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Reporting on the Shared Environmental Information System

Annex to the Draft mid-term review of the establishment of the Shared Environmental Information System

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I. Introduction

1. The draft mid-term review of the establishment of the Shared Environmental Information System (SEIS) is presented as official document ECE/CEP/AC.10/2018/6. The draft review was produced using an assessment framework (ECE/CEP/AC.10/2018/5) based on a questionnaire. This annex to the draft review provides additional background information.

2. The Working Group developed the questionnaire to facilitate the mid-term review and in order to overcome shortcomings from previous reviews. The questionnaire comprises 25 questions in 7 categories (review criteria): relevance, accuracy, timeliness and punctuality, accessibility, clarity, comparability and institutional and organizational arrangements. These categories follow the three building blocks of SEIS (the 3 SEIS pillars) – content, cooperation and infrastructure. Thus, unlike previous reviews, it addresses all three of the SEIS pillars and all seven of the SEIS principles.

3. The Working Group decided that the mid-term review would focus mainly on the introduced quality component and for a limited number of indicators and underpinning data flows. It was furthermore agreed that, if the revised review criteria and SEIS reporting tool proves to be effective during the trial of the mid-term review reporting exercise, then in a next step the number of environmental indicators and underpinning datasets to be implemented by countries would be gradually increased during the planned regular (annual) reporting exercise by using the SEIS assessment framework and reporting tool. The target is to implement all United Nations Economic Commission for Europe (ECE) environmental indicators and data sets as outlined in the document *Targets and performance indicators for measuring progress in developing the Shared Environmental Information System across the pan-European region (ECE/BATUMI.CONF/2016/INF/16) by 2021*. The SEIS assessment framework builds on that earlier work (see table).

4. The mid-term review is based on countries' responses to the questionnaire on seven selected data flows. Replies to 15 of the 25 questions contained in the questionnaire were mandatory. A performance score was calculated based on the answers to the mandatory questions, with averages calculated for countries and subregions. The results presented in this document are based primarily on countries' responses to the 15 mandatory questions.

5. The assessment framework questionnaire was made available as a Microsoft Excel workbook and as an online reporting tool for testing. The Microsoft Excel workbook reporting tool provided the basis to pilot the reporting across the pan-European region and for conducting the mid-term review of progress in establishing SEIS. The scoring was done automatically in the Excel workbook, which already contained the necessary formulas in line with the scoring for mandatory questions. The online reporting tool which faced some delay in completion has been made available for testing only and countries were invited to provide their feedback and suggestions for improvement.

6. The draft mid-term review presents mainly the results of the self-assessments submitted by countries. Further investigation of the quality of the provided answers to the questionnaire is suggested for the future however this was outside of the scope of the envisaged self-assessment of countries and the current mid-term review.

7. Despite the fact that further analysis on the quality of provided answers will be needed it should be noted that compared to 2015, when the SEIS development status at the pan-European level was assessed mainly based on the online availability of data, the self-assessments provided by countries, based on the seven quality criteria, indicate already progress in terms of quality and quantity of SEIS establishment given the amount of additional in-depth information provided compared to 2015.

Review criteria

<i>Common targets for monitoring progress for each building block of a SEIS (ECE/BATUMI.CONF/2016/INF/16)</i>	<i>Review criteria in the SEIS Assessment Framework linked to the requirements formulated in ECE/BATUMI.CONF/2016/INF/16</i>	<i>Questions from the SEIS Assessment Framework linked to the requirements formulated in ECE/BATUMI.CONF/2016/INF/16</i>
Content		
A1. Agreed environmental indicators and related data sets are produced (per thematic area and their interlinks) to meet country and international level policy needs and enable regular reporting and assessments.	Relevance, Accuracy, Accessibility, Timeliness and Punctuality, Clarity, Comparability	D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12, D13, D14, D17, D18, D19, D20, D21, D22, D23
A2. Agreed methodologies and calculation methods (including necessary data aggregation), etc., for the production of the environmental data sets and indicators are described through metadata.	Clarity	D19
A3. Agreed indicators and related data sets are assessed regularly against the policy targets.	Relevance, Timeliness and Punctuality, Institutional and organizational arrangements	D1, D2, D3, D10
Institutional cooperation		
B1. Clear protocols for institutional cooperation in terms of data management (collection, processing and validation), sharing and assessment are established.	Institutional and organizational arrangements	D24, D25
B2. Interoperability protocols for intersectoral institutional cooperation enabling regular and timely data flow (national and international) and public access are established.	Institutional and organizational arrangements, Accessibility	D24, D25
B3. A coherent environment data sharing policy is defined and implemented.	Institutional and organizational arrangements	D24, D25
Infrastructure		
C1. Availability of electronic databases to data managers is ensured.	Accessibility	D15, D16
C2. Environmental indicators underpinned by data sets are available online described/structured by metadata.	Accessibility	D15
C3. Any data exchange is based on agreed open standards.	Accessibility, Institutional and organizational arrangements	D15, D16, D17, D19, D25

9. Data collection was based on the SEIS assessment framework and questionnaire shown in document ECE/CEP/AC.10/2018/5 and the analysis (as part of a desk study) for the current progress report was conducted in the period between March and June 2018:

(a) The secretariat shared the SEIS Assessment Framework questionnaire at the beginning of March 2018 and member States were invited to complete the self-assessment questionnaire by 6 May 2018;

(b) Based on the submitted self-assessments (self-assessment submitted by 15 June 2018 could be taken into consideration) the secretariat compiled the draft mid-term review report. All self-assessments submitted after 15 June will be integrated into a revised mid-term review report for consideration at the twenty-fourth session of the Committee on Environmental Policy;

(c) Only a few countries requested clarifications regarding the filling of the questionnaire.

10. The secretariat as well as the European Environment Agency (EEA) provided clarifications where needed. Considering that some countries reported that they are not applying IUCN categories for protected areas as foreseen by the ECE indicator, and considering that also the world database on protected areas maintained by the IUCN refers partly to protected areas not following IUCN categories, countries were invited to report and answer the questionnaire based on their national classification and their rating was considered.

11. It is suggested to discuss further with members of the Working Group and the Joint Task Force on Environmental Statistics and Indicators if and how to consider national categories of protected areas and whether a different scoring should be applied. Additional comments provided on the SEIS Assessment Framework questionnaire and the scoring are listed under chapter IV.

12. A discussion among the Working Group will be needed in connection with how to improve the review process.

II. Performance in developing a SEIS in the pan-European region

A. General achievements and findings by country and data flow

13. For the mid-term review, the assessment was limited to seven data flows. Thirty of the 53 ECE member States in Europe and Central Asia¹ submitted a self-assessment by 15 June 2018.² Switzerland and Italy submitted their self-assessment later than 15 June 2018 and could therefore not be considered in the draft mid-term review. Both countries reported an overall good performance. Their detailed results will be incorporated in the revised report following the twentieth session of the Working Group on Environmental Monitoring and Assessment.

14. EEA pre-filled the assessment questionnaire for its 33 members and 5 cooperating countries in South-Eastern Europe;³ for EEA members that did not submit a self-assessment,

¹ The 56 ECE member States, with the exception of Canada, Israel and the United States of America.

² Only 12 countries responded by the deadline of 6 May 2018; the others responded at a later date.

³ The five cooperating countries are Albania, Bosnia and Herzegovina, Montenegro, Serbia and the former Yugoslav Republic of Macedonia. In addition, Kosovo (without prejudice to its status and in compliance with United Nations Security Council Resolution 1244 (1999) and with the advisory

the default values were used for the review at the suggestion of EEA. Countries were invited to report on other data flows underpinning the ECE set of environmental indicators, in addition to the seven listed, but none did so. They were also invited to review the assessment framework, test an online reporting tool and provide suggestions for improvement of the framework and tool; several did so and their comments will be used to refine the two instruments.

15. Of the 30 countries that responded in time, 27 submitted results for all 7 data flows and answered all 15 mandatory questions; some of the optional questions were not answered. The other three countries (Kyrgyzstan, Poland and Tajikistan) did not answer some of the mandatory questions for one or two data flows. Countries' responses to all mandatory 15 questions are summarized in factsheets below.

16. The self-assessment conducted by EEA members and cooperating countries revealed an overall good performance. However, EEA members were also the least likely to provide a response (only 15 did so), whereas all five countries in South-Eastern Europe and all five Central Asian States submitted information and five out of seven countries in the Caucasus and Eastern Europe, as well as the Russian Federation, did so. Further details on the self-assessment results by country and data flow are provided in the figure below:

Figure 1.

Performance by data flow and country

Country	PM10	sulphur dioxide	nitrogen dioxide	ground-level ozone	BOD5	ammonium in major rivers	Total protected areas (by IUCN categories)	Overall National Performance
EEA members pre-filled default values								
Belgium								
Bulgaria								
Croatia								
Estonia								
Finland								
France								
Germany								
Hungary								
Italy	Self-assessment results submitted will be included in the final version of the MTR							
Latvia								
Lithuania								
Poland								
Romania								
Slovakia								
Sweden								
Switzerland	Self-assessment results submitted will be included in the final version of the MTR							
Turkey								

opinion of the International Court of Justice on the accordance with international law of the unilateral declaration of independence in respect of Kosovo (*I.C.J. Reports* 2010, p. 403), Kosovo is recognized by the European Union and, as an EEA cooperating country, was invited by EEA to submit a completed questionnaire but did not do so.

Figure 2.
Performance by data flow and country

Country	PM 10	sulphur dioxide	nitrogen dioxide	ground-level ozone	BOD5	ammonium in major rivers	Total protected areas (by IUCN categories)	Overall National Performance
East" covering Eastern Europe, the Caucasus and the Russian Federation"								
Armenia	Green	Green	Light Green	Green	Green	Green	Green	Green
Azerbaijan	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green
Belarus	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Yellow	Light Green
Republic of Moldova	Yellow	Yellow	Yellow	Yellow	Light Green	Light Green	Yellow	Light Green
Russian Federation	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green
Central Asia								
Kazakhstan	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green
Kyrgyzstan	Light Green	Yellow	Orange	Light Green	Orange	Yellow	Yellow	Light Green
Tajikistan	Orange	Light Green	Orange	Yellow	Yellow	Light Green	Green	Light Green
Turkmenistan	Orange	Orange	Orange	Orange	Orange	Orange	Yellow	Orange
Uzbekistan	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Light Green	Yellow
South-East Europe								
Albania	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green
Bosnia and Herzegovina	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green
Montenegro	Green	Green	Green	Green	Light Green	Light Green	Yellow	Light Green
Serbia	Green	Green	Green	Green	Orange	Orange	Light Green	Light Green
FYROM	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green

Scoring according to SEIS Assessment Framework

Orange	0-50%: Requires improvement
Yellow	51-75%: Moderate performance
Light Green	76-95%: Good performance
Green	96-100%: Very good performance

17. Over the past few years, many countries have facilitated data harmonization and improved the quality of the produced environmental indicators and underpinning data sets. This was confirmed by their self-assessments.

18. While there was generally consistency between national data flows and the ECE indicators and data flows, many countries provided information on national categories of protected areas rather than using the categories established by the International Union for the Conservation of Nature, as foreseen by the ECE environmental indicator.

19. Countries' self-assessments were, on average, highest for theme A (on air pollution and ozone depletion), followed by D (on biodiversity) and C (on water). The same was true at the indicator level since only one indicator was assessed per theme. At the data flow level, too, the average scores were highest for air quality (sulphur dioxide, PM₁₀, ground-level ozone and nitrogen dioxide), followed in descending order by total protected areas, ammonium in major rivers and BOD₅ in major rivers.

20. Almost all of the countries reported that metadata was available for all data flows, thus ensuring greater clarity and quality of the information provided.

21. A positive development compared to the 2016 progress report (ECE/BATUMI.CONF/2016/8), where data usage could not be assessed, is that most of the countries that responded confirmed that the data flows were used for multiple purposes, including the production of national and regional indicators; various reporting purposes related to national legislation, European Union directives and multilateral environmental agreements; and the elaboration of state-of-the-environment reports (see section IV.A below). However, only some countries reported explicitly that the data flows were used for environmental policymaking and reporting on implementation of the Sustainable Development Goals. A few countries reported limitations in using the data flows on ground-level ozone, BOD₅ in major rivers and ammonium in major rivers for multiple purposes.

B. Achievements and key findings by subregion

22. A simplified grouping of countries into sub-regions has been applied. All EEA members for which a pre-filled questionnaire has been provided were considered in one group.

1. The Caucasus and Eastern Europe, as well as the Russian Federation

23. Of the seven countries in this group, no response was received from Georgia or Ukraine. Of the five reporting countries, Armenia reported the highest (“very good”) overall performance score for the seven data flows. The other four countries all reported a “good” performance score. In this group of five countries, the theme with the highest rating was C, (water), followed by A (air pollution and ozone depletion) and D (biodiversity). The data flows with the highest performance scores were BOD₅ in major rivers and ammonium in major rivers, followed by annual average concentration of sulphur dioxide, PM₁₀ and ground-level ozone. According to the responses, the categories in which improvements are most needed are accuracy and accessibility.

24. The six countries of Eastern Europe and the Caucasus are engaged in a major project, funded by the European Union and carried out by EEA, to support implementation of the SEIS principles and practices. The project has contributed significantly to the overall good performance of Armenia, Azerbaijan, Belarus and the Republic of Moldova in the mid-term review. Similar support for countries with lower performance scores would enhance the establishment of SEIS in Europe and Central Asia.

2. South-Eastern Europe

25. Five (EEA cooperating) countries in South-Eastern Europe submitted self-assessments, responding to all 15 of the mandatory questions. All of them reported an overall “good” performance score for the seven selected data flows with the former Yugoslav Republic of Macedonia reporting the highest score. The theme with the highest rating was A (on air pollution and ozone depletion). The data flows with the highest performance scores (the same score for all) were annual average concentration of sulphur dioxide, annual average concentration of nitrogen dioxide, PM₁₀ and ground-level ozone, followed by total protected areas.

26. The five countries showed a “moderate” to “good” performance in relevance, accuracy, timeliness and punctuality; these are the categories where the greatest improvement is needed.

3. Central Asia

27. In Central Asia, all five countries submitted a self-assessment with three of them responding to all of the mandatory questions. In the case of Tajikistan, because some of the mandatory information was missing for one data flow (annual average concentration of sulphur dioxide) and, in the case of Kyrgyzstan, information was missing for two data flows (PM₁₀ and ground-level ozone), it was not possible to calculate an overall performance score for these two countries. Of the three other countries, Kazakhstan reported the highest performance score with an overall “good” performance. The other two countries’ assessments showed an overall “moderate” performance score or a need for improvement. Tajikistan has achieved “very good” performance for total protected areas and “good” performance for ammonium in major rivers but requires improvement for the other four data flows. Kyrgyzstan requires improvement for all data flows.

28. For the three countries that provided information on all data flows, the environmental theme with the highest rating was D (on biodiversity), followed by C (on water) and, lastly, A (on air pollution and ozone depletion). In all five countries, except for the annual average concentration of sulphur dioxide, PM₁₀ and ground-level ozone (for which only four countries could be considered), the highest average performance score was for total protected areas (80 per cent), followed by ammonium in major rivers (67 per cent). All five countries showed “medium” performance in the categories of relevance; accuracy; timeliness and punctuality; and accessibility. The lowest score was in the “comparability” category. Accordingly, the categories in which improvement is most needed are comparability; relevance; accuracy; timeliness and punctuality; and accessibility.

4. European Environment Agency members

29. Fifteen of the 33 EEA members completed self-assessments and responded to the questionnaire, with 14 responding to all of the mandatory questions. Poland responded to all of the mandatory questions for only six data flows; for the seventh (total protected areas), the default values provided by EEA were used to calculate an overall performance score. Those default values were used also for the 18 EEA members that did not submit self-assessments.

30. Finland reported the highest overall performance score in the group of responding countries, followed in descending order by Estonia and (all with the same score) France, Germany, Hungary and Sweden. Most of the other nine responding countries reported an overall “good” national performance score, with only a few cases of a “moderate” score. The 18 countries for which the default values were used achieved an overall “good” score. Among the 15 reporting countries, the environmental theme with the highest rating was A (on air pollution and ozone depletion). The data flows with the highest performance scores among the 15 reporting countries (all with the same score) were annual average concentration of sulphur dioxide and annual average concentration of nitrogen dioxide and PM₁₀, followed by ground-level ozone and total protected areas. The average performance scores per data flow for all 15 countries are slightly lower than the default values provided by EEA. The lowest performance scores were in the “accuracy” category, followed by “relevance”; these are the areas in which improvement is most needed.

C. Achievements per SEIS pillar

1. General achievements

31. During the first assessment in 2015, the assessment was not able to review the progress for all three SEIS pillars and it was highlighted that the next assessment would benefit from an adequate review of all the System’s three main pillars — cooperation, content and infrastructure.

32. The revised SEIS Assessment Framework questionnaire aims to address this shortcoming from the previous reviews through the introduction of 25 review questions grouped into 7 categories. These categories (review criteria) are linked to one or more of the SEIS pillars.

33. The results from the self-assessments submitted by countries are presented below for each of the three SEIS pillars and are based mostly on the mandatory questions. Considering that the current mid-term review ensured the review of all SEIS pillars it can be seen as a major achievement of this review and progress of countries in self-assessing their performance in the different categories.

2. Achievements for the “Content” pillar of SEIS

34. For the SEIS pillar of “Content”, countries were invited to answer several questions mainly under the categories (review criteria) of Relevance, Accuracy, Accessibility, Timeliness and Punctuality, Clarity and Comparability. The results based on the 30 submissions for the mandatory questions that were grouped under the SEIS pillar content and for each data flow, are set out below. Mandatory questions that are relevant for describing the performance for this pillar of SEIS are D1, D2, D3, D6, D7, D8, D10, D12, D14, D18, D19, and D20.

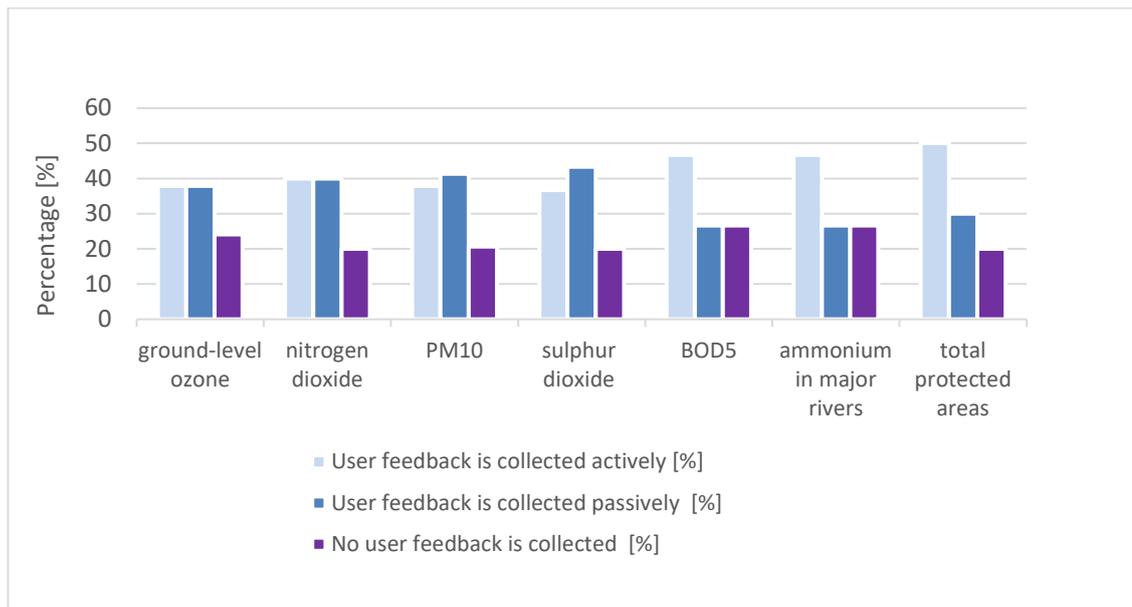
Content pillar of SEIS and category relevance

35. In order to assess the degree to which the information meets the real or perceived needs of users (e.g. in terms of coverage, content, detail) several questions to assess the relevance of the information provided have been introduced. The results from the submitted self-assessments under this category for the mandatory questions are shown below.

36. In the category of “relevance”, countries were invited to specify under question D1, whether user feedback is collected actively or passively to assess whether the data flow meets the needs of users. The options of replying included “user feedback is collected actively”, “user feedback is collected passively” or “no user feedback is collected”. The results from the 30 submissions are shown below.

Figure 3.

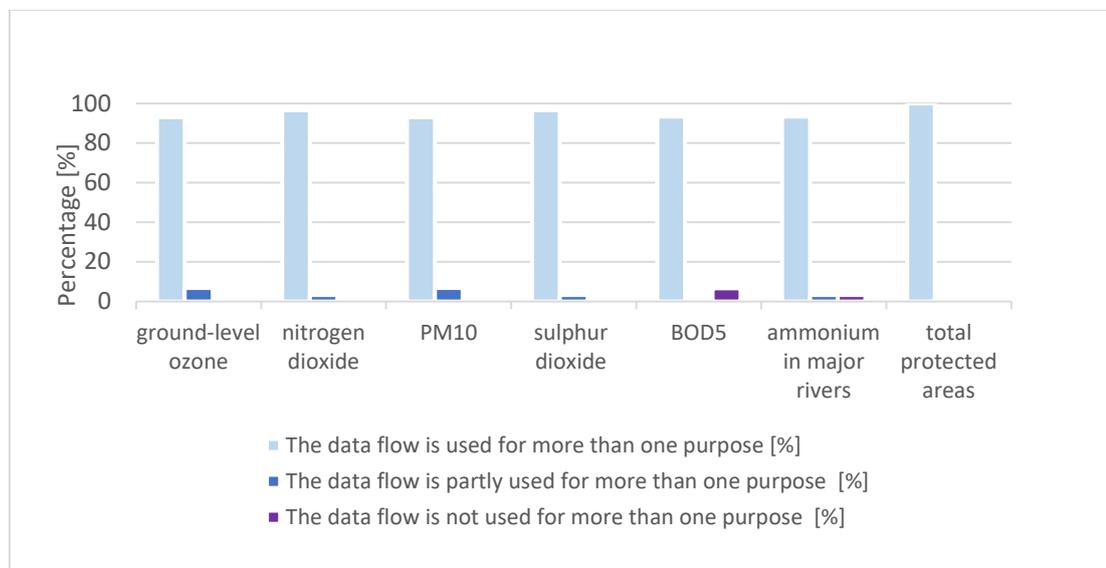
Collection of user feedback



37. Question D2 under the relevance category assessed, for each data flow, whether it was used for more than one purpose (e.g., for the production of national indicators, and in order to meet reporting obligations) with the option of replying “yes”, “partly” or “no”. The results from the 30 submissions are shown in figure 1. The default response provided by EEA was “yes” for all seven data flows. Data flows were used for multiple purposes in 95 per cent of cases.

Figure 4.

Use of data flows for multiple purposes



38. Countries were also asked to provide examples of multipurpose use of data flows. The replies included, among other things, combinations of the following:

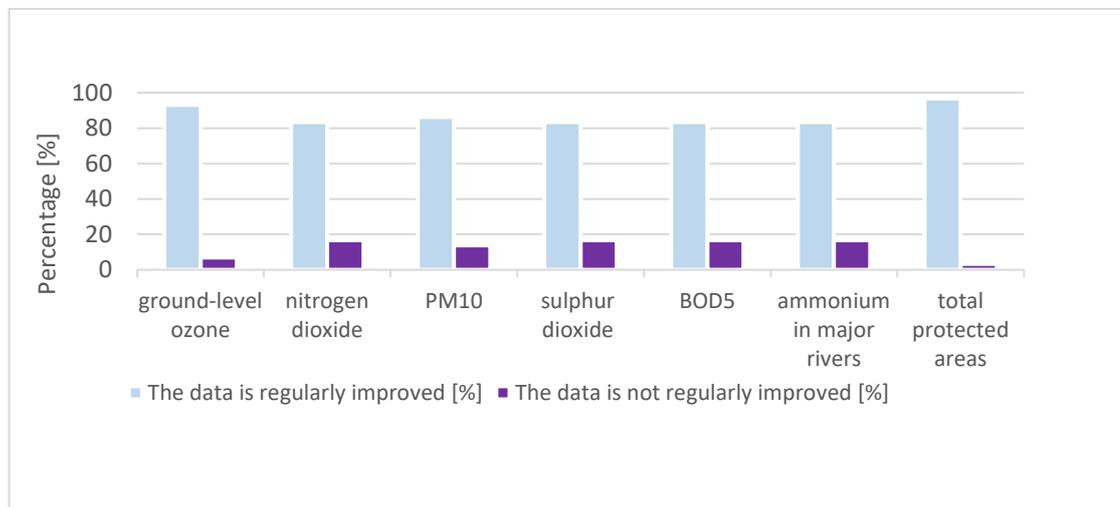
- (a) Reporting under European Union directives and ECE multilateral environmental agreements, as well as other national and international reporting purposes;
- (b) Provision of data for the European Air Quality Portal and for posting on the websites of national statistical agencies;
- (c) Provision of data for the European (EEA and Eurostat) Environmental Indicators and other national and regional indicators;
- (d) Inputs to EEA reports, such as the *Air Quality in Europe* report series, and Eurostat reports (e.g., under Sustainable Development Goal 6 – clean water and sanitation);
- (e) Production of national state-of-the-environment reports and thematic bulletins;
- (f) Production of technical reports on, for example, urban air quality for specific purposes and requests; improvement of a national monitoring programme; legislative frameworks concerning air quality; and justification of the need for an increase in air quality monitoring capacity at the national level;
- (g) Policy-making at the national level;
- (h) Public information.

39. In the category of relevance furthermore question D3 identified whether in the ECE member States the data are regularly improved (e.g., quality of data, representativeness, time or spatial coverage) to meet the needs of users? The results from the 30 submissions are

shown below. In the majority of cases countries replied that data is regularly improved however gaps remain above all for nitrogen-dioxide, PM10, sulphur dioxide, BOD and ammonium in major rivers.

Figure 5.

Data improvement



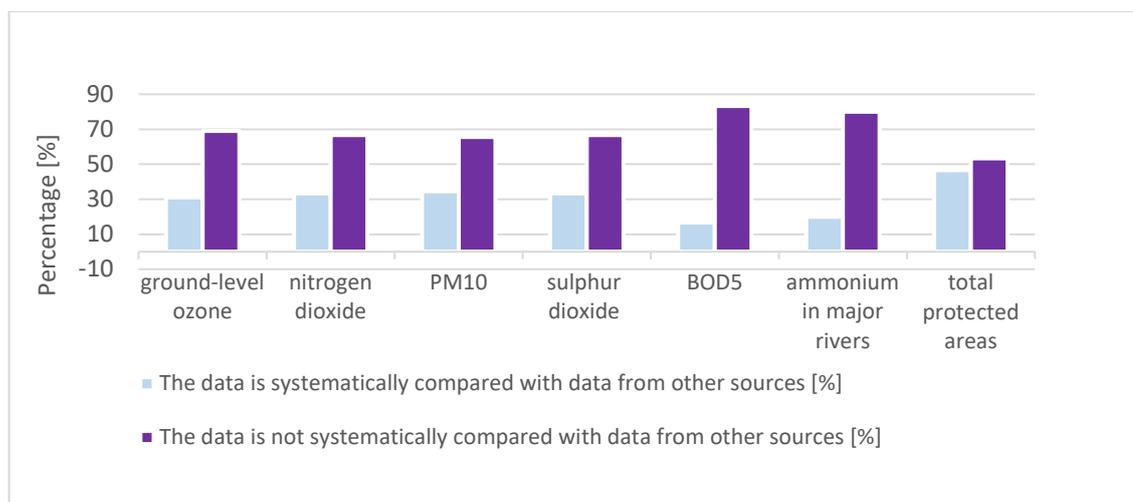
Content pillar of SEIS and category accuracy

40. In order to identify the degree to which the information correctly describes the phenomena it was intended to measure, several questions were introduced to measure the accuracy of information. The results from the self-assessments submitted by countries for the mandatory questions are presented below.

41. In the category of “accuracy”, countries were invited to specify under question D6, whether the data is systematically compared with data from other sources. The options of replying included “yes”, or “no”. The results from the 30 submissions are shown below. While for BOD5 and ammonium in rivers the data is systematically compared with data from other sources in about 80 percent of the cases, the performance for ground level-ozone, nitrogen dioxide, PM10 and sulphur dioxide and total protected areas is lower.

Figure 6.

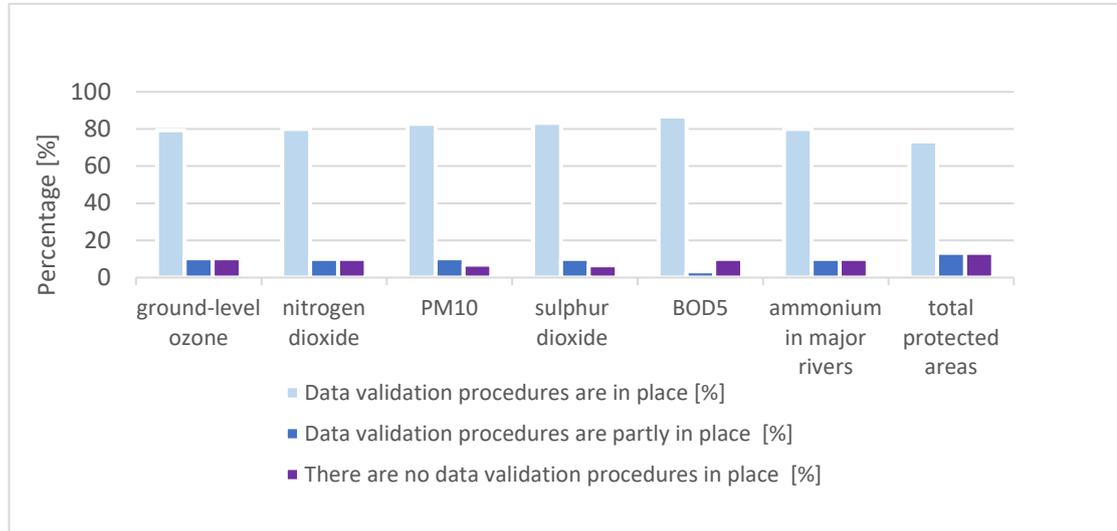
Comparison of data with data from other sources



42. Under question D7 in the category accuracy, countries were asked whether data validation procedures are in place. The options of replying included “yes”, “partly” or “no”. The results from the 30 submissions are shown below.

Figure 7.

Validation procedures

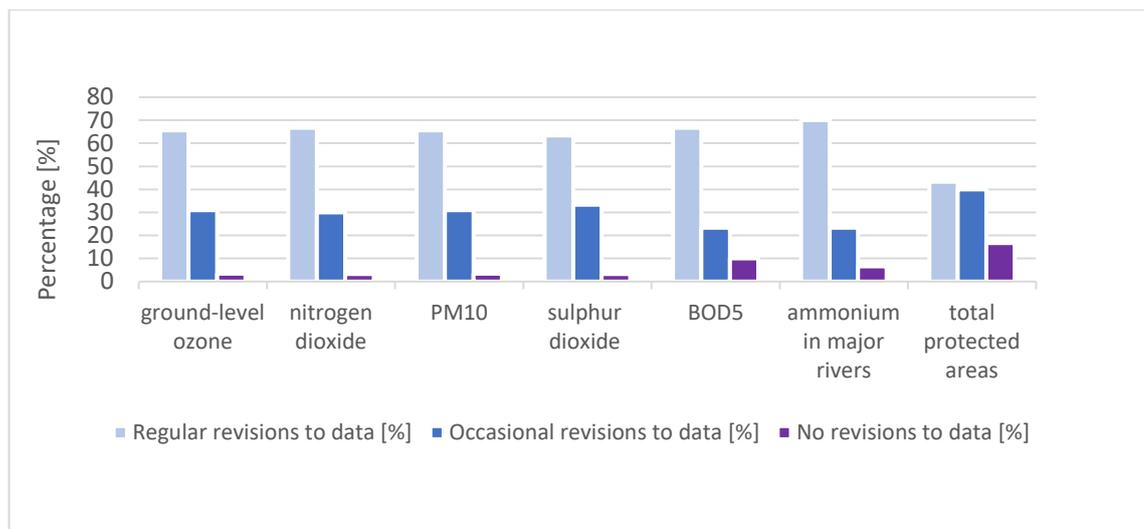


43. A positive development is that in 80 % of cases for ground-level ozone, nitrogen dioxide, PM10, sulphur dioxide, BOD5 and ammonium in rivers countries reported that data validation procedures are in place. Further improvements are however still needed for all 7 data flows.

44. Within the category of accuracy question D8 identified whether revisions are carried out to the data. The options of replying included “regularly”, “occasionally” or “no”. The results from the 30 submissions are shown below.

Figure 8.

Revisions to the data



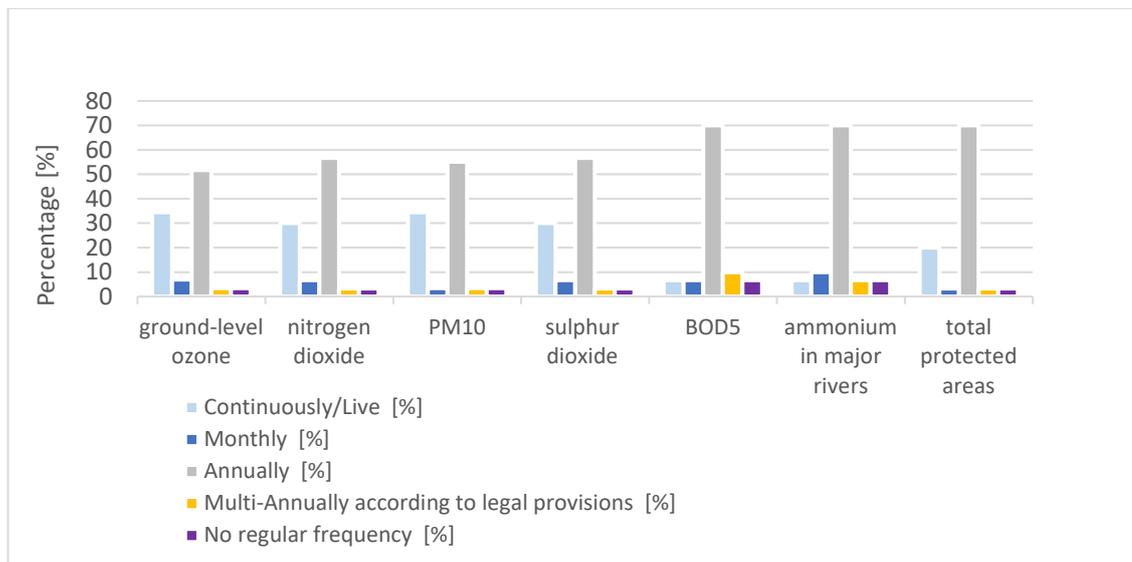
Content pillar of SEIS and category timeliness and punctuality

45. In order to assess the timeliness (length of time between data availability and the event or time the data describes) and punctuality (time lag between the actual delivery of the data and the target date when it should have been delivered) several questions were introduced. The results from the 30 submissions and for the mandatory questions are shown below.

46. In the category of “timeliness and punctuality”, countries were invited to specify under question D10, the frequency of the dissemination of the data flow in the ECE member States. The options of replying included “continuously/live”, “monthly”, “annually”, “multi-annually according to legal provisions” or “no regular frequency”. The results from the 30 submissions are shown below.

Figure 9.

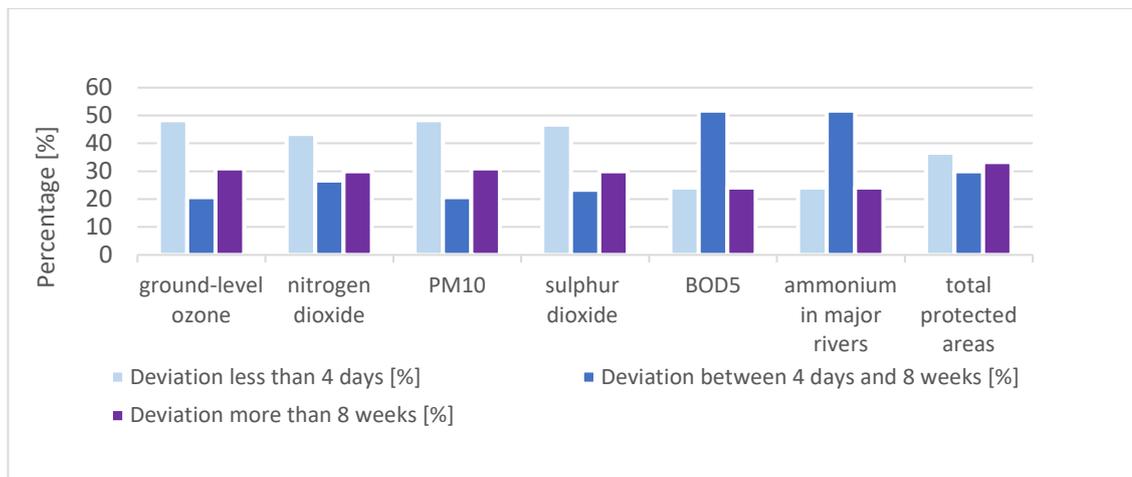
Frequency of the dissemination of the data flow



47. Question D12 under the category timeliness and punctuality assessed the punctuality of the data flow’s online release in the ECE member States. Several options were provided for replying as shown in the figure below.

Figure 10.

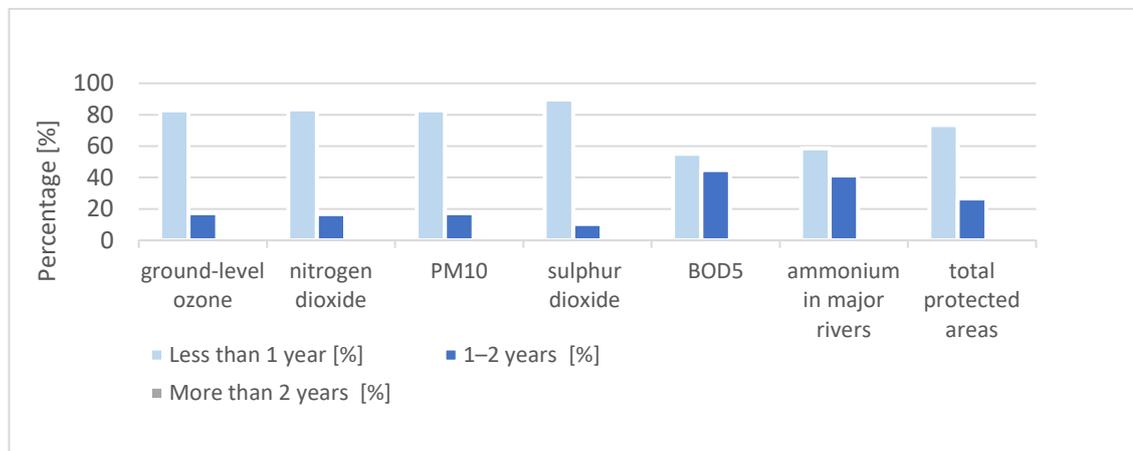
Punctuality of the data flow’s online release



48. In the category timeliness and punctuality, furthermore Question D14 assessed the timeliness of the data flow in the ECE member States based on three options that were provided for replying. The results from the 30 submissions are shown below.

Figure 11.

Timeliness of the data flow



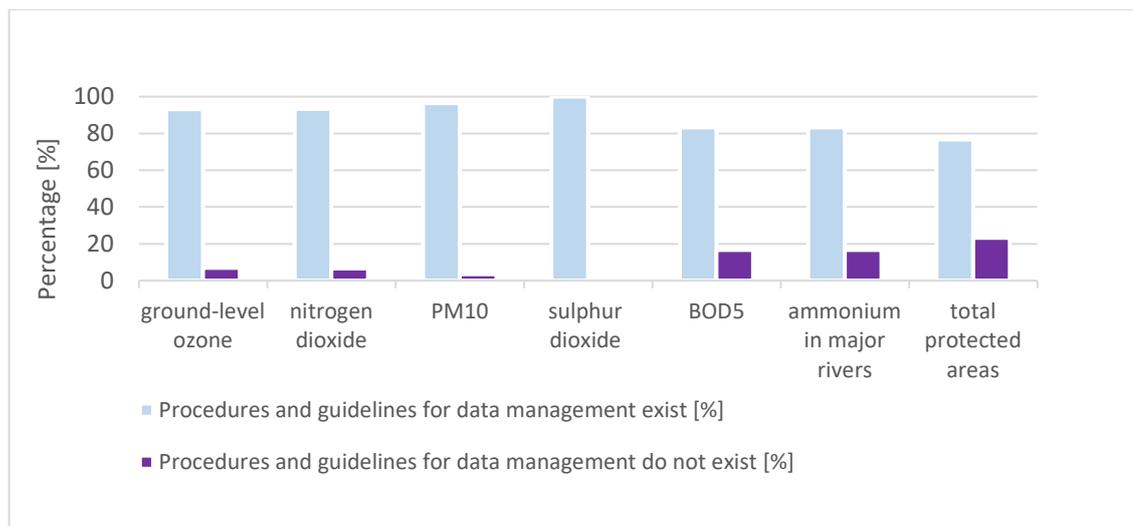
Content pillar of SEIS and category clarity

49. In order to identify 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, countries have been requested to reply to several questions in the category clarity. The results from the mandatory questions are presented below.

50. Question D18 under the clarity category assessed whether procedures and guidelines for data quality management exist in the ECE member States. The options for replying included “yes” or “no”. The results from the 30 submissions are shown below. For the data flow sulphur-dioxide all 30 countries that submitted a self-assessment reported that procedures and guidelines for data quality management exist. According to the self-assessments submitted by ECE member States the data flow with the least procedures and guidelines for data quality management in place is “total protected areas”.

Figure 12.

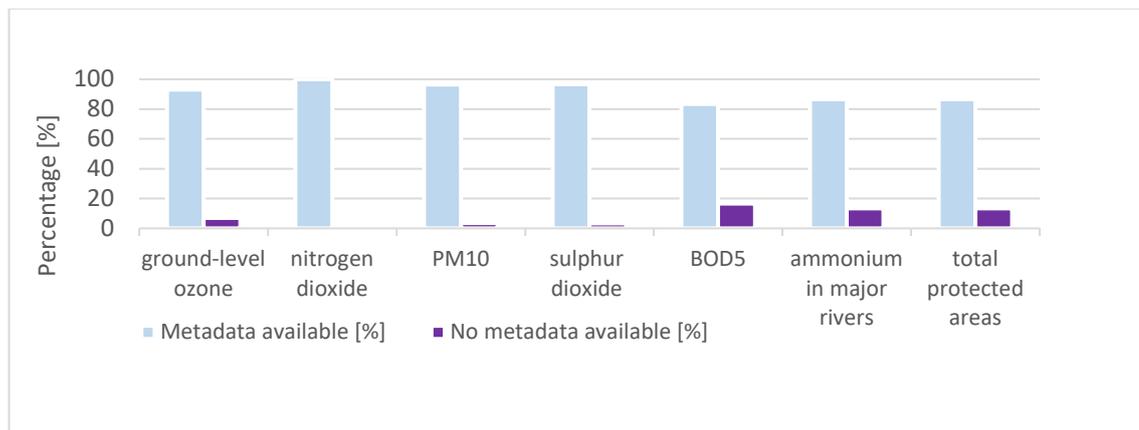
Procedures and guidelines for data quality management



51. In the same category, Question D19 assessed whether metadata are available for the data flows in the ECE member States. The options for replying included “yes” or “no”. The results from the 30 submissions are shown below. It is a positive development that in the majority of cases countries reported that metadata is available. The data flow nitrogen-dioxide is the data flow with the highest performance in regard to the availability of metadata, the data flow BOD5 the one with the lowest performance according to the self-assessments submitted by the countries.

Figure 13.

Availability of metadata



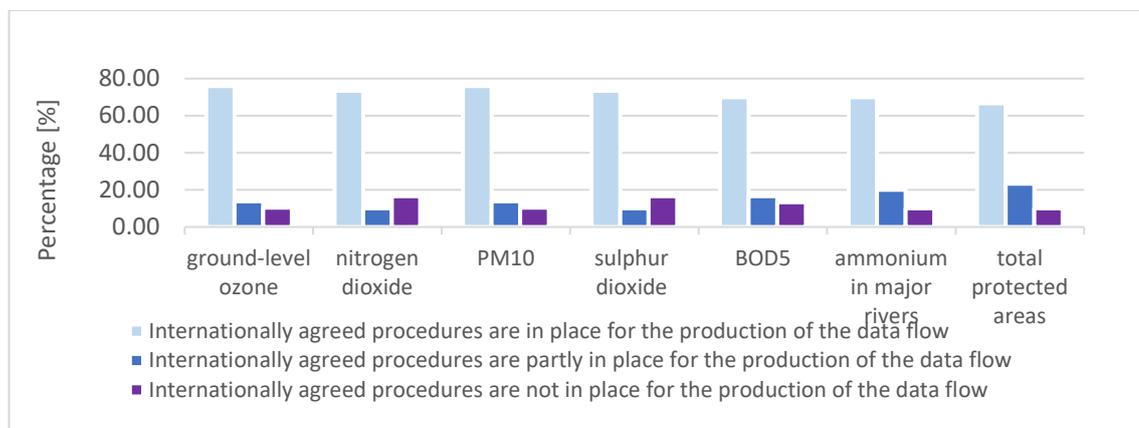
Content pillar of SEIS and category comparability

52. In order to identify the extent to which the information can be compared countries have been requested to reply to several questions in the category comparability. The results from the mandatory question are presented below.

53. Question D20 in the category comparability assessed whether internationally agreed procedures in the production of the data flows are applied (e.g., compilation, data adjustments and transformations and statistical analysis) in the ECE member States. The options for replying included “yes”, “partly” or “no”. The results from the 30 submissions are shown below. Internationally-agreed procedures were applied in 72 per cent of cases, falling to 67 per cent for total protected areas. The self-assessments highlighted that further efforts in enhancing the comparability for all data flows are required in the ECE member States.

Figure 14.

Application of internationally agreed procedures for the production of data flows



54. Within the same category, countries described limitations in comparing data flows across regions and between countries owing to differences in, for example:

- (a) Densities of measurement stations and configurations of monitoring networks;
- (b) Means of data collection (e.g., automated stations and laboratory processing) and determination methodologies;
- (c) Data flow definitions (e.g., use of 7-day BOD instead of 5-day BOD and differing definitions of protected areas);
- (d) Legislation.

3. Achievements for the “Institutional Cooperation” pillar of SEIS

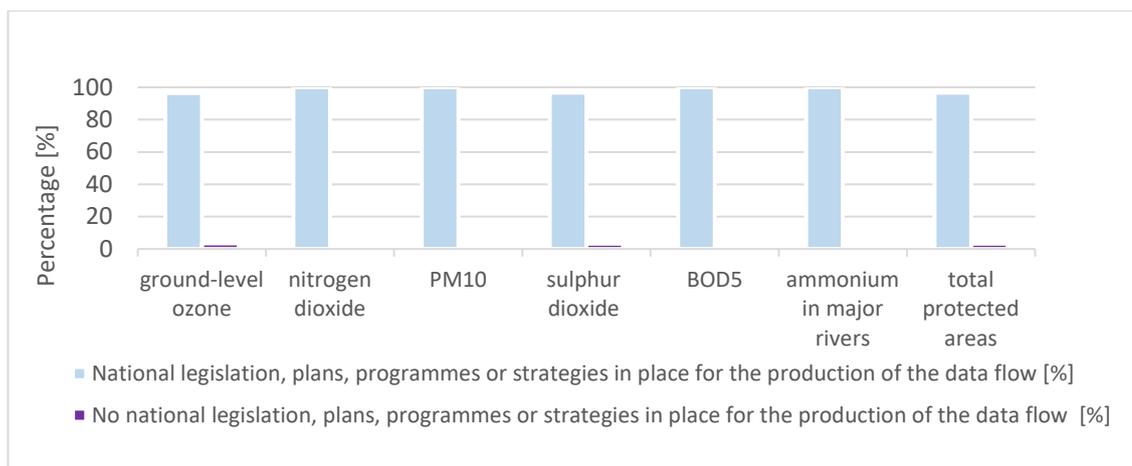
55. In order to assess the degree to which institutional and organizational arrangements are in place to ensure regular production and sharing of environmental indicators, data and information, countries were invited to answer several questions in the category of Institutional and organizational arrangements. Questions that are mainly relevant for describing the performance for the SEIS pillar institutional cooperation are the questions D24 and D25. Question D24 was mandatory and the results based on the 30 submissions under the SEIS pillar institutional cooperation are set out below.

Institutional Cooperation pillar of SEIS and category Institutional and organizational arrangements

56. Question D24 assessed whether national legislation, plans, programmes or strategies are in place related to the production of the data flows in the ECE member States. The results from the 30 submissions are shown below. Most of the countries which submitted a self-assessment reported for all data flows that national legislation, plans, programmes or strategies are in place for the production of the data flows. For the data flows ground-level ozone, sulphur dioxide and total protected areas one country reported that no national legislation, plans, programmes or strategies are in place for the production of the data flow.

Figure 15.

Availability of national legislation, programmes or strategies for the production of data flows



4. Achievements for the “Infrastructure” pillar of SEIS

57. For the SEIS pillar of “infrastructure”, countries were invited to answer several questions mainly in the category of Accessibility. Questions that are relevant for describing

the performance for the SEIS pillar Infrastructure are mainly the questions D15, D16 and D19. The results based on the 30 submissions under the SEIS pillar infrastructure are set out below.

Infrastructure pillar of SEIS and category Accessibility

58. In order to assess the ease with which users are able to access at any time the data and its supporting information online, several questions have been introduced in the SEIS Assessment Framework under the category accessibility.

59. In the category of “accessibility”, countries were invited under question 15 to specify, for each data flow, whether it was readily available and accessible online for users on any national platform, with the option of replying either “yes” or “no”. The results from the 30 submissions are shown in figure 16. Data flows were readily available and accessible online in 90 per cent of cases, though that proportion dropped to 77 per cent for water-related data flows. Countries were also asked in what formats information on the data flows was presented with the option to select all applicable options. The results are shown in figure 17. The most popular formats were reports (such as state-of-the-environment reports) and visual presentations.

Figure 16.

Ready availability and accessibility online of data flows on a national platform

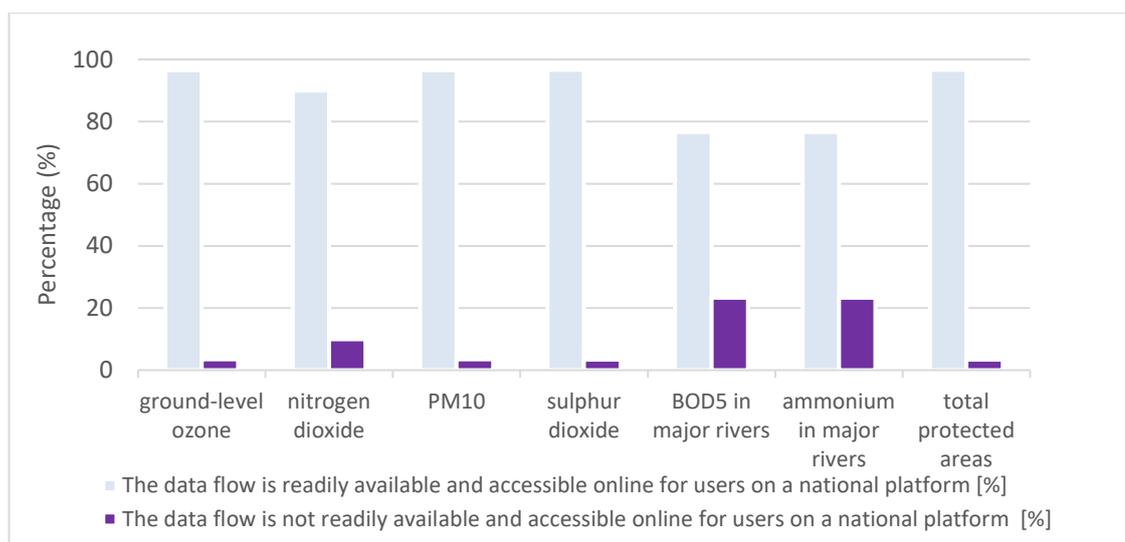
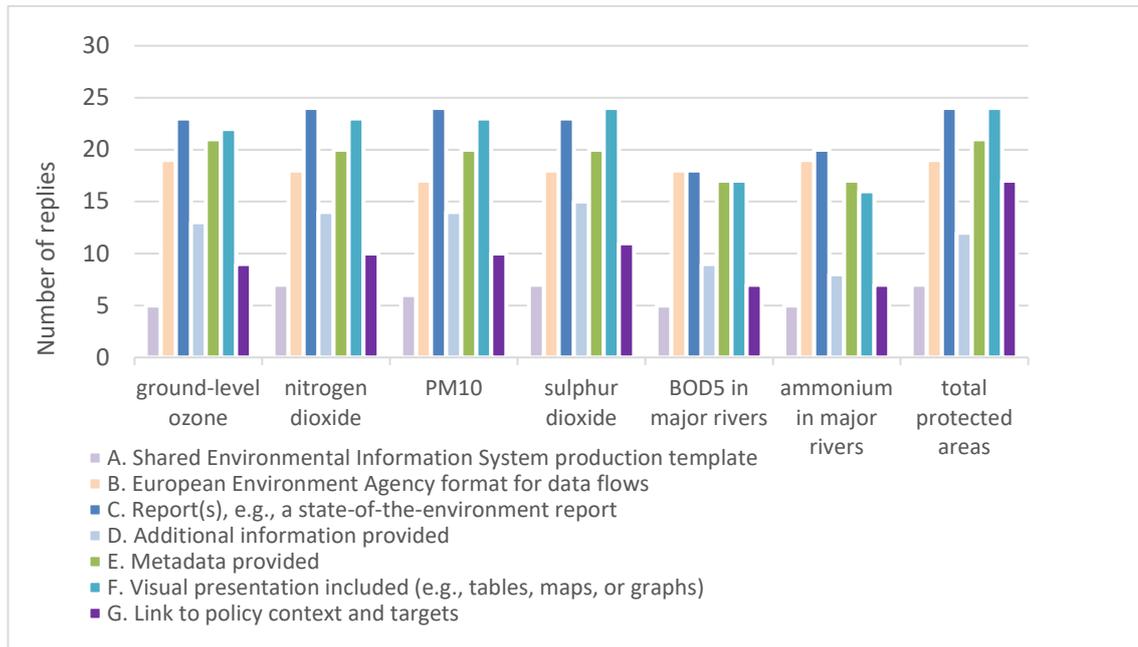
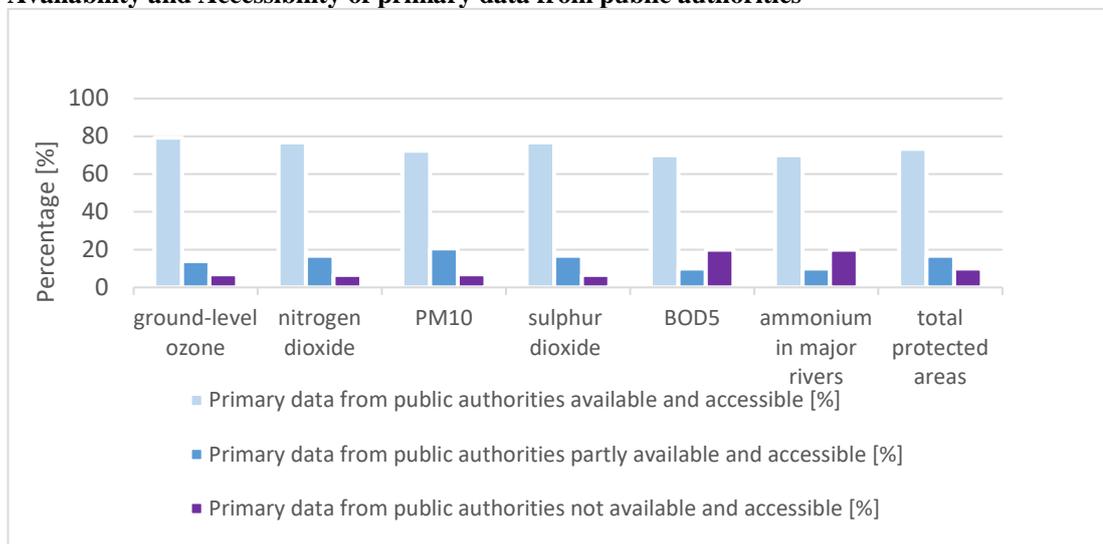


Figure 17.
Formats in which information on the data flows is presented



60. Question 16 under the same category identified for each data flow, whether primary data from public authorities is readily available to and accessible by users. The results submitted show that in 20 % of cases for BOD5 and ammonium in rivers primary data is not yet made available and accessible for users.

Figure 18.
Availability and Accessibility of primary data from public authorities



III. Lessons learned and challenges

61. The review represents a milestone in the establishment of SEIS as it records considerable progress in addressing all three of the SEIS pillars with a focus on the quality of information, which is crucial for the successful establishment of SEIS throughout the pan-

European region in support of a regular assessment process. However, on the basis of the information collected for this review, it is not possible to determine categorically whether countries are fully on track to establish SEIS in Europe and Central Asia by 2021.

62. The mandatory part of the mid-term review was limited to a few selected indicators and underpinning data flows. This approach was taken so that the review could pilot the revised assessment framework and focus on quality aspects as decided by the Working Group. It was therefore impossible to assess progress in the production and sharing of all ECE environmental indicators. While countries were encouraged to report on a longer list of ECE environmental indicators and underpinning data flows based on the assessment framework and reporting tool, none of them did so.

63. Moreover, full participation in the mid-term review by all countries in the pan-European region was not achieved with a particularly low response rate from the European Union countries. The next review would therefore benefit significantly from a higher response rate from all member States in Europe and Central Asia in order to provide a complete assessment across the entire region.

64. The main challenge is therefore to encourage all States to report on a higher number of indicators and data flows across all themes so as to provide a more complete picture of the progress achieved.

65. A positive development is the fact that in the category “institutional and organizational arrangements”, most countries reported that national legislation, plans, programmes or strategies related to the production of the data flows and legal or institutional arrangements for regular production and sharing of data between various institutions at national level were in place. These arrangements are crucial for SEIS establishment.

66. The ongoing work by countries, supported by projects, in establishing SEIS at the pan-European level has had a positive impact on the accessibility and availability of the data flows on national platforms. Most countries reported that the selected data flows were readily available and accessible on integrated platforms (see section IV.B). Some limitations have been reported, notably for BOD₅ and ammonium in major rivers and total protected areas. There is a particular need for further improvement in Central Asia.

67. Of the three themes examined, countries in South-Eastern Europe and EEA members, performed least well on theme C (on water). Further efforts by all subregions are needed in the categories of “timeliness and punctuality”, “accuracy” and “relevance” in support of regular assessments and reporting.

68. A particularly important point that was raised by countries, including EEA members, in completing their self-assessment was the fact that there are limitations in comparing data flows across the region or between countries, for example for protected areas. These limitations highlight the need for further efforts in the area of data and indicator harmonization across the region, including in view of reporting obligations and for use in thematic assessments at different geographical levels (e.g., for transboundary ecosystems or river basins).

69. These initial results will serve as a baseline for future progress reports on the establishment of SEIS and, in particular, in assessing country performance related to quality aspects, the effective operationalization of all three pillars of SEIS and the data flows underpinning the ECE set of environmental indicators. It is expected that the validation and continued review process will help to improve performance or make it more evident in support of regular assessment and reporting in the region.

III. Further steps

70. The establishment of SEIS by some countries is supported by several international capacity development mechanisms. In addition to the work of the ECE Working Group on Environmental Monitoring and Assessment and the Joint Task Force on Environmental Statistics and Indicators, a number of projects are being implemented, with support from donor countries, by EEA in Eastern Europe and the Caucasus through the European Union's European Neighbourhood Policy Instrument; and by the United Nations Environment Programme (UNEP) in Central Asia through another project funded by the European Union.

71. ECE is responsible for a portion of the EEA project in Eastern Europe and the Caucasus and, together with UNEP, is implementing a project funded by the United Nations Development Account in seven selected countries across the Caucasus, Central Asia and South-Eastern Europe. This project focuses on assessment of the status of SEIS establishment, production of the full set of ECE environmental indicators and their use for various reporting purposes, including in the context of the 2030 Agenda for Sustainable Development.

72. It is vital that ECE, UNEP and EEA continue to collaborate closely so as to maximize the effectiveness and efficiency of their activities.

73. While the above projects cannot fully address all three of the SEIS pillars, they provide a valuable source of information on and support for the production and use of ECE environmental indicators and the establishment of SEIS. At the same time, some of the performance gaps identified by the self-assessments demonstrate the continued need for assistance with a view to full compliance with all of the SEIS pillars and principles, and thus to full production and sharing of all agreed ECE environmental indicators and associated data flows by 2021.

74. The purpose of the self-assessment process is to encourage each country to identify and implement measures in order to improve or maintain a high level of performance from year to year. It is therefore essential to motivate countries to participate in the regular review process. Given the low response rate from EEA members, further efforts to achieve an adequate level of participation are needed.

75. It is therefore recommended that the establishment of SEIS and production of the ECE environmental indicators and underpinning data flows be harmonized and aligned with other monitoring and assessment processes at the regional and global levels, including in the context of the 2030 Agenda for Sustainable Development.

76. At the same time, countries are encouraged to continue to improve their regular data production and to publish environmental information online. Environmental authorities are also encouraged to work closely with their respective national statistical and other relevant agencies in order to integrate and share information.

77. As the focus of this mid-term review is on quality aspects, it would be valuable to include, as part of the next annual reporting round, an assessment of a longer list of environmental indicators and underpinning data flows. Future assessments should also aim to monitor variation from the baseline established through this review. Therefore, the following international milestones with regard to the mid-term review and the establishment of SEIS by 2021 are anticipated:

(a) In January 2019, the Committee on Environmental Policy considers the mid-term review;

(b) In 2019 and 2020, countries provide data for the next periodic reviews;

(c) In November 2020, the Committee considers a final review of the establishment of SEIS;

(d) In 2021, the Ministers consider the final review.

78. The online reporting tool, which was developed by UNEP in consultation with the Working Group, supported by ECE and EEA and made available during the mid-term review for testing, should be completed and improved as needed so that it can be used during the next review. To that end, it would be useful to identify, for each country, the national administrators in charge of environmental information and data and to encourage them to share data and information as a way of encouraging multiple uses of data and reducing the reporting burden.

IV. Comments on the SEIS Assessment Framework

79. Countries were invited to provide their feedback to the SEIS Assessment Framework to refine the reporting tools. The comments provided are summarized below. Further discussion at the 20th session of the Working Group on Environmental Monitoring and Assessment will be required to agree on the next steps.

A. General comments and suggestions

Bosnia and Hercegovina: The framework is well-designed, is not complicated to fill in.

Romania: The terms like “primary data”, “statistical data”, “aggregated data”, and “data flow” in the context of the SEIS assessment framework will need our further attention for the next SEIS questionnaire.

Republic of Moldova: In the process of fulfilling the excel file, we encountered several technical issues such as: excel not responding, hangs, freezes or stops working. Perhaps in future we may use a less demanding excel type. Separate excel files for each topic instead of a file with several protected sheets.

Croatia: Croatia keeps records on the protected areas solely in accordance with the national protection categories

B. Comments per question

D5. Are any other data sources available on the same topic?

Republic of Moldova: We understand the logic behind, D5 and D6 have a value/make sense (1 point) only if both are answered with "yes", however, there are cases where data sources are available on the same topic but lacking resources of any kind to systematically compare the data should be taken into consideration as well. The issue is not related to the accuracy of the data but rather lack of the organization's internal resources to do so, to assure the comparison process itself. That being said, we suggest to review the scoring for D5/D6.

D6. If the answer to question D5 is yes, do you systematically compare the data with data from other sources?

France: It would be nice that the vocabulary is more precisely defined: compare, qualify, validate

Republic of Moldova: We understand the logic behind, D5 and D6 have a value/make sense (1 point) only if both are answered with "yes", however, there are cases where data sources are available on the same topic but lacking resources of any kind to systematically compare the data should be taken into consideration as well. The issue is not related to the accuracy of the data but rather lack of the organization's internal resources to do so, to assure the comparison process itself. That being said, we suggest to review the scoring for D5/D6.

D7. Are data validation procedures in place?

France: It would be nice that the vocabulary is more precisely defined: compare, qualify, validate

D8. Do you carry out revisions to the data?

France: It would be nice that the vocabulary is more precisely defined: update, revision, review, correction.

D9. If the answer to question D8 is regularly or occasionally, please indicate the circumstances in which revisions are carried out.

France: Methodological changes: to be better specified (and better assessed?) in next questionnaire

D10. What is the frequency of the dissemination of the data flow?

France: It would be nice that the vocabulary is more precisely defined: disseminate, release.

D11. When was the data flow released?

France: It would be nice that the vocabulary is more precisely defined: disseminate, release.

Romania: some of the terms/questions are not very clear

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?

Romania: some of the terms/questions are not very clear

D13. What is the reference year of the data flow?

Romania: some of the terms/questions are not very clear

D14. What is the timeliness of the data flow?

Romania: some of the terms/questions are not very clear

D18. Do procedures and guidelines for data quality management exist?

Bosnia and Hercegovina: To modify the question *Do procedures and guidelines for continuous process of data quality management exist?* to: Proposal for new question: Do technology and tools to achieve the data quality exist?

D19. Are metadata available for the data flow?

Russian Federation: If the answer to a question D19 is positive, the report proposes to provide a clarification using several options. At the same time, options E, F, G, H, I require further comments to ensure completeness when answering the question.

1. It is feasible to clarify more into details what geographical coverage (item E) means: to which extend information can be disaggregated (country, federal district, constituent entity, municipality) or something else.

2. If the agency's website contains information about the person responsible for the indicator (name, phone number, e-mail address), then it is possible to include in a response of the option F. Contact information for the data and I. Information on Processor. If not, please provide examples on what the Processor stands for. What to do if the organizations that won the competition for this work are engaged in the report processing, but the regulations of the agency does not allow to publish information about them, as the Processor.

3. An additional commentary is required on the option G. Information on Rights: for instance, whether the following part of the text could fall under the item G.: "All rights on the web-site materials are protected in accordance with the Russian legislation. In case of full or partial use of the materials, a link to the web-site is required." If not (or this is not the only possible option), please provide examples.

4. It is feasible to clarify what the option H. Information on Owner stands for. For example, in Russia, if the data is collected by Rosstat as a part of a statistical survey, then it is Rosstat that owns the information. If this data is published on the agency's website, then there is no need to provide information on the owner. At the same time, the information developed by other authorities and published on the Rosstat web-site must contain a link to their developer (owner). If the situation described above is not a viable option for the option H, please provide examples.

D23. Are there any limitations in comparing the data flow across regions and countries?

France: (limitations): The question looks unclear, or not accurate enough.

D24. Is there national legislation, plans, programmes or strategies in place related to the production of the data flow?

Bosnia and Hercegovina: enable uploading of documents (transmit documents)

D25. Are there any legal or institutional arrangements for regular production and sharing of data between various institutions at national level in place?

Romania: some of the terms/questions are not very clear.
