Global work on climate change statistics and indicators and adaptation-related SDG indicators

Workshop on national adaptation goals/indicators and their relationship with the SDGs and the Sendai Framework for Disaster Risk Reduction

(Tokyo, Japan, 24-25 July 2018)

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UNSD past activities

- At the Statistical Commission in 2009 a programme review on climate change and official statistics carried out by the Australian Bureau of Statistics was presented.
  - 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
- UNSD 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)
- No follow-up to the programme review was asked by the Statistical Commission in 2009.
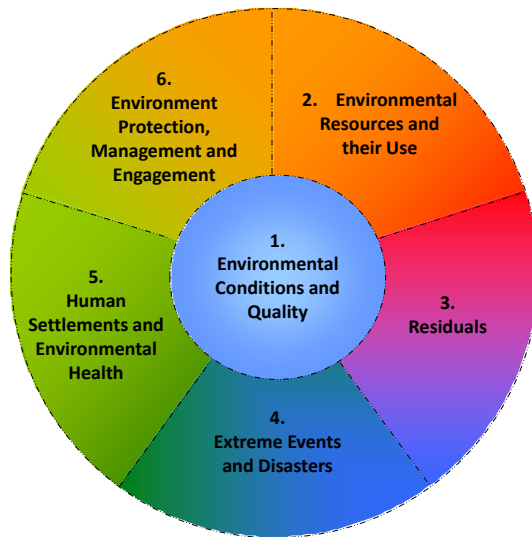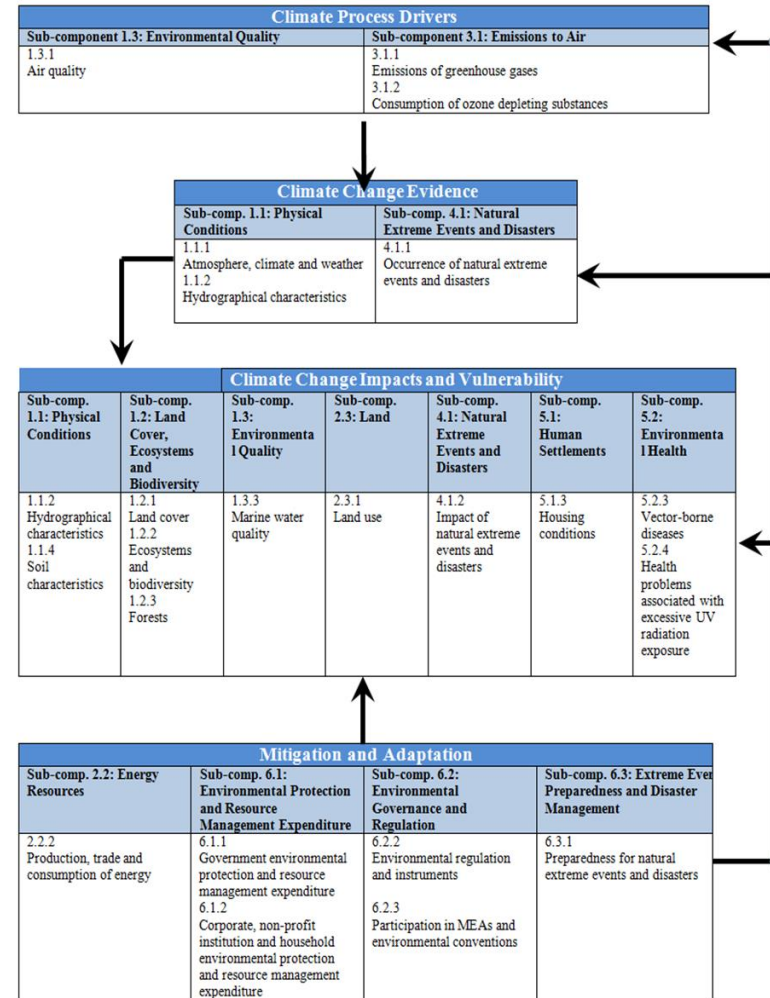
IPCC Framework
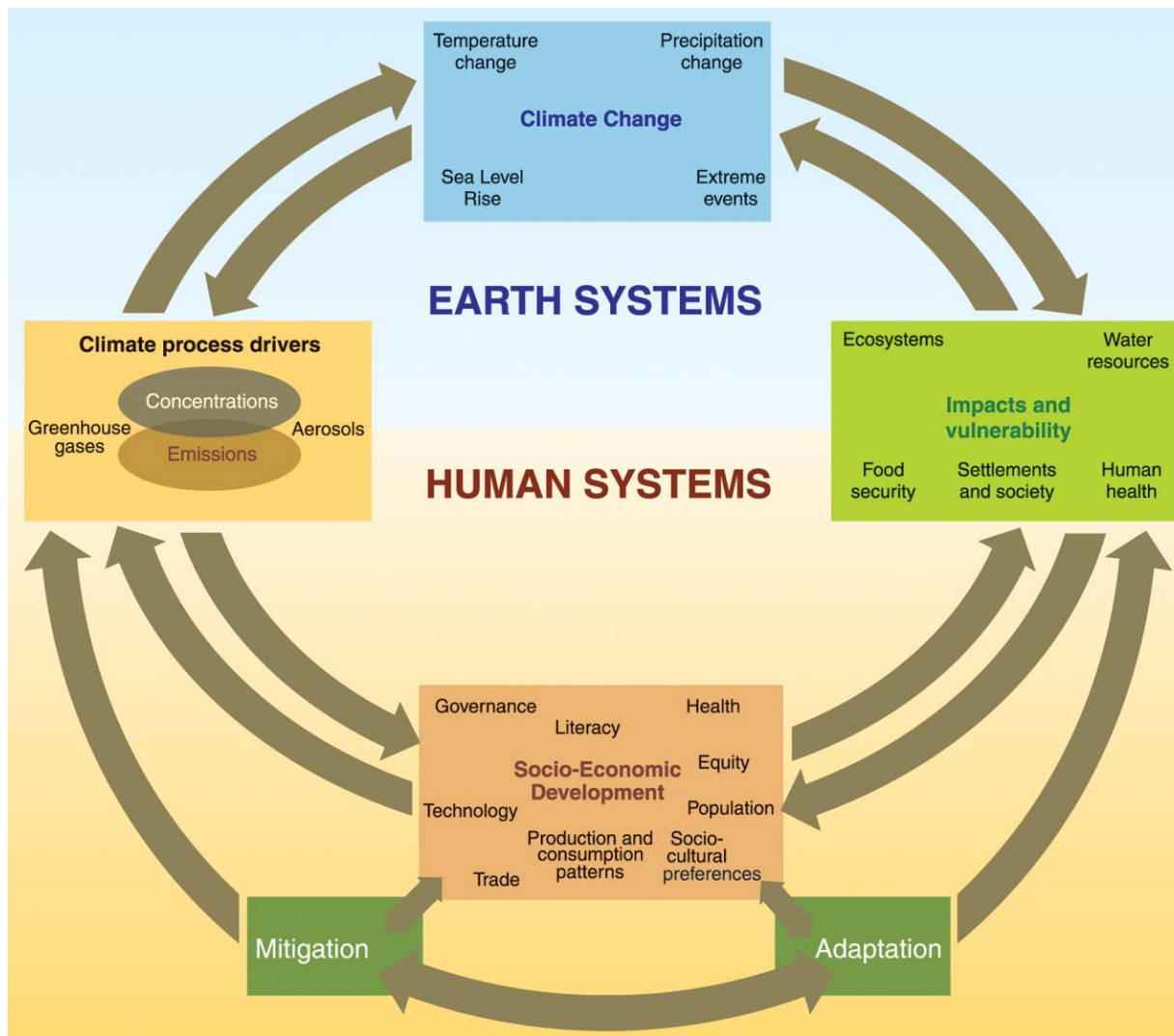
IPCC, 2007, Fourth Assessment Report
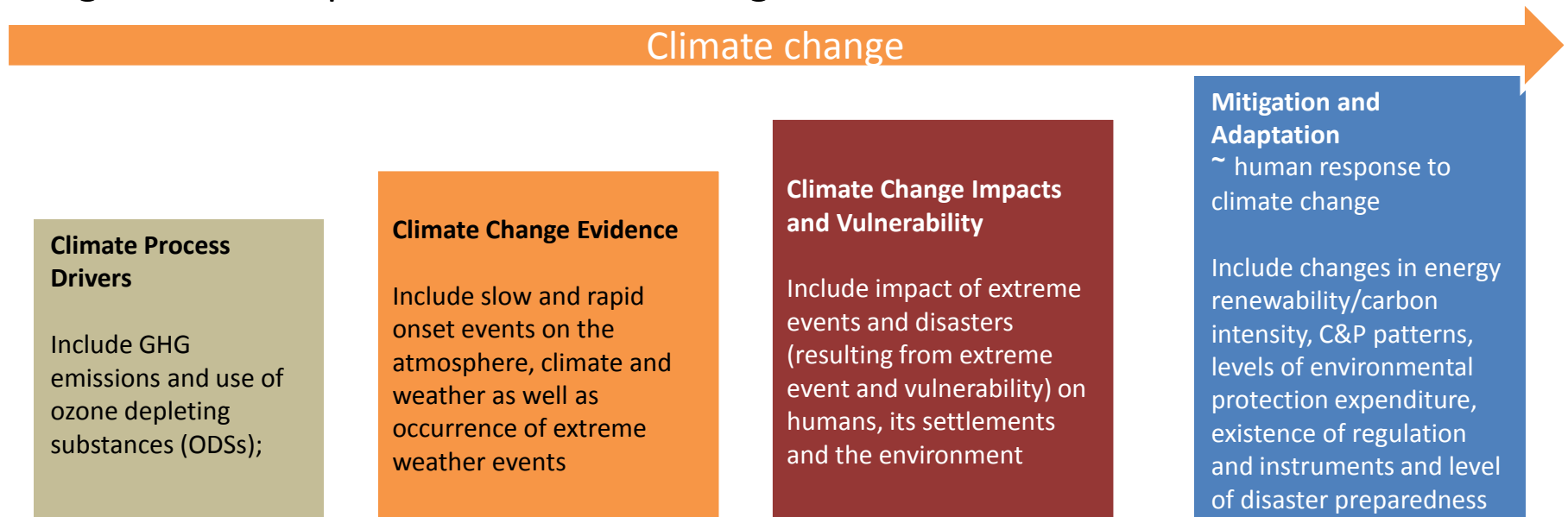
FDES & climate change statistics

- 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

IPCC sequence of climate change

The IPCC Framework (4th report in 2007) was the basis upon which the stages of the sequence of climate change were constructed to substantiate the application of the FDES to climate change statistics.

The FDES application to climate change statistics identifies the components, topics and individual statistics that are needed to inform about each of the stages of the sequence of climate change:

Climate change

Climate Process Drivers

Include GHG emissions and use of ozone depleting substances (ODSs);

Climate Change Evidence

Include slow and rapid onset events on the atmosphere, climate and weather as well as occurrence of extreme weather events

Climate Change Impacts and Vulnerability

Include impact of extreme events and disasters (resulting from extreme event and vulnerability) on humans, its settlements and the environment

Mitigation and Adaptation
~ human response to climate change

Include changes in energy renewability/carbon intensity, C&P patterns, levels of environmental protection expenditure, existence of regulation and instruments and level of disaster preparedness

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:
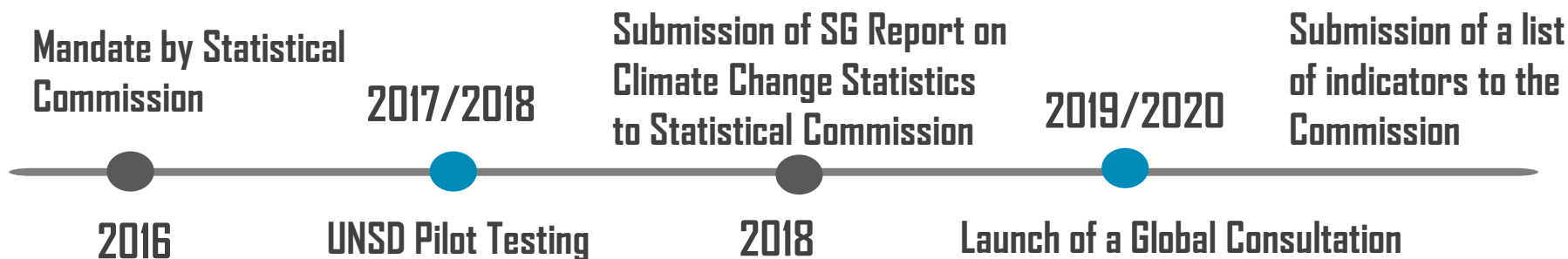http://unstats.un.org/unsd/statcom/47th-session/documents/Report-on-the-47th-session-of-the-statistical-commission-E.pdf

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: Globalizing climate change statistics and indicators

Mandate by Statistical Commission

2017/2018

Submission of SG Report on Climate Change Statistics to Statistical Commission

2019/2020

Submission of a list of indicators to the Commission

2016

UNSD Pilot Testing

2018

Launch of a Global Consultation

The UN-ECE set of indicators was endorsed by the Conference of European Statisticians plenary session in June 2017 as an initial list.

UNSD:

- is pilot testing the UN-ECE set of indicators with countries and analyzing the responses to assess its applicability for developing countries, in particular to consider areas of concern such as adaptation/vulnerability.
- is discussing the set of indicators in various fora, including the Expert Group on Environment Statistics (EGES), and regional and national capacity building workshops.

EGES website: https://unstats.un.org/unsd/envstats/fdes/fdes_eges.cshtml

United Nations Statistics Division

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

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 national statistical offices (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.

UNSD: Globalizing climate change statistics and indicators (cont'd)

UNSD:

- presented the SG's Report on Climate Change Statistics to the 49th session of the Statistical Commission (6-9 March 2018).

- is reviewing the UN-ECE and the IPCC/FDES frameworks and identifying links to the Paris Agreement.

- is reviewing the UN-ECE list of indicators and consulting other lists (international organizations (UNFCCC, WMO, FAO), regional institutions (UNECE, ESCWA, ECLAC, OECD), research (IPCC) national agencies (US EPA, New Zealand EPA), national reports (National Adaptation Reports, National Communications) and NGOs (Climate Reality, World Resources Institute) with a view to developing a suitable list prior to the Global Consultation.

- is developing a work plan based on the list of planned activities contained in the SG's Report to the 49th session of the Statistical Commission.

- is planning to develop an inventory of related work on climate change statistics by partner organizations.

- is planning to conduct the Global Consultation in 2019/2020.

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.

- The Pilot Survey contained 13 questions for the 39 indicators that were identical to those used by UN-ECE.

- UNSD has summarized responses to:

    Question 1: Is this indicator available in your country? [Yes/No]

    Question 9: [If not] Which are the main problems in developing this indicator?

    Question 4.1: Is this indicator compiled by the NSO? [Yes/No]

Observations from the Pilot Survey and the EGES

- Methodological issues/Need clear definitions.
- Lack of technical capacity; constraint of human/financial resources.
- No policy framework.
- Specialized surveys needed/Lack of resources to conduct specialized surveys/Low survey response rates/Data quality issues.
- Lack of dedicated inter-institutional working group at national level focusing on climate change statistics.
- Some NSOs are highly involved in indicator compilation; others not.
- Several indicators not applicable/relevant (e.g., proportion of pop. living in dwellings with air conditioners or air conditioning), not available, not top priority, not significantly important, or too complex.
- Need to adjust indicators to reflect attribution and to include new sub-areas (such as oceans) or indicators which may be pertinent to developing countries, and to expand on areas such as adaptation which are of particular relevance to developing countries.
- Reporting methodologies, procedures and guidelines under negotiation at the UNFCCC.

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.

5th EGES meeting – key points on climate change

Framework for Climate Change Statistics and Indicators:

Expert Group agreed to use the areas of the IPCC framework to structure the global set of statistics and indicators as it would create a direct link to international policy and reporting to UNFCCC through the Paris Agreement.

Global Set of Climate Change Statistics and Indicators:

Expert Group agreed that indicators should be based on IPCC framework and linked to UNFCCC through the Paris Agreement to strengthen relationship between statistics and policy. The set of indicators should be limited in number to provide clear guidance for policy makers and encourage an inclusive and universal set applicable to all countries. It was agreed that a limited core set with additional indicators developed in a tiering system to cater to countries with different concerns, priorities and capabilities would be useful.

5ᵗʰ EGES meeting – key points on climate change

Role of National Statistical Offices (NSOs):

Expert Group discussed that existing structures in a country may provide an entry point and the NSO could become the national aggregator of the climate change information by mining National Communications reported to UNFCCC and putting them into context. The role of the NSO was seen as providing transparency and in raising awareness of climate change as an issue among a broad range of stakeholders. Expert Group discussed that NSOs could play a more active role in the national climate change committees.

Global Consultation on Climate Change Statistics and Indicators:

Expert Group discussed that the Global Consultation should take place in 2019-2020 and the results be ready prior to the Global Stocktake of the Paris Agreement (first one in 2023) to be available to collectively assess progress and implementation to address the information needs of the Global Stocktake. Guidance to implement the Transparency Framework of the Paris Agreement will most probably be finalized at the COP24 in Dec 2018. The implementation guidance is expected to shed more light on the data reporting requirements of the Paris Agreement, so exact dates of when to conduct the Consultation will be determined in due course.

SDGs related to climate change adaptation

Climate change adaptation in SDGs & FDES

SDG Indicators Related to Adaptation

SDG 1.5.3/11.b.2/13.1.2 ……………………………………………

Number of countries that adopt and implement national disaster risk reduction strategies

SDG 4.7.1(ii) …………………………………………………………..

Extent to which education for sustainable development are Mainstreamed at all levels

SDG 6.4.1 …………………………………………………………….

Change in water use efficiency over time

SDG 7.2.1 …………………………………………………………….

Renewable share in the total final energy consumption

SDG 11.4.1 …………………………………………………………..

Total expenditure per capita spent on the preservation, protection, and conservation of all cultural and natural heritage

SDG 11.c.1 …………………………………………………………..

Proportion of financial support to the least developed countries that is allocated to the construction and retrofitting of sustainable, resilient, and resource-efficient buildings utilizing local materials

Related FDES Statistic(s)

FDES 6.3.1.a.(1-7)/6.3.2.a.(1-2)

Existence of national disaster plans/programmes

FDES 6.4.2.a.2

Number and description of environmental education programmes in schools

FDES 2.6.2.(a-m)

Abstraction, use and returns of water

FDES 2.2.2.c

Final consumption of energy (requires disaggregation by type of energy to give share of renewable energy)

FDES 6.1.1a.(1-2)/6.1.2.a.(1-4)

Environmental protection and resource management expenditure

FDES 6.1.1.a.(1-2)

Government environmental protection and resource management expenditure

Climate change adaptation in SDGs & FDES (cont'd)

SDG Indicators Related to Adaptation

SDG 12.5.1 ....
National recycling rate, tons of material recycled

SDG 12.a.1 ....
Amount of support to developing countries on research and development for sustainable consumption and production and environmentally sound technologies

SDG 12.c.1 ....
Amount of fossil-fuel subsidies per unit GDP and as a proportion of total national expenditure on fossil fuels

SDG 13.3.1 ....
Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary, and tertiary curricula

SDG 14.5.1 ....
Coverage of protected areas in relation to marine areas

SDG 15.3.1 ....
Proportion of land that is degraded over total land area

Related FDES Statistic(s)

FDES 3.3.1.(a-c)/3.3.2(a-b)
Generation and management of waste

FDES 6.1.1.a.(1-2)
Government environmental protection and resource management expenditure

FDES 6.2.2.b.2
List and description (e.g. year of establishment) of environmentally-relevant subsidies

FDES 6.4.2.a.2
Number and description of environmental education programmes in schools

FDES 1.2.2.d.1
Protected terrestrial and marine areas

FDES 1.1.4.(a-c)
Soil characteristics

Towards the global set of climate change indicators
(consulted sources to date)

International Sources

- IPCC Reports
- WMO
- FAO
- FDES
- ECE
- Other Academic/NGO institutions or frameworks

National Sources (35 to date)

- State of environment reports
- UNFCCC National Communications
- National Adaptation Plans (NAPs)
- National environmental protection agencies
- National Statistics Offices (NSOs)
- Ministry websites
  - Ministries of Environment
  - Ministries of Natural Resources

Towards the global set of climate change indicators
(consulted 35 national sources to date)

United Nations Statistics Division

Towards the global set of adaptation indicators

- In the growing list of climate change indicators, there are approximately 900 indicators related to adaptation, many of which are repeated across different countries and organizations

- Indicators come from documents which are published by national bodies, such as the Ministry of Environment or Ministry of Natural Resources, which contain country-relevant information, at least one national source has been taken from 35 countries

- Currently, most country-specific indicators come from State of Environment or UNFCCC National Communications, since NAPs are not always available

- The lack of availability of indicators in the list does not mean countries do not report them, rather they were not explicitly reported in the national source which was accessed

- Presented are the 24 indicators which most commonly occur and cover the majority (about 600) of reported indicators which have been extracted so far (67%)

Towards the global set of adaptation indicators

Common Indicators	Number of occurrences (both national/int'l)	Countries which have reported (out of 35 consulted)
Early warning systems, mitigation strategies, published forecasts accessible to the public	50	12
Distribution and status of known species	48	24
Expenditure for adaptation	47	14
Number of climate-change-relevant plans or policies .... developed	45	10
Area which is protected	41	24
Energy production or supply	33	12
Production of food	32	13
Use of water	32	13

Towards the global set of adaptation indicators

Common Indicators

	Number of occurrences (both national/int'l)	Countries which have reported (out of 35 consulted)
Area of degraded or remediated land …………………………….…	29	15
Use of renewable energy …………………………………………………	28	16
Measures of cultural sensitization to environmental issues …. and climate change	28	9
Size of environmental monitoring network …………………………..	27	10
Amount of environmentally-relevant published reports, ……… studies, data, or other research	24	9
Recycling/reuse/use of solid waste ………………………………………	23	9
Proportion of buildings and infrastructure adhering to ………… climate change or environmental standards	23	9

Towards the global set of adaptation indicators

Common Indicator Themes	Number of occurrences (both national/int'l)	Countries which have reported (out of 35 consulted)
Population accessibility to water	16	7
Utilization of adaptive agricultural methods or crops	16	6
List & description of green/environmental taxes	16	5
Population living in hazard-prone areas	14	11
Energy intensity of economy or sectors	13	6
Use of renewable water resources	12	8
Population accessibility to food	10	5
Progress in GHG emission reduction	7	5
Carbon stock in soil	7	5

Possible sub-areas for adaptation
(based on the 24 indicators)

Environmental Governance & Regulation

Early warning systems/mitigation strategies/forecasts available to public

Number of climate-change-related plans developed

Amount of environmentally-relevant publications

Proportion of buildings adhering to climate-change/environmental standards

List & description of environmentally-relevant subsidies

Adaptation expenditure

Size of environmental-monitoring network

List & description of green/environmental taxes

Progress in GHG emission reduction

Resource Management & Efficiency

Energy production or supply

Recycling/reuse/use of solid waste

Energy intensity of economy or sectors

Use of renewable energy

Use of renewable water resources

Water use

Human settlements & Environmental Health

Measures of cultural sensitization to environmental issues & climate change

Population accessibility to water

Population living in hazard-prone areas

Population accessibility to food

Land, Land cover, ecosystems, & biodiversity

Distribution & status of species

Area of degraded or remediated land

Area which is protected

Carbon stock in soil

Agriculture, forestry, and fishery

Utilization of adaptive agricultural methods

Further work on the global set of climate change indicators

- Continue compilation of indicators from more sources and identification of common indicators.

- Review/compile metadata for the common indicators (maybe just Tier 1) to promote international applicability and harmonization.

- Engage deeper in these adaptation indicators through e.g. participation in this workshop in Tokyo and follow-up.

- Ensure linkage of the work on the global set of indicators to the Global Stocktake of the Paris Agreement and to the Transparency Framework of the Paris Agreement, given that the implementation guidance is expected to shed more light on the data reporting requirements of the Paris Agreement.