/default.htm)
- Dedicated webpage: http://unstats.un.org/unsd/environment/climatechange.html
- Member of the Task Force on a set of key climate change-related indicators and statistics of which UN-ECE is the Secretariat.

Report of the Secretary-General on Climate Change Statistics to the 47th session of the Statistical Commission

UNSD, in collaboration with UN-ECE, prepared the Report of the Secretary-General on Climate Change Statistics to the 47th session of the Statistical Commission (E/CN.3/2016/15), that was held in New York from 8 to 10 March 2016.

http://unstats.un.org/unsd/environment/climatechange_docs_conf.html

Decision 47/112:
http://unstats.un.org/unsd/statcom/47th-session/documents/Report-on-the-47th-session-of-the-statistical-commission-E.pdf



United Nations E/CN.3/2016/15

Economic and Social Council

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Statistical Commission
Forty-seventh session
8-11 March 2016
Item 3 (k) of the provisional agenda*
Items for discussion and decision: climate change statistics

Climate change statistics

Report of the Secretary-General

Summary

In accordance with Economic and Social Council decision 2015/216 and past practice, the present report was prepared by the Statistics Division of the Department of Economic and Social Affairs, in its capacity as secretariat of the Statistical Commission, in collaboration with the Economic Commission for Europe (ECE). It contains a discussion of climate change statistics and highlights their relevance and the need for them. It builds upon the programme review on climate change and official statistics, undertaken at its fortieth session in 2009, and upon the outcome of two related conferences on climate change and official statistics organized by the Division. The present report elaborates on the demand and supply of climate change statistics, describing the situation around the world, with particular emphasis on the constraints that developing countries face. Responding to increasing demand from countries, the present report summarizes the work of the Division on climate change statistics, including methodological guidance, technical assistance and training, as it pertains to three key statistical domains relevant to climate change, namely, environment statistics, geospatial statistics and environmental-economic accounts. Complementarily, it describes the progress made in the work of ECE on climate change-related statistics and indicators. The Statistical Commission is invited to express its views on the report and discuss the way forward.

* E/CN.3/2016/1.

15-22534 (E) 150116

Please recycle

47th session of Commission - decisions

The Commission, inter alia,:

- Urged countries to develop and strengthen environment statistics, which are necessary for effective monitoring of key aspects of climate change.
- Urged the international statistical community to expand its regional, subregional and national capacity-building efforts in climate change statistics, in line with the Paris Agreement, adopted by the parties to the United Nations Framework Convention on Climate Change in 2015, and the 2030 Agenda for Sustainable Development.
- Recommended that countries use the Framework for the Development of Environment Statistics (FDES 2013) to guide the development of climate change statistics and indicators, given the close interrelationship between environment statistics and climate change statistics.

47th session of Commission - decisions

The Commission, inter alia,:

- Noted the link between climate change and disaster reduction and requested that the Sendai Framework for Disaster Risk Reduction 2015-2030 be considered in the development of climate change statistics and indicators.
- Encouraged national statistical systems to invest adequate resources in the development of climate change statistics, in particular the underlying environment, energy, agriculture and industry statistics, and environmental-economic accounts that relate to the climate-economy interface and the physical flow accounts for greenhouse gas emissions.

47th session of Commission - decisions

The Commission, inter alia,:

- Expressed its appreciation of the work being undertaken by the Economic Commission for Europe task force on climate change-related statistics and indicators, in particular their efforts to develop a set of climate change-related statistics and indicators, and requested UNSD to review and consider it as a basis for developing a global set of climate change statistics and indicators, applicable to countries at various stages of development.
- Requested that climate change statistics appear on the multi-year programme of the Statistical Commission with greater frequency and asked UNSD to develop a workplan for submission to the Commission at its forty-eighth session.

UNSD Plans: Climate change statistics

- Given that the work of the UN-ECE is still underway and that the set of indicators is still to be submitted to the Conference of European Statisticians plenary session in June 2017 for endorsement, UNSD is in the process of pilot testing the set of climate change-related statistics and indicators in various fora to assess its applicability for the majority of developing countries. UNSD will subsequently launch a global consultation to fulfil the request mandated by the Statistical Commission.

Dedicated page on UNSD' Environment Statistics Section website

http://unstats.un.org/unsd/environment/climatechange.html

UNSD documents and conferences on climate change statistics

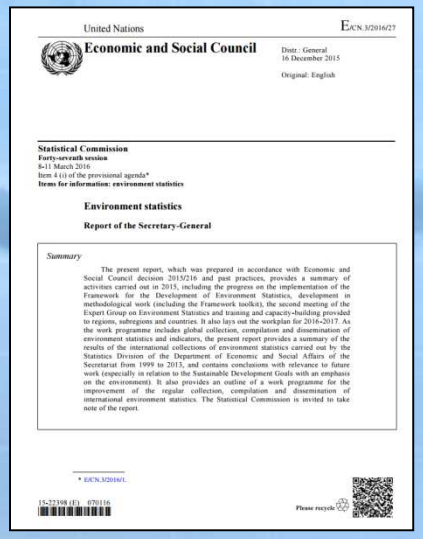
Conference on Climate Change and Official Statistics
14 – 16 April 2008, Oslo, Norway

Conference on Climate Change, Development and Official Statistics in the Asia-Pacific Region
11-12 December 2008, Seoul, The Republic of Korea

Report of the Secretary-General on climate change statistics to the 47th session of the Statistical Commission
8-10 March 2016, New York
Languages: [Arabic]; [Chinese]; [English]; [French]; [Russian]; [Spanish]

Framework for the Development of Environment Statistics (FDES 2013) Chapter 5, Section 5.3 on Climate Change

Statistical Note for the Open Working Group on Sustainable Development Goals: Climate Change and Disaster Risk Reduction Statistics and Indicators



United Nations E/CN.3/2016/27

Economic and Social Council

Distr.: General
16 December 2015

Original: English

Statistical Commission
Forty-seventh session
8-11 March 2016
Item 4 (i) of the provisional agenda*
Items for information: environment statistics

Environment statistics

Report of the Secretary-General

Summary

The present report, which was prepared in accordance with Economic and Social Council decision 2015/216 and past practices, provides a summary of activities carried out in 2015, including the progress on the implementation of the Framework for the Development of Environment Statistics, development in methodological work (including the Framework toolkit), the second meeting of the Expert Group on Environment Statistics and training and capacity-building provided to regions, subregions and countries. It also lays out the workplan for 2016-2017. As the work programme includes global collection, compilation and dissemination of environment statistics and indicators, the present report provides a summary of the results of the international collections of environment statistics carried out by the Statistics Division of the Department of Economic and Social Affairs of the Secretariat from 1999 to 2013, and contains conclusions with relevance to future work (especially in relation to the Sustainable Development Goals with an emphasis on the environment). It also provides an outline of a work programme for the improvement of the regular collection, compilation and dissemination of international environment statistics. The Statistical Commission is invited to take note of the report.

* E/CN.3/2016/1.

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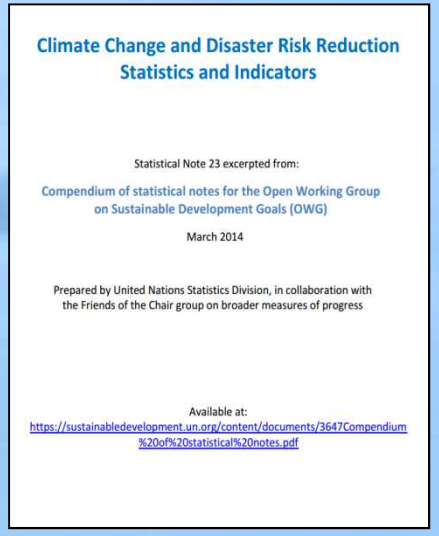


Climate Change and Disaster Risk Reduction Statistics and Indicators

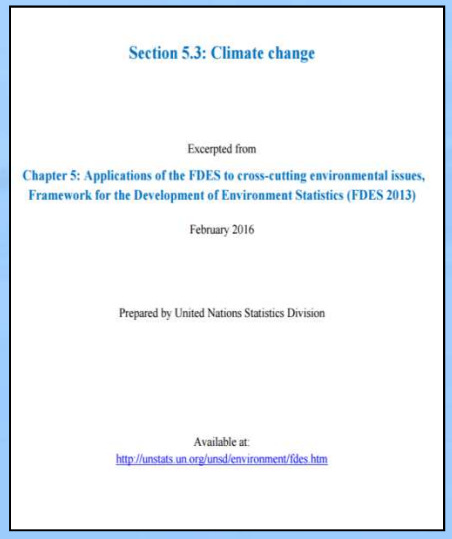
Statistical Note 23 excerpted from:

Compendium of statistical notes for the Open Working Group on Sustainable Development Goals (OWG)

March 2014

Prepared by United Nations Statistics Division, in collaboration with the Friends of the Chair group on broader measures of progress

Available at:
https://sustainabledevelopment.un.org/content/documents/3647Compendium%20of%20statistical%20notes.pdf



Section 5.3: Climate change

Excerpted from

Chapter 5: Applications of the FDES to cross-cutting environmental issues, Framework for the Development of Environment Statistics (FDES 2013)

February 2016

Prepared by United Nations Statistics Division

Available at:
http://unstats.un.org/unsd/environment/fdes.htm

We are ready to help but need more resources to assist countries

- UNSD, UNECE and partner agencies are committed to providing technical assistance to countries, particularly developing countries, to strengthen their capacities to produce statistics on the **environment** and **climate change**.
- However, often environment statistics programmes face insufficient resources to adequately respond to the increasing demand.
- More donor support is needed to benefit Member States, in particular their national statistical offices and national partners.

Thank you for your attention!

Please contact us:
Environment Statistics Section of the United Nations Statistics Division
E-mail: envstats@un.org
website: http://unstats.un.org/unsd/ENVIRONMENT/

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.

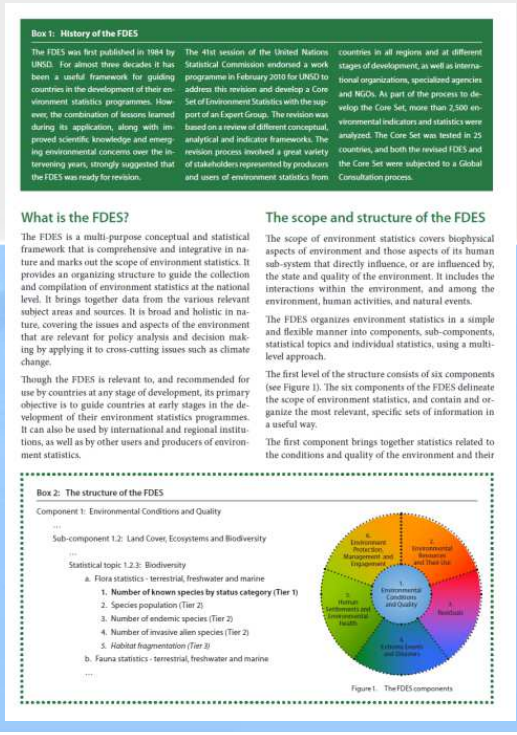
Environment statistics portray key information about the state of the environment and its most relevant changes through space and time. They strengthen assessments through quantitative techniques, making analyses more robust, timely and progressively harmonized at the international level. Environment 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 2,500 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 1.2.3: 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 3)*

b. Fauna statistics - terrestrial, freshwater and marine

...

Figure 1. The FDES components