

Session 6.1: Current work in climate change statistics and indicators

Global set of climate change statistics and indicators



Workshop on Environment Statistics and Information for Sustainable Development in the Arab Region

(Beirut, Lebanon, 12-16 November 2018)

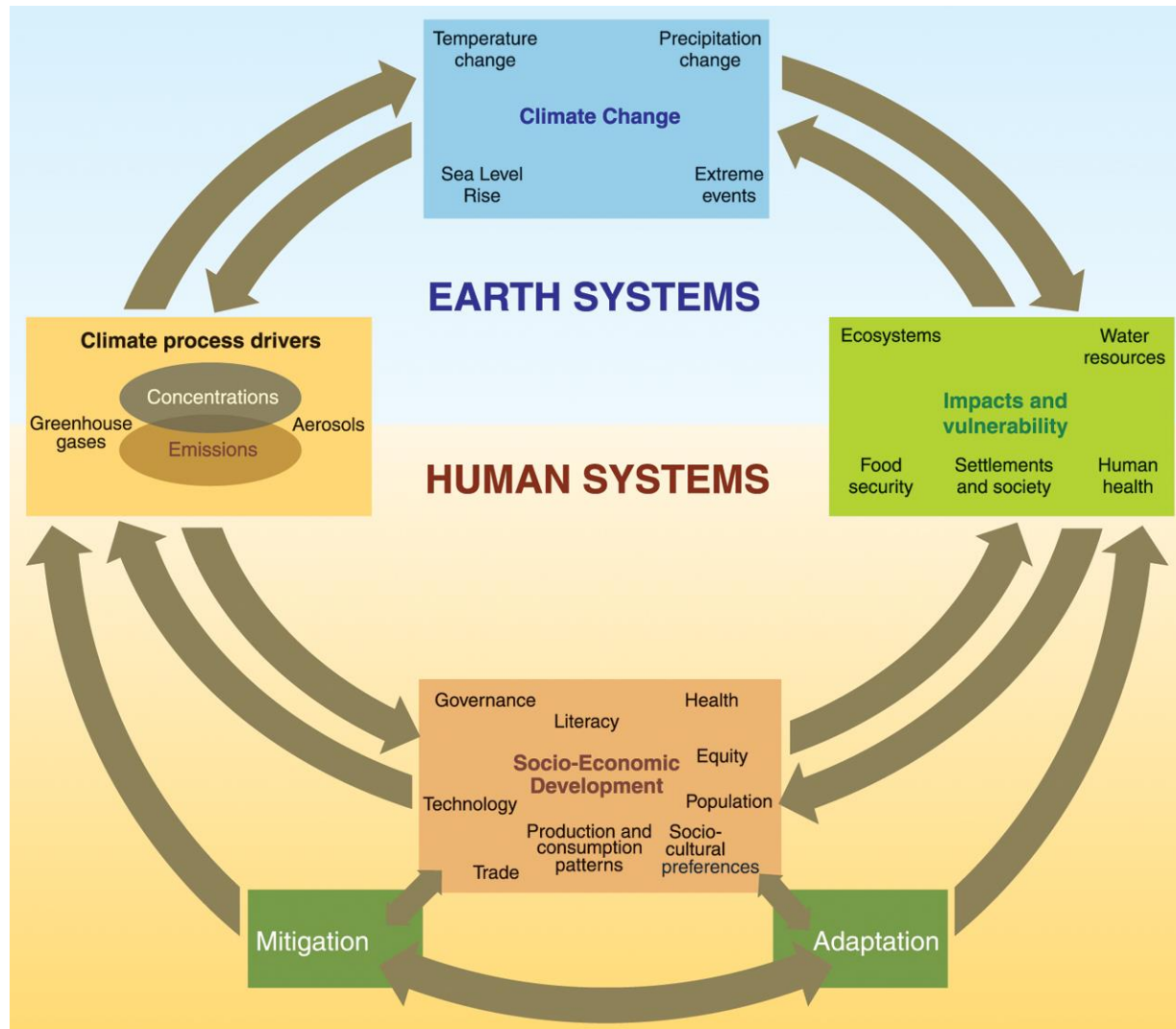


UNSD past activities

- 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.



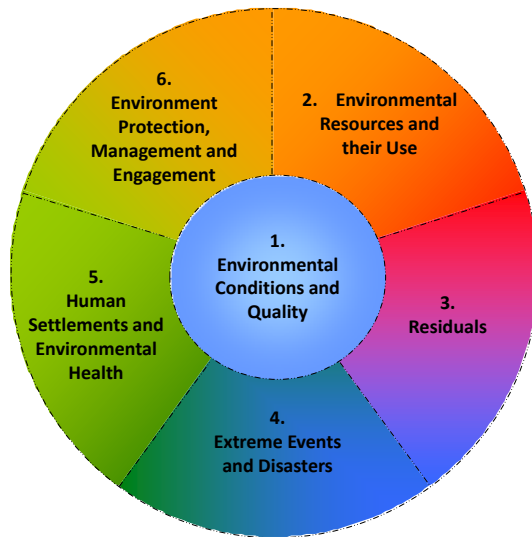
IPCC Framework



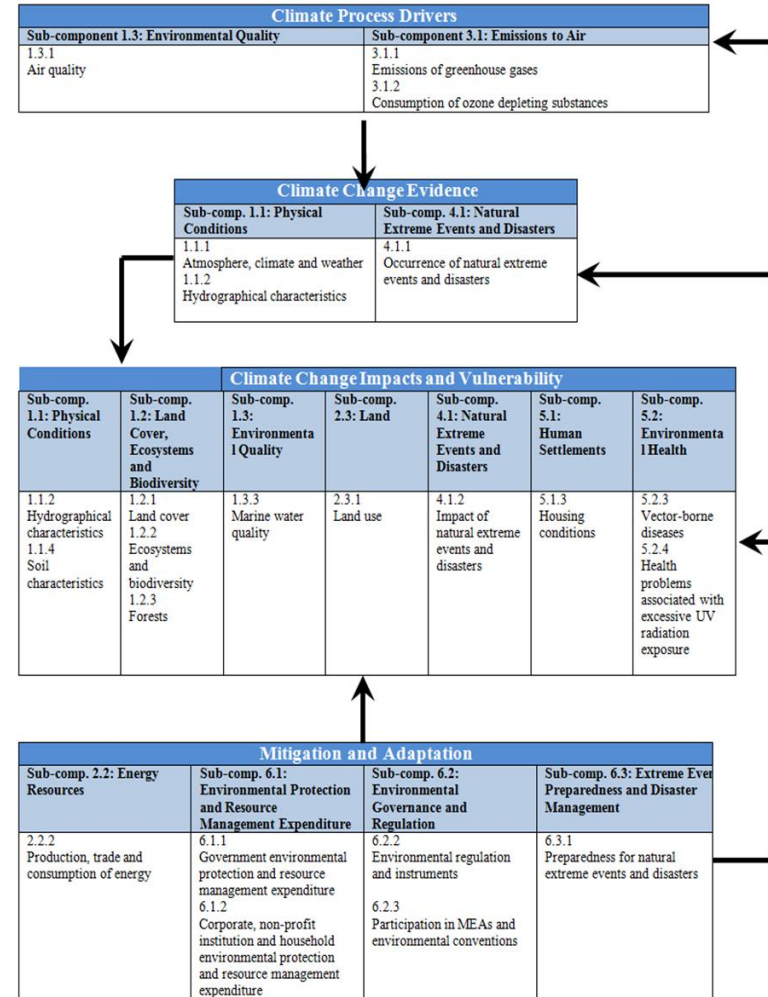
IPCC, 2007, Fourth Assessment Report



FDES & climate change statistics



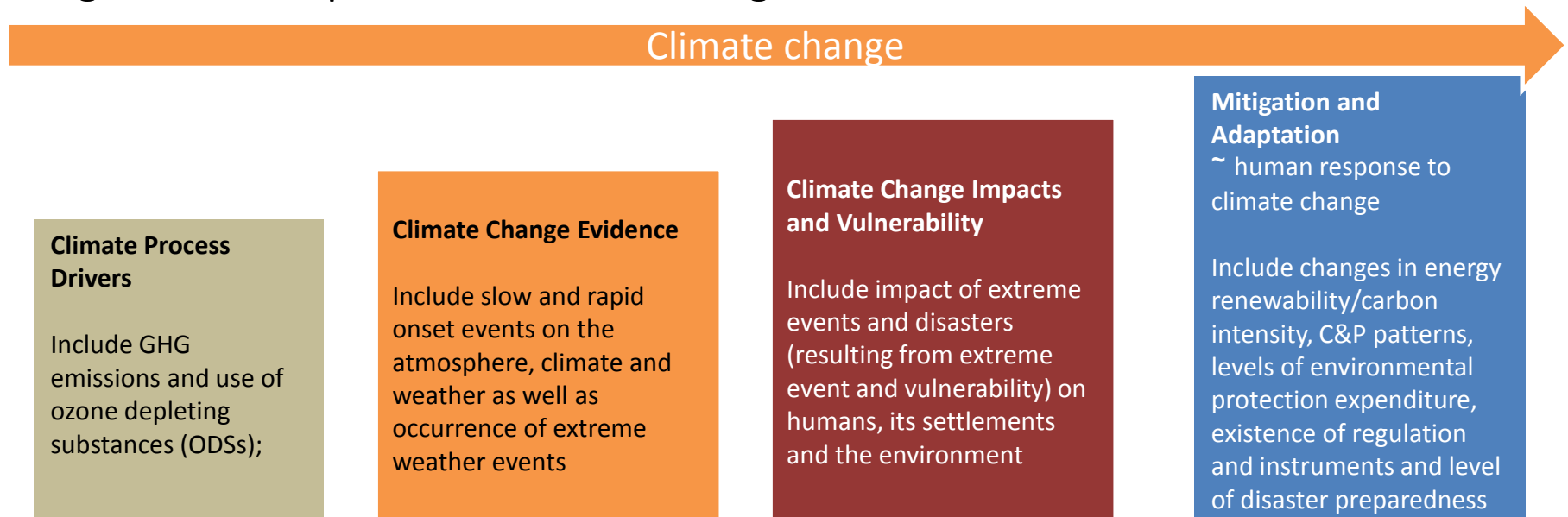
- FDES cross-cutting application (Chapter 5) links climate change and environment statistics based on IPCC Framework (4th report in 2007)
- Integrating official statistics for climate change monitoring



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:



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>

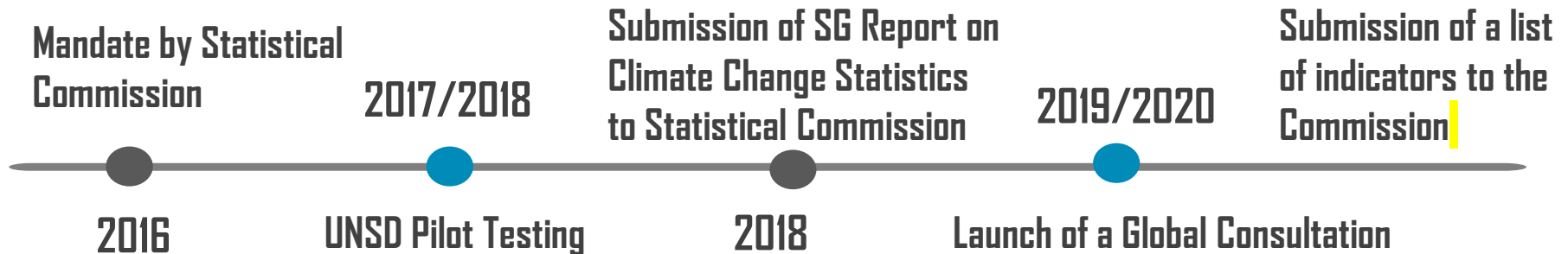
Main decisions:

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



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

UNSD:

- has pilot tested the UN-ECE set of indicators with countries and analyzed the responses to assess its applicability for developing countries, in particular to consider areas of concern such as adaptation/vulnerability.
- has discussed 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



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.



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 (current activities/plans)

UNSD:

- presented the SG's Report on Climate Change Statistics to the 49th session of the Statistical Commission (6-9 March 2018).
- has reviewed the UN-ECE and the IPCC/FDES frameworks and identified 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 Plans, 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 Stat. 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: Globalizing climate change statistics and indicators (current activities/plans)

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. Some examples are:

- Joint report to the 49th session of the Stat. Commission (with UN-ECE)
- Joint Side Event at the 49th session of the Stat. Comm. (with UN-ECE/FAO)
- UNFCCC participates in the Expert Group on Environment Statistics
- UNSD participated in the Workshop on national **adaptation** goals/indicators and their relationship with the SDGs and the Sendai Framework for Disaster Risk Reduction in Tokyo in July 2018. Main discussions as they relate to statistics:
 - (i) NSOs should be more engaged in the development of the national indicator reporting system on climate change given their experience in data compilation and dissemination, as well as their expertise in assessing data quality and availability which were stressed as fundamental to this work;
 - (ii) while integration of the three frameworks was seen as important it was also emphasized that this could be quite challenging as both the SDG and the Sendai indicator frameworks are intended for global monitoring while climate adaptation indicators are more applicable at sub-national levels due to the nature of adaptation in the local context resulting in different type of indicators; and
 - (iii) while it was stressed that global adaptation indicators should be established parallel to local indicators, the lack of data for effective monitoring was seen as a serious obstacle.



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 (drivers, impacts, vulnerability, mitigation, adaptation,) 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.



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 (96 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 96 national sources to date)



Towards the global set of climate change indicators

- In the growing list of climate change indicators, there are approximately 6,469 indicators related to Drivers, Impacts, Mitigation, Adaptation, and Vulnerability. Many of which are repeated across different countries and organizations.
- Indicators come from documents which published by national bodies, such as the M. of Environment or National Statistical Offices, which contain country-relevant information, at least one national source has been taken from 96 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.
- Currently, most country-specific indicators come from State of Environment reports or UNFCCC National Communications. Data from ministries of energy, meteorology and natural resources has also been considered.
- 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 11 common indicators for Drivers, 9 indicators for Impacts, 9 indicators for Vulnerability, 8 indicators for Mitigation and 8 for Adaptation. There is one unique indicator reported from the Arab region for Vulnerability, Mitigation and Adaptation areas respectively. The common indicators occur often and cover the majority (about 6,469) of reported indicators which have been extracted so far.



Towards the global set of Drivers' indicators (96 countries)

<u>Common Indicators</u>	Number of occurrences (both national/int'l)	Countries which have reported (out of 96 consulted)
Total greenhouse gas (GHG) emissions.....	187	107
Emissions from waste sector (waste and waste water).....	175	50
Emissions due to land use, change and forestry sector (LULUCF).....	46	41
Use of pesticides/fertilizers.....	43	26
Livestock production.....	32	24
Number of vehicles.....	28	16
Energy intensity of the economy.....	16	10
Deforestation.....	15	12
Total support for fossil fuels.....	14	6
Total energy efficiency of the economy.....	12	5
Total primary energy supply (TPES).....	8	4

Indicators reported by the countries in the Arab region are included among the common indicators in the global set.



Towards the global set of Impact indicators (96 countries)

<u>Common Indicators</u>	Number of occurrences (both national/int'l)	Countries which have reported (out of 96 consulted)
Occurrence of natural extreme events and disasters.....	320	214
Change in the air temperature.....	149	72
Incidence and distribution of diseases..... <i>(Vector-borne, air, water and food borne)</i>	127	98
Change in precipitation.....	94	61
Freshwater availability.....	54	19
Sea level rise.....	47	41
Declining agricultural production.....	39	26
Number of deaths..... <i>(due to extreme events, heat related, diseases and pollution)</i>	34	29
Distribution of invasive alien species.....	20	14

Indicators reported by the countries in the Arab region are included among the common indicators in the global set.



Towards the global set of Vulnerability indicators (96 countries)

Common Indicators

	Number of occurrences (both national/int'l)	Countries which have reported (out of 96 consulted)
Vulnerability to crops and agriculture.....	115	67
Population living in coastal areas.....	56	33
Fresh water quality and availability.....	55	33
Productivity of fishing.....	44	23
Population living below the poverty line.....	25	20
Vulnerable ecosystems.....	25	18
Food security.....	17	10
Endangered/vulnerable species.....	12	9
Vulnerability to energy production.....	8	2
	(out of 19 Arab countries)	

“Vulnerability to energy production” is an exclusive indicator reported by the countries in the Arab region.



Towards the global set of Mitigation indicators (96 countries)

Common Indicators

	Number of occurrences (both national/int'l)	Countries which have reported (out of 96 consulted)
Share of climate change mitigation expenditure..... (investments, funding, incentives)	93	45
Increase in forest area (clears GHGs from the air).....	74	45
Protected area/reserves.....	70	44
Renewable energy use in overall consumption.....	59	42
Share of energy and transport related taxes.....	33	18
Policies in place to enhance climate change mitigation.....	19	12
Total number of climate change related subsidies.....	17	8
Number of capacity building projects.....	3	3
	(out of 19 Arab countries)	

“Capacity building projects” is an exclusive indicator reported by the countries in the Arab region.



Towards the global set of Adaptation indicators (96 countries)

Common Indicators

	Number of occurrences (both national/int'l)	Countries which have reported (out of 96 consulted)
Monitoring and early warning system..... (Climate change, air and water)	64	41
Distribution and status of known species.....	46	35
Education and awareness of climate change.....	38	26
Adaptation of coastal water resources.....	19	10
Research and development on climate change.....	19	9
Area afforested	13	12
Expenditure for adaptation.....	5	4
Green building projects	6	4
	(out of 19 Arab countries)	

“Green building project” is an exclusive indicator reported by the countries in the Arab region.



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.
- Continue to engage with UNFCCC and other partners to strengthen the link between statistics and policy, e.g., by: (i) undertaking joint initiatives in the development of climate change statistics and indicators; and (ii) encouraging joint capacity building efforts and training (e.g., UNFCCC is participating in the current workshop on environment statistics and information for the Arab region).
- Ensure linkage of the work on the global set of indicators to:
 - the Adaptation Programme of UNFCCC (Article 7 - Paris Agreement);
 - the Global Stocktake of the Paris Agreement (Article 14); and
 - the Transparency Framework of the Paris Agreement (Article 13), given that the implementation guidance is expected to shed more light on the data reporting requirements of the Paris Agreement.

