Global Set of Climate Change Statistics and Indicators

New York, Friday, 19 February 2021

Virtual Side Event at the 52nd Session of the Statistical Commission
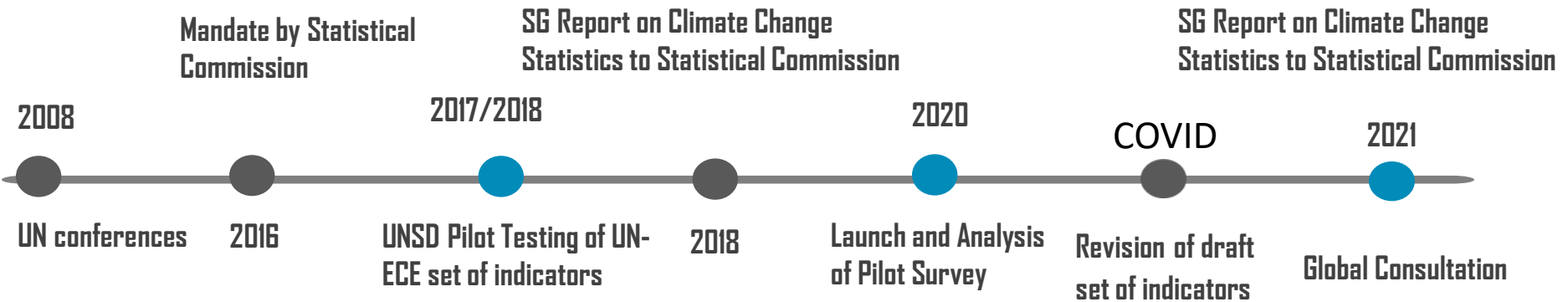
United Nations Statistics Division

Outline

1. Introduction/background
2. Mandate and objective
3. Methodology: towards a Global Set
4. Dissemination examples
5. Planned actions

Background: More than a decade long process

Mandate by Statistical Commission

SG Report on Climate Change Statistics to Statistical Commission

SG Report on Climate Change Statistics to Statistical Commission

2008

2017/2018

2020

COVID

2021

UN conferences

2016

UNSD Pilot Testing of UN-ECE set of indicators

2018

Launch and Analysis of Pilot Survey

Revision of draft set of indicators

Global Consultation

- FDES cross-cutting application (Chapter 5) links climate change and environment statistics based on IPCC Framework (4th report in 2007)
- Joint reports, side-events and UNFCCC participation in EGES since 2017

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
<u>For countries</u>: (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;
<u>For UNSD and UNFCCC</u>: 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

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 |

**Current work** **on climate change statistics in the Statistics Division**
A. Development of the global set of climate change statistics and indicators
B. Pilot survey on the draft global set of climate change statistics and indicators
C. Main outcomes of the pilot survey
D. Review of the draft global set of climate change statistics and indicators at the seventh meeting of the Expert Group on Environment Statistics
E. Capacity development activities
F. Substantive activities on climate change statistics and indicators
G. Planned actions of the Statistics Division

Climate change statistics: methodology base for a Global Set
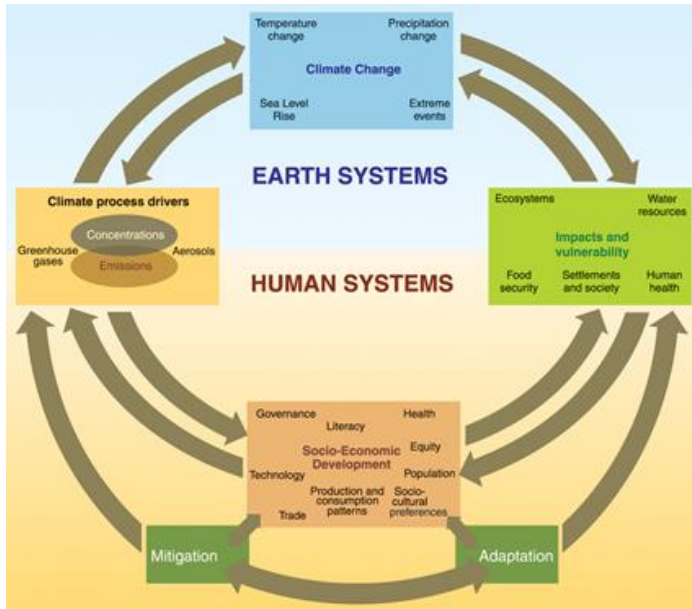
IPCC, 2007, Fourth Assessment Report
(drivers, evidence, impacts & vulnerability, mitigation and adaptation)
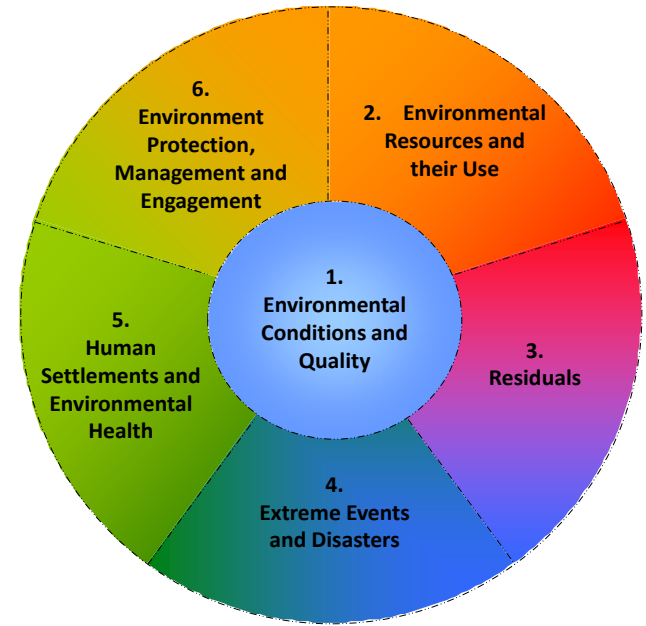
Framework for the Development of Environment Statistics (FDES 2013)

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

Towards a Global Set: objective and initial work

Objective:

develop a global set of climate change statistics and indicators tailored for all countries while ensuring that the needs of countries with less developed statistical systems are taken into account.

UNSD has:

- carried out a systematic review of climate change statistics and indicators from 130 countries 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 (134 initially) thereby promoting a

The draft set of climate
the five areas of the IPC
adaptation, to promote

Towards a Global Set: criteria for selection of indicators

References to international agreements and frameworks:
- relevant articles of the Paris Agreement and the Katowice Package are mentioned for each indicator thereby clearly demonstrating the link between statistics and policy.
- SDGs, FDES and Sendai Framework, as well as UN-ECE set of indicators, have been considered to promote consistency and harmonize the wording of the indicators to the extent possible.

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

UNSD: Globalizing climate change statistics and indicators

The Expert Group on Environment Statistics (EGES) has been contributing to work on the draft set through 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 with interested experts of the EGES, before conducting a Pilot Survey.

An expert review was completed in January 2020 based on feedback from six countries (Jamaica, Luxembourg, Suriname, Tanzania, The Netherlands and Zimbabwe) and four international and regional organizations (UNFCCC, FAO, ECLAC, EEA).

Pilot Survey and impact of pandemic and follow-up

The Pilot Survey was launched on 23 February 2020 to test and assess the relevance, soundness and measurability of the proposed indicators in two ways:

(1) by inviting the national statistical offices (NSOs) and/or ministries of environment from 42 countries to assess their preparedness to compile the suggested indicators in collaboration with relevant partners according to their national priorities as well as the development stage of the country;

- 17 countries responded - 7 developed and 10 developing;
- Another 12 developing countries communicated some progress but could not complete the survey.

(2) 30 international/regional organizations were invited to assess the indicators from a thematic and methodological point of view to ensure that the selected indicators are relevant, correctly named, and supported by definitions, references and data.

- 13 organizations provided feedback.

While further responses were awaited from, UNSD set up a small group of (developing) countries that were faced with the most challenges due to the pandemic as well as with the completion of the survey in general, along with the Chair of the EGES, to examine in detail the structure of the draft Global Set and provide inputs towards a product for the planned Global Consultation in 2021.

Main outcomes of the pilot survey and follow-up

(a) Most of the proposed indicators were considered applicable, although some needed further methodological work;

(b) For several indicators, the relevance to climate change was not clear [metadata are being prepared];

(c) Several new indicators were suggested;

(d) The links to the Intergovernmental Panel on Climate Change and to the ECE core set of indicators were appreciated;

(e) Several of the indicators originally proposed were considered to be overlapping [redundancies will be eliminated];

(f) There is a need to reduce the number of indicators [multi-tiering system will assist with prioritization];

(g) **There is a need to clarify the difference between indicators and statistics [a new structure with both indicators and the underlying basic statistics was prepared and presented to the 7th EGES meeting];**

(h) Some of the proposed indicators needed to be simplified, as they were considered too complex or requiring modelling in their present form;

(i) References to the System of Environmental-Economic Accounting were encouraged where applicable **[several ECE indicators include such references, and references will be provided in metadata as necessary];**

(j) **Data availability was mentioned as a concern for some indicators, especially in the area of adaptation [recent work with consultants is being undertaken in adaptation, impacts and vulnerability in CARICOM SIDS and African countries];**

(k) **Several indicators were considered to be outside the mandate of national statistical offices or national statistical systems [additional efforts are being undertaken with the specialized agencies];**

(l) **There is inadequate capacity in developing countries to compile some of the indicators that are relevant in those countries.**

Main conclusions of the 7ᵗʰ EGES

(a) The global set of climate change statistics and indicators is a comprehensive, but not exhaustive, set of indicators and statistics designed to support countries according to their individual concerns, priorities and resources;

(b) The pilot survey clearly demonstrates that most of the proposed indicators in the global set are applicable, although some indicators need further methodological work;

(c) The matrix-based structure of the global set that links indicators and underlying statistics helps to promote transparency and comprehensiveness and **is flexible enough for countries to select relevant indicators and statistics for compilation, depending on their level of development;**

(d) Comprehensive metadata for the global set can be used as a guiding tool for countries to compile climate change statistics;

(e) International and regional organizations should continue to collaborate to streamline, inter alia, concepts, definitions and methodologies;

(f) Complementarity should be promoted, to the extent possible, among global, regional and national sets of climate indicators;

(g) **UNSD and UNFCCC should continue** to: undertake joint initiatives to develop climate change statistics and indicators; strengthen the link between policy and statistics and between NSO and climate change reporting agencies at the national level; and collaborate on capacity development with support from other partners;

(h) The role of **NSOs as providers of activity data** (economic statistics) was highlighted, including the need to include such offices in the greenhouse gas compilation processes and reporting under UNFCCC;

(i) **NSO can contribute to or coordinate** climate change statistics, as is done in environment statistics, on the basis of their mandates to produce official statistics and role in coordinating the national statistical system

Conclusions from Group Work during the 7th EGES

- Some 50 experts took part in the group work and were well familiarized with the structure of the global set and the objectives of its development. The individual statistics and indicators, the overall structure and metadata examples were reviewed in each area.

- The participants concluded that the **areas of adaptation and vulnerability were especially important to small island developing States, developing and least developed countries, as well as the most challenging areas** to advance the production of internationally comparable statistics and indicators.

- They also concluded that the **areas of drivers and mitigation were of more importance to developed countries and contained statistically better-defined indicators**.

- The experts recognized the **importance of applying the relevant Sustainable Development Goals in the global set**, even if some indicators needed further work to relate them to climate change. Missing, weak or insufficiently defined statistics and indicators were identified in all areas. It was also noted that there was a need to identify a core set of indicators applicable to all countries.

Global set structure

Indicators and statistics side-by-side, main metadata details

The set contains:
- 5 areas (IPCC)
- 41 topics
- 140 indicators
- 253 statistics
- Key metadata

Area	Topic	Indicators	Statistics(FDES Statistic)	Themes	Definition reference	Relevance	Methodological Guidance	Update frequency	Potential aggregations and	Category of Measurement	Data collection methods	National data sources	Computation/ compilation	Data reference	Data type	Paris Agreement Articles	Katowice package	SDG	FDES	Sendai Framework	Tier (UNSD)
Drivers			Population	Energy				annual			Census, survey, population register										
Drivers			Households	Energy				annual			Census, survey, population register										
Drivers			Population	Transport				annual		Number	Census, survey, population register										
Drivers			Livestock numbers (IPCC)	GHG emissions	FAO, FAOSTAT (	FAO, FA		annual	By species a	Heads	censuses			FAOSTA	C						1
Drivers			Rate of nitrogen fertilizers use (IPCC)	GHG emissions	IFASTAT (https:/	IFASTA		annual	By synthetic	Tonnes	censuses, proxy from in			FAOSTA	C						1
Impacts			Population	Water resources				annual	National	Volume	Census, survey, population register										1
Impacts			Population	Disasters				annual			censuses, surveys, pop registers										
Vulnerability			Vulnerable buildings	Buildings							surveys, censuses					7.1; 1	Decision 18/CMA.1, chapter IV;				
Vulnerability			Population with access to electricity (FDES 5.1.2.h)	Electricity				annually	National; Su	Number	surveys, censuses					7.1; 1	Decision 18/CMA.1, chap				2
Vulnerability			Population	Electricity				annually			surveys, censuses					7.1; 1	Decision 18/CMA.1, chapter IV;				
Vulnerability			Population	Waste				annually			surveys, censuses										
Vulnerability			Population practicing open defecation	Sanitation				annually, ten yearly			surveys, censuses										
Vulnerability			Population using safely managed sanitation service	Sanitation				annually, ten yearly			surveys, censuses										
Vulnerability			Population with basic handwashing facilities on pr	Sanitation				annually, ten yearly			surveys, censuses										
Vulnerability			Population	Sanitation				annually			surveys, censuses										
Vulnerability			Population using an improved drinking water sour	Water resources				annually	By urban an	Number	surveys, censuses					7.1; 1	Decision 18	5.1.2.a.			2
Vulnerability			Population using other drinking water source (SDG	Water resources				annually	By urban an	Number	surveys, censuses					7.1; 1	Decision 18/CMA.1, chap				2
Vulnerability			Population	Water resources				annually		Number	surveys, censuses										
Vulnerability			Population with access to heating	Energy					By urban/ru	Number	surveys, censuses					7.1; 1	Decision 18/CMA.1, chap				2
Vulnerability			Population with access to cooling	Energy					By urban/ru	Number	surveys, censuses					7.1; 1	Decision 18/CMA.1, chap				2
Vulnerability			Population	Energy				annually		Number	surveys, censuses										
Vulnerability			Distribution of population	Sea and coasts				annually			surveys, censuses										
Vulnerability			Population below international poverty line	Poverty							surveys										
Vulnerability			Employed population	Poverty				monthly, annually			surveys, censuses										
Vulnerability			Population	Poverty				annually			surveys, censuses										
Vulnerability			Urban population living in slums	Poverty				ten years, ad hoc			surveys, censuses					7.1; 1	Decision 18/CMA.1, chapter IV;				
Vulnerability			Population	Poverty				annually			surveys, censuses										
Vulnerability			Number of persons with disability	Disability				ten years, ad hoc			surveys, censuses, administrative records										
Vulnerability			Population	Disability				annually			surveys, censuses										
Vulnerability			Number of persons living in isolated areas	Infrastructure							surveys, censuses										
Vulnerability			Population	Infrastructure				annually			surveys, censuses										
Mitigation			Population with access to heating (SDG7.1.2. subin	Energy					By urban an	Number	censuses, surveys		SDG dB		E	4.8; 4.	Decision 18/CMA.1, chapt				1
Mitigation			Population with access to cooking (SDG7.1.2. subin	Energy				annually	By urban an	Number	censuses, surveys		SDG dB		E	4.8; 4.	Decision 18/CMA.1, chapt				1
Mitigation			Population with access to lighting (SDG7.1.2. subin	Energy				annually	By urban an	Number	censuses, surveys		SDG dB		E	4.8; 4.	Decision 18/CMA.1, chapt				1
Mitigation			Population	Energy				annually		Number	censuses, surveys										
Adaptation			Teacher education	Education				annually	National	Number	sample surveys					12	Decision 17/CMA.1				2
Adaptation			Student assessment	Education				annually	National	Number	sample surveys					12	Decision 17/CMA.1				2
Adaptation			Number of dwellings with adequacy of building ma	Buildings					By urban/ru	Number	censuses, administrative records					7; 13.	Decision 18/CMA.1, chapt				3
Adaptation			Population	Waste				annually		Number	censuses, surveys										
Adaptation			Population	Water				annually		Number	censuses, surveys										

Global set: metadata example

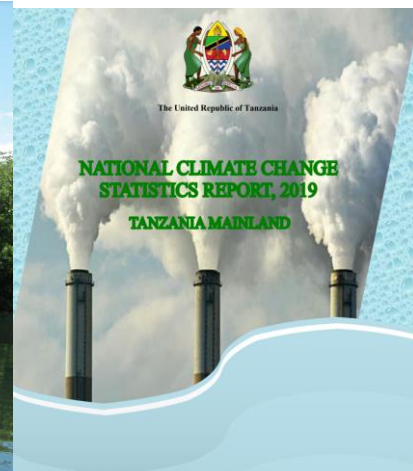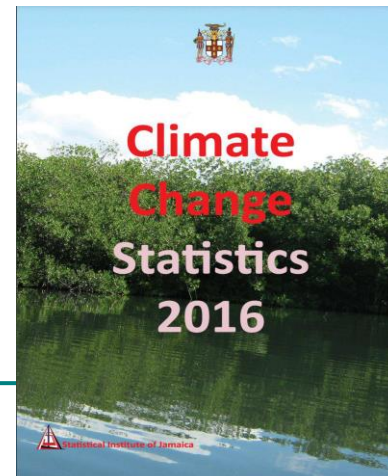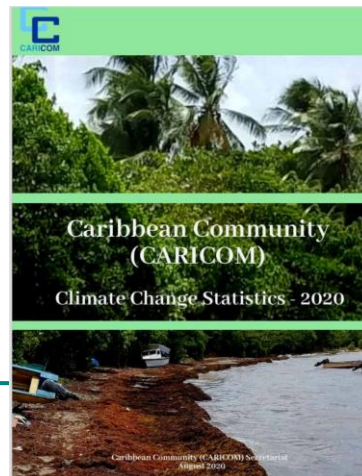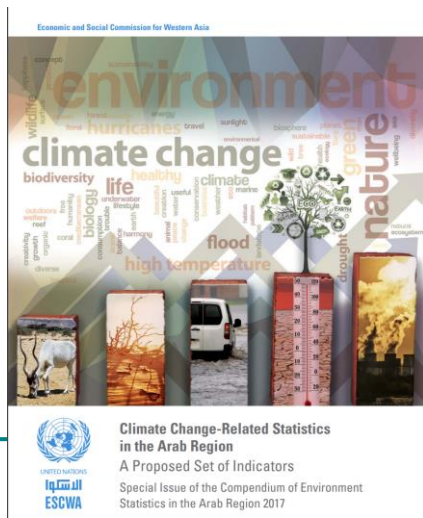|	Indicator	Statistic 1	Statistic 2	Statistic 3
Codes and titles:	41. Renewable freshwater resources per capita	41.1 Precipitation	41.2 Evapotranspiration	41.3 Inflows
Area, topic	Impacts, Freshwater resources			
Themes	Water			
Correspondences SDGs FDES Paris Agreement articles Katowice Package decisions Sendai	Related to SDG 6.4.2 Paris agreement articles 7; 13.8 Decision 18/CMA.1, chapter IV; Decision 9/CMA.1	FDES 1.1.1.b/2.6.1.a Paris agreement articles 7; 13.8	FDES 2.6.1.b.1 Paris agreement articles 7; 13.8	FDES 2.6.1.b.2 Paris agreement articles 7; 13.8
Tier	1	1	1	1
Definitions	Renewable water resources are replenished by precipitation and are represented by the annual flow of surface water and groundwater. (BSES manual)	The volume of water that flows from the atmosphere to inland water resources via rain, snow, sleet, hail, dew, mist, etc., per year. (BSES manual)	The volume of water that enters the atmosphere by vaporization of water into a gas through evaporation from land and water surfaces and transpiration from plants, per year. (BSES manual)	The volume of surface water and groundwater that moves into a territory from other territories, during a year. (BSES manual)
Relevance	• Water resources management • International data collection (UNSD/UNEP, Eurostat/OECD, AQUASTAT, SDG)			
Update frequency	annual	annual	annual	annual
Category of Measurement	Percent	Volume	Volume	Volume
Data collection methods	Monitoring systems	Monitoring systems	Monitoring systems	Monitoring systems
Data sources	hydro meteorological institutions			
Computation/compilation methods	Precipitation plus inflows minus evapotranspiration divided over population number	Interpolation of point measurements over a geographic area (SEEA water pg71). GIS modelling of precipitation.	Residual of precipitation less surface and sub-surface run-off (SEEA water pg71).	sum of inflows from other territories
Reference to examples of statistics / Type of statistics	UNSD Environmental Indicators (Inland water resources) / Country	UNSD Environmental Indicators (Inland water resources) / Country	UNSD Environmental Indicators (Inland water resources) / Country	UNSD Environmental Indicators (Inland water resources) / Country
Potential aggregations and scales	National; Sub-national; By territory of origin and destination			
Methodological Guidance	UNSD/UNEP Questionnaire on Environment Statistics (Water); Manual on the Basic Set of Environment Statistics (BSES) (Water Resources): International Recommendations for Water Statistics; Compilation Guidelines for Water Accounts and Statistics			

Dissemination Examples

There is a growing number of NSOs producing separate climate change statistics report [outputs/events] to illustrate the importance of this topic.

National

- Jamaica – Climate Change Statistics Report (2016)
- Tanzania – National Climate Change Statistics Report (2020)
- Nepal – Climate Change Impact Survey (2016)
- Slovenia – Statistical Day 2020: Climate Crisis – Hot Data

Regional

- Caribbean Community (CARICOM) – Climate Change Statistics (2020)
- ESCWA – Climate change-related statistics in the Arab region (2017)

Planned actions of the Statistics Division

- Completion of the analysis of the pilot survey and of the feedback from the Expert Group on Environment Statistics, and completion of the metadata for tier I and II indicators;
- Participation in and following of the relevant processes for **developing international standards, guidelines and frameworks** to ensure that the related indicators and statistics are included in the global set to the extent possible, with the best references included in the metadata;
- Undertaking of pilot projects or case studies on climate change indicators and statistics, especially in developing countries;
- Expansion of the dissemination of climate change statistics and indicators on the UNSD website;
- **Further widening of the scope of the Expert Group on Environment Statistics** to cover all topics related to climate change drivers, impacts, vulnerability, mitigation and adaptation and to ensure continuous technical support from the experts for the global set;
- Setting up of an advisory group to assist in the revision and refinement of the draft global set;
- Holding of an extraordinary meeting on climate change statistics of the Expert Group on Environment Statistics to discuss the revised draft global set and discuss a long-term workplan;
- Further exploration of ways to strengthen the relationship between national statistical offices and national authorities reporting climate change information;
- Further investigation of the linkages between data producers and data users, and engagement with the wider statistical community;
- Holding of side events on climate change statistics on the margins of the sessions of the Statistical Commission and the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement;

Planned actions of the Statistics Division: Global Consultation

- Conduct of a **consultation on the global set** around March [more likely April] 2021 with **all countries and relevant agencies**, accompanied by an **inventory of related activities**;

- Analysis of the results of the global consultation and development of implementation guidelines;

- Submission of the global set to the **53rd session of the Statistical Commission, in 2022**, for adoption;

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