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**Working Group on Environmental
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Item 5 of the provisional agenda
**Reporting on the Shared Environmental Information System
to support a regular process of environmental assessment**

Assessment framework for the mid-term review of the Shared Environmental Information System

Note by the secretariat

Summary

At the Eighth Environment for Europe Ministerial Conference (Batumi, Georgia, 8–10 June 2016), ministers invited countries to continue their efforts and to further develop their national information systems to have the Shared Environmental Information System in place in the countries of Europe and Central Asia by 2021 (ECE/BATUMI.CONF/2016/2/Add.1, para. 10). To assess progress in the implementation of the System and other outcomes of the Conference, ministers invited the United Nations Economic Commission for Europe (ECE) Committee on Environmental Policy to convene a mid-term review of the Conference's main outcomes in 2018 (ibid., para. 16).

At its eighteenth session (Geneva, 28–29 June 2016), the ECE Working Group on Environmental Monitoring and Assessment made several decisions and recommendations regarding reporting on progress in developing the Shared Environmental Information System and agreed that the secretariat would revise the review criteria and integrate a quality component as part of a framework for the assessment. At its nineteenth session (Geneva, 27–28 June 2017), the Working Group examined the results of the review and agreed that the secretariat would prepare a guidance document on the assessment framework (ECE/CEP/AC.10/2017/5, paras. 45–50).

At its twenty-third session (Geneva, 14–17 November 2017), the Committee on Environmental Policy agreed to hold the mid-term review of the Batumi Conference's main

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outcomes in the framework of its twenty-fourth session, and invited partners and stakeholders to proceed with the preparation of the mid-term review reports in accordance with a reporting template (ECE/CEP/2017/16, annex II).

The present document sets out the assessment framework for conducting the mid-term review on establishing the Shared Environmental Information System in the pan-European region. The Working Group is invited to review the assessment framework in the light of its use for the production of the draft mid-term review report (ECE/CEP/AC.10/2018/6) to be submitted and to recommend improvements, as appropriate, including with respect to performance scoring.

A final assessment of implementation is planned for 2020–2021 and will be presented to the Ninth Environment for Europe Ministerial Conference, expected to be held in 2021.

I. Introduction

1. The availability of integrated, relevant, high quality, timely and easily accessible environmental information provides the means for assessing environmental status and the foundation for meaningful and informed environmental governance. Conversely, a lack of such information presents a major obstacle to defining effective policies and targets for environmental conservation and sustainable resource use and to monitoring their effectiveness.

2. Timely, relevant, reliable and easily accessible environmental information is also essential to inform citizens about the quality of their environment so that, with full awareness, they can defend their basic right to live in a healthy and safe environment.

3. At the same time, organizing a vast array of environmental data and information and integrating them, where appropriate, with economic and social data is a challenging task. Even more challenging is to make this information and data available for analysis so that they can offer the basis for easily comprehensible, accessible and targeted recommendations to decision makers and the public or be used for reporting at the country level or internationally in accordance with legal obligations, policy commitments and mandates.

4. Recognizing the challenge, the international community in the pan-European region has facilitated the discussion and the sharing of experience between the various countries on the management and use of environmental information. This process led to a proposal by the European Environment Agency to develop, initially within the European Union, a Shared Environmental Information System — a system that, with the support of modern technologies such as the Internet, would link all the existing data and information flows relevant at the country and international levels in support of the regular environmental assessment process. The European Environment Agency proposal on the development of the Shared Environmental Information System was agreed and launched in the European Union primarily to support the reporting related to European Union environmental policies and legislation.

A. Development of the Shared Environmental Information System at the pan-European level

5. Regularly assessing the environment and developing the Shared Environmental Information System was also considered by the ministers of environment from the pan-European region[1] at the Seventh Environment for Europe Ministerial Conference (Astana, 21–23 September 2011). Following a discussion and acknowledging the benefits of such a system, the ministers decided to establish a regular process of environmental assessment and to develop the Shared Environmental Information System across the region to keep the pan-European environment under review (ECE/ASTANA.CONF/2011/2/Add.1, para. 14).

6. The ministers emphasized that the Shared Environmental Information System, and the regular process of environmental assessment, should serve multiple policy purposes, including with regard to multilateral environmental agreements. The work on these linked processes should include capacity-building of countries in Eastern and South-Eastern Europe, the Caucasus and Central Asia to monitor and assess their environment. Consequently, ministers invited the European Environment Agency and its partners to

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[1] The pan-European region under the Environment for Europe process covers the full membership of the United Nations Economic Commission for Europe (ECE), i.e., the 56 ECE member States.

develop an outline for how these actions could be performed and to present it to the United Nations Economic Commission for Europe (ECE) Committee on Environmental Policy.

7. The Committee on Environmental Policy decided to set up a coordination mechanism for the development of the System across the entire ECE region in the form of a Group of Friends of the Shared Environmental Information System, which was established at its nineteenth session (Geneva, 22–25 October 2013). Subsequently, the ECE Executive Committee formally approved the establishment of the Group of Friends, its mandate and its terms of reference and financial requirements (see ECE/EX/11).

8. The Committee on Environmental Policy entrusted the Group to work on two issues:

(a) The preparation of clear targets and performance indicators to monitor and evaluate the development of the Shared Environmental Information System in the pan-European region;

(b) The organization and shaping of the regular environmental assessment process, taking into consideration the benefits of the Shared Environmental Information System (ECE/CEP/2013/2, para. 39).

9. Accordingly, with regard to the first issue, targets and performance indicators were adopted by the Committee on Environmental Policy at its twentieth session (Geneva, 28–31 October 2014), based on a proposal made by the Group of Friends (see ECE/CEP/2014/8). The targets and performance indicators aim to facilitate the monitoring, development and operation of the pan-European Shared Environmental Information System overseen by the ECE Working Group on Environmental Monitoring and Assessment, which has been mandated with these tasks.

10. Regarding the second issue, the Group of Friends submitted a proposal (ECE/CEP/2015/10) to the Committee on Environmental Policy at its twenty-first session (27–30 October 2015) for the organization and shape of the regular environmental assessment process. The elaboration of the document was supported by the ECE secretariat, the United Nations Environment Programme (UNEP) and the European Environment Agency.

11. As an approach to link relevant data and information in support of integrated assessments, the Shared Environmental Information System makes agreed data and information easily available and accessible online. For the pan-European region, the Working Group on Environmental Monitoring and Assessment is defining the data and information content to be made available and accessible.

B. Monitoring progress in establishing a Shared Environmental Information System

12. At its twentieth session, the Committee on Environmental Policy requested the Working Group to prepare an evaluation report on progress made in establishing the Shared Environmental Information System for consideration at the Eighth Environment for Europe Ministerial Conference (ECE/CEP/2014/2, paras. 76 and 98 (ff) (iii)).

13. The Working Group agreed at its sixteenth session (Istanbul, Turkey, 16–17 April 2015) that the data and information included in the report should allow the measurement of progress towards agreed global and regional priorities in line, as relevant, with global and regional multilateral environmental agreements.

14. The Working Group further agreed on a first development milestone: 67 specific data sets that every country in the pan-European region should aim to make available and accessible online during 2015. These data sets referred to the following priorities: air

pollution and ozone depletion (25 data sets); climate change (4 data sets); water (20 data sets); biodiversity (4 data sets); land and soil (2 data sets); energy (4 data sets); and waste (8 data sets).

15.   It was furthermore discussed that the Working Group would agree on additional data sets for implementation in subsequent years, with a target of 2020 for the pan-European Shared Environmental Information System to be fully operational, based on the agreed targets and performance indicators. Each specific data set should be accompanied by information explaining the data production methodology and how the data should be interpreted and should be up to date for the latest production period and indicate sources of additional information.

16.   During the first assessment in 2015, full participation of all countries in the pan-European region could not be achieved and the assessment was not able to take into account internationally accepted standards for data set production nor data quality, given the limited resources available. Neither data quality nor data usage was, as such, assessed. Therefore, it was suggested that these shortcomings should be rectified in the next review round. Furthermore, the first progress report (ECE/CEP/2015/11) stated that continued efforts were needed to measure progress in establishing the Shared Environmental Information System. It was also highlighted that the next assessment would benefit from an adequate review of all the System's three main pillars — cooperation, content and infrastructure — and the expansion of the review criteria when assessing its establishment in order to enhance data quality for environmental reporting.

C.   The current mid-term review of progress

17.   At the Eighth Environment for Europe Ministerial Conference (Batumi, Georgia, 8–10 June 2016) ministers invited countries to continue their efforts and to further develop their national information systems to have the Shared Environmental Information System in place in the countries of Europe and Central Asia by 2021 (see ECE/BATUMI.CONF/2016/2/Add.1).

18.   Furthermore, the Committee on Environmental Policy was invited to convene a mid-term review in 2018 to assess progress in the implementation of the main outcomes of the Batumi Conference, including the development of the Shared Environmental Information System to support a regular process of environmental assessment.

19.   At its eighteenth session (Geneva, 28–29 June 2016), the Working Group on Environmental Monitoring and Assessment made several decisions and recommendations regarding reporting on progress in establishing the Shared Environmental Information System (ECE/CEP/AC.10/2016/2, paras. 31–32). It was agreed that the secretariat would revise the review criteria and integrate a quality component as part of the assessment framework. The purpose of that continuing review of the assessment framework was to utilize the revised assessment framework in the preparation of the mid-term review that would be submitted to the Committee on Environmental Policy.

20.   At its nineteenth session (Geneva, 27–28 June 2017), the Working Group examined the results of the review of the assessment framework (see ECE/CEP/AC.10/2017/5). The Working Group agreed that it would be necessary to pilot the assessment framework and its associated reporting application before moving on to data collection for the mid-term assessment. It was also noted that steps would need to be taken to ensure that the assessment framework was streamlined with other initiatives, such as the data quality assessment framework being developed by the European Environment Agency. Armenia, Bosnia and Herzegovina, Kazakhstan, the Russian Federation and the former Yugoslav

Republic of Macedonia agreed to participate in piloting the assessment framework. UNEP and the European Environment Agency also took part in the process.

21.   The Working Group further agreed that the secretariat would prepare a guidance document and clarify which of the ECE environmental indicators and underlying data flows from the core set could be used for piloting the assessment framework. It was also agreed that the full list of questions would be converted into a paper-based questionnaire that could be shared with other relevant agencies on the national level. The Working Group noted that the preparations for the mid-term assessment of the System would be reviewed at its twentieth session and that the mid-term review would then pilot the assessment framework across the whole pan-European region.

22.   The present document therefore aims to provide information on the revised assessment framework for conducting the mid-term review on establishing the System in the pan-European region. It provides a brief introduction to the System (chapter II), details the reporting process (chapter III), sets out the selection of data flows to be reported upon at the mid-term (chapter IV) and provides a guidance document that explains how to answer the data flow-level questionnaire (chapter V). The document concludes by explaining how responses to the questionnaire are to be weighted to provide performance scores (chapter VI).

23.   A final assessment of the implementation of the Shared Environmental Information System is planned for 2020–2021 and will be presented to the Ninth Environment for Europe Ministerial Conference, expected to be held in 2021.

D.   Organizational arrangements

24.   The Working Group on Environmental Monitoring and Assessment is supported by the ECE secretariat, in cooperation with the European Environment Agency and UNEP. The three organizations are together helping to review the online availability and accessibility of data and information provided by the countries in the pan-European region under the Shared Environmental Information System.

25.   The partner organizations thus help to ensure that the pan-European System is managed effectively by the countries in accordance with the agreed targets and performance indicators. ECE and the European Environment Agency, in cooperation with UNEP, also help to ensure that the data and information are compatible with those produced and shared at other governance levels, such as under the Global Environment Outlook process led by UNEP.

26.   The pan-European Shared Environmental Information System is already active to a degree and is beginning to organize, regularize and coordinate the pan-European environmental knowledge base. When it is fully operational, in 2021, it will provide extensive data and information for the generation of assessments, whether for the environment as a whole or for thematic areas. It will also be available to underpin environmental policy development in the pan-European region and the identification of emerging issues at the regional level, as well as for providing regional input to global processes.

II. Overview and principles of the Shared Environmental Information System

27.   For the pan-European region, the European Environment Agency regularly reported on the state of the environment in the past as a support to the Environment for Europe

process. The first comprehensive assessment by the Agency of the state of the pan-European environment was presented at the Third Environment for Europe Ministerial Conference in Sofia in 1995. Updated assessments were presented at the subsequent ministerial conferences held in Aarhus, Denmark, in 1998, Kyiv in 2003 and Belgrade in 2007.[2]

28.   The Environment for Europe process was redefined and refocused in 2007 with the aim of avoiding unnecessary duplication of activities and ensuring better resource allocation.

29.   A vast amount of environmental data on the state of Europe's environment, trends, pressures and drivers is being collected not only for policymakers but also to provide public access to data. As part of this process within the European Union, and to maximize the use of environmental data, the European Commission called in 2008 for a shared environmental information system to connect existing databases and to make data more accessible.[3] Since then, the Shared Environmental Information System has become a collaborative initiative of the European Commission together with the European Environment Agency and the 39 countries of the European environment information and observation network (Eionet).

30.   Furthermore, ministers at the Seventh Environment for Europe Ministerial Conference established a regular process of environmental assessment for the pan-European region based on seven Shared Environmental Information System principles (see para. 36 below). It was agreed that the System should function within a framework of enhanced networking and cooperation with and between national authorities concerned with environmental information and statistics and should serve multiple policy purposes, including for reporting under multilateral environmental agreements.

31.   In response to the ministers' decision and in accordance with the approved pan-European targets and performance indicators, the Committee on Environmental Policy mandated the Working Group on Environmental Monitoring and Assessment to review the progress of member States in establishing the Shared Environmental Information System.

32.   The Shared Environmental Information System should facilitate regular environmental assessments and reporting. At its heart are existing data and information flows relevant at the country as well as the international level. These flows should be linked with the support of modern technologies, such as the Internet, and shared between existing networks.

33.   The data and information flows at the country level should allow a country to track changes in specific environmental thematic areas (e.g., air, water and waste), as well as concerning the various interlinks between them, and to assess these changes against the policy framework.

34.   The international data and information flows should make it possible to track changes in the environment, again by specific thematic areas and also the interlinkages between them, subregionally or regionally, and to provide information on the progress made on agreed regional or global commitments. They should help in:

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[2] More information is available on the European Environment Agency web page, "The pan-European Environment" (3 June 2016), https://www.eea.europa.eu/themes/regions/pan-european/pan-european-environment.

[3] Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions – Towards a Shared Environmental Information System (SEIS), COM (2008) 46 final (1 February 2008).

(a)   Preparing assessments on the state of the environment at the subregional, regional or global levels (e.g., a pan-European assessment, or the UNEP Global Environmental Outlook);

(b)   Understanding changes or progress in addressing the issues covered by the regional multilateral environmental agreements and further developing them or strengthening their implementation;

(c)   Elaborating global initiatives related to sustainable development, for which environmental data and information are key.

35.   The Shared Environmental Information System advances the dissemination, application and comparability of environmental indicators and associated data flows to share existing information networks. It is a collaborative approach aiming to organize environmental information required for designing and implementing environmental policy and to harmonize environmental monitoring requirements. Through the full implementation of the System, benefits, such as efficiency gains and cost savings, effective and meaningful governance, simplification, innovation and an informed public, are expected in the pan-European region.

36.   The Shared Environmental Information System is based on the following seven principles:[3]

(a)   Information should be managed as close as possible to its source;

(b)   Information should be collected once, and shared with others for many purposes;

(c)   Information should be readily available to public authorities and enable them to easily fulfil their legal reporting obligations;

(d)   Information should be readily accessible to end users, primarily public authorities at all levels from local to European, to enable them to assess in a timely fashion the state of the environment and the effectiveness of their policies, and to design new policy;

(e)   Information should also be accessible to enable end users, both public authorities and citizens, to make comparisons at the appropriate geographical scale (e.g., countries, cities or catchment areas) and to participate meaningfully in the development and implementation of environmental policy;

(f)   Information should be fully available to the general public, after due consideration of the appropriate level of aggregation and subject to appropriate confidentiality constraints, and at the national level in the relevant national language(s);

(g)   Information sharing and processing should be supported through common, free open-source software tools.

37.   The development of the System is underpinned by three main pillars:

(a)   **Cooperation**: building partnerships between the providers and users of data and information;

(b)   **Common content**: generating policy-relevant and comparable information;

(c)   **Infrastructure**: using shared and modern Internet-based information and communication technologies.

38.   Across the pan-European region, the process of establishing the Shared Environmental Information System in support of regular assessment and reporting is

steered and implemented by ECE with guidance and support from UNEP and the European Environment Agency.

39.   At the European Union level, a recent report from the European Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on Actions to Streamline Environmental Reporting suggested to strengthen cooperation with relevant international organizations with a view to streamlining reporting and information management between the European Union level and the international level.[4]

III. Reporting on progress in establishing a Shared Environmental Information System

40.   In order to report on progress in the establishment of the Shared Environmental Information System in line with the Astana and Batumi Conference mandates and in line with the outcomes of the eighteenth and nineteenth sessions of the Working Group on Environmental Monitoring and Assessment, the assessment framework has been reviewed and revised with the aim to support countries in establishing the System and developing a mechanism capable of monitoring countries' performance.

41.   The assessment framework is based on responses by countries to questions on selected data flows in the following seven categories: relevance; accuracy; timeliness and punctuality; accessibility; clarity; comparability; and institutional and organizational arrangements. These categories, agreed upon by the Working Group at its nineteenth session, are described further in table 1.

42.   An assessment framework questionnaire has been established and further developed by the Working Group on Environmental Monitoring and Assessment together with ECE, UNEP and the European Environment Agency. The assessment framework questionnaire is made available as an online reporting tool[5] and as a Microsoft Excel workbook.[6] These two reporting tools provide the basis to pilot the reporting across the pan-European region and for conducting the mid-term review of progress in establishing the Shared Environmental Information System.

43.   During a Shared Environmental Information System Assessment Framework Technical Meeting and Country Workshop (Vienna, 13–15 September 2017), the assessment framework questionnaire was further developed with countries that volunteered at the thirteenth session of the Joint Task Force on Environmental Statistics and Indicators (Geneva, 29–30 June 2017). The workshop was also attended by representatives of ECE, UNEP and the European Environment Agency.

44.   Based on the outcomes of the workshop in Vienna, the assessment framework was updated and then further discussed during the fourteenth session of the Joint Task Force (Rome, 2–3 October 2017). During this meeting, member States agreed on the next steps including on the modalities and, tentatively, data flows (see next chapter) that would be

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[4] Commission Staff Working Document, "Fitness Check of Reporting and Monitoring of EU Environment Policy – Accompanying the document: Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Actions to Streamline Environmental Reporting", SWD (2017) 230 final (9 June 2017).

[5] Available at https://environmentlive.unep.org/seis.

[6] Mention of a commercial company or its products or services does not imply any endorsement whatsoever on the part of the United Nations or its Member States.

included in the assessment of Shared Environmental Information System performance for the mid-term review.

45. The present document provides further information on the assessment framework developed in line with Shared Environmental Information System principles as the basis for the mid-term review. The assessment framework questionnaire is a self-assessment to be undertaken by the countries using the reporting tools. It also describes how a performance score for the regional assessment of progress in establishing the Shared Environmental Information System at the pan-European level is calculated, as developed jointly with countries. A first proposal on how to calculate performance scores was developed with pilot countries at the Vienna meeting and then presented during the fourteenth session of the Joint Task Force. Countries were invited to provide comments on the proposal. The review criteria, within the seven categories, were weighted, providing a basis on which the performance scores can be calculated. All data flows will be rated according to the review criteria and given a performance score.

Table 1
Categories for review

Category	Description
Relevance	The degree to which the information meets the real or perceived needs of users (e.g., in terms of coverage, content and detail).
Accuracy	The degree to which the information correctly describes the phenomena it was intended to measure.
Timeliness and punctuality	Timeliness describes the length of time between data availability and the event or phenomenon they describe.
	Punctuality describes the time lag between the actual delivery of the data and the target date when it should have been delivered.
Accessibility	The ease with which users are able to access at any time the data and its supporting information online.
Clarity	The degree to which information is presented in a clear and understandable form and released in a suitable and convenient manner, with supporting metadata and guidance.
Comparability	The extent to which differences between statistics can be attributed to differences between the true values of the statistical characteristic, or to methodological differences. Comparability includes: (a) comparability over time — the extent to which data from different points in time can be compared; (b) comparability through space — the extent to which data from different countries and/or regions can be compared (the application of international standards is particularly important here); and (c) comparability between domains — the extent to which data from different statistical domains can be compared.
Institutional and organizational arrangements	The degree to which institutional and organizational arrangements are in place to ensure regular production and

Category	Description
	sharing of environmental indicators, data and information.

Note: The categories are loosely based on those set out in the Eurostat "Quality Assurance Framework of the European Statistical System" (see version 1.2, adopted May 2015, available from http://ec.europa.eu/eurostat/web/quality).

46.   The exercise of reporting on progress for the mid-term review is being treated as a pilot. Countries are invited to provide feedback on the proposed scoring of questions and calculation of the national performance score.

47.   The national performance score calculated in the reporting tools will serve as interim information for countries, as part of their self-assessment. At its twentieth session the Working Group will decide on whether and how performance will finally be scored.

48.   The online reporting tool will:

(a)   Act as a data interface by providing a link to the data;

(b)   Provide an online assessment framework to be completed by the countries;

(c)   Provide a scoring mechanism and ultimately evaluate to what extent the Shared Environmental Information System is being established in the pan-European region;

(d)   Allow subregional comparisons in support of a regular process of environmental assessment, as well as an overall assessment of regional performance towards the implementation of Shared Environmental Information System principles.

49.   This assessment framework was revised in the light of comments received after the fourteenth session of the Joint Task Force to finalize the reporting tools. Depending on decisions taken by the Working Group and later by he Committee on Environmental Policy, this document will be further revised in preparation for the final review of progress in 2020–2021.

IV.   Selected data flows for the mid-term review

50.   The reporting by countries for the mid-term review is based on data flows underlying a small subset of the ECE set of environmental indicators. The Joint Task Force stressed the need to report on data flows with a focus primarily on the quality of the environment and environmental conditions, such as air quality or water. The Joint Task Force also requested the secretariat to solicit feedback on a limited number of themes and data flows to inform a final selection.

51.   The secretariat therefore proposed that the mid-term assessment be carried out against seven data flows underlying the environmental indicators from the core set of ECE environmental indicators, as listed in table 2 below. Nonetheless, countries are encouraged to report on a longer list of ECE environmental indicators and underpinning data flows.

V.   Guidance on mid-term reporting on progress

52.   The questionnaire and this accompanying guidance have been designed to support the user in reporting on progress under the Shared Environmental Information System by using the assessment framework. The assessment framework questionnaire has been designed for the data flow level.

53.   The questionnaire is specific to the data flow underlying the environmental indicator[7] that it targets and has to be answered once for each separate data flow (e.g., five-day biochemical oxygen demand (BOD_5) in rivers).

54.   All questions that are scored (see table 3 below) are mandatory as they will be used to calculate performance scores. Other questions are optional, but countries are encouraged to answer all questions. During the mid-term reporting, the national performance score serves as information for countries. It is not anticipated to use the score for comparison between countries or regions.

55.   The review of progress (self-assessment by countries) for the mid-term review report is based on a limited number of data flows (see chapter IV above) with a focus on the data quality and quality assurance provisions as included in the revised assessment framework. Several review criteria (within the categories described in table 1) for quality assurance have been introduced and the questionnaires for the data flows will be reviewed against the review criteria. Based on the rating (depending on whether the requirements for each review criterion were met or not) an overall performance score is calculated.

Table 2
Selected data flows

Theme	Indicator	Data flow
A. Air pollution and ozone depletion	A2. Ambient air quality in urban areas	Annual average concentration of PM_{10} – validated
		Annual average concentration of sulphur dioxide – validated
		Annual average concentration of nitrogen dioxide – validated
		Annual average concentration of ground-level ozone – validated
C. Water	C10. BOD and concentration of ammonium in rivers	Mean concentration of BOD_5 in major rivers
		Mean concentration of ammonium in major rivers
D. Biodiversity	D1. Protected areas	Total protected areas (by International Union for Conservation of Nature categories)

Abbreviations: BOD = biochemical oxygen demand; PM_{10} = particulate matter with a diameter of 10 micrometres or less.

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[7]   See http://www.unece.org/env/indicators.html.

Table 3
Shared Environmental Information System assessment framework questionnaire

Category	Data flow (D) question	Guidance	Possible answers	Scoring of answer
Relevance	D1. Do you actively or passively collect user feedback to assess whether the data flow meets the needs of users?	The purpose of this question is to identify whether the disseminated information is adjusted to the users' needs. This question can be answered with "actively" (e.g., user satisfaction surveys), "passively", or "no user feedback is collected".	Actively, passively or no user feedback is collected	Actively = 1 Passively = 0 No = 0
		You can also specify further how user feedback is collected in greater detail; this is an open question and you can type an extended response, though without formatting options.	Open	None
	D2. Is the data flow used for more than one purpose (multipurpose use, e.g., for production of national indicators, production of regional indicators, various reporting obligations)?	The purpose of this question is to assess whether the data flow is used for more than one purpose. Please answer according to your understanding with "yes", "partly" or "no".	Yes, partly or no	Yes = 1 Partly = 0.5 No = 0
		If the answer to this question is yes or partly, please specify.	Open	None
	D3. Do you regularly improve your data (e.g., quality of data, representativeness, time or spatial coverage) to meet the needs of users?	The purpose of this question is to see whether action is taken to improve the data to meet the needs of the users. This question needs to be answered with "yes" or "no".	Yes or no	Yes = 1 No = 0
		If the answer to this question is yes, please specify how you improve the data.	Open	None

Category	Data flow (D) question	Guidance	Possible answers	Scoring of answer
Accuracy	D4. Where do you get the primary data from (please select all options that apply)?	The purpose of this question is to check the reliability of the data. This question allows the ticking of a number of boxes. Please select as many options as apply.	A. We use the data that we produce ourselves B. We use other producers' data C. We use estimates obtained through, e.g., models or objective estimation methods	None
	D5. Are any other data sources available on the same topic?	The purpose of this question is to determine whether the data provided by a source can be checked for bias. This question requires only a yes or no answer.	Yes or no	None
	D6. If the answer to question D5 is yes, do you systematically compare the data with data from other sources?	The purpose of this question is to determine whether the data can be checked for bias. This question requires only a yes or no answer.	Yes or no	Yes = 1 No = 0
	D7. Are data validation procedures in place?	The purpose of this question is to determine whether the data quality is checked. This question can be answered with "yes", "partly" or "no".	Yes, partly or no	Yes = 1 Partly = 0.5 No = 0
	D8. Do you carry out revisions to the data?	The purpose of this question is to determine whether data are adjusted when necessary. This question can be answered with "regularly", "occasionally" or "no".	Regularly, occasionally or no	Regularly = 1 Occasionally = 1 No = 0
	D9. If the answer to question D8 is regularly or occasionally, please indicate the circumstances in which revisions are carried out.	The purpose of this question is to identify the reason for revisions. This question allows the ticking of a number of boxes. Please select as many options as apply.	A. Methodological change B. New data C. Errors D. Mandated	None

Category	Data flow (D) question	Guidance	Possible answers	Scoring of answer
Timeliness and punctuality	D10. What is the frequency of the dissemination of the data flow?	The purpose of this question is to determine how regularly the data is disseminated. Please select as many options as apply.	A. Continuously/live B. Monthly C. Annually D. Multi-annually according to the legal provisions on the frequency of dissemination of the specific data flow E. No regular frequency	A–D = 1 E = 0 Maximum score is 1
	D11. When was the data flow released?	The purpose of this question is to determine when the data flow was published. Please indicate the date.	Date	None
	D12. If the answer to question D10 is one of the options A–D, what is the punctuality of the data flow's online release?	The purpose of this question is to assess whether there was a delay in the release of the data flow compared to the planned date of the release. Please specify the delay in days or weeks.	Deviation less than 4 days Deviation between 4 days and 8 weeks Deviation more than 8 weeks	Deviation less than 4 days = 1 Deviation between 4 days and 8 weeks = 0.5 Deviation more than 8 weeks = 0
	D13. What is the reference year of the data flow?	The purpose of this question is to assess the temporal coverage of the data flow. Please specify the year of the data, or the latest year if the data flow extends over several years.	Year	None
	D14. What is the timeliness of the data flow?	The purpose of this question is to determine whether the data flow was released in time to be policy relevant. Please indicate the timeliness by calculating the actual release year minus the reference year. The delay is expressed in years.	Less than 1 year 1–2 years More than 2 years	Less than 1 year = 1 1–2 years = 0.5 More than 2 years = 0

Category	Data flow (D) question	Guidance	Possible answers	Scoring of answer
Accessibility	D15. Is the data flow readily available and accessible online for users on any national platform?	The purpose of this question is to check the availability of information to the public. This question requires only a yes or no answer.	Yes or no	Yes = 1 No = 0
		If the answer to the question is "yes", please provide the link(s) to the platforms and specify whether there is an integrated platform in place.	Open	None
	D16. Is the primary data from public authorities readily available to and accessible by users?	The purpose of this question is to determine whether there are restrictions to obtain data. This question can be answered with "yes", "no" or "partly".	Yes, partly or no	Yes = 1 Partly = 0.5 No = 0
		If the answer to this question is no or partly please specify the restrictions.	Open	None
	D17. In what formats is the information on the data flow presented?	The purpose of this question is to see how information is represented and made available to the public. This question allows the ticking of a number of boxes. Please select as many options as apply.	A. Shared Environmental Information System production template	None
			B. European Environment Agency format for data flows	
			C. Report(s), e.g., a state-of-the-environment report	
			D. Additional information provided	
			E. Metadata provided	
			F. Visual presentation included (e.g., tables, maps, or graphs)	
			G. Link to policy context and targets	

Category	Data flow (D) question	Guidance	Possible answers	Scoring of answer
Clarity	D18. Do procedures and guidelines for data quality management exist?	The purpose of this question is to determine reliability. This question requires a yes or no answer.	Yes or no	Yes = 1 No = 0
		If the answer is "yes", please specify what resources, such as procedures or guidelines, are available to assess data quality in general.	Open	None
	D19. Are metadata available for the data flow?	The purpose of this question is to determine if further explanations including of the methods are provided and if the methods meet standards. This question requires a yes or no answer.	Yes or no	Yes = 1 No = 0
		If the answer is "yes", please describe the metadata by selecting as many options as apply. If you select "Other", please provide a short description of the kind of metadata.	A. Information on data quality B. Information on methodology C. Information on data sources D. Temporal coverage E. Geographic coverage F. Contact information for the data G. Information on rights H. Information on owner I. Information on processor J. Data flow(s) made available in English K. Data flow(s) made available in Russian L. Other (please specify)	None

Category	Data flow (D) question	Guidance	Possible answers	Scoring of answer
Comparability	D20. Do you apply internationally agreed procedures in the production of the data flow (e.g., compilation, data adjustments and transformations and statistical analysis)?	The purpose of this question is to determine whether standard techniques are used. Please answer this question with "yes", "partly" or "no".	Yes, partly or no	Yes = 1 Partly = 0.5 No = 0
	D21. What is the length of the time series of the data flow?	The purpose of this question is to determine the period of time covered by the data flow. Please specify the length of the time series and the units (e.g., years).	Open (length of time series)	None
	D22. Are there any breaks in the time series of the data flow (e.g., owing to a change of methods)?	The purpose of this question is to determine consistency and/or impacts. This question requires a yes or no answer.	Yes or no	None
		If the answer is "yes", please provide the information on such breaks.	Open	None
	Question to be answered by the secretariat: D23. Are there any limitations in comparing the data flow across regions and countries?	The purpose of this question is to assess any limitations in comparability of the data flows across a certain geographical area. This question will be answered by the secretariat, where needed.	Yes, partly or no	None
		If the answer to this question is yes or partly, please describe the limitations.	Open	None
Institutional and organizational arrangements	D24. Is there national legislation, plans, programmes or strategies in place related to the production of the data flow?	The purpose of this question is to determine whether there is legislation, plans, programmes or strategies in place to identify necessary information. This question requires a yes or no answer.	Yes or no	Yes = 1 No = 0

Category	Data flow (D) question	Guidance	Possible answers	Scoring of answer
		If the answer is "yes", please provide the names of the legislation, plans, programmes or strategies and the period covered. Also, please list all institutions that are involved in producing the data flow and provide the link to the most relevant website where further information may be found.	Open (name of legislation, plan, programme or strategy; period covered; all institutions involved; website)	None
	D25. Are there any legal or institutional arrangements for regular production and sharing of data between various institutions at national level in place?	The purpose of this question is to determine whether there are inter-agency agreements in place that regulate the regular production of data flows and exchange and sharing of information and data. Inter-agency agreements include legally binding procedures, specific inter-institutional agreements or procedures for production of data flows and exchange of data and information. This question requires a yes or no answer.	Yes or no	None
		If the answer to this question is yes, please specify.	Open	None

56.   The assessment framework takes into account the review questions asked for the first progress report (see ECE/BATUMI.CONF/2016/8, annex I).

57.   As previously noted, the assessment framework questionnaire is available both as an online reporting tool and as an Excel workbook. It begins with an introductory form asking for three pieces of information:

(a)   The name of the country;

(b)   The name of the institution that is taking the lead in completing the questionnaire;

(c)   Individual or organizational contact points for the data or metadata, including information on how to reach the contact points. This person will be contacted by the secretariat in case any clarification is needed. The person will also likely be the person who takes the lead in completing the questionnaire.

58.   The data flow must then be identified by name. Background information on the data flow can also be given.

59.   A series of 25 questions then follows (see table 3; the columns labelled "possible answers" and "scoring of answers" are explained in chapter VI). Many of the questions require only a yes or no answer, or the ticking of a box. Questions D1, D2, D3, D15, D16, D18, D19, D22, D23, D24 and D25 each contain a follow-up request for further information, depending on the response. It is recommended that this information be provided, but it will not affect the scoring.

60.   A box below provides a glossary of key terms used.

Glossary

Data

Characteristics or information, usually numerical, that are collected through observation. (*Source*: Organization for Economic Cooperation and Development (OECD))

Data flow

A structure which describes, categorizes and constrains the allowable content of a data set that providers will supply for different reference periods. (*Source*: OECD)

Data quality

Data quality relates to information about sampling and non-sampling errors, as well as associated statistical reporting and adjustments intended to quantify and account for these errors. There are both direct and indirect measures of data quality. Direct measures deal with the survey itself, while indirect measures are the result of process evaluations or comparative studies. (*Source*: OECD)

Data set

Any organized collection of data. (*Source*: OECD)

Data dissemination

The release of information. Data dissemination consists of distributing or transmitting data to users. In the context of the Shared Environmental Information System, data dissemination would be through online media.

Data validation

In general, validation is the process of checking if something satisfies a certain criterion. Examples would be: checking if a statement is true; if an appliance works as intended; if a computer system is secure; or if computer data is compliant with a standard. This should not be confused with verification. (*Source*: European Environment Agency)

Environmental monitoring

Periodic and/or continued measuring, evaluating and determining of environmental parameters and/or pollution levels in order to prevent negative and damaging effects to the environment. Also includes the forecasting of possible changes in ecosystems and/or the biosphere as a whole. (*Source*: European Environment Agency)

Frequency of dissemination

The time interval at which the data are released over a given time period. (*Source*: Statistical Data and Metadata eXchange (2016))

Indicator

An environmental indicator is a parameter, or a value derived from parameters, that points to, provides information about and/or describes the state of the environment, and has a significance extending beyond that directly associated with any given parametric value. The term may encompass indicators of environmental pressures, conditions and responses.

A statistical indicator is a data element that represents statistical data for a specified time, place, and other characteristics. (*Source*: OECD)

Indicator profile (European Environment Agency environmental indicators)

The indicator profile contains information on the indicator specification (see below) plus assessment of the latest trends for the indicator, including supporting graphics and data. (*Source*: European Environment Agency)

Indicator specification (European Environment Agency environmental indicators)

The indicator specification contains general information that explains aspects that are relatively static over time; these include the indicator name, its policy relevance, data sources, methodologies and guidelines for presentation of the assessment. (*Source*: European Environment Agency)

Integrated platform

In this context an integrated platform refers to a publicly available website where core environmental indicators and data flows are readily available and accessible.

Metadata

Metadata is data that defines and describes other data. (*Source*: OECD)

Primary data

The most important inputs from among the universe of institutional, administrative, sample survey and/or census-based information used in compiling statistical aggregates. (*Source*: OECD)

Punctuality

The time lag between the actual delivery of the data and the target date when it should have been delivered. Punctuality may be calculated, for instance, with reference to target dates announced in an official release calendar, laid down by regulations or previously agreed among partners. (*Source*: Statistical Data and Metadata eXchange (2016))

Quality assurance

Refers to all the planned and systematic activities implemented that can be demonstrated to provide confidence that the data production processes will fulfil the requirements for the output. This includes the design of programmes for quality management, the description of planning process, the scheduling of work, the frequency of plan updates and other organizational arrangements to support and maintain planning function. (*Source*: Statistical Data and Metadata eXchange (2016))

Reference period or reference year

Timespan or point in time to which the measured observation is intended to refer. (*Source*: Statistical Data and Metadata eXchange (2016))

Release calendar

The schedule for release of data which are publicly disseminated so as to provide prior notice of the precise release dates on which a national agency, or international organization undertakes to release specified information to the public. (*Source*: Statistical Data and Metadata eXchange (2016))

VI. Calculating a performance score

61.   For the pilot reporting exercise, the calculation of a national performance score will serve as information for countries only as part of their self-assessment. Countries are invited to provide feedback on the proposed scoring of questions and calculation of a national performance score. The calculation of the performance score is described in more detail below.

62.   The following elements guide the performance score:

        (a)   Not all aspects of the Shared Environmental Information System assessment framework can be considered of equal importance when determining a performance score, so a weighting scheme is needed;

        (b)   Many of the questions in the questionnaire are assigned a score (0–1);

        (c)   All questions with a score are weighted equally;

        (d)   Each of the seven categories (review criteria) of the questionnaire is assigned a percentage weight;

        (e)   The weights of all categories sum to 100 per cent;

        (f)   Each data flow receives an overall performance score (0–100 per cent);

        (g)   Each environmental indicator can be reported alongside an average of the scores assigned to the data flows underlying the indicator;

(h)   The average of all performance scores for data flows gives the overall performance score;

(i)   Performance scores are presented in four bands:

0–50 per cent: Requires improvement

51–75 per cent: Moderate performance

76–95 per cent: Good performance

96–100 per cent: Very good performance.

63.   Besides the questions posed to a country on selected data flows, the secretariat will assist in answering one question (question D23), where needed, by visiting the website or websites identified by the country. The answer will not be scored and will not therefore be used in the performance scoring.

A.   Scoring of questions

64.   Each question on a data flow may be given a score between 0 and 1. If the question is not answered, the score will be 0. Open questions do not receive a score. The questions to which the answer is a simple "yes" or "no" are scored 1 for a positive response (which may mean "no" in some instances, such as when the question is whether there are limitations or breaks in data series) and 0 for a negative response. Where a response of "partly" is allowed, a score of 0.5 is given. Other questions, for example, with the possibility of ticking boxes are scored in a tailored way as described in table 3 above.

B.   Weighting of categories

65.   For each data flow, all questions with a score under one category will be used for calculating an average score for the respective category. The category score is multiplied by the weighting for that category (see table 4). The weighted scores of the categories for a data flow are summed, giving a total score of up to 100 per cent for each data flow.

Table 4
Weighting of categories

Category	Weighting (%)
Relevance	20
Accuracy	10
Timeliness and punctuality	10
Accessibility	20
Clarity	10
Comparability	20
Institutional and organizational arrangements	10

66.   The data flow scores can be further averaged to give an overall performance score for an environmental indicator, theme or nationally.

67.   In describing the overall performance scores of countries, the ECE secretariat will take into account the completeness of information provided by countries during the reporting exercise for the mid-term review.

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