Global Set of Climate Change Statistics and Indicators

Mandate

The United Nations Statistics Division (UNSD) received a mandate from the Statistical Commission at its 47th session in 2016 to, inter alia, develop a global set of climate change statistics and indicators applicable to countries at various stages of development. In addition, it was recommended at the 49th session in 2018 that UNSD and UNFCCC should strengthen the link between statistics and policy by undertaking joint initiatives in the development of climate change statistics and indicators, encouraging joint capacity-building efforts and training with other partners and exploring ways to encourage national statistical offices to be more involved in the preparation of data submissions to UNFCCC.

Objective

The overall objective of UNSD is to develop a global set of climate change indicators tailored for all countries while ensuring that the needs of countries with less developed statistical systems are taken into account. The final set will contain a comprehensive list of indicators accompanied by short metadata (including definitions, input variables, aggregations, measurement categories and data references).

Given the complexity of climate change monitoring and the broad multidisciplinary coverage of the above five IPCC areas, the global set will provide a framework with suitable indicators to serve as guidance for countries to prepare their own sets. The framework will link the reporting requirements stemming from the Paris Agreement and the indicators necessary to support climate policy action. Similarly to the Basic Set of Environment Statistics in the FDES, the global set of climate change indicators will be a comprehensive, but not exhaustive, set of indicators/statistics designed to support countries according to their individual concerns, priorities and resources.

While pursuing the above objective, the following criteria will be applied to the extent possible:

- consistency with existing thematic indicator sets and guidance, namely from UNFCCC/IPCC, FAO, SDGs, UNDRR, UNCCD, UNCBD, as well as with the FDES statistics.
- complementarity with existing regional climate change indicators, e.g. EEA, UN-ECE, and Eurostat, where applicable, as well as other relevant initiatives.
- selection of indicators for which metadata can be developed.
- balanced coverage of the five IPCC areas (drivers, impacts, vulnerability, adaptation and mitigation).

Process

UNSD has carried out a systematic review of climate change statistics and indicators from 130 countries (see figure below) with representative regional coverage, analysed more than 7,500 individual climate change statistics and indicators, and has identified a draft set of the most commonly repeated indicators thereby promoting a bottom-up approach to their selection. Many of the indicators are repeated across different countries and come from at least one national source. The draft set of climate change statistics

and indicators has been organized according to the five areas of the IPCC framework: drivers, impacts, vulnerability, mitigation and adaptation.

Given the request from the Statistical Commission in 2018 for UNSD and UNFCCC to strengthen the link between statistics and policy, the relevant articles of the Paris Agreement are mentioned for each indicator in the draft set thereby clearly demonstrating this linkage. In addition, international frameworks and agreements such as the SDGs, the FDES and the Sendai Framework, as well as the UN-ECE core set of climate change-related statistics and indicators, have been considered to promote consistency and harmonize the wording of the indicators to the extent possible.

The final number of statistics and indicators will be decided after the current Pilot Survey and the Global Consultation but the set of indicators will be comprehensive and applicable to all countries. The Expert Group on Environment Statistics (EGES) has been contributing to the work on the draft set through the review of iterative versions and discussions at Expert Group meetings. At its sixth meeting in May 2019, it was agreed that UNSD share the draft set of climate change statistics and indicators with interested experts of the EGES, before conducting the current Pilot Survey. The expert review was completed in January 2020 based on feedback from six countries and four international and regional organizations.

The Pilot Survey covers selected countries and international/regional organizations that have participated in this work through different processes such as the Expert Group, regional or national workshops. The Global Consultation on will take place in mid-2020 and will involve all countries.

Countries from which climate change statistics and indicators are sourced.

Climate change areas and topics

The five climate change areas **drivers, impacts, adaptation, vulnerability and mitigation** with the main topics currently included in the draft set of climate change statistics and indicators are listed below. The

draft list also included indicators and statistics within each of the topics which are currently being reviewed through the Pilot Survey. Metadata for each indicator will also be included.

Drivers: Changes in the atmospheric concentrations of GHGs and aerosols, land cover and solar radiation that alter the energy balance of the climate system are drivers of climate change (IPCC, 2007).

- Total greenhouse gas (GHG) emissions
- Atmospheric concentration of greenhouse gases
- Emissions of GHGs by sector
- Energy production and supply
- Energy consumption
- Electricity
- Fossil fuels
- Transport

Impacts: Consequences of climate change on natural and human systems. Depending on the consideration of adaptation, one can distinguish between potential impacts and residual impacts (IPCC Third Assessment Report).

- Agricultural production impacted by climate change
- Areas impacted by climate change
- Freshwater resources
- Freshwater abstraction, supply and use
- Water quality
- Hazardous events and disasters
- Climate change and human health
- Climate change evidence
- Soil condition
- Distribution and status of species
- Distribution and status of ecosystems
- Production and consumption of materials
- Climate change impacts on transport and tourism

Vulnerability: The degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity (IPCC Third Assessment Report).

- Food security
- Vulnerable ecosystems and their services
- Buildings and infrastructure vulnerable to climate change
- Vulnerable population
- Vulnerable area of country to climate change

Mitigation: An anthropogenic intervention to reduce the sources or enhance the sinks of greenhouse gases (IPCC Third Assessment Report).

- Renewable energy
- Climate change mitigation policies, strategies and plans
- Climate change mitigation technology and practice

Adaptation: Initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects. Various types of adaptation exist, e.g. anticipatory and reactive, private and public, and autonomous and planned. Examples are raising river or coastal dikes, the substitution of more temperature-shock resistant plants for sensitive ones, etc. (IPCC, 2007).

- Climate change adaptation policies, strategies and plans
- Risk management, disaster forecasting and early warning systems
- Climate change public awareness and education
- Climate change adaptation management and practice
- Climate change monitoring
- Waste management
- Water management and treatment