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**Ongoing developments with relevance for the work of the Joint Task Force**

# Assessment framework 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).

At its twenty-first session (6 and 7 May 2019), the Working Group on Environmental Monitoring and Assessment considered a revised assessment framework of the Shared Environmental Information System (ECE/CEP/AC.10/2019/5). The Working Group decided to finalize the assessment framework to be used for the final review of progress in establishing the Shared Environmental Information System in Europe and Central Asia, including the questions to be posed, the indicators and data flows to be reviewed and the application of the chosen scoring system.

The present document provides the assessment framework for the review of progress in establishing the Shared Environmental Information System in Europe and Central Asia in advance of the next Environment for Europe Ministerial Conference.

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# 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 efforts to inform citizens about the quality of their environment, raising their awareness in that regard and enabling them to defend their basic right to live in a healthy and safe environment.

3. At the same time, organizing a wide range of environmental data and information and integrating them, where appropriate, with economic and social data is a difficult undertaking. Even more challenging is the task of making this information and these 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 problem, the international community in the pan-European region facilitated the discussion and the sharing of experience between the various countries on the management and use of environmental information. This process led to the introduction of the Shared Environmental Information System by the European Commission in 2008, when it released a communication entitled "Towards a Shared Environmental Information System"[1] as a solution to the environmental information challenge and to develop a knowledge-based economy.

5. The present document sets out the steps that have been taken to develop a framework for reviewing progress in establishing the Shared Environmental Information System in Europe and Central Asia.

# II. Background

## A. Developing a Shared Environmental Information System in Europe and Central Asia and monitoring progress

6. The ministers of environment from the pan-European region[2] considered the issues of regular environmental assessment and the development of the Shared Environmental Information System at the Seventh Environment for Europe Ministerial Conference (Nur-Sultan, 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).

7. At its twentieth session (Geneva, 28–31 October 2014), the Committee on Environmental Policy requested the Working Group on Environmental Monitoring and Assessment to prepare an evaluation report on progress made in developing the Shared Environmental Information System, for consideration at the Eighth Environment for Europe Ministerial Conference (Batumi, Georgia, 8–10 June 2016) (ECE/CEP/2014/2, paras. 76 and 98 (ff) (iii)).

[1] See https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0046:FIN:EN:PDF.

[2] 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.

8. The Working Group agreed at its sixteenth session (Istanbul, 16 and 17 April 2015) that the data and information included in the report should enable the measurement of progress towards agreed global and regional priorities in line, as relevant, with global and regional multilateral environmental agreements (ECE/CEP/AC.10/2015/2).

9. 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. Those data sets referred to the following thematic areas prioritized for review: 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).[3]

10. It was furthermore agreed that the Working Group would consider 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.

11. According to the 2016 report on progress in establishing the Shared Environmental Information System, during the 2015 assessment of progress in establishing the System, full participation of all countries in the pan-European region was not achieved and the assessment was not able to take into account internationally accepted standards for data-set production or data quality, given the limited resources available. Neither data quality nor data usage was, as such, assessed. Therefore, it was suggested that those shortcomings should be rectified in the next review round (ECE/BATUMI.CONF/2016/8, para. 5).

12. Furthermore, the 2016 report 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 the establishment of the System in order to enhance data quality for environmental reporting (ECE/BATUMI.CONF/2016/8, para. 6).

## B. Mid-term review report on the establishment of the Shared Environmental Information System

13. To assess progress in the implementation of the System and other outcomes of the Batumi Conference, ministers invited the Committee on Environmental Policy to convene, in 2018, a mid-term review to assess progress in the implementation of the main outcomes of the Conference (ECE/BATUMI.CONF/2016/2/Add.1, para. 16), including the development of the Shared Environmental Information System to support a regular process of environmental assessment.

14. At its eighteenth session (Geneva, 28 and 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. It was agreed that the secretariat would revise the review criteria and integrate a quality component as part of the assessment framework (ECE/CEP/AC.10/2016/2, paras. 30–32). 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.

15. At its nineteenth session (Geneva, 27 and 28 June 2017), the Working Group agreed to pilot the Shared Environmental Information System assessment framework as part of a process to prepare the mid-term review report (ECE/CEP/AC.10/2019/7) for the twenty-fourth session of the Committee (Geneva, 29 and 31 January 2019). It was also agreed that steps needed to be taken to ensure that the assessment framework was streamlined with other

[3] See www.unece.org/env/indicators.html.

initiatives, such as the data quality assessment framework being developed by the European Environment Agency (ECE/CEP/AC.10/2017/2, para. 48).

16. The Working Group further agreed that the secretariat would prepare a guidance document and clarify which of the United Nations Economic Commission for Europe (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 at the national level (ECE/CEP/AC.10/2017/2, para. 49).

17. At its twentieth session (Geneva, 3 and 4 September 2018), the Working Group took note of the draft mid-term review of the establishment of the Shared Environmental Information System (ECE/CEP/AC.10/2018/6), which highlighted improvements that had been made since the 2016 progress report (ECE/BATUMI.CONF/2016/8). The draft review demonstrated considerable progress in addressing all three pillars of the Shared Environmental Information System (content, infrastructure and cooperation) and identified category-specific areas (for example, institutional and organizational arrangements, timeliness and punctuality, accuracy and relevance) that required further improvement.

18. The Working Group agreed to adjust the assessment framework (ECE/CEP/AC.10/2018/5), as elaborated prior to and during its twentieth session (Geneva, 3 and 4 September 2018), notably regarding the clarity of the questions, the terminology used and the scoring. It furthermore decided that the revised framework, once approved, would be used to produce a final report of progress in the establishment of the Shared Environmental Information System in Europe and Central Asia for the Ninth Environment for Europe Ministerial Conference, to be initiated at a time determined by the Committee on Environmental Policy in preparation for the Conference (ECE/CEP/AC.10/2018/2, paras. 33 and 35).

19. At its twenty-fourth session (Geneva, 29–31 January 2019), the Committee on Environmental Policy welcomed the mid-term review report on the establishment of the Shared Environmental Information System (ECE/CEP/2019/7) prepared by the Working Group. The Committee also requested the Working Group to lead a further review of progress in establishing the Shared Environmental Information System in Europe and Central Asia in advance of the next Environment for Europe Ministerial Conference.

20. At its twenty-first session (Geneva, 6 and 7 May 2019), the Working Group agreed to finalize the assessment framework to be used for the final review (ECE/CEP/AC.10/2019/5), including the questions to be posed, the indicators and data flows to be reviewed and the application of the chosen scoring system. The Working Group also agreed that the online reporting tool would be used as the primary tool for data collection for the final review of progress. It was highlighted that the tool would need to be able to upload content from a file, such as an Excel or Portable Document Format file (ECE/CEP/AC.10/2019/2, para. 32).

## C. Organizational arrangements for reviewing progress

21. 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 have been working together to review the online availability and accessibility of data and information provided by the countries of Europe and Central Asia under the Shared Environmental Information System. The three organizations will make arrangements between them to support the final review of progress.

22. The partner organizations help to ensure that the 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 UNEP-led Global Environment Outlook process.

23. The Shared Environmental Information System in Europe and Central Asia is already active to a degree and is beginning to organize, regularize and coordinate the pan-European environmental knowledge base. When 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 to provide regional input to global processes.

# III. Assessment framework of the Shared Environmental Information System

24. In order to report on progress in the establishment of the Shared Environmental Information System in line with the Nur-Sultan and Batumi Conference mandates, and in line with the outcomes of the twenty-first session of the Working Group on Environmental Monitoring and Assessment (Geneva, 6 and 7 May 2019), the assessment framework has been further reviewed and revised with the aim of supporting countries in establishing the System and developing a mechanism capable of monitoring countries' performance.

25. The assessment framework was revised in the light of comments received during the fifteenth session of the Joint Task Force on Environmental Statistics and Indicators (Geneva, 25 and 26 October 2018) and a technical workshop (Vienna, 13 and 15 September 2017) involving the secretariat, the European Environment Agency and UNEP (6 and 7 December 2018).

26. 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 (Geneva, 27 and 28 June 2017), are described further in table 1.

27. The assessment framework questionnaire will be made available as an online reporting tool,[4] which will provide the basis for reporting across Europe and Central Asia and for conducting the review of progress in establishing the Shared Environmental Information System in connection with the ninth Environment for Europe Ministerial Conference. The assessment framework is a self-assessment to be undertaken by the countries using the reporting tool.

28. 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 the extent to which the Shared Environmental Information System has been 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.

29. A first proposal on how to calculate performance scores was developed with pilot countries in 2017 and then presented during the fourteenth session of the Joint Task Force on Environmental Statistics and Indicators (Rome, 2 and 3 October 2017). Countries were invited to provide comments on the proposal. The review criteria, within the seven categories listed in table 1, were weighted, providing a basis on which a performance score was calculated in the mid-term review (ECE/CEP/AC.10/2018/5, para. 45). However, the revisions introduced into the present document have required further revisions of the approach used to calculate performance scores (see section III.B).

[4] To be made available at https://environmentlive.unep.org/seis.

Table 1
**Categories for review**

| *Category* | *Article I.* *Description* |
|---|---|
| Relevance | The degree to which the information meets the real or perceived needs of users (for example, in terms of coverage, content and detail). |
| Accuracy | The degree to which the information correctly describes the phenomenon it was intended to measure. |
| Timeliness and punctuality | Timeliness describes the length of time between data availability and the event or phenomenon they describe.<br>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, at any time, to access 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 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 at http://ec.europa.eu/eurostat/web/quality).

30. One of the prominent changes made to the assessment framework in this revised version is the introduction of levelling. The questions in the assessment framework questionnaire would be asked at three different levels, namely the macro, thematic and data flow levels, as explained in table 2. The macro-level questions would only be asked once for a country, the thematic questions would be asked for each theme (for example, climate change or biodiversity) and the data flow questions would be asked for each data flow.

31. Section III.A below provides additional guidance on what each section of the questionnaire means and the types of responses that would be needed.

Table 2
**Shared Environmental Information System assessment framework questionnaire**

| *Category* | *Questions* | *Level* | *Answers* |
|---|---|---|---|
| General | 1. Please outline steps that have been taken to further the establishment of a Shared Environmental Information System since the 2018 mid-term assessment. | Macro | Open |
| | 1.1. Please provide links to any supporting information for relevant programmes, projects and/or initiatives. | Macro | Open |
| | 2. How regularly do you produce an indicator-based national state-of-the-environment report? (If your answer is “D” or “E”, please go directly to question 2.2) | Macro | A. Annually<br>B. Every second year<br>C. Every five years<br>D. No regular frequency<br>E. Never |
| | 2.1. Please provide a link to the latest report. | Macro | Open |
| | 2.2. Please explain why reports are not being produced or are not produced with regular frequency based on the associated environmental indicators. | Macro | Open |
| | 3. Do you produce any integrated environmental reports covering several thematic areas? (If your answer is “No”, please go directly to question 3.4) | Macro | Yes or No |
| | 3.1. Please specify the thematic areas covered. | Macro | List all themes |
| | 3.2. Please specify how regularly you produce this/these report(s) (If your answer is “D”, please go directly to question 3.4). | Macro | A. Annually<br>B. Every second year<br>C. Every five years<br>D. No regular frequency |
| | 3.3. Please provide the link(s) to the report(s). | Macro | Open |
| | 3.4. Please explain why no reports are being produced based on the associated environmental indicators. | Macro | Open |
| Relevance | 4. How often do you collect user feedback to assess whether the data flows within the thematic area meet the needs of users? (If your answer is “C”, please go directly to question 5) | Thematic | A. Regularly<br>B. Occasionally<br>C. Never |
| | 4.1. Please specify further how user feedback is being collected. | Thematic | Open |

| *Category* | *Questions* | *Level* | *Answers* |
|---|---|---|---|
| | 4.2. What steps have been taken to respond to any user feedback and how have you improved the data flows within the thematic area based on user feedback? | Thematic | Open |
| | 5. Is the data flow used for more than one purpose (for example, for the production of national indicators, production of regional indicators, various reporting obligations)? (If your answer is "No", please go directly to question 6) | Data flow | Yes or No |
| | 5.1. Please explain how the data flow is being used for multiple purposes. | Data flow | Open |
| Accuracy | 6. Where do you get the primary data from (please select all options that apply)? | Data flow | A. We use the data that we produce ourselves<br>B. We use other producers' data<br>C. We use estimates obtained through specific survey, data modelling or objective estimation methods |
| | 7. Are data validation procedures in place? (If your answer is "No", please go directly to question 8) | Data flow | Yes or No |
| | 7.1. Please explain what data validation procedures are in place and how they are being applied. | Data flow | Open |
| | 8. Are there procedures in place to carry out revisions to the data (for example, due to methodological change, new data, errors or new mandate)? (If your answer is "No", please go directly to question 9) | Data flow | Yes or No |
| | 8.1. Please specify what procedures are in place and how they are applied. | Data flow | Open |
| Timeliness and punctuality | 9. How often is the data flow published? | Data flow | A. Continuously/live<br>B. Monthly<br>C. Annually<br>D. Over one year<br>E. According to the legal provisions on the frequency of dissemination<br>F. No regular frequency |

| *Category* | *Questions* | *Level* | *Answers* |
|---|---|---|---|
| | 10. What is the reference year of the last data point? | Data flow | Date entry |
| | 10.1. What year was the data collected? | Data flow | Date entry |
| | 11. When was the last data point published? | Secretariat (Data flow) | Date entry |
| | 11.1. What is the timeliness of the data flow? | Secretariat (Data flow) | A. Less than one year<br>B. One to two years<br>C. More than two years |
| Accessibility | 12. Is the data flow readily available and accessible online for users on a national platform? | Data flow | Yes or No |
| | 12.1. Please provide a link to the data flow. | Data flow | Open |
| | 12.2 Have you taken any other steps to improve the accessibility of the data flows within the thematic area? | Thematic | Open |
| | 12.3. Is there an integrated portal in place for environmental information and data? | Secretariat (Macro) | Yes or No |
| | 13. In what formats is the data flow presented? | Data flow | A. Complete factsheet<br>B. Only data |
| | 13.1. Please describe the factsheet by selecting as many options as apply. | Data flow | A. European Environment Agency format for data flows<br>B. Reports (for example, a state-of-the-environment report)<br>C. Visual presentations (for example, tables, maps or graphs)<br>D. Links to legislative documents provided<br>E. Connection to policy targets demonstrated<br>F. Other (please specify) |
| | 14. How are the data flows within the thematic area linked to national policy targets? | Thematic | Open |

| *Category* | *Questions* | *Level* | *Answers* |
|---|---|---|---|
| Clarity | 15. Are metadata available for the data flow? | Data flow | Yes or No |
| | 15.1. 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. | Data flow | A. Information on data quality<br>B. Information on methodology<br>C. Information on data sources<br>D. Temporal coverage<br>E. Geographic coverage<br>F. Contact information for the data<br>G. Information on rights<br>H. Information on ownership<br>I. Information on processor<br>J. Data flow(s) made available in English and/or Russian<br>K. Other metadata element (please specify) |
| Comparability | 16. Do you publish time series for this data flow? | Data flow | Yes or No |
| | 16.1. What is the length of the time series of the data flow? | Data flow | Date (specify time period) |
| | 16.2. Are there any breaks in the time series of the data flow (for example, owing to a change of methods)? | Data flow | Yes or No |
| | 16.3. Please explain why there are breaks in the time series. | Data flow | Open |
| | 17. Are there any limitations in comparing the data flow across countries in the pan-European region? | Secretariat (Data flow) | Yes or No |
| Institutional and organizational arrangements | 18. Is there national legislation and/or plans, programmes or strategies in place on monitoring and reporting in relation to the thematic area? (If your answer is “No”, please go directly to question 22) | Thematic | Yes or No |
| | 18.1. Please list the legislation, plans, programmes or strategies. | Thematic | Open |
| | 19. Please list all institutions involved in monitoring and reporting in relation to the thematic area, including links to their websites. | Thematic | Open |
| | 19.1. Are there any institutional arrangements for regular production and sharing of data between various institutions at the national level? | Thematic | Yes or No |

| *Category* | *Questions* | *Level* | *Answers* |
|---|---|---|---|
| | 19.2. Please specify what institutional arrangements are in place and how they are relevant to the thematic area in question. | Thematic | Open |

# A. Guidance on the Shared Environmental Information System assessment framework questionnaire

32. The questionnaire (see table 2 above) and this accompanying guidance have been designed to support the national authorities in reporting on progress in establishing the Shared Environmental Information System by using the assessment framework.

33. All questions that are scored (see table 3 below) will be used to calculate performance scores. All open questions are mandatory as the written responses will provide key inputs to the final review. It should also be noted that some of the open- answer questions are based on the responses provided to the multiple-choice questions (for example, question that can be answered "Yes" or "No"). This implies that the number of mandatory open-answer questions may vary depending on the answers given to the multiple-choice questions. Closed questions 3.2, 6, 11.1 and 19.1 are not scored.

**Questions 1 and 1.1. Improvements since the 2018 mid-term assessment**

34. The purpose of question 1 is to identify and clearly outline any steps that have been taken to further the establishment of a Shared Environmental Information System since the 2018 mid-term review (ECE/CEP/2019/7). Such developments concern any of the three main pillars of the System (cooperation, common content and infrastructure). This is an open question and an extended response may be provided.

35. If applicable, the follow-up question (1.1) requests that supporting information be provided to substantiate the response provided, such as references to any new legislation or links to new online platforms.

**Questions 2 to 2.2. Indicator-based national state-of-the-environment reports**

36. The purpose of question 2 is to determine whether your country is producing state-of-the-environment reports and, if so, how regularly. The first question is multiple choice and the possible answers are: "A. Annually"; "B. Every second year"; "C. Every five years"; "D. No regular frequency; and "E. Never".

37. If applicable, the follow-up question (2.1) asks for a link to the most recent state-of-the-environment report.

38. If applicable, the second follow-up question (2.2) asks for clarification in case your country does not produce, or does not produce with regular frequency, a national state-of-the-environment report. This is an open question to explain why no reports are being produced based on the associated environmental indicators.

**Questions 3 to 3.4. Integrated environmental reports**

39. These questions are similar to questions 2 to 2.2. However, they refer specifically to the production of integrated environmental reports covering more than one thematic area, such as energy, transport and the environment. Question 3 can be answered "Yes" or "No". If the answer is "No", please go directly to question 3.4.

40. If the answer to question 3 is "Yes", follow-up questions 3.1 to 3.3 ask you to clarify which thematic areas are being covered and how regularly the reports are being issued, and to provide links to any reports to substantiate your response.

41. If applicable, the last follow-up question (3.4) asks for clarification in case your country does not produce, or does not produce with regular frequency, any integrated environmental reports. This is an open question to explain why no reports are being produced based on the associated environmental indicators.

**Questions 4 to 4.2. User feedback on the data**

42. The purpose of these questions is to determine whether you are collecting any feedback on the respective data flows from the user community and, if so, how you respond

to the information collected. Question 4 is multiple choice and the possible answers are: "A. Regularly"; "B. Occasionally"; and "C. Never", to address whether any process is in place to collect user feedback at the data flow level.

43. The data flow refers to relevant structures that describe, categorize and constrain the allowable content of a data set that providers will supply for different reference periods (see OECD glossary of statistical terms).[5]

44. If the answer to question 4 is "A. Regularly" or "B. Occasionally", the first follow-up question (4.1) asks for clarification of how user feedback is collected (for example, surveys). This is an open question and an extended response can be provided to explain the procedures in place.

45. If applicable, the second follow-up question (4.2) asks for clarification of what steps you have taken to respond to any user feedback. This is an open question and an extended response can be provided on how you have improved the data flows based on user feedback.

**Questions 5 and 5.1. Multiple use of the data**

46. The purpose of these two questions is to determine whether the data flow in question is being used for multiple purposes, in line with the principles of the Shared Environmental Information System. These purposes can range from the production of national indicators to various reporting obligations. The first question (5) may be answered "Yes" or "No".

47. If applicable, the follow-up question (5.1) asks for clarification of how you are using the data flow for multiple purposes. This is an open question and an extended response can be provided to explain in detail how the data flow is being utilized.

**Question 6. Primary data**

48. The purpose of this question is to determine from which sources you get your primary data for the associated data flow. The question is multiple choice and the possible answers are: "A. We use the data that we produce ourselves"; "B. We use other producers' data"; and "C. We use estimates obtained through specific survey, data modelling or objective estimation methods". In this context, "we" refers to the national authority responsible for the data flow, which may be reliant on, for example, another data producer, such as an agency or civil society.

49. The primary data refers to the most important inputs from institutional, administrative, sample surveys and/or census-based information used in compiling statistical aggregates (see Organization for Economic Cooperation and Development glossary of statistical terms).[6]

**Questions 7 and 7.1. Data validation**

50. The purpose of these two questions is to determine whether you have any data validation procedures in place and whether the data quality is being checked. The first question (7) can be answered "Yes" or "No" to address whether any process is in place to validate the data flow in question.

51. In general, data validation is defined as the process of checking if something satisfies a certain criterion. Examples would be checking if: a statement is true; an appliance works as intended; a computer system is secure; or data is compliant with a standard. This should not be confused with verification (see Eurostat statistical glossary).[6]

52. 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 (see OECD glossary of statistical terms).[6]

[5] See https://stats.oecd.org/glossary/.

[6] See https://ec.europa.eu/eurostat/data/data-validation and https://ec.europa.eu/eurostat/statistics-explained.

53. If the answer to question 7 is “Yes”, the follow-up question (7.1) asks for clarification of what validation procedures are in place and how they are being applied to the data flow. This is an open question and an extended response can be provided to explain your data validation procedure in detail.

**Questions 8 and 8.1. Data revision**

54. The purpose of these two questions is to determine whether you carry out revisions to the data due to, for example, methodological change, new data or errors, and to adjust the data when necessary. The first question (8) can be answered “Yes” or “No” to address whether any process is in place to revise the data for the data flow in question.

55. If the answer is “Yes”, the follow-up question (8.1) asks for clarification as to what data revision procedures are in place and how they are being applied to the data flow. This is an open question and an extended response can be provided to explain your procedure in detail.

**Questions 9 to 11.1. Timeliness and punctuality of the data**

56. The purpose of these questions is to address how often the data flow is published (9), the reference period of the data flow (10) and when the data was collected (10.1). They also cover when the last data point was published (11) and whether the data flow was released in time to be policy relevant (11.1).

57. The terms “reference period” and “reference year” refer to the timespan or point in time to which the measured observation is intended to refer. The “publication date” or “release calendar” concerns when the data is publicly disseminated 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 (see Statistical Data and Metadata eXchange).[7]

58. The possible answers to question 9 are the following: “A. Continuously/live”; “B. Monthly”; “C. Annually”; “D. Over one year”; “E. According to the legal provisions on the frequency of dissemination”; and “F. No regular frequency” to determine how regularly the data flow is being published. Questions 10 and 10.1 ask for date entries covering the reference year and the year the data was collected.

59. Question 11 and 11.1 will be answered by the secretariat based on the inputs provided. The answer to question 11 is a date entry, while the possible answers to question 11.1 are: “A. Less than one year”; “B. One to two years”; and “C. More than two years”. Timeliness will be calculated by taking the actual release year minus the reference year. The delay is expressed in years.

**Questions 12 to 12.3. Accessibility and availability of the data**

60. The purpose of these questions is to check the availability of information to the public. Question 12 can be answered “Yes” or “No” to determine whether the data flow is readily available and accessible online for users on a national platform.

61. If the answer is “Yes”, follow-up question 12.1 also requests that supporting information be provided to substantiate the response provided. This means a web link directly to the data flow in question. The purpose of question 12.2 is to provide an opportunity to explain in detail any steps taken to improve the accessibility of the data flows within the thematic area referenced.

62. Question 12.3 will be answered by the secretariat based on the inputs provided to address whether there is an integrated portal in place for environmental information and data. Integrated platforms are publicly available websites where all core ECE environmental indicators and data flows are readily available and accessible.

[7] See https://sdmx.org/.

**Questions 13 and 13.1. Data formats**

63. The purpose of these questions is to see how information is represented and made available to the public. The possible answers to the first question (13) are: "A. Complete factsheet"; or "B. Only data" to determine in what formats the data flow is being presented.

64. If you select "A. Complete factsheet" when answering question 13, the follow-up question (13.1) requests information on the factsheet for the respective data flow. The possible answers to this question are: "A. European Environment Agency format for data flows"; "B. Reports (for example, a state-of-the-environment report)"; "C. Visual presentations (for example, tables, maps or graphs)"; "D. Links to legislative documents provided"; "E. Connection to policy targets demonstrated"; and "F. Other (please specify)".

**Question 14. Policy links and improved accessibility**

65. The purpose of this question is to determine whether the data being produced and made available to the public are also concretely linked to national policy targets and to clarify any steps taken to improve accessibility.

66. Question 14 is an open question, where an extended response can be provided to explain in detail how data flows within the thematic area linked to national policy targets.

**Questions 15 and 15.1. Metadata**

67. The purpose of these questions is to determine whether further explanations including of the methods are provided and whether the methods meet recognized standards. The first question (15) can be answered "Yes" or "No" to determine whether metadata is available for the data flow.

68. If the answer is "Yes", the follow-up question (15.1) also requests information on the metadata by selecting as many options as apply. The possible answers to this question are: "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 ownership"; "I. Information on processor"; "J. Data flow(s) made available in English and/or Russian"; and "K. Other metadata element (please specify)".

**Questions 16 to 17. Time series and comparability**

69. The purpose of these questions is to determine the period of time covered by the data flow and assess any limitations in comparability of the data flows across time and the pan-European region. The first question (16) can be answered "Yes" or "No" to determine whether time series are available for the data flow.

70. If the answer is "Yes", the follow-up questions also request information on the length of the time series (16.1), whether there are any breaks in the time-series (16.2), answered "Yes" or "No", and, if applicable, an open question (16.3) to provide an extended explanation of any breaks in the time series.

71. Question 17 will be answered by the secretariat based on the inputs provided in answer to questions 16 to 16.3 only and without reference to supplementary information. The purpose will be to assess any limitations in comparability of the data flows across a certain geographical area, in this case the pan-European region.

**Questions 18 and 18.1. National legislation**

72. The purpose of these questions is to determine whether there is legislation or plans, programmes or strategies in place to identify necessary information in relation to the thematic areas. The first question (18) can be answered "Yes" or "No" to determine whether each thematic area is covered by relevant national legislation, plans, programmes or strategies.

73. If the answer is "Yes", the follow-up question (18.1) asks for clarification of what national legislation, plans, programmes or strategies are in place and how they are relevant to the thematic area in question. This is an open question and an extended response can be provided to list relevant legislation, plans, programmes and/or strategies.

**Questions 19 to 19.2. Institutional arrangements**

74. The purpose of these questions is to determine what institutions are involved in producing the data flows and whether data and information are being shared between institutions. The first question (19) asks you to list all institutions that are involved in monitoring and reporting in relation to each thematic area and to provide a link to all the institutions or the most relevant website where further information may be found. This is an open question and an extended response can be provided to list all relevant institutions.

75. The second question (19.1) aims 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 interinstitutional agreements or softer procedures for production of data flows and exchange of data and information not set out in legislation. This question can be answered "Yes" or "No".

76. If the answer to question 19.1 is "Yes", the follow-up question (19.2) asks for clarification of what institutional arrangements are in place and how they are relevant to the thematic area in question. This is an open question and an extended response can be provided to list all relevant arrangements.

## B. Pillar-based Shared Environmental Information System performance score

77. The pillar-based approach for the Shared Environmental Information System performance score consists of a mixture of the approach adopted for the 2016 progress report (ECE/BATUMI.CONF/2016/8) and the 2018 mid-term review (see ECE/CEP/AC.10/2018/5), placing greater emphasis on the pillars of the Shared Environmental Information System (content, cooperation and infrastructure). The approach is intended to be more advanced and relevant compared with what was done in 2016, while not introducing a complicated weighting scheme, as applied for the mid-term review.

78. The pillar-based performance score is the grouping of relevant questions from the self-assessment questionnaire under the respective pillars of the Shared Environmental Information System (see table 3), as based on the assessment framework. The score for each question would be calculated in the same way as done for the mid-term review. However, no distinction would be made between the categories (listed in table 1 above) in terms of weighting. This implies that it would be possible to have one performance score per pillar and one aggregated national performance score, in which each pillar would be weighted equally.

Table 3
**Division of question by the pillars of the Shared Environmental Information System**

| *Pillar* | *Question* | | *Scoring* |
|---|---|---|---|
| Content | 2. | How regularly do you produce an indicator-based national state-of-the-environment report? | Annually = 1<br>Every second year = 1<br>Every five years = 1<br>No regular frequency = 0<br>Never = 0 |
| | 3. | Do you produce any integrated environmental reports covering several thematic areas? | Yes = 1<br>No = 0 |
| | 5. | Is the data flow used for more than one purpose (for example, for the production of national indicators, production of regional indicators, various reporting obligations)? | Yes = 1<br>No = 0 |

| *Pillar* | *Question* | | *Scoring* |
|---|---|---|---|
| | 9. | How often is the data flow published? | Continuously/live = 1<br>Monthly = 1<br>Annually = 1<br>Over one year = 1<br>According to the legal provisions on the frequency of dissemination = 1<br>No regular frequency = 0 |
| | 13. | In what formats is the data flow presented? | Complete factsheet = 1<br>Only data = 0.25 |
| | 13.1. | Please describe the factsheet by selecting as many options as apply. | European Environment Agency format for data flows = 0.2<br>Reports (for example, a state-of-the-environment report) = 0.2<br>Visual presentations (for example, tables, maps or graphs) = 0.2<br>Links to legislative documents provided = 0.2<br>Connection to policy targets demonstrated = 0.2 |
| | 16. | Do you publish time series for this data flow? | Yes = 1<br>No = 0 |
| | 17. | Are there any limitations in comparing the data flow across countries in the pan-European region? | Yes = 0<br>No = 1 |
| Cooperation | 4. | How often do you collect user feedback to assess whether the data flows within the thematic area meet the needs of users? | Regularly = 1<br>Occasionally = 0.5<br>Never = 0 |
| | 19.1. | Are there any institutional arrangements for regular production and sharing of data between various institutions at the national level? | Yes = 1<br>No = 0 |
| Infrastructure | 7. | Are data validation procedures in place? | Yes = 1<br>No = 0 |
| | 8. | Are there procedures in place to carry out revisions to the data (for example, due to methodological change, new data, errors or new mandate)? | Yes = 1<br>No = 0 |
| | 12. | Is the data flow readily available and accessible online for users on a national platform? | Yes = 1<br>No = 0 |
| | 12.3. | Is there an integrated portal in place for environmental information and data? | Yes = 1<br>No = 0 |
| | 15. | Are metadata available for the data flow? | Yes = 1<br>No = 0 |

| *Pillar* | *Question* | *Scoring* |
|---|---|---|
| | 15.1. Please describe the metadata by selecting as many options as apply. | Information on data quality = 0.1<br>Information on methodology = 0.1<br>Information on data sources = 0.1<br>Temporal coverage = 0.1<br>Geographic coverage = 0.1<br>Contact information for the data = 0.1<br>Information on rights = 0.1<br>Information on ownership = 0.1<br>Information on processor = 0.1<br>Data flow made available in English and/or Russian = 0.1 |
| | 18. Is there national legislation and/or plans, programmes or strategies in place on monitoring and reporting in relation to the thematic area? | Yes = 1<br>No = 0 |

79. Whether within one pillar or for all pillars together, question scores would be summed separately at each level: macro, thematic or data flow level. Each of the sums would be divided by the maximum score for that level to give a percentage score. The three percentage scores would then be summed across the macro, thematic and data flow levels, but weighted as shown in table 4 below. The weightings are intended to achieve a better balance between the levels, as the questions will be answered different numbers of times at the three levels. The interim percentage scores, for the individual pillars and for the three pillars together, will be reported alongside the overall performance scores to make this clear.

Table 4
**Weighting between the levels of questions in the assessment framework**

| *Category* | *Weighting (Percentage)* |
|---|---|
| 1. Macro: Only asked once | 20 |
| 2. Thematic: Asked for each thematic area | 30 |
| 3. Data flow: Asked for each data flow | 50 |

## C. List of environmental indicators for the final review of progress in establishing the Shared Environmental Information System

80. The reporting by countries for the final review of progress in the establishment of the Shared Environmental Information System in Europe and Central Asia for the Ninth Environment for Europe Ministerial Conference is based on data flows underlying a subset of the core ECE environmental indicators that were agreed by the Joint Task Force.[8]

81. The review of progress (self-assessment by countries) for the final review of progress is based on 22 data flows listed in table 5, covering all 18 core indicators. Four of the seven data flows used for the mid-term review are included; the others are not, in order to minimize the total number of data flows to be reported on. Based on the rating (depending on whether the requirements for each review criterion were met or not) an overall performance score would be calculated (see table 3).

[8] See www.unece.org/env/indicators.html.

Table 5
**Selected data flows**

| *Theme* | *Indicator* | *Data flows* |
|---|---|---|
| A. Air pollution and ozone depletion | A1. Emissions of pollutants into the atmospheric air | Emissions of sulphur expressed in sulphur dioxide (total, stationary and mobile sources) |
| | | Emissions of $PM_{10}$ (total, stationary and mobile sources) |
| | | Emissions of $PM_{2.5}$ (total, stationary and mobile sources) |
| | A2. Ambient air quality in urban areas | Annual average concentration of sulphur dioxide – validated |
| | | Annual average concentration of $PM_{10}$ – validated |
| | A3. Consumption of ozone-depleting substances | Total ozone depleting potential of chlorofluorocarbons |
| B. Climate change | B3. Greenhouse gas emissions | Aggregated greenhouse gas emissions including emissions/removals from land use, land-use change and forestry |
| C. Water | C1. Renewable freshwater resources | Total renewable freshwater resources |
| | C2. Freshwater abstraction | Total freshwater abstraction (per river basin, season and year) |
| | | Total freshwater use |
| | C10. BOD and concentration of ammonium in rivers | Mean concentration of BOD after five days of incubation in major rivers |
| | C11. Nutrients in freshwater | Mean concentration of phosphates in major rivers |
| D. Biodiversity | D1. Protected areas | Total protected areas by International Union for Conservation of Nature categories |
| | D4. Threatened and protected species | Number of species threatened — mammals, birds, fishes, reptiles, amphibians, invertebrates, vascular plants, mosses, lichens, fungi, algae |
| E. Land and soil | E1. Land uptake | Total land uptake |
| F. Agriculture | F2. Fertilizer consumption | Total consumption of mineral fertilizers |
| G. Energy | G1. Final energy consumption | Total final energy consumption |
| | G2. Total primary energy supply | Total primary energy supply (production, export, import, bins, stock changes) |
| | G3. Energy intensity | Final energy consumption/gross domestic product |

| *Theme* | *Indicator* | *Data flows* |
|---|---|---|
| | G4. Renewable energy consumption | Total primary energy supply by renewable energy category (hydropower, biomass, biofuels, wind, solar, geothermal, other) |
| H. Transport | H1. Passenger transport demand | Road transport (private cars, public transport, long-distance public transport) |
| I. Waste | I1. Waste generation | Total waste generation |

*Abbreviations:* BOD, biochemical oxygen demand; PM, particulate matter.