



# Climate change-related Statistics and Indicators

Progress of work of the UNECE Task Force



STATISTICS



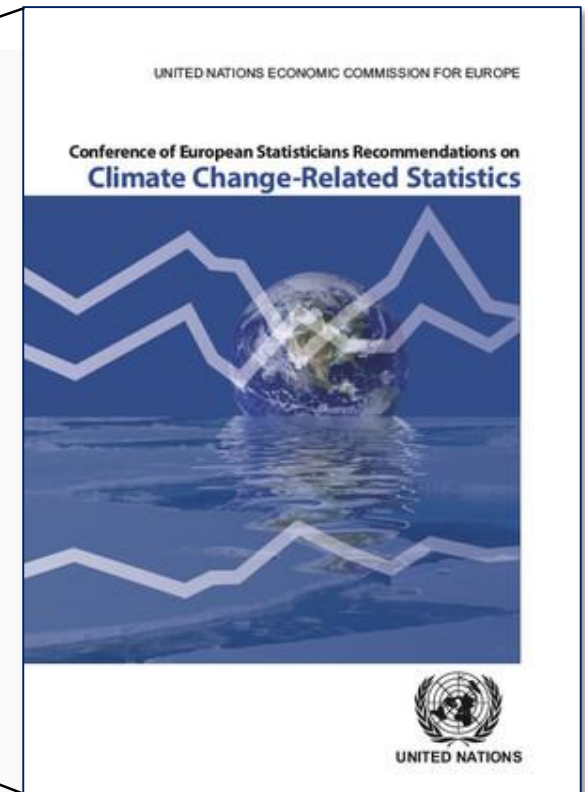
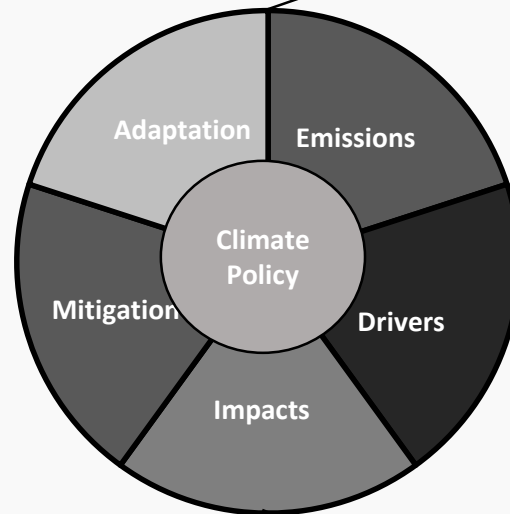
# CES Recommendations on climate change-related statistics

Promote the use of official statistics

## STATISTICS



- Approved by CES in 2014
- Defines the scope



- 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

# Members of the Task Force

NSOs, Ministries and International Organizations



## STATISTICS

- 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, Malgorzata Cwiek)

# Initial set of key climate change-related indicators

39 indicators with definitions and sources



## STATISTICS

- 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

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## STATISTICS

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

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## STATISTICS

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
ADAPTATION	Expenditures	33. Average carbon price
		34. Mobilized amount of USD per year starting in 2020 accountable towards the USD 100 billion commitment
	Water resources	35. Share of government adaptation expenditure to GDP
	Human settlements and human health	36. Change in water use efficiency over time
	Agriculture, forestry and fishery	37. Proportion of population living in dwellings with air conditioners or air conditioning
38. Progress towards sustainable forest management		
		39. Proportion of agricultural area under productive and sustainable agriculture

# Set of key climate change-related indicators

UNSC recognition and outcomes of the pilot testing



## STATISTICS

- In 2016 (47<sup>th</sup> 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.
- Pilot survey was conducted in the second half of 2017 - results available for 10 volunteer countries and the Food and Agriculture Organization of the United Nations (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” (which can be produced either from SEEA or from traditional statistics and other data sources)
  - Most work on refining indicators and identifying the right methodologies is needed in the areas “impacts”, “adaptation” and “mitigation”

# Current work of the Task Force

Objectives of the revised ToR 2017-2019



## STATISTICS

- **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







## STATISTICS

### 1. Decision on “dual indicators”:

- a) Generally the “residential approach” is applied, “territory-based” indicators serve as proxy indicators (if residential approach indicator cannot yet be produced) and contextual indicators.
- b) Following advice received at the 2018 UNCEEA meeting, some indicators are recommended to be calculated as “residential” AND “territorial”:
  - 1a - Total energy use by resident units (residence principle)
  - 1b - Total primary energy supply (TPES) (territorial principle)
  - 2a - Share of fossil fuels in total energy use by resident units (residence principle)
  - 2b - Share of fossil fuels in total primary energy supply (TPES) (territorial principle)
  - 9a - Total GHG emissions of the national economy (residence principle)
  - 9b - Total GHG emissions of the national territory (territorial principle)
  - 10a - CO2 emissions from fuel combustion of the national economy (residence principle)
  - 10b - CO2 emissions from fuel combustion of the national territory (territorial principle)
  - 29a - Renewable energy share in total energy use (residence principle)
  - 29b - Renewable energy share in the total final energy consumption (territorial principle)



## STATISTICS

### 2. Review of tier I and tier II indicators:

- Some are SDG indicators which have been upgraded from tier III (e.g. 21 - *Proportion of land that is degraded over total land area*), thus now an internationally agreed methodology is available and can be referred to)
- A few indicators have been changed, e.g. 16 – *mean temperature* is now *mean temperature anomaly*
- Most tier I and tier II have been reviewed and metadata sheets are finalized.
- Tier changed from I to III for some residence based indicators due to lack of internationally agreed methodology (ex. 1a, 2a, 10a, 29a)

### 3. Contextual indicators being discussed by the TF:

- **General contextual indicators**, to characterize the country in terms of geography, climate, economy, society
- **Contextual indicators accompanying individual core indicators or groups of indicators:**
  - e.g. for core indicator 3 - *Losses of land covered by (semi-) natural vegetation* contextual indicators on agricultural and forestry production could provide more context.
  - e.g. for energy-related core indicators contextual indicators on import and export of energy (by type of energy product) provides better understanding

# Status of work

May 2019



## STATISTICS

### 4. Operational indicators, suggested breakdowns are:

- Geographical
- Seasonal
- Institutional sector (Industries / Households / Government)
- Gender and age groups
- Income group
- Energy product
- Land class
- Product
- Type of purpose (heating, cooling, transport, other)
- Type of tax (energy, CO2, transport, etc.)
- Type of hazard
- dead persons / missing persons
- Type of damage (agricultural, other productive assets, critical infrastructure, cultural heritage, etc.)
- Mitigation expenditure type (renewable energy, energy saving, CO2 abatement)
- Type of transfer (subsidies, current transfer, capital transfer)
- Type of disease
- Type of adaptation measure

A	B	C	D	G		H	J	K	L	M	N	O	P	Q	R
				Contextual indicators			Possible disaggregations (operational indicators)								
Area	No.	Indicator (revised name)	Tier (revised)	Contextual indicators proposed after review of metadata sheet, indicators inventory and pilot testing (Olivier)	Possible proxy indicator	Institutional sector (Industries / Households / Government)	Geographical	Gender and age groups	Income group	Energy product	Seasonal	Land class	Product	Type of purpose (heating, cooling, transport, other)	
	1a	Total energy use by resident units (residence principle)	III	Energy imports and exports by type of energy	1b - Total primary energy supply (TPES) (territorial principle)	x	x			x					
	1b	Total primary energy supply (TPES) (territorial principle)	I	Energy imports and exports by type of energy			x			x					
	2a	Share of fossil fuels in total energy use by resident units (residence principle)	III	Energy imports and exports by type of energy		x	x			x					
	2b	Share of fossil fuels in total primary energy supply (TPES) (territorial principle)	I	Energy imports and exports by type of energy	2b - Share of fossil fuels in total primary energy supply (TPES) (territorial principle)		x			x					
D	3	Losses of land covered by (semi-) natural vegetation	III	Agricultural production			x					x			



## STATISTICS

### 5. Review of adaptation indicators (work at an early stage)

- Special case compared to other core indicators, because:
  - a) There is no internationally agreed set on CC adaptation indicators available
  - b) Progress has been made by countries and international organisations in identifying CC adaptation indicators and organizing them
  - c) Information requirements of Paris Agreement are being clarified
- Important documents used by the TF for its work:
  - *Indicators for adaptation to climate change at national level - Lessons from emerging practice in Europe* (ETC/CCA (European Topic Center on CCIVA) and the European Environment Agency (EEA), 2018; including an annex with country examples
  - *COP24 Report of the Adaptation Committee*
- Indicator selection distinguishes between
  - **Indicator function** (input indicator, process indicator, output indicator, outcome indicator); and
  - **Indicator content** (exposure indicator, adaptive capacity indicator, sensitivity indicator, composite vulnerability indicator, hazard indicator)
- TF has recognized the links with its adaptation indicators, and is now selecting as set based on its 3 main criteria: relevance, methodological soundness, data availability

# 2019 Expert Forum for Producers and Users of Climate Change-related Statistics

3-4 October 2019 in Geneva (Switzerland)



STATISTICS

## Substantive sessions address the following main topics:

- Measuring climate change adaptation
- Measuring hazardous events and disasters
- Climate change-related statistics and indicators
- Role of statistical community in climate action

Seminar will include presentations, panel discussions and active involvement of the audience

Sessions will discuss data producer's and user's views as well as different (and new) ways to generate information

More information will be made available at <http://www.unece.org/index.php?id=50812>



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**Thank you very much for your attention!**

Angelica Tudini



Michael Nagy

