Developing a Set of Key Climate Change-Related Statistics: the UNECE Task Force approach

The *CES Recommendations on climate change-related statistics*, endorsed in April 2014 by the Conference of European Statisticians (CES), highlighted the need to develop an internationally comparable set of key climate change-related statistics and indicators. Although greenhouse gas (GHG) emission indicators are internationally comparable, there is a lack of internationally comparable indicator sets on the broader aspects of climate change. In addition, because climate change is a global phenomenon, it is better that these indicators are developed together rather than each country developing them separately.

Therefore, the CES established a Task Force (TF) in September 2014 to define an internationally comparable set of key climate change-related statistics and indicators. The Task Force will explore how the System of Environmental-Economic Accounting (SEEA) could be used to develop the set. The group also aims at identifying definitions and data sources for the indicators.

The Task Force works under the guidance and coordination of the Steering Group on climate change-related statistics. It will take into account the Sustainable Development Goals (SDGs) and relevant issues raised in the context of the Post-2015 Development Agenda. The TF consists of experts from Canada, Italy, Kyrgyzstan, Luxembourg, Mexico, Netherlands, Romania, Russian Federation, the Philippines and Turkey. Furthermore, there are members from the following international organizations: EEA, Eurostat, FAO, UNFCCC, UNPF, UNSD and UNECE.

This background paper describes the approach adopted by the Task Force to achieve its objective, the results obtained so far, and the planned future steps. The Expert Forum for producers and users of climate change-related statistics will discuss the selection of indicators on 2-3 September 2015.

The basis of the Task Force work

At the start of its work, the Task Force agreed on the following issues:

a. Data sources
b. The scope of the work
c. Main terminology
d. The hierarchical approach to be adopted
e. Defining key climate change related statistics and indicators

a. Data sources

The CES suggested data sources to be used to derive the set of indicators and noted that, to the extent possible, priority should be given to existing statistical data sources, especially SEEA, and the Framework for the Development of Environment Statistics (FDES). In addition to these main reference frameworks, the Task Force members identified other relevant reports and studies for indicator selection.

b. *The scope of the work*

As regards the scope of work, the Task Force chose to focus on the climate change-related statistics as defined in the "CES Recommendations on Climate Change-Related Statistics", i.e.: *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 these consequences*.

This definition encompasses five main categories[1]:

1. Emissions: GHG emissions and their human causes
2. Drivers: human causes of climate change that deal with sources of emissions
3. Impacts: impacts of climate change on human and natural systems
4. Mitigation: efforts of humans to avoid the consequences of climate change
5. Adaptation: efforts to adapt to these consequences

c. *Main terminology*

The SEEA and FDES, in addition to providing the main sources for indicator selection, were used as references for defining basic terms and the relation between the terms. Specifically, the following FDES-based definitions were adopted:

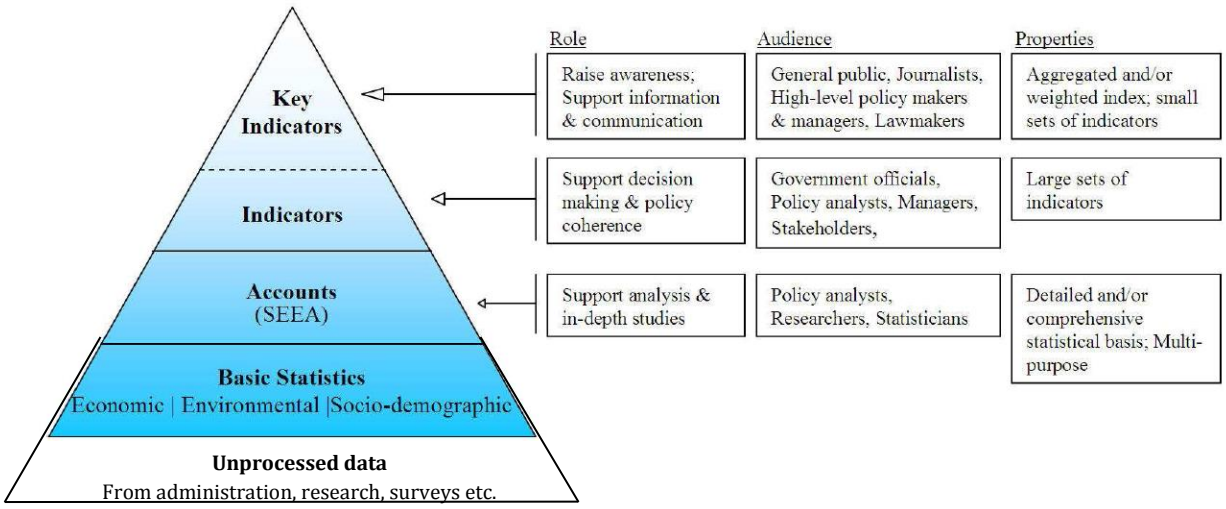
(UNPROCESSED) DATA: Large amounts of unprocessed observations and measurements. They can be collected or compiled by statistical surveys (censuses or sample surveys) by national statistical offices (NSOs) or other parts of the national statistical system, or they may originate from administrative records, registers, inventories, monitoring networks, remote sensing, scientific research, and field studies.

(BASIC) STATISTICS: Data that are described, aggregated, synthesized and structured according to statistical methods, standards and procedures. It is the role of NSOs to process data into meaningful statistics.

INDICATORS: Indicators are used to synthesize and present complex statistics and are measures that summarize, simplify and communicate information. Given that (basic) statistics are usually too numerous and detailed to satisfy the needs of policy makers and the general public, they often require further processing and interpretation, resulting in indicators. Indicators have the purpose of defining objectives, assessing present and future direction with respect to goals and values, evaluating specific programmes, demonstrating progress, measuring changes in a specific condition or situation over time, determining impact of programmes and conveying messages. Frameworks such as the Driving force, Pressure, State, Impact and Response (DPSIR), or policy frameworks such as the Millennium Development Goals (MDG) or the Sustainable Development Goals (SDG) indicators are typically used for the identification and structuring of indicators.

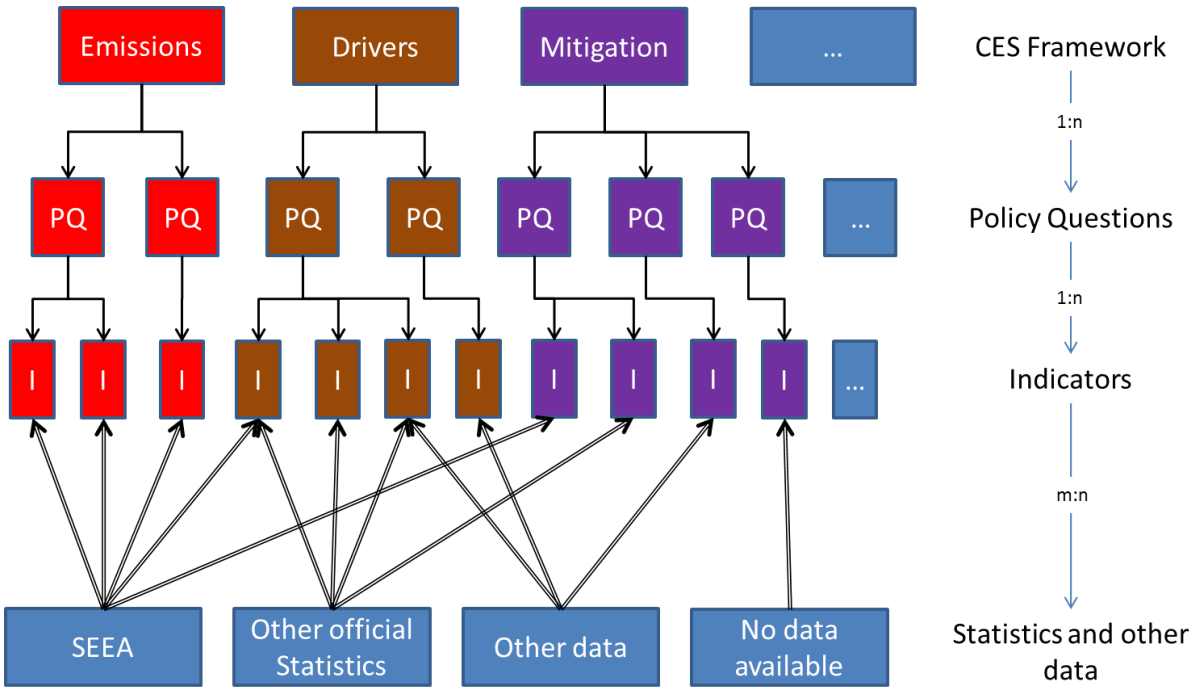
The relation between different layers of information was taken from the "information pyramid" (SEEA 2012, Applications and Extensions, Figure 2.1, "Unprocessed data" added by TF).

[1] The Task Force will not focus on statistics on climate and weather as these data are frequently collected and analysed outside the statistical system.



d. *Hierarchical approach*

The Task Force adopted a hierarchical approach to describe the relationship between the CES Framework of climate change-related statistics, policy questions, indicators and statistics. For each of the 5 areas of the scope (emissions, drivers, impacts, mitigation, adaptation) there is an underlying set of policy questions (PQ) (1:n relation). Each policy question can be answered by one or more indicators (I) (1:n relation). Each of the indicators needs underlying statistics (basic statistics and/or accounts) or data from non-statistical sources. In some cases data from different sources (or different statistics) may need to be combined to compile one single indicator and usually one kind of statistics can serve more than one indicator (m:n relation).



Defining key climate change-related statistics and indicators

The Task Force proposed the following definitions:

- **Key climate change related indicators (CCRS)** are those analytically sound and measurable indicators which are needed to answer key climate change (CC) related policy questions. In addition, they "paint a picture" that clearly represents all five areas that have been identified as the scope of CCRS: drivers, emissions, impacts, adaptation and mitigation.
- **Key CC related statistics** are those basic statistics, which are needed to synthesize the key CC related indicators AND statistics which are needed to compile emission inventories.

The definition of key CC related indicators takes into account the changing nature of policy questions and recognizes that the set of indicators should be flexible and help to identify future policy questions. Therefore, the selection of the indicators is based on the most relevant current policy questions. Later, the set will be checked to see if additional indicators are needed to describe the main phenomena ("the picture") of climate change.

The task force expects a total number of around 40-50 key CC related indicators.

The work carried out so far

On the basis of the approach outlined above, the Task Force split into three groups that worked from March to June to identify a preliminary list of indicators and related dimensions, as outlined above (mainly: Policy objective, Policy question, Main phenomenon, CES Area - Driver, Emission, Impact, Mitigation, Adaptation - Name of indicator, Reference document, Underlying data source). The difference among the three groups was that they each used a different source document. Specifically: one group focused on the SEEA and SEEA-based analysis; the second group started from the most recent policy questions and indicators discussed within the post 2015 agenda, and the third group based its work on other reference documents.

The working groups identified around 140 policy questions and related indicators. The policy questions have subsequently been grouped and "umbrella questions" have been formulated.

The following shows an example of the grouping of policy questions and formulation of an umbrella question:

The umbrella question "What is the amount and trend of GHG emissions and who are the main contributors?" covers the following policy questions that have been identified by the different working groups:

a) What is the role of the energy sector in GHG emissions?
b) What is the role of waste generation and disposal in GHG emissions?
c) What is the contribution of agriculture to total GHG emissions
d) What is the role of manufacturing industries in GHG emissions?
e) What is the amount and trend of GHG emissions and removals from the LULUCF (Land use, land-use change and forestry) sector?
f) What is the amount and trend of GHG emissions from aviation?
g) What is the amount and trend of GHG emissions from marine transportation?

The reduced set of policy questions (including the umbrella questions) forms the basis for the electronic ranking survey, which has been sent to the participants of the expert forum.

The Task Force will, in its meeting on 4 September, analyse the results of the ranking survey and begin to identify first indicators for the most important (umbrella) policy questions. For that purpose also the original longer list (about 140 policy questions, which for the purpose of the survey were reduced to about 40 "umbrella questions") will be taken into consideration.

Discussion points for the Expert Forum

Question 1:

The United Nations Statistics Division (UNSD) recommends the use of existing statistical frameworks, such as SEEA and the System of National Accounts (SNA) for the monitoring of SDGs. The UNECE Task Force on a set of key climate change-related statistics was given the task of developing an internationally comparable set of key climate change-related statistics and indicators derived, to the extent possible, from the System of Environmental-Economic Accounting Central Framework (SEEA-CF), from statistical frameworks such as the Framework for the Development of Environment Statistics (FDES), and other statistical sources. The work of the Task Force has thus been in line with UNSD recommendations. Several SDGs contain elements that are relevant to climate change, therefore considerable synergies could be achieved by developing key climate change-related statistics and indicators and SDG indicators in parallel.

What are the specific needs stemming from the SDGs process that the UNECE Task Force on a set of key climate change-related statistics should take into account when finalizing the set of key indicators?

Question 2:

Please provide comments and suggestions on the approach described in this paper, particularly concerning the proposed future steps of the work.

Question 3:

Please clarify the criteria you used when answering the questionnaire on policy questions.