

Climate change statistics at the global level



National Technical Training Workshop on
Environment Statistics

Kololi, Banjul, The Gambia

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UNSD past activities

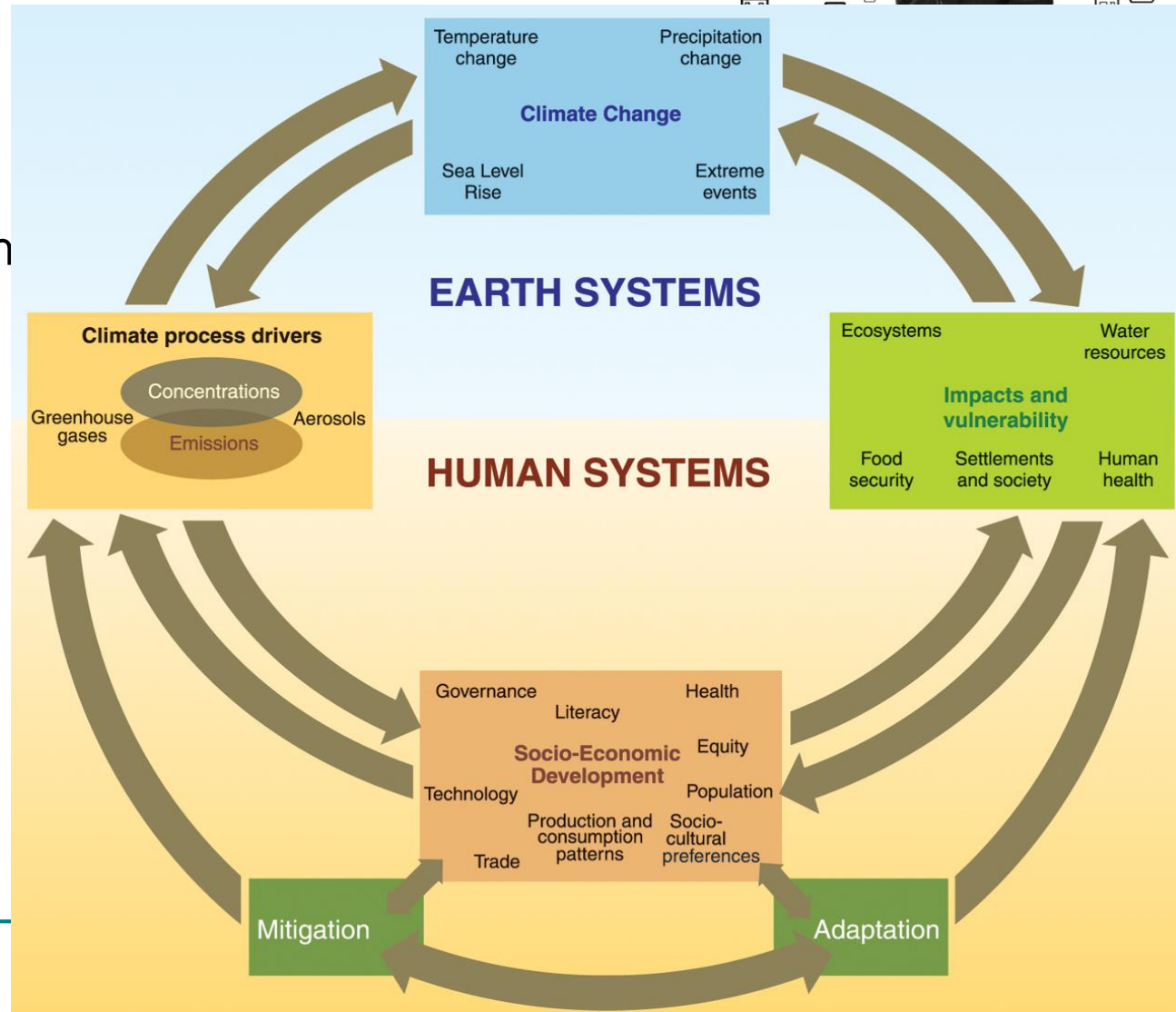
- UNSD organized two conferences on climate change and official statistics
 - Oslo, 14-16 April 2008
(http://unstats.un.org/unsd/climate_change/default.htm)
 - Seoul, 11-12 December 2008
(http://unstats.un.org/unsd/climate_change/Korea/default.htm)
- A review on climate change in official statistics by the Australian Bureau of Statistics was presented at the Statistical Commission in 2009.
 - Specify how official statistics may be used for climate change measurement and analysis
 - Identify recommendations and actions to mainstream the climate change aspect in official statistics
- No follow-up for some years



Climate change statistics: where are we now?



- Demand is greater than supply, particularly for **environmental** aspects, particularly in developing countries
- Guidance exists but on some areas
- IPCC framework



FDES & climate change statistics



Climate Process Drivers	
Sub-component 1.3: Environmental Quality	Sub-component 3.1: Emissions to Air
1.3.1 Air quality	3.1.1 Emissions of greenhouse gases 3.1.2 Consumption of ozone depleting substances

Climate Change Evidence	
Sub-comp. 1.1: Physical Conditions	Sub-comp. 4.1: Natural Extreme Events and Disasters
1.1.1 Atmosphere, climate and weather 1.1.2 Hydrographical characteristics	4.1.1 Occurrence of natural extreme events and disasters

Climate Change Impacts and Vulnerability						
Sub-comp. 1.1: Physical Conditions	Sub-comp. 1.2: Land Cover, Ecosystems and Biodiversity	Sub-comp. 1.3: Environmental Quality	Sub-comp. 2.3: Land	Sub-comp. 4.1: Natural Extreme Events and Disasters	Sub-comp. 5.1: Human Settlements	Sub-comp. 5.2: Environmental Health
1.1.2 Hydrographical characteristics 1.1.4 Soil characteristics	1.2.1 Land cover 1.2.2 Ecosystems and biodiversity 1.2.3 Forests	1.3.3 Marine water quality	2.3.1 Land use	4.1.2 Impact of natural extreme events and disasters	5.1.3 Housing conditions	5.2.3 Vector-borne diseases 5.2.4 Health problems associated with excessive UV radiation exposure

Mitigation and Adaptation			
Sub-comp. 2.2: Energy Resources	Sub-comp. 6.1: Environmental Protection and Resource Management Expenditure	Sub-comp. 6.2: Environmental Governance and Regulation	Sub-comp. 6.3: Extreme Event Preparedness and Disaster Management
2.2.2 Production, trade and consumption of energy	6.1.1 Government environmental protection and resource management expenditure 6.1.2 Corporate, non-profit institution and household environmental protection and resource management expenditure	6.2.2 Environmental regulation and instruments 6.2.3 Participation in MEAs and environmental conventions	6.3.1 Preparedness for natural extreme events and disasters

- FDES cross-cutting application (Chapter 5) links climate change and environment statistics based on IPCC Framework (4th report in 2007)
- Integrating official statistics for climate change monitoring

State of statistics and guidance

- **Climate process drivers** - statistics relatively more available.
 - Greenhouse gas (GHG) emissions transform into global concentrations.
- **Climate change evidence** - statistics relatively more available.
 - Temperature and precipitation are available over long periods of time.
- **Climate change impacts and vulnerability** - some statistics are produced on impacts but more are needed. For vulnerability, need to develop methodologies and capacity.
 - Emerging data needs: Extreme climate-related meteorological events and natural disasters increase in frequency and intensity.
- **Mitigation and adaptation** statistics are less often produced and more difficult to capture statistically.
 - Insufficient resources for measurement and lack of guidance.
 - Adaptation statistics, while may be produced for particular sectors, need to be linked to climate change statistics.



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

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 the set of climate change-related statistics and indicators of the Economic Commission for Europe as a basis for developing a global set of climate change statistics and indicators, applicable to countries at various stages of development.



UNSD Pilot Survey on Climate Change-related Statistics and Indicators - summary

- The UN-ECE set includes 39 indicators, grouped into five areas:
Drivers – Emissions – Impacts – Mitigation – Adaptation
- **12 countries** (11 developing and 1 developed), most of which are part of Expert Group on Environment Statistics (EGES), responded to Pilot Survey.



Pilot Survey – key points

Demonstrated the need to develop:

- new or additional indicators to reflect situation in developing countries.
- process on how to identify/modify the indicators based on:
 - existing global processes (e.g. incorporating indicators identified in adaptation and mitigation plans being submitted to UNFCCC).
 - regional and national policies, priorities and processes.
- systematic process for a full consultation at national level to involve all stakeholders.



UNSD: Globalizing climate change statistics and indicators (current activities)

To strengthen the link between statistics and policy, UNSD is engaging closely with **UNFCCC** to develop the global set of climate change statistics and indicators.



Towards the global set of climate change indicators

(consulted sources to date)

International and Regional Sources

- **IPCC Reports**
- WMO
- ESCWA
- FAO
- FDES
- **SDG Indicators**
- SEEA
- ECE
- EEA
- Other Academic/NGO institutions or frameworks

National Sources (from 103 countries to date)

- State of environment reports
- UNFCCC National Communications
- National Adaptation Plans (NAPs)
- National environmental protection agencies
- Intended National Determined Contributions (INDCs)
- National Statistics Offices (NSOs)
- Ministry websites
 - Ministries of Environment
 - Ministries of Natural Resources
 - Ministries of Sustainable Development
 - Ministries of Energy
 - Bureaus of Meteorology



Towards the global set of climate change indicators

(consulted 103 national sources to date)



Towards the global set of climate change indicators

(consulted sources to date)

Processing steps:

- The documents of the above sources were compiled.
- Key word search was conducted in the documents using predefined set of key words, for example:
 - Natural disasters, threatened species, forest area, emissions.
- Next, key words were grouped into common indicators and consolidated.
- Indicators were assigned to one (or more) of the five climate change areas (drivers, impacts, adaptation, mitigation or vulnerability).
- Counts of source indicators were automatically extracted so that each indicator can be assessed in terms of how many countries mentioned it and in how many sources.



Towards the global set of climate change indicators

- In the growing list of climate change indicators, there are approximately 6,822 instances sourced from countries, grouped into five areas (Drivers, Impacts, Mitigation, Adaptation, and Vulnerability) consisting of around 150 indicators. Many of which are repeated across different countries and organizations.
- Indicators come from reports of M. of Env/NSOs, which contain country-relevant information, at least one national source has been taken from 103 countries. Besides, international and regional sources such as SDG indicators, FDES, IPCC reports and ECE have been taken into account to identify other key indicators.
- Most country-specific indicators come from State of Environment reports or UNFCCC National Communications/National Adaptation Plans. Data from ministries of energy, meteorology and natural resources also been considered.
- UNSD is identifying a list of the most commonly repeated indicators according to the five areas of IPCC framework promoting a bottom-up approach to the selection of indicators and will continue this compilation from more countries.
- After improvement of the indicator names, correspondence to SDGs and FDES statistics were mapped, **but further work is needed**



Towards the global set of Driver Indicators (103 countries)

Name of Indicator	Countries which have reported (Out of 103)	Number of Occurrences (multiple sources per country)
Area under Land Use	83	268
GHG emissions of production activities	71	113
Generation of Waste/Wastewater	51	158
Livestock Production	34	39
Emission of NMVOC	29	29
Number of Vehicles	20	32
Deforestation Rate	14	15
Energy Intensity of the Economy	12	15
Energy Consumption by Household/Capita	12	15
Total Energy Efficiency of the Economy	10	10
Emission of Hydrocarbons	9	10



Towards the global set of Impact Indicators (103 countries)

Name of Indicator	Countries which have reported (Out of 103)	Number of Occurrences (multiple sources per country)
Anomalies in Precipitation	62	86
Changes in Agricultural Production	54	79
Sea level Rise	49	56
Occurrence of Drought	47	58
Mortality due to Water related Diseases and Conditions	42	165
Occurrence of Flood	41	60
Incidence / Number of Cases of Vector-Borne Diseases	38	46
Concentration of Nitrogen Oxides (NO _x)	34	42
Concentration of Carbon Monoxide (CO)	33	172
Anomalies in Surface Air Temperature	33	37
Incidence / number of cases of Water related Diseases and Conditions	31	33
Incidence / number of cases of Airborne Diseases and Conditions	24	25



Towards the global set of Vulnerability Indicators (103 countries)

Name of Indicator	Countries which have reported (Out of 103)	Number of Occurrences (multiple sources per country)
Threats to Crops and Vegetation	39	62
Affects on Fish Production	28	47
Water bodies - Lakes/Rivers	15	27
Distribution of Ecosystems	14	16
Various Risk Elements of Ecosystem	14	26
Vulnerability due to Exposure to various Elements	14	24
Population living in Slums	13	14
Population living below the Poverty Line	10	10
Mortality Rate	10	11
Climate Variability	10	12
Access to Health Care	9	9



Towards the global set of Mitigation Indicators (103 countries)

Name of Indicator	Countries which have reported (Out of 103)	Number of Occurrences (multiple sources per country)
Increase in Forest Area	51	81
Use of Hydro Energy	40	61
Renewable Energy use in Overall Consumption	39	47
Measures of Development related to Mitigation	39	84
Progress towards Reducing GHG Emissions	19	21
Use of Solar Energy	18	20
Pro-Environment Activities and NGOs	15	29
Investments on Environmental Protection	14	20
List and Description of Green/Environmental taxes	14	17
Amount of Environmental Monitoring Measures	14	18
Environmental Engagement and Activities to Mitigate	12	18



Towards the global set of Adaptation Indicators (103 countries)

Name of Indicator	Countries which have reported (Out of 103)	Number of Occurrences (multiple sources per country)
Use of Water Resources	80	265
Distribution & Status of Species	52	95
Area which is Protected	44	66
Use of Hydro Energy	40	61
Proportion of Buildings/Infrastructure Adhering to Climate-Change Standards	28	57
Recycling/ Reuse/ Use of Solid Waste	27	35
Utilization of Adaptive Agricultural Methods	21	32
Size of Environmental Monitoring Network	21	28
Population Accessibility to Water	19	25
Use of Solar Energy	18	20
National Climate Change Research and Education Programs or Measures	14	15
Measures of Cultural Sensitization or Knowledge to Environmental Issues	13	14



Further work on the global set of climate change indicators (contd)

- Develop and conduct a **Pilot Survey** to test the draft Global Set of Climate Change Statistics and Indicators (by end of 2019)
- Analyze results of Pilot Survey to develop survey for the **Global Consultation** (early 2020)
- Conduct Global Consultation with all Member States in 2020 and **report to the Statistical Commission in 2021**.
- The purpose of the Global Consultation, including that it is not intended to collect data, will be clearly explained to countries. It will also be stated in the Global Consultation that it is an indicator framework to assess primarily the relevance, methodological soundness and availability of indicators to derive a Global Set of Climate Change Statistics and Indicators, and not an additional reporting burden. The accompanying letter will include an introduction on why a set of climate change indicators is needed, i.e., that it has been requested from countries under the mandate of the Statistical Commission.
- A work plan outlining all the steps and activities will be developed by UNSD in collaboration with the Expert Group.





Questions and comments?



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Thank you for your attention!

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