Climate change-related Statistics and Indicators

Progress of work of the UNECE Task Force

STATISTICS

Fifth Meeting of the Expert Group on Environment Statistics, New York, 16-18 May 2018

Work of Task Force is under the auspices of the Conference of European Statisticians (CES)

Governing body in statistics

- 65 countries:
  - 56 UNECE Member States, including Canada, Russian Federation and United States
  - All other OECD countries: Australia, Chile, Japan, Republic of Korea, Mexico, New Zealand
  - Some additional countries: Brazil, Colombia, South Africa
- Chief Statisticians of international organizations
  - CIS-STAT, Eurasian Economic Commission, Eurostat, OECD, IMF, World Bank, UN Statistics Division in New York etc.
- A number of partner organizations
  - Specialized UN agencies, regional commissions and several organizations interested in statistics for SDGs
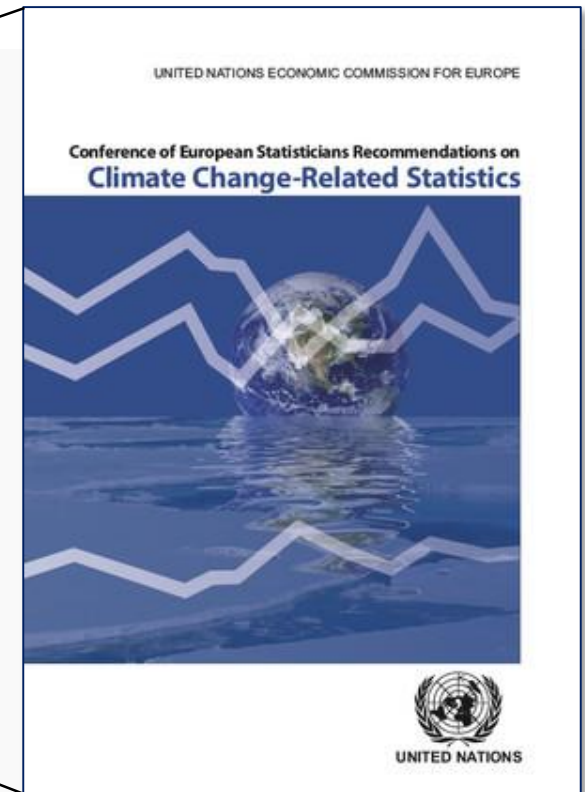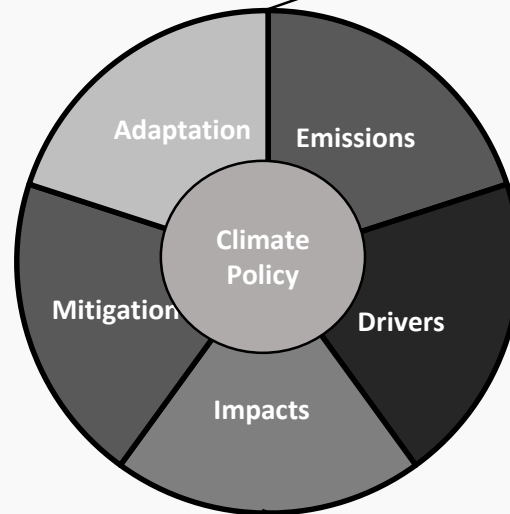
CES Recommendations on climate change-related statistics

Promote the use of official statistics

- Approved by CES in 2014
- Defines the scope

Adaptation
Emissions
Climate Policy
Mitigation
Drivers
Impacts

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

Conference of European Statisticians Recommendations on
Climate Change-Related Statistics

UNITED NATIONS

- Recommends practical steps to:
  - Inform emission inventories
  - Inform analysis of climate change
  - Improve the fitness of official statistics to inform climate policies
- Provided the starting point for developing the set of indicators

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Members of the Task Force

NSOs, Ministries and International Organizations

- Chair: Italy (Angelica Tudini)

- Vice-Chair: Luxembourg (Olivier Thunus)

- Countries: Canada, Finland, Kyrgyzstan, Mexico, Netherlands, Russian Federation, Sweden, Turkey

- Organizations: EEA, Eurostat, FAO, IEA, OECD, UNEP,UNFCCC, UNSD

- Secretariat: UNECE (Michael Nagy)

Initial set of key climate change-related indicators

39 indicators with definitions and sources

- A well-aligned set was developed by the Task Force (chaired by Italy):
  - **75%** linked with the Framework for Development of Environment Statistics
  - Over **50%** can be produced from the System of Environmental Economic Accounting
  - **25%** are SDG indicators
  - **10%** are Sendai Framework indicators
- Covers the scope of climate change-related statistics:
  - **Drivers:** 8 indicators
  - **Emissions:** 7 indicators
  - **Impacts**: 13 indicators
  - **Mitigation**: 6 indicators
  - **Adaptation:** 5 indicators
- Adopted by the CES in June 2017

Initial set of key climate change-related indicators

39 indicators with definitions and sources

DOMAIN	SUB DOMAIN	INDICATOR
DRIVERS	National total	1. Total primary energy supply (TPES) 2. Share of fossil fuels in total primary energy supply (TPES) 3. Losses of land covered by (semi-) natural vegetation 4. Total support for fossil fuels / GDP
	Production	5. Total energy intensity of production activities 6. CO2 intensity of energy for the economy 7. Emission intensity of agricultural commodities
	Consumption	8. Energy consumption by households / capita
EMISSIONS	National total	9. Total GHG emissions 10. CO2 emissions from fuel combustion 11. GHG emissions from land use
	Production	12. Total GHG emissions of production activities 13. GHG emission intensity of production activities
	Consumption	14. Direct GHG emissions from households 15. Carbon footprint
IMPACTS	Physical Conditions	16. Annual average surface temperature 17. Percentage of land area suffering from unusual wet or dry conditions (Standard Precipitation Index)
	Water resources	18. Level of water stress: freshwater withdrawal as a proportion of available freshwater resources
	Land, Land Cover, Ecosystems and Biodiversity	19. Cumulative number of alien species 20. Carbon stock in soil 21. Proportion of land that is degraded over total land area
	Extreme Events and Disasters	22. Number of deaths and missing persons attributed to hydro-meteorological disasters, per 100,000 population 23. Occurrence of extreme weather events 24. Direct economic loss attributed to hydro-meteorological disasters in relation to GDP 25. Number of people whose destroyed dwellings were attributed to hydro-meteorological disasters
	Human settlements and human health	26. Distribution of cases of vector-borne diseases 27. Heat-related mortality
	Agriculture, forestry and fishery	28. Direct agricultural loss attributed to hydro-meteorological disasters

Initial set of key climate change-related indicators

39 indicators with definitions and sources

DOMAIN	SUB DOMAIN	INDICATOR
MITIGATION	Energy resources	29. Renewable energy share in the total final energy consumption
	Expenditures	30. Share of climate change mitigation expenditure relative to GDP
	Environmental Governance and Regulation	31. Share of energy and transport related taxes as percentage of total taxes and social contributions 32. Total climate change related subsidies and similar transfers / GDP 33. Average carbon price 34. Mobilized amount of USD per year starting in 2020 accountable towards the USD 100 billion commitment
ADAPTATION	Expenditures	35. Share of government adaptation expenditure to GDP
	Water resources	36. Change in water use efficiency over time
	Human settlements and human health	37. Proportion of population living in dwellings with air conditioners or air conditioning
	Agriculture, forestry and fishery	38. Progress towards sustainable forest management 39. Proportion of agricultural area under productive and sustainable agriculture

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Set of key climate change-related indicators

UNSC recognition and outcomes of the pilot testing

- In 2016 (47th session) the UNSC adopted decision 47/112 which considers the UNECE set of indicators as a basis for developing a global set of climate change statistics and indicators.

- Task Force is now refining the set of indicators based on the results of a pilot testing with 10 countries and FAO.

- Initial results show that:
  - For several of the proposed indicators long time series (e.g. back to 1990) can already be produced
  - In some cases methodological clarifications are needed, e.g. in the case of so-called "dual indicators" (for which both a residence - i.e. SEEA - and a territory approach is possible)
  - Most work on refining indicators and identifying the right methodologies is needed in the areas "impacts", "adaptation" and "mitigation"

Countries were asked to compile indicators

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	No.	Indicator	Tier	Dual	Unit	2010	2011	2012	2013	2014	2015	2016	Comments
Drivers	1	Total primary energy supply (TPES)	I	yes	PJ	186.56	185.79	206.20	196.34	200.35	196.19		
	2	Share of fossil fuels in total primary energy supply (TPES)	I	yes	%	67%	62%	60%	60%	59%	60%		
	3	Losses of land covered by (semi-) natural vegetation	III	yes	ha								
	4	Total support for fossil fuels / GDP	II		%								
	5	Total energy intensity of production activities	II	yes	TJ / monetary unit (national currency)	9.07	7.83	7.80	7.85	7.72	7.77		unit: TJ/mill euro
	6	CO2 intensity of energy for the economy	II	yes	kT CO2/TJ	0.05	0.05	0.05	0.04	0.04	0.04		
	7	Emission intensity of agricultural commodities	II	yes	kg of CO2eq per kg of product	0.53	0.54	0.43	0.45	0.42			Find data per country on FAOSTAT http://www.fao.org/faostat/en/#d
	8	Energy consumption by households / capita	I	yes	GJ per person	37.89	35.85	35.81	35.27	36.03	34.22		
Emissions	9	Total GHG emissions	I	yes	Gg CO2 equivalent	13926.98	12871.27	12626.87	12542.11	12655.46	12915.45		
	10	CO2 emissions from fuel combustion	I	yes	Mt CO2	9700.95	8580.47	8083.85	7984.33	7948.76	8269.08		
	11	GHG emissions from land use	I	yes	Gg CO2 equivalent	2018.88	1782.15	639.83	1091.99	4343.32	1377.15		
	12	Total GHG emissions of production activities	I		Gg CO2 equivalent	11954.13	10987.37	10815.49	10673.04	10582.61	10893.67		
	13	GHG emission intensity of production activities	I		Gg CO2 equivalent / monetary unit (national currency)	0.75	0.64	0.61	0.59	0.58	0.58		unit: kg/euro
	14	Direct GHG emissions from households	I	yes	Gg CO2 equivalent	1972.86	1883.90	1811.39	1869.06	2072.85	2021.78		
	15	Carbon footprint	III	yes	Thousand tonnes of CO2 equivalent		13594.08						
Impacts	16	Annual average surface temperature	I		degrees Celsius	5.6	7.3	6.1	7	7.4	7.8	7.1	
	17	Percentage of land area suffering from unusual wet or dry conditions (Standard Precipitation Index)	I		% of land area								
	18	Level of water stress: freshwater withdrawal as a proportion of available freshwater resources	I	yes	%								
	19	Cumulative number of alien species (terrestrial, primary producers)	III		Number of species	34	34	34	34	34	34	34	Find all data per country on ~~...~~ ~~...~~ ~~...~~ invasive species in ~~...~~ here ~~...~~ on 2015 a Nature Conservation Agency cond research to evaluate alien specie made a list of invasive alien spec number indicated on the table is invasive alien species that occur Total number of alien species in
		Cumulative number of alien species (terrestrial, invertebrats)	III		Number of species	3	3	3	3	3	3	3	
		Cumulative number of alien species (terrestrial, vertebrats)	III		Number of species	3	3	3	3	3	3	3	
		Cumulative number of alien species (freshwater, primary producers)	III		Number of species	2	2	2	2	2	2	2	
		Cumulative number of alien species (freshwater, invertebrats)	III		Number of species	7	7	7	7	7	7	7	
		Cumulative number of alien species (freshwater, vertebrats)	III		Number of species	1	1	1	1	1	1	1	
		Cumulative number of alien species (marine, primary producers)	III		Number of species	1	1	1	1	1	1	1	
		Cumulative number of alien species (marine, invertebrats)	III		Number of species	6	6	6	6	6	6	4	
		Cumulative number of alien species (marine, vertebrats)	III		Number of species	1	1	1	1	1	1	1	

Countries were asked some questions on the indicators

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- **All indicators**
    - 1.1 Were you able to produce the indicator according to the proposed methodology?
    - 1.2 If you used another methodology, please describe briefly
    - 1.3 Which data sources did you use?
    - 1.4 What were the main problems in producing the indicator?
    - 1.5 In case it was not possible to produce the indicator: Please explain why
    - 1.6 Based on your experience from the pilot testing: Do you think the indicator or its methodology needs to be revised?
    - 1.7 If you think a revision is needed, please specify
    - 1.8 Any other comments?

- **Tier III indicators – if an alternative indicator was used by the country**
    - 2.1 What is the name of the used indicator
    - 2.2 Reason for use of another (similar) indicator
    - 2.3 Methodology of the indicator

Current work of the Task Force

Objectives of the revised ToR 2017-2019

- **Refine the initial set indicators based on the outcomes of the pilot testing and other comments received**

- Develop a set of operational and contextual indicators

- Identify missing methodologies for tier III indicators

- Develop guidelines for the implementation

- Contribute to the work on the global set of indicators

Work to be completed by end of 2019

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Current work of the Task Force

10 general questions discussed by the TF

1. How to deal with "dual indicators" (e.g. total energy intensity of production activities, total GHG emissions etc.)?

    *   Proposal: split into 2 indicators, one following the residential (SEEA) approach and one following the territory approach. Generally, the SEEA-based indicator will become part of the core-set

2. What should be the process when the pilot testing shows lack of underlying data?

    *   Proposal: review tier classification, and encourage countries to produce the data.

3. Which changes of some of the sub-areas (e.g. in the impact area) are needed?

    *   Proposal: minor changes in the impacts area (remove sub-area extreme events and disasters and allocate concerned indicators differently)

4. What are the criteria for replacing and adding of indicators?

    *   Proposal: Only if better indicators are available fulfilling the criteria relevance, methodological soundness and data availability

5. What to recommend for indicators for which only punctual data for a single year are available (e.g. disaster-related indicators)?

    *   Proposal: No action needed, this is not a problem

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Current work of the Task Force

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6. What to recommend for indicators for which only small changes between years are expected (e.g. indicators related to use of land)?

    - Proposal: Suggest in the methodological sheets that the reporting frequency can be lower for this type of indicators.

7. Should the set include indicators that measure climate and weather directly (for example, temperature and precipitation)?

    - Proposal: yes, this is needed to have a better picture about relevant CC-related phenomena

8. How to identify contextual and operational indicators?

    - Proposal: a preliminary screening is done by the TF from an existing indicators inventory

9. How to deal with indicators that are only relevant for some countries?

    - Proposal: Most of the indicators are relevant in all UNECE and CES countries. There is no need to delete or add indicators.

10. "Scaling by GDP" issue, i.e. how to deal with the comment that scaling by GDP might lead to ambiguity?

    - Proposal: Keep GDP as denominator, as this is a very commonly used approach; use the same type of GDP (e.g. PPP or GDP in chain-linked volumes)

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Approximate timetable

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Activity /Month	2017		2018													2019												2020
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan/Feb
Draft a work plan with activities, timing and division of work	■	■																									
Analyse the results of the pilot testing (data sources, needs for further guidance, needs for refinements of the set of indicators)			■	■	■																						
Refine the set of core indicators						■	■	■	■	■	■																
Present interim results to EF on Climate Change-related Statistics												■															
Implement recommendations of EF												■	■														
Develop set of operational and contextual indicators												■	■	■	■	■	■	■									
Draft implementation guidelines and final report																		■	■	■	■	■					
Present interim results to EF on Climate Change-related Statistics																							■				
Implement recommendations of EF																							■	■			
Finalise report																									■		
Submit the report to the CES Bureau																											■
Teleconferences	T		T		T		T	T			T		T		T		T		T	T			T		T		

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2018 Expert Forum for Producers and Users of Climate Change-related Statistics
2-4 October 2018 in Geneva (Switzerland)

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Sessions:

1. Set of key climate change indicators

2. Statistics on climate change adaptation

3. Measurement of extreme events and disasters

4. Use of geospatial data and earth observations with climate change statistics

5. Cooperation and collaboration on climate change related statistics between NSOs and other governmental bodies

More information will be made available on http://www.unece.org/index.php?id=47805

Thank you very much for your attention!

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