United Nations ECE/CES/2020/4/Add.1

Economic and Social Council

Distr.: General
18 June 2020

English only

Economic Commission for Europe

Conference of European Statisticians

Sixty-eight plenary session
Geneva, 22-24 June 2010
Item 4 (b) of the revised provisional agenda
Reports, guidelines and recommendations prepared under the umbrella of the Conference: Climate change-related statistics and indicators

Summary of comments from the consultation on the *Updated Set of Core Climate Change-Related Indicators and Statistics* and its implementation guidelines

Prepared by the Secretariat

Summary

This document summarizes the comments by members of the Conference of European Statisticians on the *Updated Set of Core Climate Change-Related Indicators and Statistics Using the System of Environmental-Economic Accounting*, the implementation guidelines and indicator metadata sheets. The secretariat carried out an electronic consultation in March-April 2020.

Thirty-six countries and three international organisations replied to the request for comments. The responding countries and organizations supported the endorsement of the Guide, subject to amendments resulting from the electronic consultation.

This note presents the substantive comments received, together with the replies of the Task Force on a set of core climate change-related statistics, including suggestions for amendments to the documents to address the comments.

In view of the support received, the Conference is invited to endorse the *Updated Set of Core Climate Change-Related Indicators and Statistics Using the System of Environmental-Economic Accounting,* its implementation guidelines and indicator metadata sheets, subject to the amendments outlined in this document.

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I. Introduction

1. This document summarizes the comments by members of the Conference of European Statisticians (CES) on the *Updated Set of Core Climate Change-Related Indicators and Statistics Using the System of Environmental-Economic Accounting (the Updated Indicator Set)*, the implementation guidelines and indicator metadata sheets. The documents were sent for electronic consultation in March-April 2020 to all countries and organizations who participate in the work of CES.

2. CES endorsed an initial set of 39 core climate change-related indicators and related statistics in 2017. At the same time, CES requested the Task Force to further refine the set of indicators and to develop implementation guidelines. The refinement process resulted in more indicators with references to internationally agreed methodologies, clarification concerning the use of indicators based on the System of Environmental-Economic Accounting (SEEA) and a review of the underlying statistics and accounts. The set now includes 42 indicators and two placeholders for areas which are considered as relevant, but where currently no internationally recommended indicators are available.

3. As requested by CES in 2017, the Task Force also recommended a set of contextual and operational indicators which can be used to contextualise the set of core indicators regarding specific national or sub-national circumstances.

4. Furthermore, the Task Force drafted implementation guidelines which should help national statistical offices (NSOs), statistical service units and other agencies to implement a national set of core climate change-related indicators and climate change-related statistics.

II. Summary

5. In the electronic consultation, responses were received from the following 36 countries and 3 international organisations: Armenia, Australia, Austria, Belarus, Belgium, Bulgaria, Canada, Colombia, Croatia, Czechia, Denmark, France, Germany, Hungary, Ireland, Italy, Japan, Latvia, Lithuania, Mexico, Netherlands, Norway, Poland, Portugal, Republic of Moldova, Romania, Russian Federation, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom, United States of America (Bureau of Economic Analysis), Eurostat, Organization for Economic Cooperation and Development (OECD) and United Nations Statistics Division (UNSD).

6. The responding countries and organizations supported the endorsement of the Guide, subject to amendments resulting from the electronic consultation. Australia and Germany initially had some concerns which were addressed by the Task Force and taken into account in updating the documents.

7. Australia was of the opinion that SEEA-based energy indicators (following the residency principle) and indicators based on energy balances (following the territory principle) cannot be mixed together.

8. Germany commented that the SEEA framework should have been taken into account to a greater extent. Germany also had concerns that there are too many tier III indicators and two placeholders.

9. The Task Force chairs and secretariat discussed these issues with Australia and Germany, and added some text in the Updated Indicator Set and the implementation guidelines to provide further guidance on the implementation of the “dual approach” (both residence based and territory based indicators in the same set) and making reference to the SEEA research agenda and the planned review of the set of indicators in five years’ time. The updated text is presented in section IV of the current document.

10. Given the dynamics of this policy area and the various climate change priorities in countries, it is not possible to agree on a “one-size-fits-all” set of indicators. The recommended set of indicators covers the most relevant climate change-related areas for most countries of the region. Countries are free to choose from the set what is useful for their situation, and to add other indicators as needed for their national indicator sets.

11. The following 17 countries and OECD informed that they plan to implement the set of indicators or parts of it in 2020/ 2021: Armenia, Austria, Belarus, Bulgaria, Denmark, Hungary, Ireland, Italy, Latvia, Mexico, Poland, Republic of Moldova, Russian Federation, Slovenia, Spain, Switzerland and the United Kingdom.

12. The comments and relevant actions by the Task Force are presented in more detail in sections III-VIII below. Several countries provided editorial comments. These are not presented in this note but will be taken into account when finalising the documents.

III. Comments on the refinement of the initial set of core climate change-related indicators (section 3.5 of the *Updated Indicator Set*)

13. Many respondents praised the chosen methodology for the refinement of the set of indicators, and the principles and criteria used (including Bulgaria, Croatia, Hungary, Poland, Portugal, Romania, Serbia, Switzerland, UK). Countries noted that that the set is well constructed and gives a holistic view (Armenia), appreciated basing on countries' experiences (Colombia), and welcomed the efforts to align with SEEA and main international statistical frameworks (Denmark, Mexico). Latvia anticipated the need of further clarification in the future, as climate policy is still in a dynamic development.

14. Australia had concerns regarding the appropriateness of NSOs providing analytical pieces of work on climate change adaptation or impacts as this tends to go beyond the scope of work on reporting facts. However, Australia agreed that NSOs can re-publish results of other government agencies specialising in economic/environmental modelling or academia.

15. Austria suggested to introduce in paragraph 85(f) a general rule that the use of data from national organisations has priority, unless better data quality can be expected from data of international organisations. If national data are already reported to an international organisation, these should be used. Colombia also had a similar comment.

16. Mexico proposed to consider the use of earth observations and geospatial tools in the methodology of the new indicator 82 (share of green spaces in the total area of cities).

17. Sweden noted that the now larger set of indicators increases the necessity of working in collaboration with researchers and several public agencies.

18. Editorial comments to improve the clarity of the text were provided by Belarus, Colombia, Mexico and the United Kingdom.

Action by the Task Force

19. The Task Force will revise section 3.5 of the *Updated Set of Core Climate Change-Related Indicators and Statistics Using the System of Environmental-Economic Accounting*, to take into account editorial and substantive comments above. This concerns in particular a revision of the following:

(a) Paragraph 67: Mentioning "embedded emissions" as suggested by United Kingdom;

(b) Paragraph 80: Reformulating to increase clarity;

(c) Paragraph 85(c): Adding a sentence about the need of an action plan to succeed in producing the statistics needed to calculate these indicators in the medium or long term, as suggested by Colombia;

(d) Paragraph 85(f): Rewording to take into account Austria's and Colombia's comments concerning the preferable use of national data;

(e) Paragraphs 93: Adding of the missing information about indicator 38 (progress towards sustainable forest management) as noted by Belarus.

20. In indicator metadata sheet 82 (share of green spaces in the total area of cities) the possible use of geospatial information is already mentioned, and in indicator metadata sheet 15 (carbon footprint) a reference to "embedded emissions" will be made.

IV. Comments on the output of work (chapter 4 of the *Updated Indicator Set*)

21. Most countries supported the refined list of indicators. For example, Denmark called the indicator set as "highly relevant". Canada, Hungary, Latvia, Mexico and Switzerland expressed support and appreciated the output of work. Romania called the efforts done "outstanding". Sweden noted that countries experience in implementing the indicators may lead to further improvements of the set.

22. Austria, Spain and the United Kingdom explicitly supported the approach of using dual indicators and making a clear difference between territory-based and residence-based indicators. Australia and Ireland expressed concerns about combining such indicators in one set.

23. Croatia was concerned about the burden on countries to develop these indicators and the efforts needed to increase data availability.

24. Germany welcomed the use of the SEEA framework and that the chapter addresses open methodological questions. As mentioned in the introduction, it believed that the SEEA framework should have been taken into account to a greater extent. Germany also saw a need for further action to complete the set of indicators (referring to the two placeholders) and establishing methodologies for the tier III indicators. Netherlands and Spain also emphasized the importance of finding and improving methodologies for tier III indicators, and asked for more clearly indicating why some indicators are considered Tier III.

25. Hungary noted that several types of sets of climate change-related indicators are available worldwide. It would be useful to harmonize and make them able for international comparisons or to co-operate internationally before planning and launching a new set.

26. Lithuania considered linking the core climate change-related indicators with indicators of the Sustainable Development Goals and of the Sendai Framework as very helpful. Lithuania also mentioned the challenge of finding and exploring of national data sources for some of the indicators.

27. Poland and the US Bureau of Economic Analysis appreciated that the set of indicators refers to SEEA as one of the main data sources and use it as much as possible.

28. Slovenia considered the idea of including operational and contextual indicators as useful to consider different national circumstances.

29. Spain was satisfied that the indicator metadata are maintained in a database and suggested to add a link to the main results of the pilot survey. Spain agreed with recategorization of some indicators to "contextual indicators" and suggested to consider including indicators 19 (cumulative number of alien species) and 38 (progress towards sustainable forest management) in the list of core indicators at a later stage.

30. Belarus, Colombia, Czechia, Slovakia and UNSD made specific editorial comments and proposals for making the text more precise (addressed in para 31 below).

Action by the Task Force

31. To address the concern of Australia and Ireland that the set of core climate change-related indicators includes both residence-based and territory-based indicators, the Task Force proposes to add the following paragraphs in the report and in the implementation guidelines:

> *Following a recommendation of UNCEEA and the UNECE Steering Group on Climate Change-related Statistics, the set of core climate change related indicators currently includes both residence-based indicators which can be derived from SEEA and traditional territory-based indicators. This approach*

takes into account that several of the territory-based indicators (e.g. related to energy use and greenhouse gas emissions) are widely used for defining policy targets, therefore data and methodologies exist, and the indicators are internationally comparable. Currently the production of SEEA-based indicators is not straightforward in many countries of the region. It can be expected that the planned revision of the set of indicators in 5 years' time will increase the share of SEEA-based indicators due to methodological developments and the increasing implementation of related SEEA modules. At the same time, the number of non-SEEA based indicators is expected to be reduced.

When implementing the set of indicators, NSOs are encouraged to give SEEA-based indicators a priority. To understand their relationship with territory-based indicators and to avoid confusion, it is recommended to give an explanation in all related statistical products.

32. In response to Germany's comments that SEEA-based indicators should be used to a greater extent and that a large number of indicators require further methodological work, the Task Force proposes to add the following paragraphs:

NSOs are encouraged to implement tier III indicators based on methodologies referred to in the metadata sheets, even if they are not internationally clarified, or to use alternative indicators or nationally used methodologies. Countries' experiences will also help in the planned review of the set of core climate change-related indicators in 5 years' time. For some of the SEEA-related indicators methodological development can be expected sooner from the SEEA research agenda.

For the sub-areas currently identified as "indicator placeholders" countries are encouraged to use nationally available indicators and to share their experiences, for example at the UNECE Expert Fora for Producers and Users of Climate Change-related Statistics.

33. The comments of Canada, Germany and Spain about the importance of finding and improving methodologies for some of the tier III indicators are addressed in the proposed follow-up activities, outlined in section 5.2 (further work on indicators) of the report. However, the Task Force will add a note, recalling that this policy area is still in a dynamic development (as noted by Latvia in the previous section). It requires the use of some non-traditional indicators, which are undoubtedly relevant, but currently do not have underlying internationally agreed methodologies (including both SEEA-based indicators and SDG indicators).

34. Therefore, as suggested by the Netherlands, for each of the tier III indicators a short explanation will be added to justify this categorisation. For SEEA-based tier III indicators this could also be the starting point for methodological development within the SEEA research agenda and could be taken up for the methodological work of the Inter-agency and Expert Group on SDG Indicators (IAEG-SDGs).

35. Indicator 1a (total energy use by the national economy) was wrongly classified as tier III indicator. This will be corrected to tier II in the report and in the metadata sheet.

36. The Task Force will review chapter 4 to take into account all other comments made. In particular the following changes will be made:

(a) Paragraph 100: Add information about EU Regulation 691/2011 on European environmental economic accounts;

(b) Paragraph 102(d): Add missing information about new indicator 81 (net emissions/removals of carbon dioxide by forest land);

(c) Table 3 (list of indicators):

i. Reference to SEEA-Energy also for indicators 1b (total primary energy supply) and 2b (share of fossil fuels in total primary energy supply);

ii. Change name of last column to “can be produced from SEEA / SNA.

iii. Adding a column referencing the inputs from FDES.

(d) Table 5 (statistics and accounts needed): a distinction of the different core accounts for SEEA-EEA will be made and a reference to the currently ongoing SEEA-EEA revision will be made.

V. Comments on the proposed follow-up work (chapter 5 of the *Updated Indicator Set*)

37. There was general agreement with the proposals for further work suggested by the Task Force (e.g. mentioned explicitly by Austria, Croatia, Denmark, Latvia, Lithuania, Romania, Serbia, Slovenia and Switzerland).

38. Armenia and Colombia mentioned the importance of future technical assistance and further development of methodological guidance. Colombia considered necessary to develop a strategy or tool for evaluating the use of the set of indicators, and a contact list of subject matter experts by indicator. Croatia also stressed the importance of exchange of knowledge and experience.

39. Australia suggested to add some work on the SEEA based indicators.

40. Austria emphasized the importance of integrating different existing portals and/or extending them for the dissemination of available national sets of core climate change-related statistics indicators, instead of creating a new one.

41. Canada and France asked for more international work to provide methodological guidance for tier III indicators and SEEA-based indicators, and the Netherlands suggested to summarise the methodological problems of tier III indicators in this chapter. For SEEA-based indicators this could directly feed into the SEEA research agenda.

42. Hungary supported the idea to review the entire set of core climate change-related indicators after 5 years.

43. Ireland had concerns that many countries will only be able to produce a small number of indicators and only a few countries can produce a larger number of indicators.

44. The Netherlands suggested to add a recommendation for the development of an (international) implementation strategy, similar to the SEEA implementation strategy. This might provide NSOs a clear mandate to implement the set of indicators. The Netherlands also suggested to make stronger recommendations with regard to setting up international data collection and dissemination.

45. Portugal said that priority should be given to liaising with other international bodies, in particular Eurostat, to define a minimal set of information to be provided.

46. Spain is planning to create a working group before the end of 2020 to develop and implementation strategy for a national set of core climate change-related indicators and develop national methodologies according to the proposals made by the Task Force.

47. Ukraine suggested to consider the inclusion of the set of indicators in the statistical requirements compendium of Eurostat. This would allow NSOs to receive the necessary mandate for production and dissemination of this set of indicators.

Action by the Task Force

48. To take into account the proposals made by Australia, Colombia and Portugal, the Task Force will add the following to the recommended follow-up work:

(a) To explore whether SEEA-based indicators can be used in form of combined presentations.

(b) To develop a strategy or tool to evaluate the use of the set of indicators and if they are effectively answering the relevant questions.

(c) To develop a strategy for encouraging countries to develop a national set of climate change-related indicators and statistics based on the CES core set. This could take into account the lessons learned from the SEEA implementation strategy. To the extent possible this strategy should be aligned with related activities of other international organisations (e.g. Eurostat, OECD and UNSD).

49. For each of the tier III indicators a short explanation will be added in chapter 4 (output of work) to justify this categorisation. For SEEA-based tier III indicators this could also be the starting point for methodological development within the SEEA research agenda.

VI. Comments on the set of indicators and/or the metadata

50. Concerning the set of indicators four types of comments were received:

(a) Proposals for replacing, deleting or adding core indicators;

(b) Comments on the indicator placeholders;

(c) Comments on the proposed methodologies for calculation of indicators, including comments on the tier classification;

(d) Editorial comments and proposals for improving the clarity of the indicator metadata.

51. The comments on the first three types are summarized below in corresponding sections. A summary of all comments received per indicator, including the fourth type, is presented in the annex. Editorial proposals will be reflected in the finalised version of the *Updated Indicator Set.*

A. Proposals for replacing, deleting or adding of core indicators

52. Australia disagreed with indicator 1b (total primary energy supply (TPES)) due to the lack of coherence with energy intensity based on SEEA energy.

53. Austria suggested to add green finance and transportation indicators. It was also of the opinion that indicator 81 (net emissions/removals of carbon dioxide by forest land) can be deleted, because this is already included in indicator 11 (greenhouse gas emissions from land use change (LULUCF)). Furthermore, it was proposed to delete indicators 8a (energy use by resident households per capita) and 14 (direct greenhouse gas emissions from households), in case the total number of core indicators becomes too large. Austria also suggested to add an indicator for measuring the area affected by wildfires per year, since this problem is steadily increasing on the global scale, both as a result of climate change and as a contribution to GHG emissions. Concerning indicator 20 (carbon stock in soil) it was commented that this indicator could be either skipped or to be replaced by carbon stock in general (including vegetation, not only soil).

54. Austria and Slovakia questioned the necessity to have both indicator pairs 2a and 29a as well as 2b and 29 b in the indicator set, because they seem to be complementary with each other.

55. France mentioned that indicator 31 (share of energy and transport related taxes in total taxes and social contributions) also could be related to GDP.

B. Comments on the indicator placeholders

56. United Kingdom commented on the placeholder for climate change adaptation by forests, that this will be challenging as the appropriate actions are likely to be context specific and could relate to pest/disease control, wildfire control, planting of more resilient species/genotypes or adoption of continuous systems of management. There is also some uncertainty in the title as to whether this relates to the forests becoming better adapted to climate change or to forests protecting society from the impacts of climate change (through

targeting planting for flood risk management, soil erosion control or to reduce the urban heat island).

C. Comments on the proposed methodologies for calculation of indicators, including comments on the tier classification

57. Some countries, including Belarus and the Netherlands, were asking for clarification why some of the SEEA-based indicators are categorised as tier III.

58. France suggested to categorize indicator 6a (total CO2 intensity of energy used in production activities of the national economy) as tier III.

59. Poland, Slovakia and Russian Federation commented, that the methodologies for indicators 22 (number of deaths and missing persons attributed to hydro-meteorological disasters, per 100,000 population) and 27 (excess mortality related to heat) have to refer to ICD-10 codes.

Action by the Task Force

60. The proposals for replacing, deleting or adding of core indicators as well as UK's comment on the indicator placeholder provide a useful input for the foreseen revision process within five years. In that regard, the Task Force will strengthen the wording in the report to explain that the currently proposed set of core climate change-related indicators is the result of a careful selection process, including several rounds of consultation with countries, researchers and international organisations. Given the dynamics of this policy area and the various climate change priorities in countries it is currently impossible to agree on a "one-size-fits-all" set of indicators, but it is possible to recommend a set of indicators for implementation which covers the most relevant climate change-related areas for most countries of the region. Countries are free to choose from the set what is useful for their situation, and to add other indicators as needed for their national indicator sets (e.g. as done by Switzerland, see section VIII).

61. An explanation will be added in the report why both indicator pairs 2a – 29a and 2b-29b are needed. The share of fossil fuel is a climate change driver and the share of renewable energy is a mitigation measure. Both indicators are needed to maintain the complete picture of all main areas of climate change-related policies.

62. The methodologies chosen by the Task Force for the individual indicators originate from different international organisations (e.g. IEA, FAO, UNDRR, WHO), indicator frameworks (e.g. SDGs and Sendai Framework) and statistical frameworks (e.g. SEEA-CF, FDES). The comments received during this electronic consultation on the proposed methodologies will be made available for the expert communities involved in developing these indicators. This concerns in particular the comments on the proposed methodologies of the indicators presented in the following table.

Table
Comments on proposed methodologies of indicators

Indicator	*Tier*	*Expert communities*	*Remark by Task Force*
3 – Losses of land covered by (semi-) natural vegetation	III	London Group on Environmental Accounting and UNCEEA	
20 - Carbon stock in soil	III	London Group and UNCEEA	
22 - Number of deaths and missing persons attributed to hydro-meteorological disasters, per 100,000 population	II	IAEG-SDGs, UNDRR	SDG tier II indicator and Sendai Framework indicator, custodian agency: UNDRR

Indicator	*Tier*	*Expert communities*	*Remark by Task Force*
27 - Excess mortality related to heat	III	WHO	
29a - Renewable energy share in total energy use by the national economy	III	London Group and UNCEEA	
29b - Renewable energy share in the total final energy consumption within the national territory	I	IAEG-SDGs	SDG tier I indicator, custodian agencies: IEA, UNSD, IRENA
30 - Share of climate change mitigation expenditure in relation to GDP	III	London Group and UNCEEA	
35 - Share of government adaptation expenditure in relation to GDP	III	London Group and UNCEEA	
36 - Change in water use efficiency over time	I	IAEG-SDGs	SDG tier I indicator, custodian agency: FAO

63. On indicator 6a (total CO2 intensity of energy used in production activities of the national economy) the methodological description will be improved to justify better why it fulfils the criteria of a tier II indicator.

64. For each tier III indicator a short explanation will be added in chapter 4 (output of work) to justify this categorisation. For SEEA-based tier III indicators this could also be the starting point for methodological development within the SEEA research agenda.

65. Editorial comments to improve the clarity of the indicator descriptions will be taken into account to the extent possible.

VII. Comments on the implementation guidelines

66. Most respondents, including Bulgaria, Canada, Colombia, Croatia, Denmark, Germany, Hungary, Italy, Latvia, Lithuania, Mexico, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Switzerland and Ukraine expressed their satisfaction with the document.

67. Bulgaria is planning to use the guidelines in its work. Canada, Colombia, Germany, Serbia and Spain appreciated the country examples.

68. Portugal noted that this should be considered a “living document” to be regularly reviewed and updated.

69. Spain appreciated the reference to the Generic Statistical Business Process Model (GSBPM) as a basis for planning the implementation of a national set of core climate change-related indicators.

70. UNSD suggested to clarify in paragraph 7 the aim of the global set as follows: The overall objective of the UNSD global set of climate change statistics and indicators is to provide a framework with suitable indicators to serve as guidance for countries to prepare for their own sets, especially for those with less developed statistical systems. The global set aims to meet the needs of all countries, and to contain a comprehensive list of indicators accompanied by metadata (including definitions, input variables, aggregations, measurement categories and data references).

Action by the Task Force

71. Paragraph 7 of the implementation guidelines will be revised as suggested by UNSD.

VIII. Other general comments

72. Belarus suggested to refer to SDG targets 6.4 and 15.3 in paragraph 21 of the *Updated Indicator Set*, because indicators for these targets are reflected in the set of core climate change-related indicators. Belarus also proposed to create a single list of all indicators referred to in the report (including core indicators, contextual indicators, operational indicators and proxy indicators).

73. Some countries asked for additional indicators, such as indicators linked to coastal zones (Belgium), and an indicator on financing activities to protect ecosystems and biodiversity from climate change (Colombia). Slovenia considered the refined set to be well structured and not too large. Ireland was of the opinion that the indicator set is too big and an international organisation should be responsible for the data collection. The Netherlands appreciated the good balance between indicators derived from SEEA and other statistics.

74. Bulgaria has already started implementing some of the indicators, but data availability, lack of resources and the need to develop methodologies remain challenging. Also, Czechia pointed out the lack of human resources to implement the indicators. Slovakia is exploring the possibilities for implementing these statistics at national level. Switzerland has already published a set of climate-related indicators which was inspired by the CES set. Canada plans to identify a subset that could be produced with data already being disseminated (e.g. those related to energy intensity and GHG emissions).

75. Colombia asked for a methodological diagram, showing the phases of developing the indicators and summarizing the decision processes. Colombia also proposed to reflect in the title of the document that it is wider than just updating the indicator set and includes additional sources of information. It was also proposed to take into account the update of the Global Warming Potential (GWP) factors for the calculation of GHG emissions, based on the guidelines of the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC).

76. Ireland called for indicators that would be easier to communicate to the general public, e.g. the rate of introduction of electric vehicles or improvements in the energy efficiency ratings of dwellings.

77. Mexico was of the opinion that the COVID-19 pandemic created new conditions which may need to be taken into account at a later stage. Furthermore, the use of non-conventional data sources, including geospatial information tools, should be explored more.

78. Portugal asked for more coordinated efforts of international organisations in this area and highlighted the work done in the European Union.

79. Sweden considered the implementation guidelines very valuable and noted that close collaboration with researchers and other government agencies is needed as the competence is not always within NSOs.

80. UNSD asked the Task Force to add more information in the *Updated Indicator Set* on the global indicator set developed by UNSD, and to add references to SEEA and FDES in specific places.

Action by the Task Force

81. An explanation will be added in section 3.2 of the *Updated Indicator Set* (selection procedure) why the chosen scope of the set of core climate change-related indicators currently excludes indicators related to oceans and coastal zones.

82. The Task Force will consider adding a methodological diagram.

83. In chapter 5 (follow-up work) the need for close collaboration with other international organisations and alignment with existing processes will be explicitly mentioned, to address the concern of Portugal.

84. References will be made to the revised GWP factors of the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) in the concerned indicator metadata sheets.

85. Explanatory text on the global climate change indicator set will be added to paragraph 9, and references to FDES and SEEA added, as requested by UNSD.

IX. Proposal to the Conference

86. The Conference is invited to endorse the *Updated Set of Core Climate Change-Related Indicators and Statistics Using the System of Environmental-Economic Accounting*, the implementation guidelines and indicator metadata sheets, subject to the amendments outlined in this document.

Annex

I. Specific comments on individual core indicators

A. 1a: Total energy use by the national economy

- Belarus and Slovenia were questioning why this indicator is classified as tier III since a methodology exists and it can be produced from SEEA.
- Colombia was of the opinion that is not clear whether the indicator should include the sum of all energy used or something else.
- Poland noted that the definition and description of this indicator is not consistent with information given in methodology and comments. Poland made very detailed comments on this and suggested to correct the definition and description of indicator by shortening it to: This indicator represents the amount of energy that is used by resident units of a given economy.

B. 1b: Total primary energy supply (TPES)

- Australia notes that this indicator is not coherent with energy intensity based on SEEA energy.

C. 2a: Share of fossil fuels in total energy use by the national economy

- Austria and Slovakia questioned the necessity to have both indicators 2a and 29a (renewable energy share in total energy use by the national economy) in the indicator set, because they seem to be complementary with each other.
- Belarus suggested to classify the indicator as tier II, because it can be produced from SEEA.
- Colombia raised the question why SEEA energy accounts are not mentioned as a data source.
- Poland made suggestions for improving the definition and description of the indicator. The concerns are similar to the ones with indicator 1a (total energy use by the national economy).

D. 2b: Share of fossil fuels in total primary energy supply (TPES)

- Austria and Slovakia questioned the necessity to have both indicators 2b and 29b (renewable energy share in the total final energy consumption within the national territory) in the indicator set, because they seem to be complementary with each other.

F. 3: Losses of land covered by (semi-) natural vegetation

- Colombia noted that the measurement of land cover is complex and requires the processing of a large amount of satellite images, with some field verification processes. This complexity, added to the availability of budget, generates disparity in base periods between countries. It was recommended that this aspect be taken into account for the further methodological development of this indicator. Furthermore, a correlation exercise was recommended between the different methodologies and classifications currently used by countries. The progress made in the revision of the ecosystem classification of SEEA-EEA may be helpful for the methodological development of this indicator.

G. 5a: Total energy intensity of production activities of the national economy

- Colombia raised the question if this indicator is a sectoral disaggregation of a more general indicator measuring energy intensity for the total economy, i.e. including households.

H. 6a: Total CO2 intensity of energy used in production activities of the national economy

- France suggested to classify this indicator as tier III, because its calculation is different from how it is reported today.

I. 8a: Energy use by resident households per capita

- Austria was of the opinion that this indicator could be removed if the total number of core climate change-related indicators becomes too large.

J. 9a: Total greenhouse gas emissions from the national economy

- Croatia recommended to review the units of measure of all GHG-emission-related indicators (e.g. kt CO2 versus Gg CO2) and to harmonise them.

K. 9b: Total greenhouse gas emissions from the national territory

- Croatia recommended to review the units of measure of all GHG-emission-related indicators (e.g. kt CO2 versus Gg CO2) and to harmonise them.

L. 10a: CO2 emissions from fuel combustion attributable to the national economy

- Croatia recommended to review the units of measure of all GHG-emission-related indicators (e.g. kt CO2 versus Gg CO2) and to harmonise them.

M. 10b: CO2 emissions from fuel combustion within the national territory

- Croatia recommended to review the units of measure of all GHG-emission-related indicators (e.g. kt CO2 versus Gg CO2) and to harmonise them.

N. 11: Greenhouse gas emissions from land use change (LULUCF)

- Austria proposed to express the indicator as GHG emissions per area and not as totals (which are significantly influenced by the size of the country.
- Colombia noticed that in the methodological sheet 81 (net emissions/removal of carbon dioxide by forest land from national territory) indicator 11 is referenced to as a context indicator.
- Croatia recommended to review the units of measure of all GHG-emission-related indicators (e.g. kt CO2 versus Gg CO2) and to harmonise them.

O. 12: Total GHG emissions from production activities

- Croatia recommended to review the units of measure of all GHG-emission-related indicators (e.g. kt CO2 versus Gg CO2) and to harmonise them.

P. 13: Greenhous gas emission intensity of production activities

- Croatia recommended to review the units of measure of all GHG-emission-related indicators (e.g. kt CO2 versus Gg CO2) and to harmonise them.

Q. 14: Direct greenhouse gas emissions from households

- Austria was of the opinion that this indicator could be removed if the total number of core climate change-related indicators becomes too large.
- Croatia recommended to review the units of measure of all GHG-emission-related indicators (e.g. kt CO2 versus Gg CO2) and to harmonise them.

R. 15: Carbon footprint

- Austria was missing details on the second methodological approach of using Life Cycle Assessment (LCA). It was also suggested to include information on the second option on Carbon Footprint as a result of LCA and doing so, clearly setting a reference to the International Standard ISO 14067 "Product Carbon Footprint" as the methodological basis for the bottom-up modelling. This would be better than referencing to global footprint network which follows another methodological approach - called ecological footprint which is not internationally standardised.

S. 20: Carbon stock in soil

- Austria considered this as an important indicator. However, it was noted that an indicator on average carbon stock per ha in the total landscape would be more indicative, since a significant share of carbon is stored in the vegetation. It was also noted, that this indicator is one of the three sub-indicators of indicator 21 (according to UN-CCD guidelines). The other two are land cover and land productivity. Therefore, it should be considered to skip indicator 20 or to be changed into carbon stock in general (including vegetation, not only soil). These indicators can also be regarded as drivers as release of CO2 from soils and land cover changes contribute to climate change as well.
- Colombia recommended to review the thematic carbon account that is part of the SEEA-EEA. It was advised to differentiate SEEA-CF and SEEA–EEA when referring to them as data sources, since their conceptual and methodological scopes are different.

T. 22: Number of deaths and missing persons attributed to hydro-meteorological disasters, per 100,000 population

- Poland noted that it is only partly possible to develop the indicator. The term “deaths attributed to hydro-meteorological disasters” was considered not specific and too general. Therefore, it was recommended to define this in the scope of ICD-10 codes. Poland also informed that it does not collect data about missing persons. Therefore, it is currently impossible to prepare this indicator in consistency with the presented methodology.
- Russian Federation, similar to Poland, was also of the opinion that relating this indicator to ICD-10 codes would be very important.

V. 26: Incidence of climate-related vector-borne diseases

- Russian Federation informed, that in accordance with para 16.2. of the Federal Statistical Work Plan, Rospotrebnadzor is the federal executive body providing the official statistical information on infectious and parasitic diseases.

W. 27: Excess mortality related to heat

- Poland and Slovakia were of the opinion that the indicator methodology has to refer to ICD-10 codes.

X. 29a: Renewable energy share in total energy use by the national economy

- Austria was of the opinion that the description in the methodological sheet requires a correction, because neither indicator 29a nor indicator 29b is used in the EU RED II (Renewable Energy – Recast to 2030). EUR RED II uses the share of the gross final energy consumption.
- Austria and Slovakia questioned the necessity to have both indicators 2a and 29a in the indicator set, because they seem to be complementary with each other.
- Belarus suggested to classify the indicator as tier II, because it can be produced from SEEA.
- For Colombia the methodology for calculating the indicator was not clear. Therefore, it was not possible to state whether or not it can be calculated from the SEEA energy accounts.

Y. 29b: Renewable energy share in the total final energy consumption within the national territory

- Austria was of the opinion that the description in the methodological sheet requires a correction, because neither indicator 29a nor indicator 29b is used in the EU RED II (Renewable Energy – Recast to 2030). EUR RED II uses the share of the gross final energy consumption.
- Austria and Slovakia questioned the necessity to have both indicators 2b and 29b (renewable energy share in the total final energy consumption within the national territory) in the indicator set, because they seem to be complementary with each other.

Z. 30: Share of climate change mitigation expenditure in relation to GDP

- Colombia mentioned the importance to make a reference to the Classification of Environmental Activities (CEA).

AA. 31: Share of energy and transport related taxes in total taxes and social contributions

- France mentioned that this indicator also could be related to GDP.

BB. 81: Net emissions / removals of carbon dioxide by forest land

- Austria believed that this indicator can be skipped, because indicator 11 on the emissions/removals from LULUCF is more indicative and complete regarding impacts/mitigation of/from land use/management and therefore includes indicator 81. It was proposed to use an indicator of area of deforestation/degradation of forests per

year instead, because it would be more indicative for one of the most important drivers of global GHG emissions from LULUCF.

- Austria also proposed to add an indicator for measuring the area affected by wildfires per year, since this problem is steadily increasing on the global scale, both as a result of climate change and as a contribution to GHG emissions.
- The United Kingdom commented, that this indicator will not change rapidly and for the early years, at least, will be driven by historic planting and management activity – so policy changes would take many years to become apparent in the indicator. The one exception to this would be to limit harvesting (as Sweden has done); this would lead to a rapid short term increase in LULUCF removals, but could limit abatement in other sectors (energy and manufacture), result in an offshoring of emissions and reduce the resilience of forests to the effects of climate change. UK thought that a more appropriate indicator for LULUCF may be the balance between afforestation and deforestation.

CC. 82: Share of green spaces in the total area of cities

- Mexico proposed to consider the use of earth observations and geospatial tools in the methodology.

DD. 35: Share of government adaptation expenditures in relation to GDP

- Colombia mentioned the importance to make a reference to the Classification of Environmental Activities (CEA).

EE. 36: Change in water use efficiency over time

- Colombia proposed to define the “generic default ratio between rainfed and irrigated yields” and its measurement form, bearing in mind that this is currently a standard estimate for countries.