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For discussion and
recommendations

Item 3 (c) of the Provisional
Agenda

STATUS OF WORK OF THE TASK FORCE ON A SET OF KEY CLIMATE CHANGE-RELATED STATISTICS AND INDICATORS USING SEEA

Note by the Task Force

*The note informs the CES Bureau of the progress of work in developing a set of key climate change-related statistics and indicators. The proposed indicator set is based on concepts defined by the CES Recommendations on Climate Change-related Statistics, endorsed by the CES plenary session in 2014. The Task Force carried out a survey on data availability for the draft set of indicators and will seek further feedback on the set of indicators in an expert meeting on 5-7 October 2016, in Geneva. **The Bureau is invited to review the progress made and provide advice on further steps.***

I.   INTRODUCTION

1.   The *Task Force on a set of key Climate Change-related Statistics and Indicators using SEEA* was created in 2014 by the CES Bureau and is planned complete its work in December 2016. Its work is guided and overseen by the CES *Steering Group on Climate Change-related Statistics*.

2.   The creation of the Task Force follows the *CES Recommendations on Climate Change-related Statistics* – endorsed in April 2014 by more than 60 countries and international organisations in the CES plenary session, in particular the suggestion to develop a set of key climate change-related statistics.

3.   The objective of the Task Force is to define an internationally comparable set of key climate change-related statistics and indicators that can be derived from the UN System of Environmental-Economic Accounting (SEEA) to the extent possible and other sources, such as the UN Framework for the Development of Environment Statistics (FDES). The work takes into account the UN Sustainable Development Goals (SDGs), the Sendai Framework on Disaster Risk Reduction (Sendai Framework) and the requirements under the UNFCCC, including, as appropriate, the recent Paris Agreement (agreed at COP21 in December 2015).

4.   To limit the size the set, the Task Force decided at an early stage that the set of key climate change-related indicators should consist of maximum 40 indicators which serve multiple purposes:

   a) painting the picture of the most relevant climate change-related issues;
   b) addressing most relevant current policy questions;
   c) helping to identify upcoming information needs.

5.   Members of the Task Force represent the National Statistical Offices (NSOs) of Italy (chair), Canada, Kyrgyzstan, Luxembourg, Mexico, Netherlands, Philippines, Romania, Russian Federation and Turkey. Furthermore, the following international organisations are member of the Task Force: the European Environment Agency (EEA), the Food and Agriculture Organization of the United Nations (FAO), the Organisation for Economic Co-operation and Development (OECD), the Statistical Office of the European Union (Eurostat), the United Nations Environment Programme (UNEP), the United Nations Framework Convention on Climate Change (UNFCCC), the United Nations Population Fund (UNFPA) and the United Nations Statistics Division (UNSD).

6.   A first status report (interim report) was presented to the Steering Group on Climate Change-related Statistics in January 2016, and feedback received from the Steering Group was taken into consideration for the further work.

7.   The ongoing work of the Task Force was also presented at the 47th Session of the United Nations Statistical Commission (UNSC), where it was decided that **based on the outcomes of the work of the Task Force a global set of key climate change-related indicators and statistics should be developed.**

II.   STATUS OF WORK (30 September 2016)

8.   The Task Force has prepared a **draft list of 39 headline climate change indicators**. The list includes "potential headline indicators" for which either the methodology still needs to be developed or the data availability is not high.

9.   The scope of the indicator set is consistent with the *CES Recommendations on Climate Change-related Statistics* that define climate change related statistics as:

> "Environmental, social and economic data that measure the human causes of climate change, the impacts of climate change on human and natural systems, the efforts of humans to avoid the consequences as well as their efforts to adapt to the consequences".

10.   The indicators are broken down into five climate change-related areas, also derived from the CES Recommendations:

(a)   Drivers: human causes of climate change;
(b)   Emissions: GHG emissions;
(c)   Impacts: impacts of climate change on human and natural systems;
(d)   Mitigation: efforts to avoid the consequences;
(e)   Adaptation: efforts to adapt to the consequences.

11.   For the presentation of the indicators, to allow for a clear link with the main aspects of climate change, the Task Force introduced sub-areas for each of the 5 areas. Table 1 shows the areas and their sub-areas. A grey cell indicates that the specific combination area-sub-area does not apply. The table highlights some important links between the areas (e.g. the same set of sub-areas apply to drivers and emissions, sub-areas for impacts and adaptation overlap to a certain extent). The values in the fields represent the number of headline indicators per sub-area.

Table 1. Areas and sub-areas of climate change-related indicators

Sub-areas	Areas				
	Drivers	Emissions	Impacts	Mitigation	Adaptation
National total	4	3			
Production	3	2			
Consumption	1	2			
Physical Conditions			2		
Land Cover, Ecosystems and Biodiversity			2		
Land			1		
Extreme Events and Disasters			4		
Water resources			1		1
Human settlements and environmental health			2		1
Agriculture, forestry and fishery			1		2
Energy resources				1	
Environment protection and resource management expenditure				1	
Environmental governance and regulation				4	
Adaptation expenditures					1
Total	**8**	**7**	**13**	**6**	**5**

12.   The area "impact" is slightly over-represented in terms of the number of indicators. This can be explained by the bigger number of sub-areas to be addressed by impact indicators. Several of the impact indicators also serve as outcome based adaptation indicators. The complete list of indicators is provided in Annex I.
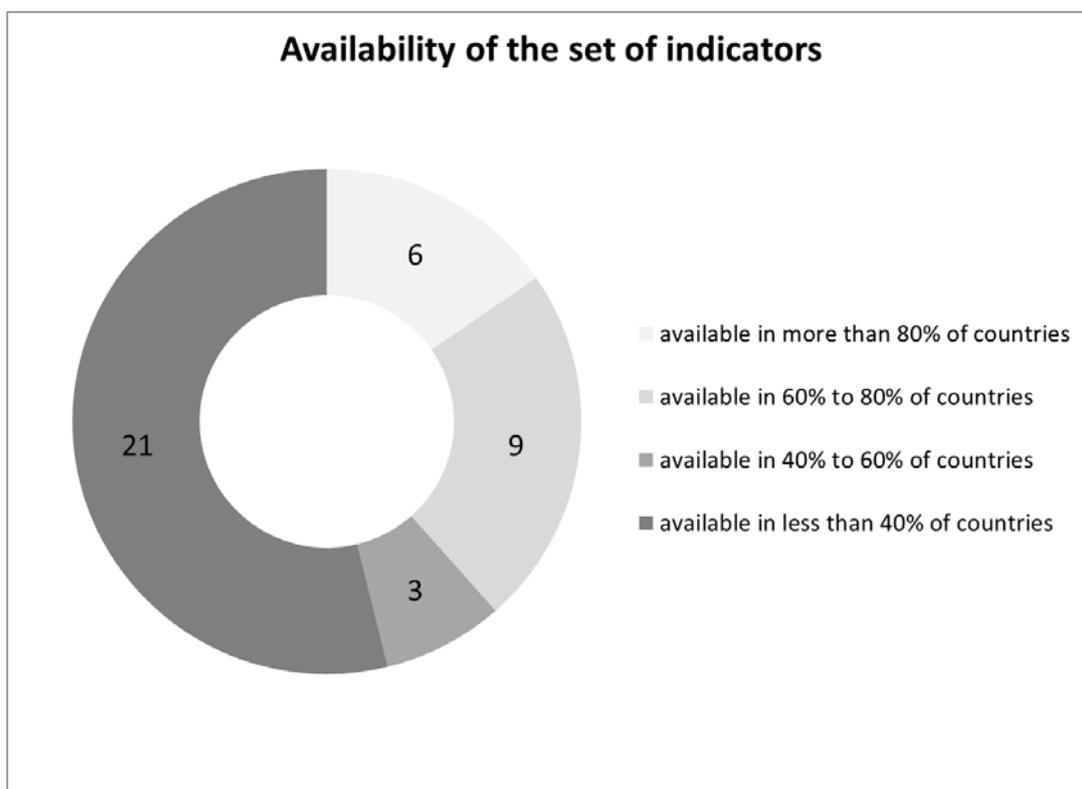
13.   Half of the proposed indicators can be produced from SEEA, 10 are SDG indicators and 3 are indicators are currently under discussion for measuring the targets of the Sendai Framework on Disaster Risk Reduction.

14.   For each of the proposed indicators a **metadata sheet** was produced, which contains the following information:

(a)   Versioning (First publication, Last update)
(b)   Indicator (Number, Name)
(c)   Domain and subdomain
(d)   Presentation (Type of indicator, Indicator description, Unit of measure, Classification systems, Coverage, Spatial aggregation, Reference period, Update frequency, Base period, Related operational indicators, Related contextual indicators)
(e)   Relevance (Policy context and targets, Link to SDGs, Link to Sendai Framework, Other, Policy references)
(f)   Methodology (Methodology for indicator calculation, Methodology for gap filling, Methodology references, Methodology uncertainty, Data sets uncertainty)
(g)   Data sources (Data sources, Reference to UN-FDES, Reference to SEEA-CF, Georeferenced data, Data availability)
(h)   Comments

15.   A **survey on data availability** for the draft set of indicators was sent out to NSOs of all CES member countries in August 2016. The aim of the survey was to identify the availability of data to produce the proposed set of key climate-change related indicators and to get information about possible alternative and additional indicators which are used by countries. The Task Force will revise the draft list of indicators based on data availability in the National Statistical Systems of countries, and develop proposals for implementation and capacity building.

16.   By 23 September 2016, 41 countries have replied to the survey on data availability. The first results show the following picture:

Availability of the set of indicators

- available in more than 80% of countries
- available in 60% to 80% of countries
- available in 40% to 60% of countries
- available in less than 40% of countries

17.   About half of the indicators were reported by countries which produce it, as fully mature

18.   Other observations form the survey:

- Indicators on drivers and emissions are quite well available, but indicators on impacts, mitigations and adaptions need more work.
- For many of these indicators, the compilation methodology is not considered as fully mature: international organizations have a role to play in this area.
- For a vast majority of indicators mentioned as available, NSO is not the producer of these indicators: the compilation of climate change-related indicators requests effective exchanges between NSO and other agencies.

19.   These results were presented and discussed at the Expert Forum on Climate Change-related Statistics (5-7 October 2016, Geneva).

III.   NEXT STEPS

- **List of indicators:** Taking into consideration the results of the data availability survey and the input received from the Expert Forum on Climate Change-related Statistics, the Task Force is carrying out a final revision of the list of indicators.
- **Metadata sheets:** The metadata sheets for the final list of indicators still have to be completed. As some methodological issues remain open (e.g. for SDG indicators), it will not be possible to fully complete all metadata sheets under the current mandate of the Task Force.
- **Final report:** The final report, including a detailed explanation of the selection procedure, the final list of indicators and the metadata already exists in a draft version,

but editing and actualization with the revised list of indicators is still necessary. The report will also include a chapter on implementation and proposed next steps.

20.   The final report will be presented to the CES Bureau for a review at its next meeting in February 2017. The Bureau will then decide if the report can be sent for an electronic consultation to all CES members. Subject to the positive outcome of the consultation, the Report will be submitted to the 2017 CES plenary session for endorsement.

ANNEX I – DRAFT LIST OF HEADLINE (=KEY) CLIMATE CHANGE-RELATED INDICATORS

Area	Sub-area	No.	Indicator	Link to policy and statistical frameworks
Drivers	National total	1	Total primary energy consumption	FDES 2.2.2.a.4, SEEA-CF 3.4 (Physical flow accounts for energy)
		2	Share of fossil fuels in primary energy consumption	FDES 2.2.2.a.4, SEEA-CF 3.4 (Physical flow accounts for energy)
		3	Land use/cover change	FDES 1.2.1.a and 2.3.1.a, SEEA-CF 5.6 (Asset accounts for land)
		4	Total support for fossil fuels / GDP	SEEA-CF 4.4 (Accounts for other transactions related to the environment)
	Production	5	Total energy efficiency of the economy	SDG 7.3.1 (tier 1), FDES 2.2.2.a, SEEA-CF 3.4 (Physical flow accounts for energy)
		6	Carbon intensity of energy for the economy	
		7	Cattle stock	FDES 2.5.4.a.1
	Consumption	8	Energy consumption by households / capita	FDES 2.2.2.a.c, SEEA-CF 3.4 (Physical flow accounts for energy)
Emissions	National total	9	Total GHG emissions	UNFCCC, FDES 3.1.1, SEEA-CF 3.6.3 (Accounting for air emissions)
		10	CO2 emissions from fuel combustion	UNFCCC, FDES 3.1.1.a.1, SEEA-CF 3.6.3 (Accounting for air emissions)
		11	GHG emissions from LULUCF	UNFCCC, FDES 3.1.1
	Production	12	Total GHG emissions of production activities, residence based	FDES 3.1.1, SEEA-CF 3.6.3 (Accounting for air emissions)
		13	GHG emission intensity of production activities	SEEA-CF 3.6.3 (Accounting for air emissions)
	Consumption	14	Direct GHG emissions from households	FDES 3.1.1, SEEA-CF 3.6.3 (Accounting for air emissions)
		15	Carbon footprint	SEEA-CF 3.6.3 (Accounting for air emissions)
Impacts	Physical Conditions	16	Mean temperature	FDES 1.1.1.a
		17	Change of precipitation pattern	FDES 1.1.1.b and 2.6.1.a
	Water resources	18	Level of water stress: freshwater withdrawal as a proportion of available freshwater resources	SDG 6.4.2 (tier 1), FDES 2.6.1 and 2.6.2.a, SEEA-CF 3.5 (Physical flow accounts for water) and SEEA-CF 5.11 (Asset accounts for water resources)
	Land Cover, Ecosystems and Biodiversity	19	Cumulative number of alien species	FDES 1.2.2.c.3
		20	Carbon stock in soil	
	Land	21	Proportion of land that is degraded over total land area	SDG 15.3.1 (tier 3), FDES 1.1.4.b
	Extreme Events and Disasters	22	Number of deaths, missing, injured, affected by climatological, hydrological and meteorological disasters	SDG 1.5.1(tier 2), 11.5.1 (tier 2) and 13.1.2 (tier 2), Sendai Framework: Number of deaths, missing persons and persons affected by disaster per 100,000 people, FDES 4.1.2.a
		23	Occurrence of extreme weather events	FDES 4.1.1.a

Area	Sub-area	No.	Indicator	Link to policy and statistical frameworks
		24	Direct Economic loss due to hazardous climatological, meteorological and hydrological events in relation to GDP	SDG 11.5.2 (tier 2), Sendai Framework: Direct disaster economic loss in relation to global GDP, including disaster damage to critical infrastructure and disruption of basic services, FDES 4.1.2.b
		25	Number of housing units damaged and destroyed by climatological, hydrological and meteorological disasters	Sendai Framework, FDES 4.1.2.c
	Human settlements and environmental health	26	Incidence and distribution of vector-borne diseases (e.g. West Nile virus, malaria, Lyme disease)	FDES 5.2.3.a.1
		27	Heat-related mortality	
	Agriculture, forestry and fishery	28	Agricultural losses from droughts, floods and other severe weather events	FDES 2.3.1.a and 4.1.2.b
Mitigation	Energy resources	29	Renewable energy share in the total final energy use/consumption	SDG 7.2.1 (tier 1): Renewable energy share in the total final energy consumption, FDES 2.2.2a.3
	Environment protection and resource management expenditure	30	Share of climate change mitigation expenditure relative to GDP	FDES 6.1.1.a, SEEA-CF 4.4 (Accounts for other transactions related to the environment)
	Environmental governance and regulation	31	Share of energy and transport related taxes as percentage of total taxes and social contributions	FDES 6.2.2.b.1, SEEA-CF 4.4 (Accounts for other transactions related to the environment)
		32	Total climate change related subsidies and similar transfers / GDP	FDES 6.2.2.b.2, SEEA-CF 4.4 (Accounts for other transactions related to the environment)
		33	Average carbon price	
		34	Mobilized amount of USD per year starting in 2020 accountable towards the USD 100 billion commitment	SDG 13a.1 (tier 3)
Adaptation	Adaptation expenditures	35	Share of government adaptation expenditure to GDP	FDES 6.1.1.a.1, SEEA-CF 4.4 (Accounts for other transactions related to the environment)
	Water resources	36	Change in water use efficiency over time	SDG 6.4.1 (tier 3), FDES 2.6.2.h, SEEA-CF 3.5 (Physical flow accounts for water)
	Human settlements and environmental health	37	Proportion of population living in dwellings with air conditioners or air conditioning	
	Agriculture, forestry and fishery	38	Progress towards sustainable forest management	SDG 15.2.1 (tier 3), FDES 2.3.1.b.3
		39	Proportion of agricultural area under productive and sustainable agriculture	SDG 2.4.1 (tier 3), FDES 2.3.1.a

ANNEX II – CRITERIA AND METHODOLOGY FOR THE SELECTION OF INDICATORS

I.   PROCESS OF SELECTING THE INDICATORS

1.   Following the Eurostat methodology, the main criteria for selecting climate change-related headline indicators were relevance, soundness and measurability.

2.   The following procedure was applied to identify headline climate change-related indicators:

(a)   The Task Force **analysed the most important climate change-related frameworks, studies, reports and as well as international and national climate change-related indicator sets** in order to extract policy questions and indicators. The analysed documents included the targets of the SDGs and their proposed indicators, the Dutch paper *SEEA as a Framework for assessing Policy Responses to Climate Change*, the climate change indicators of the European Environment Agency and several other international and national related papers. In this way a total of 140 policy questions and 205 related indicators were identified.

(b)   The **policy questions were grouped under so-called "umbrella questions"** with a broader scope reducing the 140 policy questions to 39 umbrella questions. Each umbrella question was assigned to one of the five areas drivers, emissions, impacts, mitigation and adaptation (according to the CES recommendations).

(c)   The set of umbrella questions was presented to the participants of the Expert Forum for producers and users of climate change-related statistics (Geneva, 2-3 September 2015). A survey on the relevance of the individual umbrella questions was carried out among the participants. Participants assigned a rating to each of the 39 policy questions indicating its importance (on a scale from 1 to 5). The Task Force discussed the results of the survey at its face-to-face meeting on 4 September 2015 in Geneva.

(d)   At the 4 September meeting, the Task Force took the following decisions:
   i.   The **maximum total number of key climate change-related indicators** was set at 40.
   ii.   The **spatial reference of the indicators** will be mainly national but – where relevant – sub-national phenomena will also be represented.
   iii. The **temporal reference of the indicators** will be mainly annual but – where relevant – seasonal phenomena will also be represented.

(e)   Taking into account the ranking of the umbrella questions by the participants of the Expert Forum, the Task Force decided to identify about 8 indicators for each of the five areas based on the criteria relevance, soundness and measurability.

(f)   The list was revised focusing on relevance and methodological soundness. The Task Force concluded that headline indicators have to be relevant (rated as high) and need a sound methodology (soundness rated high). Where relevance is high but the soundness of the methodology and/or the measurability (i.e. data availability) are not rated high, indicators could be classified as "potential headline indicators" and considered again in the future (methodological soundness and/or measurability may increase over time, e.g. in case of SDG indicators).

(g)   Further revisions were made based on feedback received from the Steering Group and the UN Committee of Experts on Environmental-Economic Accounting (UNCEEA).

II. IMPORTANT CONSIDERATIONS RELATED TO THE SELECTION PROCEDURE

A. Indicators on adaptation to climate change

3. There is no internationally harmonised set of indicators on adaptation to climate change. After consultation with experts of the European Environment Agency and UNFCCC the Task Force agreed to the general approach chosen, and in particular to the following:

(a) To make a distinction between process and outcome indicators;

(b) To show the close relation between impact and adaptation indicators by using the same set of sub-areas;

(c) Ideally, there should be a pair of indicators (a process indicator under adaptation and a corresponding outcome indicator under impact). However, in practice this was not be possible in all cases. Therefore, the pairing is mainly represented by using the same sub-areas.

(d) Outcome indicators that can be found in the area "impacts" are not repeated in the adaptation area. There will be a general reference to impact indicators instead.

B. Conceptual differences between GHG Inventories (UNFCCC) and SEEA Air Emission Accounts

4. While more and more countries are implementing SEEA Air Emission Accounts, most international and national GHG-related policy targets and their measurement refer to GHG inventories reported under the UNFCCC. The inventories record GHG emissions on the national territory (territorial principle) and use a specific sector classification whereas SEEA Air Emission Accounts follow the residence principle and classify activities according to the ISIC classification of economic activities. The Task Force recommended to take into consideration the following when choosing between GHG inventories or SEEA Air Emission Accounts as a data source for the key set of indicators:

(a) Indicators should be defined by the information need rather than the underlying data set.

(b) There is an ongoing process to align SDG indicators with SEEA.

(c) Climate change-related information needs can refer to both GHG emissions on the national territory (e.g. GHG reduction goals usually refer to emissions generated on the national territory) and GHG emissions of its resident entities (e.g. GHG emission intensities and carbon footprint can benefit from statistics following the residence principle).

(d) Ideally data from GHG inventories should be fully compatible with data from SEEA Air Emission Accounts and the conceptual differences can be shown via bridge tables.

(e) Any sectorial breakdown which is not compliant with ISIC will hinder further data integration (e.g. with economic statistics) and would not be in-line with international statistical frameworks (such as SEEA or the FDES).

(f) SEEA Air Emission Accounts are among the priority accounts to be implemented (priority by international organisations and many countries). If SEEA Air Emission Accounts are recommended as data source for certain headline climate change-related indicators, it could be an incentive for countries to start or accelerate the implementation.

(g) A similar question appears with the use of energy data and statistics. Energy data can originate from energy balances of the International Energy Agency (IEA) following

the territorial principle and a specific industry classification, national energy statistics and/or SEEA Energy Accounts (residence principle and ISIC).

5.   Taking into consideration the above, and comments received from UNCEEA and the Steering Group, the Task Force decided to recommend a dual approach: for all indicators that can be derived both from SEEA and other sources a dual measurement should be foreseen in the short term. This is consistent with the ongoing process on aligning SDG indicators with SEEA.

C.   Use of "vector-type" indicators

6.   Some indicators are related to each other in form of sectorial breakdowns, e.g. total GHG emissions and GHG emissions for selected economic activities. The Task Force decided not to include different sectorial breakdowns of the same indicator in the set of headline indicators. This can be covered by accompanying operational and explanatory indicators which still have to be defined (not part of the current mandate of the Task Force).

D.   Constraints on choosing the most appropriate indicator

7.   **Potential headline indicators.** The Task Force considered relevance and methodological soundness as the most important criteria for the indicators. However, some of the highly relevant indicators may not be sufficiently methodologically sound or not available in many countries. Such indicators were noted as "potential headline indicators" to be considered again in a later review.

8.   Examples for that are important climate change-related SDG indicators classified as "tier 3". Other examples are the *share of climate change-related subsidies and similar transfers per GDP* and *share of climate change mitigation expenditure to GDP* where data are available only for a few countries. The Task Force considered the latter two cases as very important mitigation indicators and the discussion is open whether they should be classified as "potential headline indicators" (remark: the Steering Group recommended to find another term for it, the Task Force is still working on that). The same applies to indicators referring to adaptation expenditures which are important, but not well defined.

9.   **Data availability**. Measurability (i.e. data availability) is an important criterion for the selection of the headline indicators. However, the actual data availability differs in countries. It was decided, that data availability is ranked high if several countries (but not necessarily all) produce the data. For other countries the list of headline indicators could provide an incentive for starting to produce the necessary data on a regular basis.

10.   **SDG indicators**. Ideally the set of headline climate change-related indicators should have a certain overlap with the set of SDG indicators. However, the Task Force did not include all climate change-related SDG indicators automatically in the set of headline climate change-related indicators. Reasons for that are:

   (a) Several of the global climate change-related indicators cannot be applied at the national level.
   (b) The criteria for the selection of SDG indicators are different from those for the set of headline climate change-related indicators.
   (c) Many of the proposed climate change-related SDG indicators are targeted to one specific topic (such as poverty or health). Therefore, they do not qualify as headline indicators according to the chosen criteria, but would rather qualify as explanatory or operational indicators.

(d) Taking all of SDG indicators on board for the set of headline indicators would significantly increase the number of indicators and they would be unevenly distributed across the five main domains. This would also undermine some of the agreed concepts (such as the chosen selection criteria relevance, soundness and measurability or using activity breakdowns according to ISIC).

11. All initially proposed SDG indicators (status February 2015) which are related to climate change have been considered by the Task Force in the initial set of 205 indicators. In its further work the Task Force checked its results against the final list of SDG indicators (status March 2016).

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