

Global Set of Climate Change Statistics and Indicators



New York, Monday, 14 June 2021

Discussion between UN member states and the UN Statistics Division on:
Global Consultation on the draft Global Set of Climate Change Statistics and Indicators

Outline

1. UNSD has prepared a draft list of Climate Change Statistics and Indicators (134)

2. Which countries need which indicators/guidance?

- Which topics (common, regional, special)?
- Frameworks (e.g. IPCC, FDES, SDG, Sendai, etc.)?
- How complex?

3. UNSD is engaging with international/regional agencies to see how can we meet the needs of the countries

- Tier 1, 2, and 3 indicators
- Which gaps in the metadata (available guidance) can be filled now?
- What guidance is needed for the future?

Objectives of the consultation

The objectives of the Global Consultation are to:

1. Define a global set from proposed indicators based on relevance to countries
2. Consolidate available methodology for climate change statistics and indicators
3. Define improvement needs and gaps in methodology
4. Assess existing capacities to compile climate change statistics and indicators

Structure of the consultation

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.

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).

Other key issues

- There are about 11 Tier 3 indicators, introduced as placeholders (with only a short title) as it is clear that the topic is relevant but it is difficult to identify clearly defined indicators (e.g. indicators 46, 64 and 130), or there are ongoing parallel processes such as the CBD's indicators under the Post-2020 Global Biodiversity Framework (e.g. indicators 51 and 120).

<i>Climate change impacts on transport and tourism</i>				260			
62	Impacts of climate change on transport			2600	3	Transport	Transport authority or infrastructure
		Extent of roadways (FDES 5.1.5.f)		2601	2	Transport	Ministry of Public Works or Transport/Transport authority or infrastructure
		Extent of roadways damaged by climate-related disasters		2602	3	Transport	Ministry of Public Works or Transport/Transport authority or infrastructure
63	Reduction in tourist arrivals following climate-related hazardous events			2610	3	Tourism	Tourism department
		Number of tourists (overnight visitors)		2611	2	Tourism	Tourism department/Airport Authority/Ministry of Tourism
64	Damage to sites of interest, landmarks, beaches, etc.			2620	3	Tourism	Tourism department/Ministry of Tourism
				2621		Tourism	

- For some indicators (at Tiers 1 and 2) that require multiple statistics, not all the necessary statistics are included; only those more relevant to climate change (e.g. indicators 124 and 125).

124	Proportion of agricultural area under productive and sustainable agriculture (SDG 2.4.1)			5260	2	Agriculture	NSO/Ministry of Agriculture
		Risk mitigation mechanisms (Subindicator of SDG 2.4.1)		5261	2	Agriculture	NSO/Ministry of Agriculture
		Variation in water availability (Water use, Subindicator of SDG 2.4.1)		5270	2	Agriculture	NSO/Ministry of Agriculture
		Use of agro-biodiversity-supportive practices (Subindicator of SDG 2.4.1)		5280	2	Agriculture	NSO/Ministry of Agriculture

- Another criterion for inclusion of separate statistics was if distinct statistical guidance was identified (e.g. indicators 52 and 85).

52	Red list index (SDG 15.5.1)			2430	2	Species	Ministry of Environment / National Focal Point for CBD
		Number of red list species (FDES 1.2.2.c.1)		2431	2	Species	Ministry of Environment / National Focal Point for CBD

Metadata

Navigation

Search document

Headings Pages Results

1. Total greenhouse gas emissions per year
2. Total greenhouse gas emissions from the national...
3. Global concentration of greenhouse gases
4. Primary energy production from fossil fuels
5. Energy supply from fossil fuels
6. Energy consumption by households and enterprises
7. Energy intensity measured in terms of primary ener...
8. Use of fossil fuels
9. Share of fossil fuels in total primary energy supply
10. Amount of fossil-fuel subsidies per unit of GDP (p...
11. Population growth
12. Urban population
13. Number of (fossil-driven) vehicles per capita
14. Intensity of use of forest resources
15. Deforested area as a proportion of total forest area
16. Ratio of drained/degraded organic soils out of tot...
17. Livestock number per agricultural area
18. Use of nitrogen fertilizers per hectare of total agri...
19. Built-up area growth
20. Crop loss due to climate extremes
21. Impact of climate change on livestock productivity
22. Forest area as a proportion of total land area (SD...
23. Change in snow cover and snow depth
24. Reduction of surface water bodies

1. Total greenhouse gas emissions per year

Field	Description			
Code	1020	1021	1022	1023
Indicator	Total greenhouse gas emissions per year (SDG 13.2.2)			
Statistics		Total emissions of direct greenhouse gases (GHGs, excluding LULUCF) (FDES 3.1.1.a)	Total emissions of indirect greenhouse gases (GHGs) (FDES 3.1.1.b)	Greenhouse gas emissions from land use, land use change and forestry (LULUCF) (UN-ECE 11)
Area	Drivers			
Topic	Total greenhouse gas (GHG) emissions	Total greenhouse gas (GHG) emissions	Total greenhouse gas (GHG) emissions	Total greenhouse gas (GHG) emissions
Themes	GHG emissions	GHG emissions	GHG emissions	GHG emissions
Paris Agreement article	13.7a	13.7a	13.7a	13.7a
PAWP-Katowice	Decision 18/CMA.1, chapter II, para. 47-49	Decision 18/CMA.1, chapter II, para. 47-49	Decision 18/CMA.1, chapter II, para. 47-49	Decision 18/CMA.1, chapter II, para. 47-49
FDES		3.1.1.a	3.1.1.b	
SDG	13.2.2			
Sendai Framework				
Preliminary Tier	1	1	1	1
Definition	Greenhouse gases (GHG) are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of thermal infrared radiation emitted by the Earth's surface, the atmosphere itself, and by clouds, [IPCC, p. 550, https://www.ipcc.ch/sr15/ch	Direct GHG emissions are those directly emitted into the atmosphere by a source. It includes CO ₂ , CH ₄ , N ₂ O, HFC, SF ₆ , PFC, NF ₃ from AFOLU, from energy, industry and waste, excludes LULUCF. GHG inventories under the UNFCCC cover estimation and reporting of anthropogenic GHG emissions and removals occurring on 'managed land'. Emissions resulting from fires	Indirect GHG or GHG precursors are compounds which by themselves are not significant as GHGs, but which nevertheless have an effect on the concentration of GHGs in the atmosphere, as they take part in physical or chemical processes regulating the production or destruction rates of GHGs. The most important	GHG emissions and removals produced in land use, land use change and forestry, as defined by the relevant IPCC Guidelines for National Greenhouse Gas Inventories. [UN-ECE metadata, https://statswiki.unece.org/download/attachments/285216611/CCCI_11_25_092020.pdf?version=1&m

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,	

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	Preliminary 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													
		<i>Total greenhouse gas (GHG) emissions</i>		101													
	1	Total greenhouse gas emissions per year (SDG 13.2.2)		1020	1	GHG emission	Environment Agency/Na										
			Total emissions of direct greenhouse gases (GHGs, excluding land use, land-use change and forestry)	1021	1	GHG emission	Environment Agency/Na										
			Total emissions of indirect greenhouse gases (GHGs) (FDE)	1022	1	GHG emission	Environment Agency/Na										
			Greenhouse gas emissions from land use, land use change and forestry	1023	1	GHG emission	Environment Agency/Na										
	2	Total greenhouse gas emissions from the national economy (UN-ECE 09a, excluding land use, land-use change and forestry)		1030	2	GHG emission	NSO										
				1031		GHG emissions											
		<i>Atmospheric concentration of greenhouse gases</i>		104													
	3	Global concentration of greenhouse gases		1040	2	GHG concentration											
				1041		GHG concentration											
		<i>Energy production and supply</i>		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.

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

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

Agencies are invited to:

- Improve or modify the names of the existing indicators/statistics; List new indicators/statistics;
- Fill in gaps in the metadata, such as missing definitions, compilation methods or data references, in particular for the 54 indicators assessed as Tier 3.

More key issues

There are some cases where there are (underlying) statistics with the needed guidelines but no clear indicator was identified (e.g. indicator 20). In these cases, an indicator was suggested with a short name, as Tier 3.

<i>Agricultural production impacted by climate change</i>				201			
20	Crop loss due to climate extremes			2010	3	Agriculture	Ministry of Agriculture
		Crop yield		2011	1	Agriculture	Ministry of Agriculture
21	Impact of climate change on livestock productivity			2020	3	Agriculture	Ministry of Agriculture
		Livestock yield		2021	1	Agriculture	Ministry of Agriculture

Some of the Tier 1 or Tier 2 indicators with less clear relation to climate change may be amended following the Global Consultation (by narrowing down their definition or by introducing appropriate disaggregation elements) to strengthen their ability to inform climate change. (e.g. indicators 79 and 85).

85	Proportion of urban population living in slums, informal settlements or inadequate housing (SDG 11.1.1)			3300	2	Poverty	NSO/Ministry of Lands or Human Settlement
		Area of slums (FDES 5.1.3.b)		3301	2	Poverty	NSO/Ministry of Lands or Human Settlement
		Population		1121		Poverty	NSO
86	Indigenous population living in isolated areas			3320	3	Indigenous pc	NSO
		Number of indigenous persons		3321	2	Indigenous pc	NSO
87	Proportion of population with disability			3310	3	Disability	NSO
				3311		Disability	

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.cshhtml>

