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Items for information

Climate change statistics

Report of the Secretary-General

Summary

In accordance with Economic and Social Council decision 2020/211 and past practices, 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 secretariat of the United Nations Framework Convention on Climate Change and the Economic Commission for Europe (ECE). The report contains an update of the work of the Division in climate change statistics in response to the mandates of the forty-seventh and forty-ninth sessions of the Statistical Commission, in particular with regard to the development of a global set of climate change statistics and indicators, as well to what has been undertaken to strengthen the policy and statistics cooperation on climate change at the international level. Complementarily, it describes the current work of the secretariat of the Framework Convention on, inter alia, the reporting processes under the enhanced transparency framework of the Paris Agreement. The report also describes progress made by ECE in its work on climate change-related statistics and indicators. The Statistical Commission is invited to take note of the report.

* E/CN.3/2021/1.



I. Introduction

1. At its forty-ninth session, held from 6 to 9 March 2018, the Statistical Commission adopted decision 49/113 (see [E/2018/24-E/CN.3/2018/37](#)), in which it:

(a) Welcomed the report of the Secretary-General, prepared by the Statistics Division of the Department of Economic and Social Affairs of the Secretariat, in collaboration with the Economic Commission for Europe (ECE) and for the first time also with the secretariat of the United Nations Framework Convention on Climate Change to promote the policy and statistics interface ([E/CN.3/2018/14](#));

(b) Expressed 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;

(c) Endorsed the list of activities prepared 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;

(d) Supported 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;

(e) Urged countries to participate in the pilot survey on climate change-related statistics and indicators currently being undertaken by the Statistics Division, as well as in the planned global consultation on climate change statistics and indicators;

(f) Reiterated the importance of enhancing collaboration between national statistical offices and national authorities responsible for reporting climate change-related information to the secretariat of the Framework Convention and investing in the development of climate change statistics, in particular the underlying environment, energy, agricultural and industrial statistics, given the expected increased and possibly more diverse data requirements for the implementation of the Paris Agreement;

(g) Requested the Statistics Division and the secretariat of the Framework Convention to strengthen the link between statistics and policy, for example, by undertaking joint initiatives in the development of climate change statistics and indicators, encouraging joint capacity-building efforts and training with other partners and exploring ways to encourage national statistical offices to be more involved in the preparation of data submissions to the secretariat of the Framework Convention, in support of the implementation of the Paris Agreement;

(h) Expressed its support for the work being undertaken by the task force of ECE on the core set of climate change-related indicators, and encouraged countries to pilot the initial set of key indicators developed by the task force and to prepare national road maps for the development of climate change-related statistics;

(i) Welcomed the harmonized and coordinated efforts being undertaken by the Statistics Division and ECE in terms of methodological work and the development of indicators, and encouraged the continuation of those efforts;

(j) Noted the use of the System of Environmental-Economic Accounting for deriving the set of climate change-related statistics of ECE so as to allow for linkages with the economy to support analytical work, and encouraged further consideration of the System, in particular in the context of the development of air emission accounts;

(k) Welcomed a greater focus on disaster-related statistics given the importance of the Sendai Framework for Disaster Risk Reduction 2015–2030, and decided to include in the agenda of its fiftieth session a separate item on this topic, building on existing work in the Economic and Social Commission for Asia and the Pacific, ECE and the United Nations Office for Disaster Risk Reduction.

II. Background

2. The report of the Secretary-General for the forty-ninth session of the Statistical Commission, in 2018 (E/CN.3/2018/14), contained an update on the work of the Statistics Division in the area of climate change statistics, in response to the mandate set out in 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. Complementarily, it described 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.

3. The present report provides an overview of the work carried out in the field of climate change statistics and indicators by the Statistics Division, the secretariat of the United Nations Framework Convention on Climate Change and ECE since 2018. Several other international, regional and national institutions have been embarking on important work in climate change statistics, as described in paragraphs 16 and 17 below. In view of the growing need for sharing and coordinating 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

A. Development of the global set of climate change statistics and indicators

4. In 2016 and 2018, the Statistical Commission mandated the Statistics Division to develop a global set of climate change statistics and indicators, in collaboration with the secretariat of the United Nations Framework Convention on Climate Change, to promote the policy and statistics interface. Efforts have been stepped up and work is well under way.¹ The global set will benefit both countries and the international reporting process to monitor the drivers of climate change and its impacts, assess mitigation and adaptation measures and evaluate vulnerability. The global set will also be considered under the enhanced transparency framework and the global stocktake as a way of linking the reporting requirements stemming from the Paris Agreement and the statistics or indicators necessary to support climate policy action. The overall objective is to develop a global set of climate change statistics and indicators tailored for all countries while ensuring that the needs of countries with less developed statistical systems are taken into account. The global set will contain a thematically comprehensive list of indicators and statistics structured according to the five areas defined by the Intergovernmental Panel on Climate Change (i.e., drivers, impacts, vulnerability, mitigation and adaptation) and will be accompanied by short metadata (including definitions, aggregations, measurement categories, data references and implementation guidelines). Given the complexity of

¹ See <https://unstats.un.org/unsd/envstats/climatechange.cshtml> for further information.

climate change monitoring and the broad multidisciplinary coverage of the five areas mentioned above, the global set will provide a statistical framework with suitable indicators to serve as guidance for countries for preparing their own sets. This framework will link the reporting requirements stemming from the Paris Agreement and the agreed reporting modalities known as the “Katowice climate package” to the indicators necessary to support climate policy action. Similarly to the Basic Set of Environment Statistics in the Framework for the Development of Environment Statistics,² the global set will be a comprehensive, but not exhaustive, set of indicators and statistics designed to support countries according to their individual concerns, priorities and resources.

5. The Statistics Division initiated the process of developing the global set of climate change statistics and indicators on the basis of a systematic review of country-based practices and the close link between global climate change negotiations and reporting and national statistics. During 2018 and 2019, the Division carried out a systematic review of climate change statistics and indicators from 130 countries with representative regional coverage, analysed more than 7,500 individual climate change statistics and indicators and identified a draft set of the most commonly repeated indicators, thereby promoting a bottom-up approach to their selection. Many of the indicators are repeated across various countries and come from at least one national source. It should be noted that, given the request from the Statistical Commission in 2018 for the Division and the secretariat of the United Nations Framework Convention on Climate Change to strengthen the link between statistics and policy, the relevant articles of the Paris Agreement are mentioned for each indicator in the draft set, thereby clearly demonstrating this linkage. In addition, international frameworks and agreements, such as the Sustainable Development Goals, the Framework for the Development of Environment Statistics, the Paris Agreement and the Sendai Framework, as well as the ECE set of climate change-related statistics and indicators, have been considered to promote consistency and harmonization in the wording of the indicators, to the extent possible. The Expert Group on Environment Statistics has been contributing to the work on the draft set through the review of iterative versions and discussions at meetings of the Expert Group. At the sixth meeting of the Expert Group, in May 2019, it was agreed that the Division would share the draft set of climate change statistics and indicators with interested members of the Expert Group before conducting a pilot survey. The expert review, completed in January 2020, was based on feedback from six countries and four international and regional organizations. As a result of the review, 134 indicators and statistics were compiled in a draft global set for the pilot survey.

B. Pilot survey on the draft global set of climate change statistics and indicators

6. The pilot survey was launched on 23 February 2020, with the main objective of testing and assessing the relevance, soundness and measurability of the proposed indicators by inviting: (a) the national statistical offices and ministries of environment from 42 countries to assess their preparedness to compile the suggested indicators in collaboration with relevant partners according to their national priorities and the development stage of the country; and (b) 30 international and regional organizations to assess the indicators from a thematic and methodological point of view in order to ensure that the selected indicators were relevant, correctly named and supported by definitions, references and data. Initially, given the importance of climate change monitoring and the interest that it generated among partners, responses and feedback

² See <https://unstats.un.org/unsd/envstats/fdes.cshhtml>.

arrived quickly from several organizations and countries. However, the coronavirus disease (COVID-19) pandemic delayed the process, especially in developing countries. Despite that delay, the prolonged duration of the work proved beneficial, since potentially new indicators may be worth considering to promote more accurate monitoring of climate change. A special follow-up process with the countries and organizations that could not respond on time was initiated to better understand what the main impediments were, given the impacts of the COVID-19 pandemic.

7. Thirteen key international and regional organizations responded with thematic validation on most of the proposed indicators and statistics. A total of 17 countries responded, including seven developed countries, three of which (which could consult stakeholders prior to lockdown) had assessed all the proposed indicators. Of the 10 developing countries that responded, one had assessed all indicators, seven had completed the survey partially and two had only provided references to data produced by their national statistical offices. In addition, another 12 developing countries (including four least developed and four small island developing States) initiated the survey but have not been able to complete it to date. The main impediments have been the difficulty in collecting responses from national experts and partners that the national statistical offices could not meet during lockdown and the impossibility of exchanging data and information remotely and electronically owing to a lack of resources and capacity. Another difficulty has been addressing indicators that are outside national statistical systems, which represents about a third of the proposed indicators. Those indicators require further work, including desk research and consultations with experts to develop proper definitions and calculation methods in the next period.

8. The Statistics Division reviewed the information received from countries and reached out to them to seek clarification and request additional supporting information, as necessary. Bilateral consultations have also been taking place with selected organizations on specific thematic areas, and this will continue once additional responses have been received and enough analysis of the various themes (such as biodiversity and disasters) has been conducted and is deemed useful for more in-depth discussion. While waiting for further responses, in particular from developing countries, the Division set up a small group of developing countries faced with the most challenges, both as a result of the pandemic and with the completion of the survey in general, to examine in detail the structure of the draft global set of climate change statistics and indicators and provide inputs towards the revised global set to be sent out for the global consultation planned for early 2021.

9. The group held several online meetings between May and September and discussed a structure linking the proposed indicators and underlying basic statistics, accompanied by brief metadata, which should meet the needs of both developed and developing countries. The group also provided advice to the Statistics Division to better understand the needs of the least developed and developing countries, in particular, and the way that national statistical offices interact with other national institutions. Furthermore, the group provided suggestions to the Division on how to organize and review the feedback received to date and how to revise the structure of the draft global set of climate change statistics and indicators.

C. Main outcomes of the pilot survey

10. The pilot survey resulted in several findings, as described below, together with, in square brackets, actions taken by the Statistics Division in response:

(a) Most of the proposed indicators were considered applicable, although some needed further methodological work;

- (b) For several indicators, the relevance to climate change was not clear [metadata are being prepared that will make this more evident];
- (c) Several new indicators were suggested;
- (d) The links to the Intergovernmental Panel on Climate Change and to the ECE core set of indicators were appreciated;
- (e) Several of the indicators originally proposed were considered to be overlapping [these are being reviewed and any redundancies will be eliminated];
- (f) There is a need to reduce the number of indicators [the entire structure is being reorganized, and a multi-tiering system will assist with prioritization];
- (g) There is a need to clarify the difference between indicators and statistics [they have since been separated to promote transparency and ensure that indicators are clear and measurable and outline the underlying statistics and data needed to produce them, thereby clearly identifying data gaps];
- (h) Some of the proposed indicators needed to be simplified, as they were considered too complex or requiring modelling in their present form;
- (i) References to the System of Environmental-Economic Accounting were encouraged where applicable [several ECE indicators include such references, and references will be provided in metadata as necessary];
- (j) Data availability was mentioned as a concern for some indicators, especially in the area of adaptation [references to data availability, produced at both the international and national levels, are being reviewed and will be provided];
- (k) Several indicators were considered to be outside the mandate of national statistical offices or national statistical systems [additional efforts to compile metadata are being undertaken to provide as much information as possible, and the global consultation will include enough time for stakeholder discussions];
- (l) There is inadequate capacity in developing countries to compile some of the indicators that are relevant in those countries.

D. Review of the draft global set of climate change statistics and indicators at the seventh meeting of the Expert Group on Environment Statistics

11. In the light of the outcomes of the pilot survey and the consultations held with the small group of countries described above, the draft global set of climate change statistics and indicators was reworked into a new structure by presenting both indicators and the underlying basic statistics side by side, given that sophisticated indicators often require multiple statistics for their compilation. As a result, countries may incrementally build their climate change statistics programmes by moving from basic statistics towards sophisticated indicators. The new structure was presented at the seventh meeting of the Expert Group on Environment Statistics, in a session on climate change statistics and indicators held on 11 and 12 November 2020.³ Given the importance of the work of the Statistics Division on climate change statistics, several experts from, inter alia, the Green Climate Fund, the World Meteorological Organization and the Intergovernmental Panel on Climate Change participated in the Expert Group meeting for the first time.

³ See https://unstats.un.org/unsd/envstats/fdes/fdes_eges7.cshtml.

12. The first day of the meeting included presentations and discussion on related work at the global, regional and national levels and led to the following main conclusions:

(a) The global set of climate change statistics and indicators is a comprehensive, but not exhaustive, set of indicators and statistics designed to support countries according to their individual concerns, priorities and resources;

(b) The pilot survey clearly demonstrates that most of the proposed indicators in the global set are applicable, although some indicators need further methodological work;

(c) The matrix-based structure of the global set that links indicators and underlying statistics helps to promote transparency and comprehensiveness and is flexible enough for countries to select relevant indicators and statistics for compilation, depending on their level of development;

(d) Comprehensive metadata for the global set can be used as a guiding tool for countries to compile climate change statistics;

(e) International and regional organizations should continue to collaborate to streamline, inter alia, concepts, definitions and methodologies;

(f) Complementarity should be promoted, to the extent possible, among global, regional and national sets of climate indicators;

(g) The Statistics Division and the secretariat of the United Nations Framework Convention on Climate Change should continue to: undertake joint initiatives to develop climate change statistics and indicators; strengthen the link between policy and statistics and between national statistical offices and climate change reporting agencies at the national level; and collaborate on capacity development with support from other partners;

(h) The role of national statistical offices as providers of activity data (economic statistics) was highlighted, including the need to include such offices in the greenhouse gas compilation processes and reporting under the Framework Convention;

(i) National statistical offices can contribute to or coordinate climate change statistics, as is done in environment statistics, on the basis of their mandates to produce official statistics and their role in coordinating the national statistical system.

13. The second day of the meeting was dedicated to a detailed review of the individual statistics and indicators in the draft global set of climate change statistics and indicators, by means of group work addressing the five areas defined by the Intergovernmental Panel on Climate Change. Some 50 experts took part in the group work and were well familiarized with the structure of the global set and the objectives of its development. The individual statistics and indicators, the overall structure and metadata examples were reviewed in each area. The participants concluded that the areas of adaptation and vulnerability were especially important to small island developing States, developing and least developed countries, as well as the most challenging areas to advance the production of internationally comparable statistics and indicators. They also concluded that the areas of drivers and mitigation were of more importance to developed countries and contained statistically better-defined indicators. The experts recognized the importance of applying the relevant Sustainable Development Goals in the global set, even if some indicators needed further work to relate them to climate change. Missing, weak or insufficiently defined statistics and indicators were identified in all areas. It was also noted that there was a need to identify a core set of indicators applicable to all countries.

14. The seventh meeting of the Expert Group facilitated a fruitful dialogue that allowed the Statistics Division to continue to lead and coordinate the implementation of the work programme on climate change statistics in close collaboration with the secretariat of the United Nations Framework Convention on Climate Change.

E. Capacity development activities

15. Under tranche 10 of the United Nations Development Account, the Statistics Division provided capacity development for strengthening environment and climate change statistics in the Gambia and Namibia by holding two national workshops in each country in 2018 and two in 2019.^{4,5} Under the regular programme of technical cooperation, the Division carried out a national mission for strengthening environment and climate change statistics in Equatorial Guinea and held a regional workshop on environment statistics and information for sustainable development in the Arab region in 2018.⁶ In 2019, another regional workshop on environment statistics and climate change statistics was held for the Caribbean Community (CARICOM) region,⁷ followed by a national workshop on environment statistics and climate change statistics in Grenada.⁸ As mentioned above, during the pilot survey and the period of delays caused by the pandemic, the Division offered advice to a number of developing countries on their review of the national statistical capacities needed to develop the climate change indicators and statistics suggested in the draft global set of climate change statistics and indicators.

16. In early 2020, the Statistics Division carried out its first inventory of capacity development events and activities in the area of environment statistics⁹ in 2018 and 2019, led by 17 international and regional organizations, which revealed that many of those activities also addressed climate change statistics and indicators, such as those conducted by the United Nations Environment Programme (UNEP), the regional commissions and the European Environment Agency.

17. Capacity development activities and needs with regard to climate change statistics were presented and discussed on the last day of the seventh meeting of the Expert Group on Environment Statistics (19 November 2020). The Green Climate Fund presented the scope of its work, including the Readiness and Preparatory Support Programme and the capacity development portfolio, stating that, through the Readiness Programme, support for national adaptation planning and capacity for data and information on climate impacts, vulnerability, adaptation and assessment would be strengthened, and describing how national statistical offices could benefit. Other initiatives were also mentioned, including the new project of the Economic Commission for Latin America and the Caribbean (ECLAC) on Caribbean relevant climate change and disasters indicators for evidence-based sustainable development policies.

F. Substantive activities on climate change statistics and indicators

18. As mentioned in paragraph 3 above, there is a growing need to share information about the numerous activities undertaken worldwide, and the Statistics Division is

⁴ See <https://unstats.un.org/unsd/envstats/meetings/2019-Gambia/Gambia.cshtml>.

⁵ See <https://unstats.un.org/unsd/envstats/meetings/2019-Namibia/Namibia.cshtml>.

⁶ See <https://unstats.un.org/unsd/envstats/meetings/2018-Arab%20Region/ArabRegion.cshtml>.

⁷ See <https://unstats.un.org/unsd/envstats/meetings/2019-Caricom%20Region/CaricomRegion.cshtml>.

⁸ See <https://unstats.un.org/unsd/envstats/meetings/2019-Grenada/Grenada.cshtml>.

⁹ See https://unstats.un.org/unsd/envstats/Inventory_capacity%20development.

planning to develop an inventory of related work on climate change statistics carried out by partner organizations. Some of those activities are described below.

19. Besides its technical work on the global set of climate change statistics and indicators, as requested by the Statistical Commission at its forty-ninth session, the Statistics Division has been working closely with the secretariat of the United Nations Framework Convention on Climate Change to strengthen the link between statistics and policy by means of, inter alia, holding joint side events at the Commission sessions, the participation of the secretariat of the Framework Convention in the Expert Group on Environment Statistics, the participation of the Division in a side event at the high-level political forum on sustainable development¹⁰ held in 2019, and the participation of the secretariat of the Framework Convention in regional and subregional workshops on environment statistics and climate change statistics, such as those held by the Division for the Arab region in 2018 and the CARICOM region in 2019 (see para. 15 above).

20. The secretariat of the United Nations Framework Convention on Climate Change has held three online meetings on “Building the enhanced transparency framework” to discuss the diversity of initiatives under way and the common goals to support countries under both the current measurement, reporting and verification system and in the transition to the enhanced transparency framework of the Paris Agreement. Presentations were delivered at those meetings by, inter alia, the secretariat of the Framework Convention, the Food and Agriculture Organization of the United Nations (FAO), the Intergovernmental Panel on Climate Change and the Statistics Division. In addition to the very strong appreciation expressed by the secretariat of the Framework Convention Change for the involvement of the Division in the area of climate change statistics to support the enhanced transparency framework and, eventually, the global stocktake, FAO and the Intergovernmental Panel on Climate Change also stressed the importance of such statistics and proposed further bilateral consultations with the Division. Capacity development in climate change monitoring and reporting was also an important subject of discussion, and proposals were made by the agencies for strengthening coordination and collaboration in service delivery to countries.

21. Several other international and regional institutions have been publishing climate change statistics and indicators, including FAO, through its Corporate Database for Substantive Statistical Data, on emissions from the agricultural sector,¹¹ temperature change,¹² estimates of the area of organic soils drained for agriculture and associated greenhouse gas emissions (1990–2019)¹³ and carbon emissions and removals by forests: new estimates 1990–2020.¹⁴ Following the publication by the Economic and Social Commission for Western Asia (ESCWA) of a report on *Climate Change-related Statistics in the Arab Region*¹⁵ in 2017, the CARICOM Secretariat published a report on *Climate Change Statistics*¹⁶ in 2020, which contains quantitative and qualitative data and graphs presenting the situation on climate change in the region, including through data going up to 2020. Apart from ECE and ESCWA, other regional commissions are also working on climate change and disaster monitoring indicators for their respective regions.

¹⁰ See <https://sustainabledevelopment.un.org/hlpf>.

¹¹ See www.fao.org/economic/ess/environment/data/emission-shares/en/.

¹² See www.fao.org/economic/ess/environment/data/temperature-change/en/.

¹³ See www.fao.org/economic/ess/environment/data/organic-soils.

¹⁴ See <https://essd.copernicus.org/preprints/essd-2020-203/>.

¹⁵ See www.unescwa.org/publications/compendium-environment-statistics-arab-region-2016-2017.

¹⁶ See <http://statistics.caricom.org/climatepub.html>.

22. A number of national activities demonstrating the increased capacities and involvement of national statistical offices in climate change statistics that have been communicated to the Statistics Division are listed below:

(a) The expansion of existing environment statistics units or divisions in national statistical offices to also cover climate statistics, including, in Cameroon and Ireland, the inclusion of both “environment” and “climate” in the actual name of the unit or division;

(b) The setting up an inter-agency committee for environment and climate change statistics by the Central Statistical Office of Grenada;

(c) The holding a data-provider and data-user event in Slovenia entitled “Statistical Day”, which was dedicated to climate change data in 2020;

(d) The issuance by the National Bureau of Statistics of the United Republic of Tanzania of its first national climate change statistics report, in 2019;

(e) The issuance by the Statistical Institute of Jamaica of its “Climate Change Statistics” report, in 2016.

G. Planned actions of the Statistics Division

23. In order to advance work on climate change statistics and indicators, as well as to finalize the global set, the Statistics Division, in collaboration with other institutions, is working on the activities outlined below:

(a) Completion of the analysis of the pilot survey and of the feedback from the Expert Group on Environment Statistics, and completion of the metadata for tier I and II indicators;

(b) Participation in and following of the relevant processes for developing international standards, guidelines and frameworks to ensure that the related indicators and statistics are included in the global set to the extent possible, with the best references included in the metadata;

(c) Undertaking of pilot projects or case studies on climate change indicators and statistics, especially in developing countries;

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

(e) Further widening of the scope of the Expert Group on Environment Statistics to cover all topics related to climate change drivers, impacts, vulnerability, mitigation and adaptation and to ensure continuous technical support from the experts for the global set;

(f) Setting up of an advisory group to assist in the revision and refinement of the draft global set;

(g) Holding of an extraordinary meeting on climate change statistics of the Expert Group on Environment Statistics to discuss the revised draft global set and discuss a long-term workplan;

(h) Conduct of a consultation on the global set around March 2021 with all countries and relevant agencies, accompanied by an inventory of related activities;

(i) Analysis of the results of the global consultation and development of implementation guidelines;

(j) Submission of the global set at the fifty-third session of the Statistical Commission, in 2022, for adoption;

(k) Further exploration of ways to strengthen the relationship between national statistical offices and national authorities reporting climate change information;

(l) Further investigation of the linkages between data producers and data users, and engagement with the wider statistical community;

(m) Holding of side events on climate change statistics on the margins of the sessions of the Statistical Commission and the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement;

(n) Undertaking of further work to better articulate the linkages with the System of Environmental-Economic Accounting Central Framework and the System of Environmental-Economic Accounting Ecosystem Accounting (see also [E/CN.3/2021/10](#)).

IV. Current work by the secretariat of the United Nations Framework Convention on Climate Change in the areas of data management, statistics and support under the Framework Convention, the Kyoto Protocol and the Paris Agreement

A. Communication of information

24. Under the global climate change action, countries require a consistent stream of information and data about their greenhouse gas emission trends and projections, the effects of their policies and measures, their climate vulnerability and risks, their opportunities and actions to reduce greenhouse gas emissions and enhance resilience, and the support needed and received. The provision of such information supports evidence-based national decision-making and the timely submission of reports under the United Nations Framework Convention on Climate Change, the Kyoto Protocol thereto and, in future, the Paris Agreement.

25. The continuous collection, analysis and use of reliable information on climate action and support to reduce greenhouse gas emissions and increase resilience, as well as data on greenhouse gas emission levels and trends, are essential for evidence-based decision-making and information-sharing, building trust and understanding and promoting stakeholder engagement. The process for data collection and reporting activity forms a critical component of the measurement, reporting and verification system under the United Nations Framework Convention on Climate Change and the Kyoto Protocol and has recently been encompassed in the enhanced transparency framework of the Paris Agreement.

26. The current measurement, reporting and verification system under the United Nations Framework Convention on Climate Change and the Kyoto Protocol provides a set of requirements concerning information to be reported, the timetable for the submission of national reports and the extent of international analysis and review of information, which are different for developed and developing countries. The enhanced transparency framework builds on the current system and provides a basis for all parties to operate under a common set of modalities, procedures and guidelines (part of the Katowice climate package agreed at the first Conference of the Parties serving as the meeting of the Parties to the Paris Agreement, in 2018) with flexibility for those developing countries that need it in the light of their capacities.

27. Countries that are parties to the United Nations Framework Convention on Climate Change will continue to communicate a large amount of information under

the Convention in accordance with the different requirements for developed and developing countries and through different channels, such as the national communications (all parties), national greenhouse gas inventories (all parties, in differing formats), biennial reports (developed countries) and biennial update reports (developing countries), national adaptation plans (developing countries) and national adaptation programmes of action (least developed countries).

28. In addition, countries that are parties to the United Nations Framework Convention on Climate Change and have ratified the Paris Agreement are currently submitting their new or updated nationally determined contributions and their long-term low emissions development strategies. All parties to the Agreement are also required to submit a biennial transparency report starting December 2024 (except for small island developing States and the least developed countries, which may submit this information at their discretion). The biennial transparency report provides country-specific information on the implementation of the Agreement, including a national greenhouse gas inventory and information necessary to track progress in implementing nationally determined contributions. All parties to the Agreement should also provide information on climate change impacts and adaptation. Moreover, developed countries are to provide information on the financial, technology development and transfer and capacity-building support provided to and mobilized for developing countries. Developing countries that need it in the light of their capacities are provided with specific flexibility for reporting some of the information mentioned above.

B. Available information and data

29. The regular information currently submitted by parties to the United Nations Framework Convention on Climate Change, the Kyoto Protocol and the Paris Agreement already contains a vast amount of data concerning all aspects of national activities undertaken to address climate change, including those related to vulnerability and adaptation, mitigation, financial and technological support, research and observation. The secretariat of the Framework Convention makes all information communicated officially by countries publicly available on its website, including both the primary data (as submitted by parties) and secondary information (the information and data compilations, reports and online databases).

30. Some examples of the information submitted by parties under the United Nations Framework Convention on Climate Change are: national communications and biennial reports of developed countries;¹⁷ national communications and biennial update reports of developing countries;¹⁸ national greenhouse gas inventories of developed countries,¹⁹ while detailed and aggregated data are available from an online database;²⁰ national adaptation plans of developing countries;²¹ national adaptation programmes of action of the least developed countries;²² market-based mechanisms under the Kyoto Protocol, such as the clean development mechanism;²³ and nationally appropriate mitigation actions.²⁴

¹⁷ See <https://unfccc.int/NC7> and <https://unfccc.int/BRs>.

¹⁸ See <https://unfccc.int/non-annex-I-NCs> and <https://unfccc.int/BURs>.

¹⁹ See <https://unfccc.int/ghg-inventories-annex-i-parties/2020>.

²⁰ See https://di.unfccc.int/time_series.

²¹ See www4.unfccc.int/sites/NAPC/Pages/national-adaptation-plans.aspx.

²² See <https://unfccc.int/topics/resilience/workstreams/national-adaptation-programmes-of-action/napas-received>.

²³ See <https://cdm.unfccc.int/Projects/projsearch.html>.

²⁴ See www4.unfccc.int/sites/publicnama/SitePages/Home.aspx.

31. In addition, nationally determined contributions under the Paris Agreement are available in the interim nationally determined contribution registry,²⁵ and adaptation communications under the Agreement are also available online.²⁶ The forthcoming submissions by parties under the enhanced transparency framework, such as the biennial transparency reports, including their tabular formats, will also be presented in a similar manner on the web portal of the secretariat of the United Nations Framework Convention on Climate Change, and the data will be included in the online data interface.

C. Data-related needs and support provided

32. As described above, there is an increased need for information at the national level, which will have to be submitted by parties to the United Nations Framework Convention on Climate Change under the Paris Agreement. This information is usually rather complex and cross-cutting, requiring both a set of reliable data from national statistical offices and a substantial organizational and analytical effort for its preparation, including relevant expertise and adequate resources. Consequently, there is an increasing role for those offices in providing high-quality and timely data to ensure the trustworthiness of the overall information submitted.

33. Consequently, the sustainability of national arrangements for the preparation of the information needed is critical in the long term. The transition from the existing measurement, reporting and verification system to the enhanced transparency framework will introduce an enhanced scope, regularity and complexity of reporting, especially for developing countries, which stresses the importance of having robust sustainable institutional arrangements in place at the national level. The enhanced scope, regularity and complexity constitute a significant challenge in terms of the resources and efforts needed to meet the reporting requirements. Moreover, the process will require engagement with a broad range of stakeholders for the collection of data, the preparation of estimates and ensuring the availability of detailed information. Robust institutional arrangements will be paramount in enabling countries to provide reliable, comprehensive and regularly updated information that meets the reporting requirements and serves national decision makers.

34. The secretariat of the United Nations Framework Convention on Climate Change continues to develop and implement several training programmes, especially for developing countries. Regular training activities and events have already resulted in countries having national experts trained in the preparation of the various reports and information needed, or in becoming qualified experts in the review or analysis of the information submitted, as part of the current measurement, reporting and verification system under the Framework Convention and the Kyoto Protocol. A similar process is currently being developed for the new training programmes for experts participating in reviews under the enhanced transparency framework. The secretariat of the Framework Convention is also running a multi-year programme for strengthening the capacity of developing countries to prepare national greenhouse gas inventories, develop and maintain sustainable national inventory management systems and apply the guidelines issued by the Intergovernmental Panel on Climate Change in 2006 for national inventories, considering the agreement by the parties to the Paris Agreement to use those guidelines for reporting their national greenhouse gas inventories. The national statistical offices are often and increasingly involved in the activities, training and events organized in countries under those programmes.

²⁵ See www4.unfccc.int/ndcregistry/Pages/Home.aspx.

²⁶ See <https://unfccc.int/topics/adaptation-and-resilience/workstreams/adaptation-communications>.

35. Nevertheless, a solid national data collection system and the capability of interpreting and processing the data will continue to be extremely important at the national level, especially in the context of the increased need for data under the Paris Agreement. Also important is the understanding of the relationship between national statistics and climate-related data. The secretariat of the United Nations Framework Convention on Climate Change continues to support this work, together with the Statistics Division, considering the importance of promoting timely and reliable climate change statistics.

36. In the same context, the secretariat of the United Nations Framework Convention on Climate Change has recently launched an initiative for universal participation in the enhanced transparency framework, which seeks to bring together under a common banner all actors, such as countries, and help organizations, the business community, non-governmental organizations and others to realize the benefits of the strengthened transparency requirements under the enhanced transparency framework of the Paris Agreement. This global initiative will facilitate greater access to support for developing countries; mobilize support needed for building and strengthening national capacities, including robust and sustainable institutional arrangements for climate-relevant data; increase political awareness and buy-in at the highest national level; and generate global momentum towards enhancing the understanding of the importance of transparent data and information for the implementation of the Agreement. Participation and regular reporting under the enhanced transparency framework will allow Governments to better measure and plan for their climate actions and to identify the measures needed for achieving low-carbon and high-resilience economic transformation.

D. Cooperation with the Statistics Division

37. The secretariat of the United Nations Framework Convention on Climate Change is the official depository for climate change data and manages the greenhouse gas data interface. In this function, the secretariat cooperates with key international organizations in the area of data exchange and regularly updates the data stored on the UNdata portal²⁷ for dissemination within and outside the United Nations system.

38. The secretariat of the United Nations Framework Convention on Climate Change has gradually increased its cooperation with the Statistics Division in recent years and was involved in preparing the report of the Secretary-General on climate change statistics for the forty-ninth session of the Statistical Commission to promote the policy and statistics interface. In that context, the Commission reiterated at that session the importance of enhancing collaboration between national statistical offices and national authorities responsible for reporting climate change-related information to the secretariat of the Framework Convention and investing in the development of climate change statistics, in particular the underlying environment, energy, agricultural and industrial statistics, given the increased and more diverse data requirements for the implementation of the Paris Agreement. In addition, the Commission requested the secretariat of the Framework Convention and the Division to strengthen the link between statistics and policy by undertaking joint initiatives to develop climate change statistics and indicators, encouraging joint capacity-building efforts and training with other partners and exploring ways to encourage national statistical offices to be more involved in the preparation of data for reporting under the Agreement.

39. In response, the secretariat of the United Nations Framework Convention on Climate Change participated actively and supported the Statistics Division in holding

²⁷ See <http://data.un.org/>.

events, such as the regional workshop on environment statistics and information for sustainable development in the Arab region in November 2018 and the regional workshop on environment statistics and climate change statistics for the CARICOM region in November 2019, as part of a series of workshops bringing together the community of practitioners in environmental data and statistics. Those workshops stimulated discussion and cooperation on data matters and data exchange and dissemination. They reinforced in particular the link between the secretariat of the Framework Convention, the Division, FAO, UNEP, ESCWA and the CARICOM Secretariat and showcased the role of the secretariat of the Framework Convention as the worldwide authoritative source of climate change data. Furthermore, such events provide government representatives with extremely useful first-hand information on climate change statistics and maximize the interaction and cooperation between representatives of national statistical offices and individuals responsible for climate change reporting at the national, regional and international levels.

40. Moreover, the secretariat of the United Nations Framework Convention on Climate Change continues to be actively involved in the meetings of the Expert Group on Environment Statistics, which was established by the Statistical Commission in 2013. On the other hand, the secretariat of the Framework Convention has benefited from the participation of the Statistics Division representatives in the current series of online meetings with interested organizations on building the enhanced transparency framework, which provide an open forum for discussions on key challenges and opportunities, ensuring common understanding and identifying ways to strengthen the coherence, coordination and effectiveness of support initiatives.

41. In order to globalize climate change statistics and indicators, the secretariat of the United Nations Framework Convention on Climate Change is working closely with the Statistics Division, inter alia, to develop the global set of climate change statistics and indicators, as mandated by the Statistical Commission at its forty-ninth session, and to strengthen the link between statistics and policy at the national and international levels.

V. Current work in the areas of climate change-related statistics in the Economic Commission for Europe

42. The Statistical Commission considered the work of ECE in climate change-related statistics in 2018 on the basis of the report submitted by the Secretary-General on that topic at its forty-ninth session. The Commission welcomed the harmonized and coordinated efforts being undertaken by the Statistics Division and ECE in terms of methodological work and the development of indicators and encouraged the continuation of those efforts. The present section describes developments in those statistics in the ECE region since the previous report.

43. The work of ECE on climate change-related statistics is led by a steering group (chaired by Luxembourg) and carried out in close collaboration with the European Environment Agency, Eurostat, FAO, the International Energy Agency, the secretariat of the United Nations Framework Convention on Climate Change, ECLAC and the Statistics Division. The work follows up on the *Conference of European Statisticians Recommendations on Climate Change-related Statistics*²⁸ of 2014. The results, which may be of interest globally, include:

(a) ECE Expert Fora for Producers and Users of Climate Change-Related Statistics have been held annually since 2012, providing a platform for collaboration, sharing ideas and experience, discussing concepts and measurement issues and

²⁸ See <https://unece.org/statistics/publications/recommendations-climate-change-related-statistics>.

identifying areas for the development of practical guidance. Good practices presented at the Expert Fora are published on the ECE wiki platform.²⁹ The most recent Expert Forum was held from 28 September to 1 October 2020, and participants therein discussed, among other things, the importance of such statistics in the post-pandemic world, policy developments and statistical challenges in measuring climate change adaptation, the role of official statistics in informing climate action and energy transition, and approaches to measuring the impact of climate change on national assets through comprehensive wealth accounting;

(b) In 2018, the Statistical Commission expressed support for the work being undertaken by the ECE task force on the core set of climate change-related indicators, and encouraged countries to pilot the initial set of key indicators developed by the task force and to prepare national road maps for the development of climate change-related statistics. The Conference of European Statisticians endorsed in June 2020 a document containing the Set of Core Climate Change-related Indicators and Statistics Using the System of Environmental-Economic Accounting (version 2.0) developed by the ECE task force (led by Italy). The document guides countries in establishing their national sets of climate change-related indicators by providing metadata sheets, a set of contextual indicators and possible disaggregation variables, as well as implementation guidelines. A white cover version of the indicator set is available on the ECE website;³⁰

(c) In February 2020, the Bureau of the Conference of European Statisticians carried out an in-depth review of the role of the statistical community in climate action.³¹ The outcomes of the review were prepared in consultation with all members of the Conference of European Statisticians and endorsed by the Conference in June 2020. The conclusions of the review were that:

- (i) National statistical offices can play an essential role in national climate change information systems, but the statistical community has to step up its efforts and engage much more actively in the complicated landscape of data for climate action;
- (ii) There is an urgent need to look at climate change as a central challenge of sustainable development that requires data and statistics from all domains. Climate change considerations are increasingly mainstreamed into all areas of development work, and the statistical community should consider mainstreaming climate change into all areas of statistical work;
- (iii) With the adoption of the Paris Agreement work programme, some countries are re-examining their reporting arrangements. The momentum generated by the Paris Agreement at the national and international levels can be utilized for strengthening the cause for improvement in this very concrete aspect of providing data and statistics for climate action;
- (iv) A key obstacle to a greater involvement of national statistical offices is a widely reported lack of resources to address current needs. With some exceptions, there are almost no financial resources dedicated to capacity development in climate change-related statistics. In practice, such statistics are often considered to be a stand-alone domain (rather than a cross-cutting issue) and are therefore in direct competition for resources with other, more traditional,

²⁹ See <https://statswiki.unece.org/display/GPCCS/Good+practices+on+climate+change-related+statistics>.

³⁰ See https://statswiki.unece.org/pages/viewpage.action?pageId=285216611&preview=/285216611/290358613/CC_indicators_report_whitecover06112020.pdf.

³¹ See www.unece.org/fileadmin/DAM/stats/documents/ece/ces/2020/21Add.1_In-depth_Review_Climate_Action_full_version.pdf.

statistical domains. Capacity development funding addressing specifically the climate change-related work of those offices is needed;

(v) Many challenges and gaps in knowledge and data persist. The statistical community has the expertise to contribute, but it has to engage more closely with other data producers and data users to identify the most useful way of contributing, given the limited resources;

(vi) Additional mechanisms for direct communication among international organizations involved in providing and using statistics, data and evidence related to climate change could be considered to improve coordination, allow mutual learning and avoid the duplication of efforts. Common thinking on challenging areas is needed, in particular on measuring climate change adaptation;

(d) In preparation for the 2020 Expert Forum, ECE carried out a short survey on statistical activities relevant to climate change adaptation. The survey has shown that many national statistical offices already undertake or plan such activities, for example producing new statistics, linking and disseminating data from other producers or supporting the monitoring of national adaptation plans. However, many challenges are observed, such as a lack of resources, a lack of statistically operational definitions, conceptual difficulties and data gaps.

44. Future ECE work will focus on increasing further the usefulness and use of official statistics for informing climate change policy and analysis, improving the sharing of experience and knowledge, advancing climate change adaptation statistics and promoting the implementation of the *Recommendations on Climate Change-related Statistics* and set of core climate change-related indicators and statistics of the Conference of European Statisticians. Another topic that has been identified as important for future work is green finance and green investment.

VI. Action to be taken by the Statistical Commission

45. **The Statistical Commission is invited to take note of the present report.**
