Global Set of Climate Change Statistics and Indicators

UNFCCC Regional Webinar on

"Embedding climate reporting in national statistics for the Africa and Europe Regions"

30 September 2021

United Nations Statistics Division

Outline

1. Climate change statistics
2. Coordination: role of NSOs
3. Data collection and dissemination: role of NSOs
4. Background to UNSD Global Set of Climate Change Statistics and Indicators
5. Mandates of the Statistical Commission
6. Collaboration between UNSD and UNFCCC to strengthen link between statistics and policy
7. Global Set: Foundation
8. Global Set: Methodology
9. Global Consultation on draft Global Set
10. Global Set: Structure
11. Global Set: Metadata
12. Global Set: Output
13. Global Set: Responses and preliminary results
14. Examples of indicators in the draft Global Set that go beyond the scope of the ECE set of climate-related indicators
15. Planned actions of UNSD

Climate change statistics

Climate change statistics – similar to environment statistics:

- Synthesize data originating from various types of sources.
- Involve large number of institutions or stakeholders and need collaboration.
- Overwhelming volume of data across various institutions.
- Different users need climate change statistics at different levels of aggregation and depths of information.
- Need underlying framework to organize, similar to the Framework for the Development of Environment Statistics (FDES).
  - The **Global Set of Climate Change Statistics and Indicators will provide a comprehensive statistical framework with statistics, indicators and metadata**, as well as support the reporting requirements of countries under the Enhanced Transparency Framework and the Global Stocktake of the Paris Agreement, as well as climate-related SDG indicators.

Coordination: role of NSOs

National Statistical Offices (NSOs):

- Can contribute to, or coordinate climate change statistics, based on their mandates to produce official statistics and their role in coordinating the national statistical system.
- Can contribute by improving information quality to mainstream climate change statistics into official statistics.
- Have stronger capacity to deal with multi-disciplinary and comprehensive information flows than specialized institutions.
- Provide activity data (economic statistics) for GHG emissions.

Good practices

- Working group at national level contributes to more effective reporting by NSOs and institutions providing climate change information to UNFCCC.
- A dedicated unit/section in the NSO. Some NSOs have established combined environment and climate change statistics units (e.g., Bangladesh, Cameroon, Ireland, Mauritius).

Data collection and dissemination: role of NSOs

- Importance of establishing routine, formalised, data collection by NSOs, through from existing national institutions, e.g., on **waste statistics** which leads to methane emissions, **water resources**, **access to energy/sanitation and building materials** (from population and housing census) for vulnerability to storms/adaptation (green buildings). Use of surveys/censuses.
- Climate change impact surveys have been conducted by NSOs in some regions and climate change-related questions being included in the 2020 census round (e.g., Bangladesh, Nepal, Tanzania).
- There is a growing number of NSOs and regional statistical institutions producing climate change statistics reports. Examples:

National:

Jamaica – Climate Change Statistics Report (2016)

Tanzania - National Climate Change Statistics Report (2019)

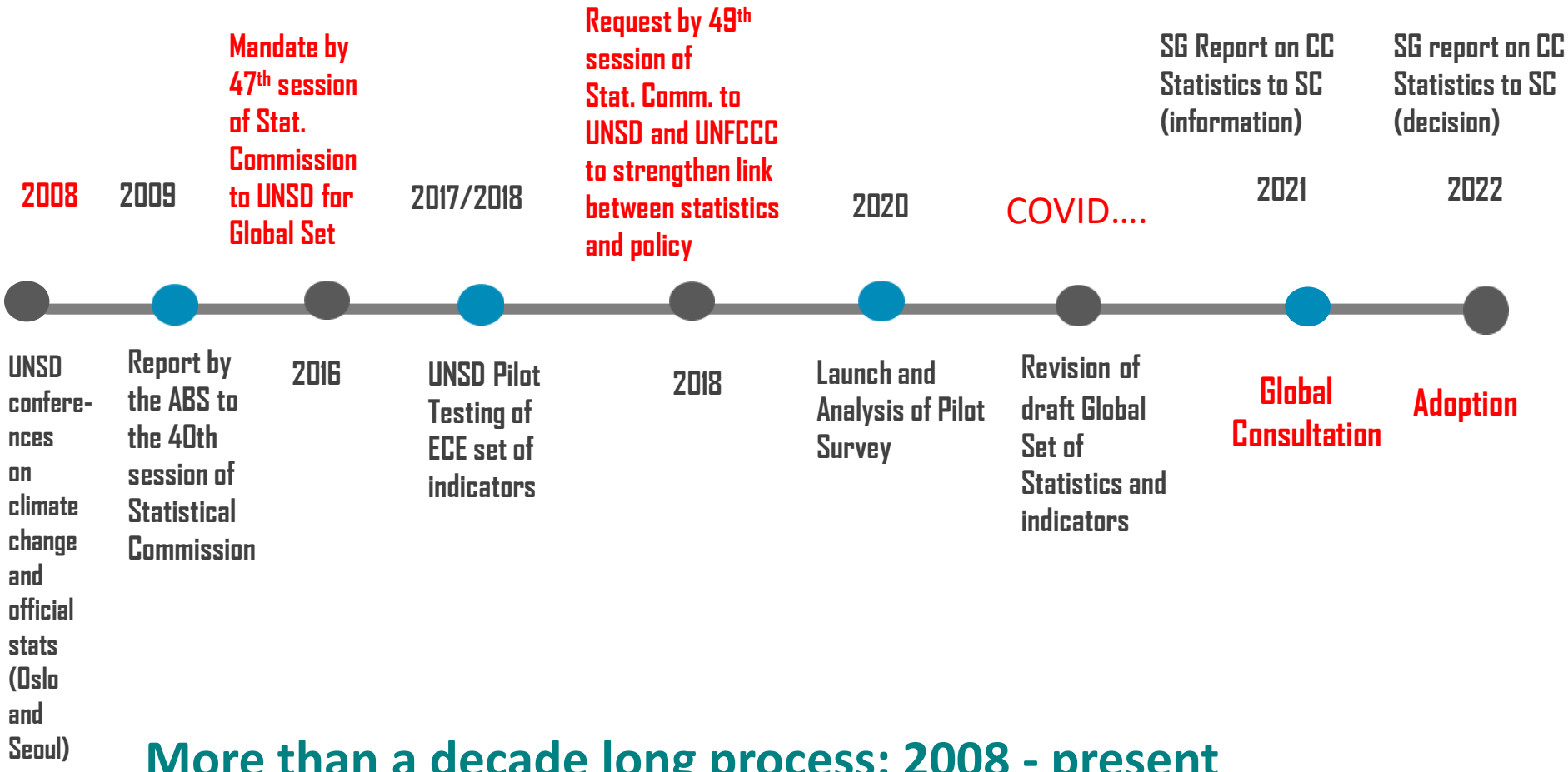
Suriname – report being planned

Regional:

Economic and Social Commission for Western Asia (ESCWA) - Climate Change-Related Statistics in the Arab Region (2017)

Caribbean Community (CARICOM) – Climate Change Statistics (2020)

Background to UNSD work on development of Global Set of Climate Change Statistics and Indicators



More than a decade long process: 2008 - present

Report of the Secretary-General on Climate Change Statistics to the 47th session of the Statistical Commission in 2016

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) (New York, 8-10 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

Main decisions:
For countries: Use the FDES 2013 to guide the development of climate change statistics and indicators given the close interrelationship between environment statistics and climate change statistics.
For UNSD: Review and consider UN-ECE set of climate change-related statistics and indicators as a basis for developing a global set of climate change statistics and indicators, applicable to countries at various stages of development.

Report of the Secretary-General on Climate Change Statistics to the 49th session of the Statistical Commission in 2018

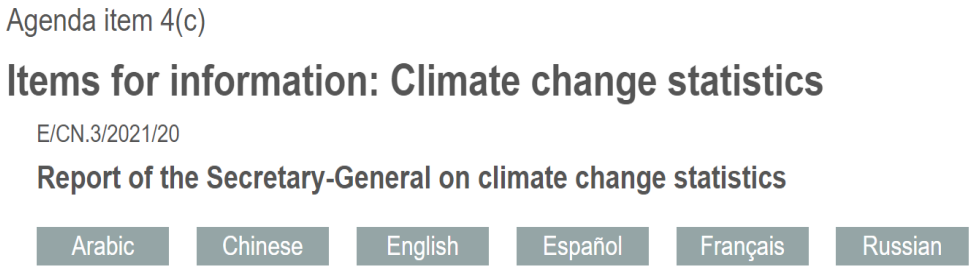
UNSD, in collaboration with UN-ECE and UNFCCC, prepared the Report of the Secretary-General on Climate Change Statistics to the 49th session of the Statistical Commission (E/CN.3/2018/14) (New York, 6-9 March 2018).
https://unstats.un.org/unsd/statcom/49th-session/documents/2018-14-ClimateChange-E.pdf

Decision: 49/113
https://unstats.un.org/unsd/statcom/49th-session/documents/Report-on-the-49th-session-E.pdf

Main decisions
For countries: (i) Participate in the Pilot Survey on Climate Change-related Statistics and Indicators currently being undertaken by UNSD, as well as in the planned Global Consultation on Climate Change Statistics and Indicators; (ii) Enhance collaboration between NSOs and national authorities responsible for reporting climate change related information to UNFCCC Secretariat;
For UNSD and UNFCCC: Strengthen the link between statistics and policy, for example, by: (i) undertaking joint initiatives in the development of climate change statistics and indicators; (ii) encouraging joint capacity building efforts and trainings with other partners, and exploring ways to encourage NSOs to be more involved in the preparation of data submissions to the UNFCCC secretariat, for supporting the implementation of the Paris Agreement.

Report of the Secretary-General on Climate Change Statistics to the 52nd session of the Statistical Commission in 2021 (information)

UNSD, in collaboration with UN-ECE and UNFCCC, prepared the Report of the Secretary-General on Climate Change Statistics to the 52nd session of the Statistical Commission (E/CN.3/2021/20) (New York, 1 to 3 and 5 March 2021). https://unstats.un.org/unsd/statcom/52nd-session/documents/2021-20-ClimateChange-E.pdf


Agenda item 4(c)

Items for information: Climate change statistics

E/CN.3/2021/20

Report of the Secretary-General on climate change statistics

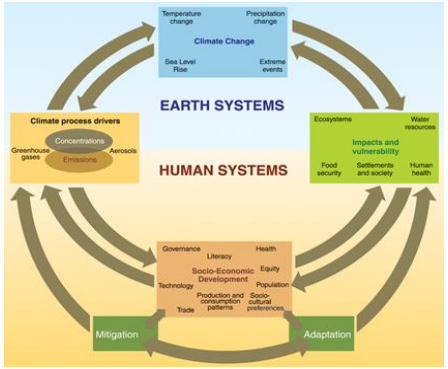
Arabic Chinese English Español Français Russian

Collaboration between UNSD and UNFCCC to strengthen link between statistics and policy

- Joint reports on Climate Change Statistics to Statistical Commission
- Joint Side Events at the Statistical Commission
- UNFCCC participation in UNSD-led Expert Group on Env. Stats.
- UNSD participation in a Side Event at the High-Level Political Forum in July 2019 organized by UNFCCC, UNSD, etc.
- UNFCCC participation in UNSD organized regional workshops on environment (including climate change statistics) statistics [e.g., Arab region in 2018, CARICOM region in 2019]
- UNSD participation in UNFCCC stakeholders' dialogues on building the Enhanced Transparency Framework (2020)
- Online information sessions by UNSD/UNFCCC for the Global Consultation - support from regional commissions (June/July 2021)
- UNSD participation in 3 UNFCCC organized regional webinars on "Embedding climate reporting in national statistics" (Aug-Sep 2021)

Global Set: Foundation

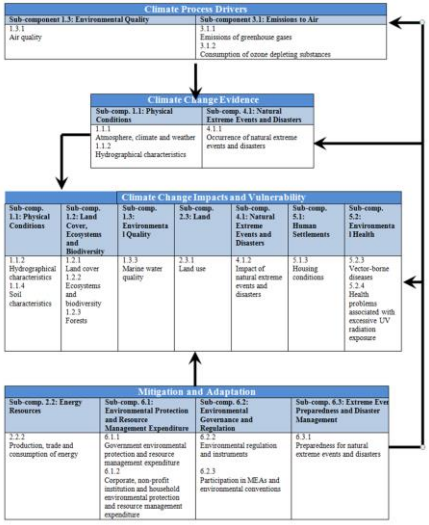
- Global Set, being developed in close collaboration with UNFCCC, is structured according to the IPCC framework and FDES.
- Relevant articles of the Paris Agreement (PA) and the decisions under the PA Work Programme adopted in Katowice, as well as related SDG and Sendai Framework indicators, are also referenced to strengthen the link between statistics and policy.



IPCC, 2007, Fourth Assessment Report

Framework for the Development of Environment Statistics (FDES 2013)

Relevant chapters of the Manual of the BSES
https://unstats.un.org/unsd/envstats/fdes/manual_bses.cshtml



FDES cross-cutting application (Chapter 5) links climate change and environment statistics based on the IPCC Framework

Goal 13

Global Set: Methodology

The Global Set is based on:

- systematic review of climate change statistics and indicators from 130 countries, with representative regional coverage, and identification of most commonly repeated statistics/indicators;
- discussions at several meetings of the UNSD-led Expert Group on Environment Statistics (EGES);
- bilateral consultations with specialized agencies and in-depth discussions with selected countries; and
- inputs from an extensive Pilot Survey that took place in 2020.

More information:

https://unstats.un.org/unsd/envstats/climatechange.cshtml and
https://unstats.un.org/unsd/envstats/ClimateChange_StatAndInd_global.cshtml

Global Consultation on draft Global Set

Part I:

- **Institutional Dimension of Climate Change Statistics and Indicators** (in countries): aims at collecting general information on the institutional dimensions of climate change statistics through an online survey.
- **International Agency's Activities on Climate Change Statistics and Indicators**: aims at collecting general information on the main activities led by international Agencies (data collection, methodology development and capacity development), through an online survey.

Part II:

- **Draft Global Set of Climate Change Statistics and Indicators** (Excel file: *Part II_DraftGlobalSet.xls*) which allows respondents to provide comments on each individual indicator or statistic in the Excel file;
- **Metadata** (Word file: *Part II_Metadata.doc*) which allows respondents to provide detailed comments on the metadata in the Word file.

34 ECE submissions:
Armenia, Azerbaijan, Belarus, Bulgaria, Canada, Croatia, Cyprus, Denmark, Estonia, Finland, France, Georgia, Hungary, Ireland, Italy, Kazakhstan, Lithuania, Luxembourg, North Macedonia, Moldova, Montenegro, Netherlands, Norway, Poland, Russian Federation, Serbia, Slovakia, Slovenia, Spain, Switzerland, Turkey, United Kingdom, Ukraine, USA.

14 ECA submissions:
Botswana, Burkina Faso, Burundi, Cameroon, Cabo Verde, Guinea, Côte d'Ivoire, Kenya, Madagascar, Mali, Mauritius, South Africa, Tanzania, Zimbabwe

Draft Global Set of Climate Change Statistics and Indicators (sent to countries)

A	B	C	D	E	F	G	H	I
Area	Topic		Indicator	Statistics	Code	Tier	Themes	National Data Sources
DRIVERS					1			
	Total greenhouse gas (GHG) emissions				101			
		1	Total greenhouse gas emissions per year (SDG 13.2.2)		1020	1	GHG emissions	Environment Agency/National climate change reporting authorities
				Total emissions of direct greenhouse gases (GHGs, excluding LULUCF) (FDES 3.1.1.a)	1021	1	GHG emissions	Environment Agency/National climate change reporting authorities
				Total emissions of indirect greenhouse gases (GHGs) (FDES 3.1.1.b)	1022	1	GHG emissions	Environment Agency/National climate change reporting authorities
				Greenhouse gas emissions from land use, land use change and forestry (LULUCF) (UN-ECE	1023	1	GHG emissions	Environment Agency/National climate change reporting authorities
		2	Total greenhouse gas emissions from the national economy (UN-ECE 09a, excluding indirect GHGs)		1030	2	GHG emissions	NSO
					1031		GHG emissions	
	Atmospheric concentration of greenhouse gases				104			
		3	Global concentration of greenhouse gases		1040	2	GHG concentration	
					1041		GHG concentration	
	Energy production and supply				105			
		4	Total primary energy production from fossil fuels		1050	1	Energy	Ministry of Energy/Oil companies
					1051		Energy	
		5	Total energy supply from fossil fuels		1060	1	Energy	Ministry of Energy/Oil companies
					1061		Energy	
	Energy consumption				107			
		6	Energy consumption by households and enterprises		1070	1	Energy	Ministry of Energy
				Final energy consumption (FDES 2.2.2.c)	1071	1	Energy	Ministry of Energy
				Households	1072	1	Energy	NSO
		7	Energy intensity measured in terms of primary energy and GDP (SDG 7.3.1)		1080	2	Energy	
				Total energy supply (FDES 2.2.2.b)	1081	1	Energy	Ministry of Energy

- The draft Global Set contains statistics for most [106 out of 134] indicators. Overall, the statistics were included to facilitate the process of compiling the proposed Tier 1 and 2 indicators.
- Three indicators are global in nature but may still be routinely produced by some countries and serve as important background indicators to monitor climate change in other countries (indicators 3, 41 and 45).

Draft Global Set of Climate Change Statistics and Indicators (required responses from countries)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Area	Topic	Indicator		Statistics	Code	Tier	Themes	National Data Sources	Relevance		Methodological Soundness		Data Availability		General Comments
									Yes/No	Reference/ Link	Yes/No/ Partially	Reference/ Link	Yes/No	Reference/ Link	
DRIVERS					1										
	Total greenhouse gas (GHG) emissions				101										
		1	Total greenhouse gas emissions per year (SDG 13.2.2)		1020	1	GHG emissior	Environment Agency/Na							
				Total emissions of direct greenhouse gases (GHGs, excludi	1021	1	GHG emissior	Environment Agency/Na							
				Total emissions of indirect greenhouse gases (GHGs) (FDE	1022	1	GHG emissior	Environment Agency/Na							
				Greenhouse gas emissions from land use, land use change	1023	1	GHG emissior	Environment Agency/Na							
		2	Total greenhouse gas emissions from the national economy (UN-ECE 09a, excluding		1030	2	GHG emissior	NSO							
					1031		GHG emissions								
	Atmospheric concentration of greenhouse gases				104										
		3	Global concentration of greenhouse gases		1040	2	GHG concentration								
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	Energy production and supply				105										
		4	Total primary energy production from fossil fuels		1050	1	Energy	Ministry of Energy/Oil c							
					1051		Energy								
		5	Total energy supply from fossil fuels		1060	1	Energy	Ministry of Energy/Oil c							
					1061		Energy								

Relevance - is the indicator/statistic relevant for your country? In column J: Yes/No; In column K, if yes, please provide reference/link to the national policies for which the data applies.

Methodological soundness - do you use the methodology as provided in the metadata? In column L: Yes/No/Partially; In column M, please provide reference/link to the methodology applied in your country.

Data availability - are national data/statistics/indicators available for the proposed global indicator/statistic? In column N: Yes/No; In column O: If yes, please provide reference/link to the available data.

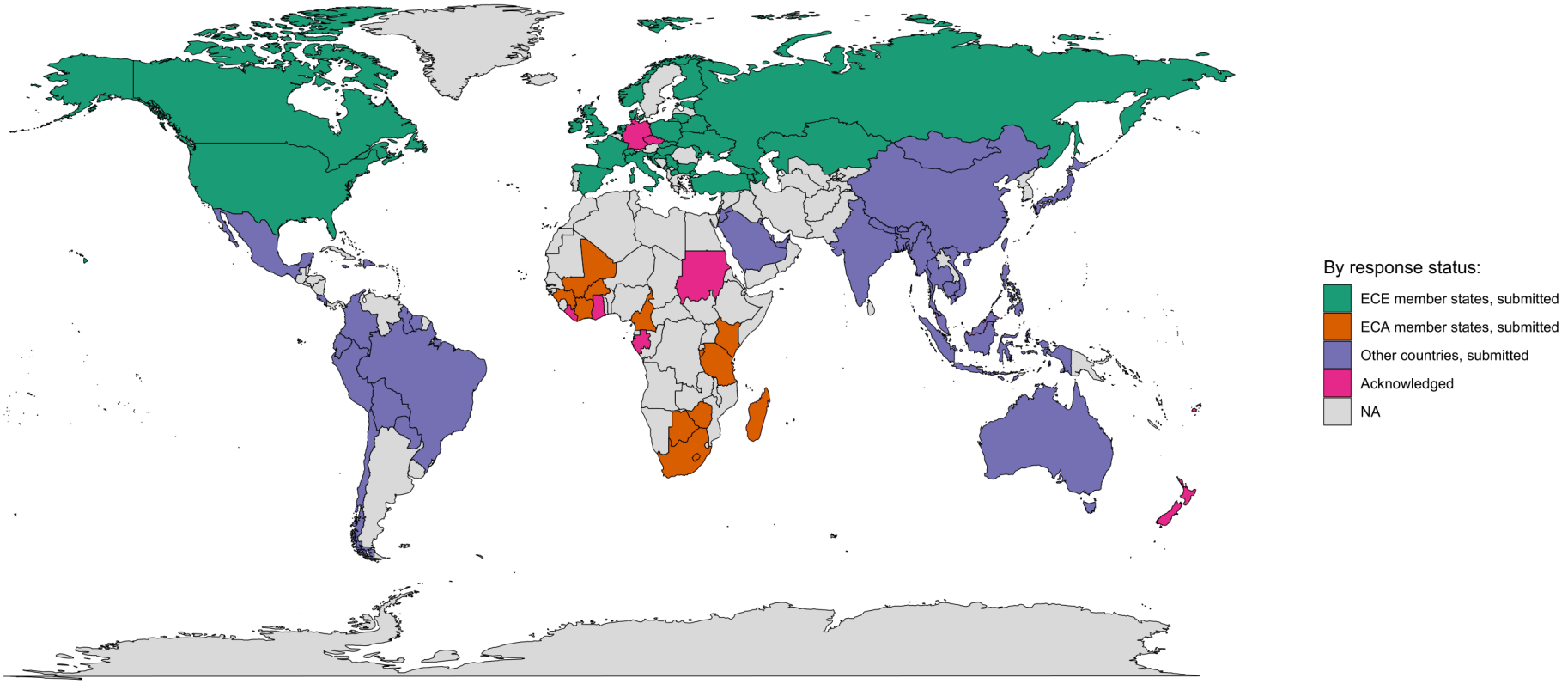
Global Set: Metadata

Field	Description	
Code	1120	1121
Indicator	Population growth	
Statistics		Population
Area	Drivers	
Topic	Population	
Themes	Population	
Paris Agreement article		
PAWP-Katowice		
FDES		
SDG		
Sendai Framework		
Preliminary Tier	1	1
Definition	The average annual percentage rates of population growth are calculated using an exponential rate of increase. [UN Population Division, https://unstats.un.org/unsd/demographic-social/products/dyb/documents/dyb2019/Notes01.pdf]	Population presents estimated mid-year total population by country or area. [UNSD, https://unstats.un.org/unsd/demographic-social/products/vitstats/index.cshtml]
Relevance	Population growth aggravates worldwide growth of GHG emissions (high confidence). Global population has increased by 87% from 1970 reaching 6.9 billion in 2010. The population has increased mainly in Asia, Latin America, and Africa, but the emissions increase for an additional person varies widely, depending on geographical location, income, lifestyle, and the available energy resources and technologies. .. [IPCC, AR5, p. 355, https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_chapter5.pdf]	
National data sources	NSO	NSO
Data collection methods	Census, survey, population register	Census, survey, population register
Update frequency		Annual
Category of measurement	Number	Number
Computation/compilation methods		
International primary data reference, institution		UNSD Demographic Yearbook – 2019
International primary data reference, description		Estimates of mid-year population: 2010-2019
International primary data reference, URL		https://unstats.un.org/unsd/demographic-social/products/dyb/documents/dyb2019/table05.pdf
Type of statistics		C
International secondary data references	OECD	
Other data references		
Potential aggregations and scales		
Methodological guidance	UNSD; https://unstats.un.org/unsd/demographic-social/products/dyb/documents/dyb2019/Notes01.pdf; UN Population Division, https://unstats.un.org/unsd/demographic-social/products/dyb/documents/dyb2019/Notes01.pdf; UNSD, https://unstats.un.org/unsd/demographic-social/products/vitstats/index.cshtml	

Global Set: Output

- The Global Set will:
  - provide a **comprehensive statistical framework with statistics, indicators and metadata**, designed to support countries in preparing their own sets of climate change statistics and indicators according to their individual concerns, priorities and resources; and
  - support the reporting requirements of countries under the Enhanced Transparency Framework and the Global Stocktake of the Paris Agreement, as well as climate-related SDG indicators.
- The Global Set is flexible enough, with a tiering system, to be applied based on regions', as well as countries', priorities and data availability. It is recommended to promote complementarity among global, regional and national sets of climate indicators, to encourage harmonization across all levels.

Responses from the Global Consultation



- 84 member states have submitted Part 1 and/or 2 (as of 29 September 2021).
  - 34 countries from **ECE**, 14 countries from **ECA** have submitted.
  - 36 **other countries** submitted.
- 14 member states **acknowledged**.
- 24 agencies also submitted.

General remarks on Part 1 (preliminary as of 7 Sept 2021)

B. National policies/strategies

- B2. Most countries have a national statistical plan/programme/strategy in place, but not many includes climate change components.
- B4. Most don't currently have a national climate change statistics plan/programme/strategy.

C. Mandate and organization of climate change statistics

- C2. On the status of the climate change statistics department, division or unit in the NSO, the answers diverse greatly and responses include:
  - Environment, energy
  - Under Social Statistics
  - Satellite accounts
  - Directorate of Social Resilience
  - Social Statistics Division
  - Agriculture, livestock & fishery and forestry section
  - Spatial and Environmental Surveys Department
  - Territory and Environment division
  - Agriculture and Environmental Statistics department
- *Some NSOs have established 'combined' environment and climate change statistics units e.g., Bangladesh, Cameroon, Ireland, Mauritius.*

General remarks on Part 1 (cont.)

D. Production and reporting of climate change statistics

D1. About half of the NSOs informed UNSD that they are involved in the preparation of the country's GHG inventory and/or in the preparation of national reports to UNFCCC.

E1. [*from Section E, as it is related to D1*]. The NSOs collaborate with UNFCCC national focal points; however, the nature of these collaborations vary – with some identified as ad-hoc.

- Involvement could be direct or indirect.
- Sometime, formal institutional agreement does not exist.
- Sectoral data in collaboration include:
  - Energy balance;
  - Agriculture, animal production;
  - Economic activities, housing, transport, etc.
- NSOs are sometimes also in charge of the quality of the data and validate.

- *NSOs do provide activity data (economic statistics) for the GHG inventory.* ***Can NSOs take the lead to coordinate production of statistics in other climate areas, in particular vulnerability and adaptation?***

General remarks on Part 1 (cont.)

D. Production and reporting of climate change statistics

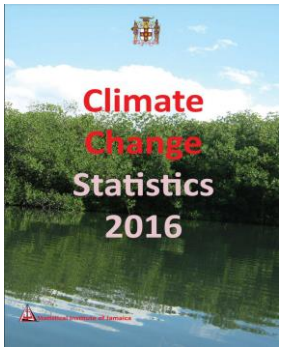
- D3. For data requests from the GHG compiler, some of the countries stated that they **CANNOT** provide data requested, for various reasons.
- There are many specific data needs mentioned, but most common ones are:
  - Industry, Industrial Processes and Product Use (IPPU)
  - Agricultural, livestock, forest area
  - Waste, industrial liquid waste
  - Population, rural and urban, income
  - Energy, firewood, biofuel
  - Transport
  - F-Gas
  - Wastewater

- *This has showcased the complexity of climate change information, and the need for a Global Set of Climate Change Statistics and Indicators which a country can adapt nationally and where all institutions can work on collaboratively.*

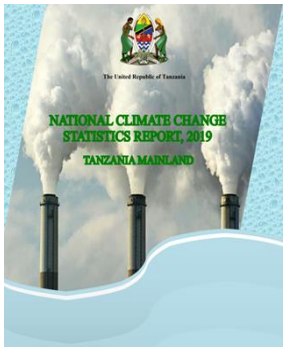
General remarks on Part 1 (cont.)

D. Production and reporting of climate change statistics

- D4. Adaptation information provided by NSOs: often involved in terms of supplying data, some specifically via household surveys, a few also in terms of providing spatially explicit population data.
- D5. Climate change surveys developed by NSO are rare. But countries are making an effort, e.g., Bangladesh and Nepal. Lack of resources is among one of the challenges.
- D7. About half of the respondents, including Netherlands, France, Spain, Bangladesh, Jamaica, Tanzania provided links to their climate change statistics dissemination online.
  - Jamaica and Tanzania NSOs have published climate change statistics reports.



Jamaica



Tanzania

General remarks on Part 1 (cont.)

E. Inter-institutional collaboration

- E2. Some NSOs established inter-institutional relationship with other stakeholders in environment statistics.
- E5. Main barriers to collaboration among institutions for climate change statistics are:
  - Lack of resources for regular meetings
  - Lack of time
  - Insufficient visibility of benefits of collaborating
  - Lack of an organized committee

F. Technical assistance and training

- F1. Not all countries who have requested technical assistance received one. Most common resource is external to that organization or country.
- F2. Types of assistance received: Grants for European Statistical System; GHG data and information review; Training and capacity building, etc.
- F3. Assistance provided: Bangladesh, Spain, Netherlands, Denmark, Finland, Estonia, Costa Rica, etc.

General remarks on Part 1 (cont.)

G. The way forward in climate change statistics

- G2. Main vehicles through which the country requires technical assistance and capacity development for climate change statistics:
  - Regional/sub-regional workshops
  - National workshops
  - Country visits/study tours
  - Bilateral consultations
  - E-learning
  - Networking

- G3. Most important needs for the development of climate change statistics are:
  - Climate change surveys
  - Capacity building
  - Methodological guidance
  - Human resources
  - Financial resources

Preliminary, general remarks on Part 2 (indicators/statistics)

- The draft Global Set received positive feedback and was praised for its comprehensiveness and scientific soundness.
- Relevance is assessed across all five areas of the draft Global Set, underlining the cross-cutting nature of climate change data.
- Relevance varies across the countries (tropical vs. temperate, land-locked vs. island states, etc.).
- Most countries provided reference links to data, methodology, and relevance.
- The Global Set is expansive, and tiering is very useful for countries to focus on their priority indicators.
- Countries and agencies have provided suggestions for improvement, proxies for some of the indicators, and suggestions for some new indicators. UNSD is in the process of consolidation and analyses.

Planned actions of UNSD

- Use the responses to the Global Consultation further explore ways, in collaboration with UNFCCC, to strengthen the relationship between NSOs and national authorities reporting climate change information;
- Continue capacity development/information sessions on climate change statistics online, in collaboration with regional commissions;
- Follow up with non-respondents;
- Validate incoming responses and provide feedback to countries;
- Continue analysis of Global Consultation and discuss results at 8th meeting of the Expert Group on Environment Statistics (Oct. 2021);
- Update Global Set and related metadata;
- Submit the Global Set to the 53rd session of the Statistical Commission, in March 2022, for adoption;
- Provide continuous support to countries to carry on activities beyond the Global Consultation;
- Develop training materials and implementation guidelines/strategy for capacity development.

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/

Climate Change Statistics Website
https://unstats.un.org/unsd/envstats/climatechange.cshtml
and
https://unstats.un.org/unsd/envstats/ClimateChange_StatAndInd_global.cshtml