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Items for discussion and decision: climate change statistics

Climate change statistics

Report of the Secretary-General

Summary

In accordance with Economic and Social Council decision 2017/228 and past practice, the present report was prepared by the Statistics Division of the Department of Economic and Social Affairs of the Secretariat in its capacity as secretariat of the Statistical Commission, in collaboration with the Economic Commission for Europe (ECE) and the secretariat of the United Nations Framework Convention on Climate Change. It contains an update on the work of the Statistics Division in the area of climate change statistics, in response to the mandate set out in Statistical Commission decision 47/112, adopted by the Commission at its forty-seventh session, in particular with regard to the development of a global set of climate change statistics and indicators. The report includes a list of activities prepared by the Division outlining the way forward. Complementarily, it describes progress made by ECE in its work on climate change-related statistics and indicators as well as the current work and future plans of the secretariat of the United Nations Framework Convention on Climate Change on policy and statistics interface. In this regard, the report also explores ways to strengthen the relationship between these institutions and how to better engage the wider statistical community in this work. The Statistical Commission is invited to comment on the points for discussion under section VI of the report.

* Reissued for technical reasons on 22 January 2018.

** [E/CN.3/2018/1](#).



I. Introduction

1. At its forty-seventh session, held from 8 to 11 March 2016, the Statistical Commission adopted decision 47/112 (see [E/2016/24](#)), in which it:

(a) Welcomed the report of the Secretary-General ([E/CN.3/2016/15](#)), which summarized the work done on climate change statistics;

(b) Urged countries to develop and strengthen environment statistics, which are necessary for the effective monitoring of key aspects of climate change;

(c) Urged the international statistical community to expand its regional, subregional and national capacity-building efforts in climate change statistics, in line with the Paris Agreement, adopted by the parties to the United Nations Framework Convention on Climate Change in 2015, and the 2030 Agenda for Sustainable Development;

(d) Recommended that countries use the Framework for the Development of Environment Statistics 2013 to guide the development of climate change statistics and indicators, given the close interrelationship between environment statistics and climate change statistics;

(e) Noted the link between climate change and disaster reduction and requested that the Sendai Framework for Disaster Risk Reduction 2015–2030 be considered in the development of climate change statistics and indicators;

(f) Encouraged national statistical systems to invest adequate resources in the development of climate change statistics, in particular the underlying environment, energy, agriculture and industry statistics, and environmental-economic accounts that relate to the climate-economy interface and the physical flow accounts for greenhouse gas emissions;

(g) Urged the donor community to mobilize additional resources to enable capacity-building in environment and climate change statistics in developing countries;

(h) Expressed its appreciation for the work being undertaken by the Economic Commission for Europe (ECE) task force on climate change-related statistics and indicators, in particular their efforts to develop a set of climate change-related statistics and indicators and requested the Statistics Division of the Department of Economic and Social Affairs of the Secretariat to review and consider it as a basis for developing a global set of climate change statistics and indicators, applicable to countries at various stages of development;

(i) Requested that climate change statistics appear on the multi-year programme of the Statistical Commission with greater frequency and asked the Statistics Division to develop a work plan for submission to the Statistical Commission at its forty-eighth session.

II. Background

2. A brief description of the main concerns emanating from climate change was presented in the above-mentioned report of the Secretary-General to the Commission in 2016 ([E/CN.3/2016/15](#)). The report: outlined the earlier work of the Commission during the period from 2008 to 2009 (sect. II); provided a detailed explanation of the demand for and supply of climate change statistics (sect. III); and described the work

of the Statistics Division as it relates to climate change statistics in terms of environment statistics (for example the link between climate change statistics and the Framework for the Development of Environment Statistics), geospatial statistics (for example describing how geospatial information can contribute to the measurement and monitoring of climate change), and environmental-economic accounts (for example how the work of the Committee of Experts on Environmental-Economic Accounts is related to climate change statistics) (sect. IV).

3. The present report provides an overview of the work being carried out in the field of climate change statistics and indicators by the Statistics Division and ECE since 2016. Given the adoption of the Paris Agreement in December 2015, it was also considered important to invite the secretariat of the United Nations Framework Convention on Climate Change to contribute to the report from a policy and information needs perspective. Several other international and regional organizations have been embarking on important work in climate change statistics, including: the Food and Agriculture Organization of the United Nations (FAO) in the creation of the FAOSTAT emissions database, and the new FAOSTAT domains on emissions intensities and temperature change; and the Economic and Social Commission for Western Asia (ESCWA) in its special issue of the Compendium of Environment Statistics in the Arab Region 2017, focusing on climate change-related statistics in the Arab region, which contains a proposed set of indicators. Given that there are many other institutions working in this field, and the growing need to share and coordinate such information, the Division is planning to develop an inventory of related work on climate change statistics being carried out by partner organizations.

III. Current work on climate change statistics in the Statistics Division

4. Based on the mandate set out in Commission decision 47/112 in which the Statistics Division was requested, inter alia, to review the ECE set of climate change-related statistics and indicators and to consider it as a basis for developing a global set of climate change statistics and indicators, the Division embarked on this work. The ECE set of climate change-related statistics and indicators was endorsed by the Conference of European Statisticians at its plenary session in June 2017 as an initial list. Given the fact that this remains an initial list and that further refinement is necessary (see sect. V below), the Division, which is also an active member of the ECE task force on a set of key climate change-related statistics and indicators, is: (a) pilot testing the ECE set of indicators with countries to assess its applicability for developing countries, in particular to consider areas of concern such as adaptation/vulnerability; and (b) discussing the set of indicators in various forums, including at the meetings of the Expert Group on Environment Statistics (https://unstats.un.org/unsd/envstats/fdes/fdes_eges.cshtml) and at regional and national capacity-building workshops. This work is currently being carried out in parallel with that of ECE, which should be seen as beneficial and complementary, given its complex nature. Furthermore, the refinement of the ECE set of indicators will provide important inputs for the development of the global set of climate change statistics and indicators being undertaken by the Division.

5. In order to make the link between statistics and policy, the Statistics Division has been collaborating with the secretariat of the United Nations Framework Convention on Climate Change by providing inputs to its policy process through the open call for submissions under the work programme for the Paris Agreement and

through the call for submissions on indicators for adaptation and resilience. Such initiatives will continue to be carried out and additional areas of collaboration will be explored.

6. The Statistics Division pilot survey on climate change-related statistics and indicators is based on the ECE set of indicators and organized around the same areas (drivers of climate change, emissions, impacts, mitigation and adaptation). To date, comments from countries have revealed the following areas of concern: issues with data disaggregation; methodological issues; lack of technical capacity and human resources; financial and time constraints; lack of policy framework; lack of a dedicated inter-institutional working group focusing on climate change statistics; several indicators not being applicable, not available or too complex for developing countries; and the need to adjust indicators and to include new-sub-areas or indicators pertinent to developing countries. The pilot survey is ongoing, but it has already demonstrated the need to develop, inter alia: (a) new or additional indicators to reflect the situation in developing countries; (b) a process on how to identify/modify the indicators based on both existing global processes (for example, incorporating indicators identified in adaptation and mitigation plans being submitted to the secretariat of the Climate Change Convention) and regional and national policies, priorities and processes; and (c) guidance for a systematic process for a full consultation at the national level involving all stakeholders.

7. In order to advance this work and develop a global set of climate change statistics and indicators, the Statistics Division, in collaboration with other institutions, is working on the activities outlined below. It should be noted that all listed activities and other related activities will be developed into a workplan with the support of the Expert Group on Environment Statistics and presented to the Statistical Commission at a future session. The planning of activities will be fully aligned to various ongoing processes, including the refinement of the ECE set of climate change-related statistics and indicators, as well as the development of the data requirements for the implementation of the Paris Agreement, which are expected to be completed by December 2018:

(a) Analysis of the results of the ongoing pilot survey and the sharing of feedback with the secretariat of ECE as it continues to refine the ECE set of indicators;

(b) Review of the current ECE list of indicators with a view to their modification, based on the results of the pilot survey and inputs from the Expert Group on Environment Statistics, prior to a global consultation on climate change statistics and indicators planned for the biennium 2018–2019;

(c) Development of a comparison table between the climate change-related Sustainable Development Goal indicators and the Basic Set of Environment Statistics contained in the Framework for the Development of Environment Statistics;

(d) Development of methodology sheets related to climate change statistics as part of the development of the Manual on the Basic Set of Environment Statistics and drawing upon chapter 5 of the Framework for the Development of Environment Statistics, which contains a cross-cutting analysis of climate change;

(e) Expansion of the mandate of the Expert Group on Environment Statistics to cover more aspects of climate change statistics and indicators, given the very close relationship of this work to environment statistics;

(f) Exploration of ways to strengthen the relationship between the climate data producers and data users, and engaging the wider statistical community;

(g) Collaboration with secretariat of the United Nations Framework Convention on Climate Change in support of its data-related needs, for example, in the plans of the Adaptation Committee to develop relevant indicators;

(h) Communication with the Intergovernmental Panel on Climate Change with regard to the development of the global set of climate change statistics and indicators and to the refinement of its publication *2006 IPCC Guidelines for National Greenhouse Gas Inventories*;

(i) Undertaking pilot projects or case studies on climate change statistics in countries worldwide;

(j) Organizing side events on climate change statistics on the margins of the sessions of the Statistical Commission;

(k) Expansion of the dissemination of climate change statistics and indicators on the website of the Statistics Division;

(l) Development of an inventory of related work on climate change statistics by partner organizations.

IV. Climate-related data under the United Nations Framework Convention on Climate Change, the Kyoto Protocol and the Paris Agreement

Communication of information

8. Under the United Nations Framework Convention on Climate Change,¹ the countries that are parties to the Convention communicate a large amount of information related to the national implementation of the Convention. The specific requirements for the communication of such information differ between developed and developing countries, and for reporting under mitigation, adaptation and support. The main sources of information are:

- (a) National communications (all parties);
- (b) National greenhouse gas inventories (all parties, in differing formats);
- (c) Biennial reports (developed countries) and biennial update reports (developing countries);
- (d) National adaptation plans (developing countries);
- (e) National adaptation programmes of action (the least developed countries only).

¹ The obligations relating to the communication of information relating to the implementation of the United Nations Framework Convention on Climate Change are laid out in article 12 of the Convention, and the specific information requirements are detailed in many decisions by parties to the Convention on the nature, frequency and format of the information that needs to be communicated. For the countries that are parties to the Kyoto Protocol, the related communication obligations are contained in article 7 of the Protocol.

9. Following the adoption of the Paris Agreement, the submission of nationally determined contributions has become a new and essential communication channel for all parties to the Agreement. Under the Paris Agreement, a transparency framework for action and support was established, encompassing the submission and consideration of the information on the implementation of the Agreement, including information on mitigation, adaptation and support.

Available information and data

10. The information submitted by parties to the Convention contains a vast amount of data concerning all aspects of national activities to implement actions to address climate change, with the areas of mitigation of climate change, vulnerability and adaptation to climate change, related financial and technological support, and climate-related research and observation being covered most extensively. Practically all information communicated by parties is publicly available on the website of secretariat of the United Nations Framework Convention on Climate Change, including both the primary data (as submitted by parties) and secondary or processed information (the information/data compilations, reports or online databases) are presented. For example, the original national communications and submissions of data on greenhouse gas inventories are posted on the website (available at http://unfccc.int/national_reports/items/1408.php) whereas processed data on greenhouse gases are available in the form of an online database (available at http://unfccc.int/ghg_data/items/3800.php); data relating to the implementation of the market-based mechanisms under the Kyoto Protocol² are also available on the site (at http://unfccc.int/kyoto_protocol/mechanisms/items/1673.php). For the Paris Agreement, nationally determined contributions are available on the website of the Climate Change Convention (see <http://www4.unfccc.int/ndcregistry/Pages/Home.aspx>). Information and data on the process to formulate and implement national adaptation plans are also available on that site (see <http://www4.unfccc.int/nap/Pages/Home.aspx>).

Data-related needs

11. The amount of information to be communicated by parties is vast, and much of that information is complex, requiring both reliable data, from national statistics systems in particular, and a significant organizational and analytical effort for its preparation, with the related need for expertise and resources. The high quality of available national statistics is indispensable for the credibility of the information submitted, and the availability and sustainability of the national arrangements for the preparation of the information needed is equally critical.

12. Under the United Nations Framework Convention on Climate Change, a number of training programmes have been established, especially for developing countries. Such programmes have been helping national experts in the preparation of the information needed,³ or in becoming qualified experts for the review or analysis of

² The mechanisms established under the Kyoto Protocol are: the clean development mechanism; joint implementation; and emissions trading.

³ See, for example, tools and training materials to facilitate reporting by developing countries, available at http://unfccc.int/national_reports/non-annex_i_natcom/training_material/methodological_documents/items/7914.php.

the information submitted,⁴ as part of a comprehensive measurement, reporting and verification framework established under the Convention. However, support for such training is limited and does not substitute for having solid national data collection systems and the capability of interpreting/processing the data. This situation applies in particular to data for the energy sector, which is usually the primary source of greenhouse gas emissions,⁵ but it is relevant to other economic sectors as well (including in the agriculture and forestry sectors). The underlying strength of national statistical systems is a key factor in determining the amount and quality of the information required under the Climate Change Convention. Also important is the understanding of the relationship between national statistics and climate-related data. In this regard, recent work of the Statistics Division⁶ and ECE⁷ is particularly valuable, and should not only be maintained but also strengthened, including work regarding the relationship between climate-related data and the Sustainable Development Goals. The secretariat United Nations Framework Convention on Climate Change has contributed to that work and, given the importance of promoting timely and reliable climate change statistics, remains very supportive of these efforts.

13. The implementation of the Paris Agreement will increase the need for climate-related data. Although the exact data requirements for the implementation of the Agreement are not yet fully defined, the related negotiations,⁸ which are ongoing, to be completed in December 2018, it is certain that, in order to implement the transparency framework for action and support (article 13 of the Paris Agreement) or the global stocktake (article 14), countries will need more data and, at least in part, new data compared to what currently exists under the United Nations Framework Convention on Climate Change. With regard to existing data, changes in terms of scope, coverage and frequency may be required.

14. The emphasis on strengthening mitigation action (articles 4, 5 and 6 of the Paris Agreement), adaptation efforts (articles 7 and 8) and financial/technological support for climate-related action by countries (articles 9 and 10) will have implications for upcoming additional data needs. For example, in order to prepare and implement nationally determined contributions, countries will require specific data, for example data relating to the ability to project emissions or to the costing of new/alternative options for energy supply and use. Such data needs are required to support global action on climate change, and broad support for all related processes is therefore required, including support from the United Nations system, in order to ensure that action on climate change can be based on solid science and reliable, up-to-date information. This information will also support the effective implementation of the 2030 Agenda for Sustainable Development and the progress towards the achievement of the Sustainable Development Goals, in particular in view of the need to enhance efficiency in the use of data, avoid unnecessary reporting burdens and reduce duplications in reporting.

⁴ See, for example, training programmes for the review of information submitted by developed countries (Annex I parties) at http://unfccc.int/national_reports/expert_training/training_programmes_for_experts/items/2763.php.

⁵ For the energy sector, the so-called “activity data”, such as physical flows of various energy sources, and the related emission factors are specifically required.

⁶ See, for example, E/CN.3/2016/15.

⁷ Such as the ECE publication *Recommendations on Climate Change-Related Statistics*, available, along with other relevant information, at http://www.unecce.org/publications/ces_climatechange.html.

⁸ See, for example, the related information on the work of the Ad Hoc Working Group on the Paris Agreement, available at <http://unfccc.int/bodies/apa/body/9399.php>.

V. Current work in the areas of climate change-related statistics and measuring extreme events and disasters in the Economic Commission for Europe

Work on climate change-related statistics in the Economic Commission for Europe region

15. In 2017, at its the forty-eighth session, the Statistical Commission discussed the recent outcomes of methodological work undertaken in the ECE region, and noted the potential global applicability and usefulness of the standards and guidelines developed by the Conference of European Statisticians, including in its publication on climate change-related statistics.⁹ The Statistical Commission expressed its appreciation for the work undertaken in the ECE region, especially on emerging topics in statistics, such as on the measurement of extreme events and disasters. The section below will describe developments in the ECE region since the previous report to the Statistical Commission in 2017 (E/CN.3/2017/6).

16. ECE, which is currently focusing on the implementation of the recommendations made in the above-mentioned report¹⁰ organizes a regular expert forum for producers and users of climate change-related statistics (together with an ECE steering group chaired by Norway). The most recent meeting, hosted by FAO, took place from 3 to 5 October 2017 in Rome. The work is carried out in close collaboration with the Directorate General for Climate Action of the European Commission, the European Environment Agency, Eurostat, FAO, the International Energy Agency, the Statistics Division and the secretariat of the United Nations Framework Convention on Climate Change. At the national level, this calls for active collaboration, involving national statistical offices, environment agencies, greenhouse gas inventory compilers and national focal points for both the Climate Change Convention and Intergovernmental Panel on Climate Change. The results of this work,¹⁰ which may be of interest globally, include:

(a) In June 2017, the Conference of European Statisticians approved the final report of the task force on a set of key climate change-related statistics using the System of Environmental-Economic Accounting (SEEA), the Framework for the Development of Environment Statistics and other statistical frameworks,¹¹ which proposes indicators on drivers of climate change, emissions, impacts, mitigation and adaptation, and is aligned with Sustainable Development Goals and the Sendai Framework for Disaster Risk Reduction. The Conference extended the mandate of the task force to refine the initial set of indicators;

(b) The ECE steering group finalized a template for the drafting of national road maps to develop official statistics for climate change analysis. A number of countries are preparing their national action plans based on the template;

(c) ECE carried out a survey on countries' progress and challenges in developing climate change-related statistics to provide a basis for further capacity-building activities; (d) The analysis of current capacity gaps showed that statistical offices need further guidance on the data required for the compilation of greenhouse

⁹ *Conference of European Statisticians Recommendations on Climate Change-related Statistics* (see www.unece.org/stats/publications/ces_climatechange.html).

¹⁰ See also: www.unece.org/stats/climate.html.

¹¹ See https://www.unece.org/fileadmin/DAM/stats/documents/ece/ces/2016/mtg/19-Report_on_climate_indicators_final.pdf.

gas emission inventories: a guidance note on what national statistical offices need to know about inventories is being finalized;

(d) ECE has set up a wiki platform¹² on good practices on climate change-related statistics.

17. Work continues on the refinement of the initial set of key climate change-related indicators. Seventeen countries (including countries from outside the ECE region) are currently pilot testing the set of indicators in the compilation of data to determine the feasibility of the indicators and the available data sources, as well as in the identification of methodologies used at the national level for their compilation. Countries are also providing information on the main challenges faced in producing each indicator and suggestions for refining the methodologies. A background document prepared by ECE provides more detail on the outcomes of the pilot testing of the initial set of key climate change-related indicators in a number of countries.

18. The ECE task force (led by Italy) will develop the indicators based on experience gained from the pilot-testing exercise and will also identify methodologies and data sources and develop guidance for the compilation of the indicators. The task force will also develop a set of operational and contextual indicators to accompany the refined core set of key indicators. As indicated earlier, the work of the task force will contribute significantly to the development of the global set of climate change statistics and indicators that is currently being carried out by the Statistics Division.

Work on measuring extreme events and disasters in the ECE region

19. One issue related to climate change is the measurement of extreme events and disasters. In February 2015, the Conference of European Statisticians launched an investigation to clarify how official statistics can contribute to the work related to extreme events and disasters. Official statistics provide vast amounts of relevant data, including data on population, transport and infrastructure, that could contribute to disaster management and risk reduction, but that are not yet being used to their full potential.

20. An ECE task force, chaired by Italy, has been clarifying the role of official statistics in providing data for disaster management and risk reduction and in identifying practical steps on how national statistical offices, in coordination with national agencies responsible for disaster management, can support work in this area. The task force is planning to finalize its work by the end of 2018.

Convergence among global efforts to strengthen disaster-related statistics

21. ECE continues its close cooperation with the Economic and Social Commission for Asia and the Pacific (ESCAP) Expert Group on Disaster-related Statistics in Asia and the Pacific, as well as with the United Nations Office for Disaster Risk Reduction (UNISDR). ECE is contributing to the work of the ESCAP Expert Group to develop a disaster-related statistics framework by March 2018.

¹² https://statswiki.unece.org/display/GPCCS_

22. ECE, ESCAP and UNISDR, together with the Group on Earth Observations, have jointly initiated eight case studies (in Armenia, Italy, Jamaica, Mexico, New Zealand, South Africa, Turkey and the United Arab Emirates) on the role of national statistical offices and the use of official statistics in disaster-risk management. At the meeting of the ECE Expert Forum on climate change-related statistics in October 2017, Armenia, Italy, Mexico and Turkey shared their best practices in this area.¹³

23. ECE is also contributing to the technical work being carried out by UNISDR to operationalize the monitoring of the Sendai Framework for Disaster-risk Reduction and the Sustainable Development Goals, including technical guidance material for the testing and roll-out of the Sendai Framework indicators. This work is based on the General Assembly resolution 71276, in which the Assembly endorsed the recommendations of the open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction.

24. Responding to the recommendations of the intergovernmental expert working group, and following discussions at the United Nations World Data Forum 2017 (Cape Town, South Africa, January 2017), it was proposed to establish a global partnership on disaster-related statistics. ECE, ESCAP and UNISDR are in the process of setting up this partnership, with UNISDR acting as the secretariat.

VI. Points for discussion

25. **The Statistical Commission is invited to:**

(a) **Express its support for the work of the Statistics Division in the development of a global set of climate change statistics and indicators, building upon all other processes in an effective and appropriate manner;**

(b) **Review the list of activities presented by the Statistics Division for the development of the global set of climate change statistics and indicators that will be included in the workplan to be presented to the Statistical Commission at a future session;**

(c) **Approve the expansion of the mandate of the Expert Group on Environment Statistics to cover more aspects of climate change statistics and indicators and to contribute to the development of the above-mentioned workplan;**

(d) **Encourage Member States to participate in the pilot survey on climate change-related statistics and indicators being undertaken by the Statistics Division, as well as in the planned global consultation on climate statistics and indicators;**

(e) **Comment on how the international statistical community can be more engaged with the secretariat of the United Nations Framework on Climate Change in order to assist in meeting information needs and to contribute to the statistical capacity-building efforts currently being undertaken by the secretariat;**

(f) **Express its support for the work being undertaken by the ECE Task Force on the core set of climate change-related indicators, encourage countries to pilot test the initial set of key indicators developed by the ECE Task Force and to prepare national road maps for the development of climate change-related statistics.**

¹³ All presentations are available on http://www.unece.org/index.php?id=43954_