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\textsubscript{2} and average global temperature change

- Atmospheric concentration of CO\textsubscript{2}
- Temperature change (right axis)

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\textsubscript{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 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 CO₂ 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:

- **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.
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.

Climate change statistics in the FDES

IPCC framework

Source: Intergovernmental Panel on Climate Change
## Climate Process Drivers

### Sub-component 1.3: Environmental Quality

<table>
<thead>
<tr>
<th>Topic 1.3.1: Air quality</th>
<th>1.3.1.b: Global atmospheric concentrations of greenhouse gases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.3.1.b.1: Global atmospheric concentration level of carbon dioxide (CO₂)</td>
</tr>
<tr>
<td></td>
<td>1.3.1.b.2: Global atmospheric concentration level of methane (CH₄)</td>
</tr>
</tbody>
</table>

### Sub-component 3.1: Emissions to Air

<table>
<thead>
<tr>
<th>Topic 3.1.1: Emissions of greenhouse gases</th>
<th>3.1.1.a: Total emissions of direct greenhouse gases (GHGs), by gas:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.1.1.a.1: Carbon dioxide (CO₂)</td>
</tr>
<tr>
<td></td>
<td>3.1.1.a.2: Methane (CH₄)</td>
</tr>
<tr>
<td></td>
<td>3.1.1.a.3: Nitrous oxide (N₂O)</td>
</tr>
<tr>
<td></td>
<td>3.1.1.a.4: Perfluorocarbons (PFCs)</td>
</tr>
<tr>
<td></td>
<td>3.1.1.a.5: Hydrofluorocarbons (HFCs)</td>
</tr>
<tr>
<td></td>
<td>3.1.1.a.6: Sulphur hexafluoride (SF₆)</td>
</tr>
<tr>
<td></td>
<td>3.1.1.b: Total emissions of indirect greenhouse gases (GHGs), by gas:</td>
</tr>
<tr>
<td></td>
<td>3.1.1.b.1: Sulphur dioxide (SO₂)</td>
</tr>
<tr>
<td></td>
<td>3.1.1.b.2: Nitrogen oxides (NOₓ)</td>
</tr>
<tr>
<td></td>
<td>3.1.1.b.3: Non-methane volatile organic compounds (NM-VOCs)</td>
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<tr>
<td></td>
<td>3.1.1.b.4: Other</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Topic 3.1.2: Consumption of ozone depleting substances</th>
<th>3.1.2.a: Consumption of ozone depleting substances (ODSs), by substance:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.1.2.a.1: Chlorofluorocarbons (CFCs)</td>
</tr>
<tr>
<td></td>
<td>3.1.2.a.2: Hydrochlorofluorocarbons (HCFCs)</td>
</tr>
<tr>
<td></td>
<td>3.1.2.a.3: Halons</td>
</tr>
<tr>
<td></td>
<td>3.1.2.a.4: Methyl chloroform</td>
</tr>
<tr>
<td></td>
<td>3.1.2.a.5: Carbon tetracloride</td>
</tr>
<tr>
<td></td>
<td>3.1.2.a.6: Methyl bromide</td>
</tr>
<tr>
<td></td>
<td>3.1.2.a.7: Other</td>
</tr>
</tbody>
</table>

## Climate Change Evidence

### Sub-component 1.1: Physical Conditions

<table>
<thead>
<tr>
<th>Topic 1.1.1: Atmosphere, climate and weather</th>
<th>1.1.1.a: Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.1.1.a.1: Monthly average</td>
</tr>
<tr>
<td></td>
<td>1.1.1.a.2: Minimum monthly average</td>
</tr>
<tr>
<td></td>
<td>1.1.1.a.3: Maximum monthly average</td>
</tr>
<tr>
<td>1.1.1.b: Precipitation (also in 2.6.1.a)</td>
<td>1.1.1.b.1: Annual average</td>
</tr>
<tr>
<td></td>
<td>1.1.1.b.2: Long-term annual average</td>
</tr>
<tr>
<td></td>
<td>1.1.1.b.3: Monthly average</td>
</tr>
<tr>
<td></td>
<td>1.1.1.b.4: Minimum monthly value</td>
</tr>
<tr>
<td></td>
<td>1.1.1.b.5: Maximum monthly value</td>
</tr>
</tbody>
</table>

### Sub-component 4.1: Natural Extreme Events and Disasters

<table>
<thead>
<tr>
<th>Topic 4.1.1: Occurrence of natural extreme events and disasters</th>
<th>4.1.1.a: Occurrence of natural extreme events and disasters</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4.1.1.a.1: Type of natural extreme event and disaster (geophysical, meteorological, hydrological, climatological, biological)</td>
</tr>
<tr>
<td></td>
<td>4.1.1.a.2: Location</td>
</tr>
<tr>
<td></td>
<td>4.1.1.a.3: Magnitude (where applicable)</td>
</tr>
<tr>
<td></td>
<td>4.1.1.a.4: Date of occurrence</td>
</tr>
<tr>
<td></td>
<td>4.1.1.a.5: Duration</td>
</tr>
</tbody>
</table>
## Climate Change Impacts and Vulnerability

### Sub-component 1.1: Physical Conditions

**Topic 1.1.1:** Environmental Resources and their Use

- 1.1.1.a: Lakes
  - 1.1.1.a.1: Surface area
  - 1.1.1.a.2: Maximum depth
- 1.1.1.b: Rivers and streams
  - 1.1.1.b.1: Length
- 1.1.1.c: Artificial reservoirs
  - 1.1.1.c.1: Surface area
  - 1.1.1.c.2: Maximum depth
- 1.1.1.d: Seas
  - 1.1.1.d.1: Area of sea ice
- 1.1.1.e: Glaciers
  
**Topic 1.1.4:** Soil characteristics

- 1.1.4.a: Soil degradation
- 1.1.4.b: Area affected by desertification

### Sub-component 1.2: Land Cover, Ecosystems and Biodiversity

**Topic 1.2.1:** Land cover

- 1.2.1.a: Areas 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: Areas 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 1.2.2.2d)
  - 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.c: Physical and chemical characteristics of marine water body
  - 1.3.3.c.1: pH
  - 1.3.3.c.2: Temperature
  - 1.3.3.c.3: Total suspended solids (TSS)
  - 1.3.3.c.4: Salinity
  - 1.3.3.c.5: Dissolved oxygen (DO)
- 1.3.3.d: Density
  - 1.3.3.d.1: Coral bleaching

### Sub-component 2.3: Land

**Topic 2.3.1:** Land use

- 2.3.1.a: Areas 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.b.1: Area affected by natural disasters
  - 4.1.2.b.2: Loss of vegetation cover
  - 4.1.2.b.3: Area of watershed affected

### Sub-component 5.1: Human Settlement

**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: Incidence
  - 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:** 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

<table>
<thead>
<tr>
<th>Topic 2.2.1: Production, trade and consumption of energy</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2.1.a: Production of energy</td>
</tr>
<tr>
<td>2.2.1.b: Production from renewable sources</td>
</tr>
</tbody>
</table>

### Sub-component 6.1: Environmental Protection and Resource Management Expenditure

<table>
<thead>
<tr>
<th>Topic 6.1.1: Government environmental protection and resource management expenditure (on climate change mitigation activities)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1.1.a: Annual government environmental protection expenditure</td>
</tr>
<tr>
<td>6.1.1.b: Annual government environmental protection management expenditure</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Topic 6.1.2: Corporate, non-profit institution and household environmental protection and resource management expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1.2.a: Annual corporate environmental protection expenditure</td>
</tr>
<tr>
<td>6.1.2.b: Annual non-profit institution environmental protection expenditure</td>
</tr>
<tr>
<td>6.1.2.c: Annual household environmental protection expenditure</td>
</tr>
</tbody>
</table>

### Sub-component 6.2: Environmental Governance and Regulation

<table>
<thead>
<tr>
<th>Topic 6.2.2: Environmental regulation and instruments</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.2.2.a: Direct regulation</td>
</tr>
<tr>
<td>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]</td>
</tr>
<tr>
<td>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]</td>
</tr>
<tr>
<td>6.2.2.a.3: Number of applications for licences received and approved per year [related to climate change]</td>
</tr>
<tr>
<td>6.2.2.a.4: Budget and number of staff dedicated to enforcement of environmental regulations [related to climate change]</td>
</tr>
<tr>
<td>6.2.2.b: Economic instruments [related to climate change]</td>
</tr>
<tr>
<td>6.2.2.b.1: List and description (e.g., year of establishment) of green/environmental taxes</td>
</tr>
<tr>
<td>6.2.2.b.2: List and description (e.g., year of establishment) of environmentally relevant subsidies</td>
</tr>
<tr>
<td>6.2.2.b.3: List of eco-labeling and environmental certification programmes</td>
</tr>
<tr>
<td>6.2.2.b.4: Emission permits traded</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Topic 6.2.3: Participation in MEAs and other global environmental conventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.2.3.a: Participation in MEAs and other global environmental conventions</td>
</tr>
<tr>
<td>6.2.3.a.1: List and description (e.g., country’s year of participation) of MEAs and other global environment conventions [related to climate change]</td>
</tr>
</tbody>
</table>

(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

<table>
<thead>
<tr>
<th>Topic 6.3.1: Preparedness for natural extreme events and disasters</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.3.1.a: National natural extreme event and disaster preparedness and management systems</td>
</tr>
<tr>
<td>6.3.1.a.1: Existence of national disaster plans programmes</td>
</tr>
<tr>
<td>6.3.1.a.2: Description (e.g., number of staff) of national disaster plans programmes</td>
</tr>
</tbody>
</table>
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 CO₂ 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.
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:
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


Climate Change Statistics

The UNFCCC has affirmed that climate change is one of the greatest challenges of our time. Climate change is a change in climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere andfeedback in addition to natural climate variability, observed over comparable time periods.

The world's climate system, including the atmosphere, oceans and cryosphere, is changing and will continue to change at rates unprecedented in recent human history. Findings on the scientific basis for climate change suggest that a number of human-induced alterations of the natural world are involved.

Climate change affects all countries and remains one of the most important development challenges facing humanity. It damages national economies and affects lives, causing people, communities and countries significantly today and in the future. The main impacts of climate change are observed through both short-term events (e.g., sea level rise, increasing temperatures, ocean acidification, forest degradation, biodiversity loss and desertification) and sudden extreme weather events.

Climate change occurs in a sequence of key events. They include process drivers, GHG emissions, CO₂ concentration, changes evidence climate change, occurrence of slow onset events and occurrence of extreme hydro-meteorological events, which, depending on the country’s disaster preparedness and risk reduction infrastructure, will result in disasters and their corresponding impacts on people, human settlements, economic assets and ecosystems. Each of the parts of this sequence can be described and measured to some extent, and pertinent statistics can be produced, depending on national priorities and resources.

Most of the literature about climate change is focused on analytical and policy aspects. The guidance available about data and statistics for the measurement of climate change is mainly about methodologies to estimate GHG emissions. However, work is increasingly being conducted to develop methodologies on the other aspects. They include climate change guidance and impacts, quantification of the occurrence of disasters, their magnitude and different impacts, as well as adaptation efforts.

Due to this increasing importance of statistical work on climate change, this new knowledge platform is dedicated to climate change statistics. It aims to provide guidance and tools for countries interested in collecting, compiling and disseminating climate change statistics, emphasizing those that are related to environment statistics.

This platform includes various documents, tools and resources which are being made available.

UNSD documents and conferences on climate change statistics

Other useful resources
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

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/3237/Compendium_SustainableDevelopmentGoals.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 2015

Prepared by United Nations Statistics Division

Available at:
http://unstats.un.org/unsd/environment/files.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:
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