

Economic Commission for Europe

Committee on Environmental Policy

**Working Group on Environmental
Monitoring and Assessment**

**Towards a Shared Environmental Information System:
SEIS assessment framework for the mid-term review
on assessing progress in establishing SEIS
across the pan-European region**

Draft of 9 November 2017

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I. Introduction

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.

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

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

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

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

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

The ministers emphasized that SEIS should serve multiple policy purposes, taking into account the needs of the multilateral environmental agreements, and that the work on SEIS and its development should include support and capacity-building for countries in Eastern and South-Eastern Europe, the Caucasus and Central Asia. Therefore, they invited EEA, in cooperation with its partners, to develop an outline for SEIS activities and implement them under the auspices of the United Nations Economic Commission for Europe (ECE) Committee on Environmental Policy.

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

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

- (a) The preparation of clear targets and performance indicators to monitor and evaluate the development of SEIS in the pan-European region;
- (b) The organization and shaping of the regular environmental assessment process, taking into consideration the benefits of SEIS (ECE/CEP/2013/2, paras. 38–39).

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

Regarding the second issue, the Group of Friends of SEIS prepared a document¹ to propose the organization and shape of the regular environmental assessment process to the Committee on Environmental Policy. The elaboration of the document was supported by the ECE secretariat, the United Nations Environment Programme (UNEP) and EEA.

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

B. Monitoring progress in establishing a Shared Environmental Information System

At its twentieth session, the Committee on Environmental Policy requested the Working Group to prepare an evaluation report on progress made in establishing SEIS for consideration at the Eighth Environment for Europe Ministerial Conference (ECE/CEP/2014/2, paras. 26 and 98 (ff) (iii)).

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

The Working Group further agreed on a first pan-European SEIS development milestone: 67 specific data sets that every country in the pan-European region should aim to make available and accessible online during 2015. These data sets referred to the following priorities: air pollution and ozone depletion (25 data sets); climate change (4 data sets); water (20 data sets); biodiversity (4 data sets); land and soil (2 data sets); energy (4 data sets); and waste (8 data sets).

It was furthermore discussed that the Working Group was expected to agree on additional data sets for implementation in subsequent years, with a target of 2020 for the pan-European SEIS to be fully operational, based on SEIS targets and performance indicators.

For the pan-European SEIS, each specific data set should be accompanied by information explaining the data production methodology and how the data should be interpreted. The data sets also need to be up to date for the latest production period and indicate sources of additional information.

¹ <https://www.unece.org/fileadmin/DAM/env/documents/2016/ece/ece.batumi.conf.2016.inf.15.e.pdf>

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

C. The current mid-term review of progress

The Eighth Environment for Europe Ministerial Conference took place in Batumi, Georgia, from 8 to 10 June 2016. The Conference culminated in a Ministerial Declaration that stated that: “While welcoming progress in developing the Shared Environmental Information System (SEIS) to support a regular process of environmental assessment, we invite countries to continue their efforts and to further develop their national information systems to have SEIS in place in the countries of Europe and Central Asia by 2021” (ECE/BATUMI.CONF/2016/2/Add.1).

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

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

At its nineteenth session, the Working Group examined the results of the review of the SEIS assessment framework (ECE/CEP/AC.10/2017/5). The Working Group agreed that it would be necessary to pilot the assessment framework and its associated reporting application before moving on to data collection for the mid-term assessment. It was also noted that steps would need to be taken to ensure that the assessment framework was streamlined with other initiatives, such as the data quality assessment framework being developed by EEA. Armenia, Bosnia and Herzegovina, Kazakhstan, the Russian Federation and the former Yugoslav Republic of Macedonia agreed to participate in piloting the SEIS assessment framework. UNEP and EEA also took part in the process. It was further agreed that the secretariat would prepare a guidance document and clarify which of the ECE environmental indicators and underlying data flows from the core set could be used for the piloting. It was also agreed that the full list of questions would be converted into a paper-based questionnaire that could be shared with other relevant agencies on the national level. The Working Group noted that the SEIS mid-term assessment would be reviewed at the twentieth session of the Working Group (Geneva, 26–27 March 2018). The mid-term review will pilot the SEIS Assessment Framework across the whole pan-European region.

This document aims to provide information on the revised SEIS assessment framework for conducting the mid-term review on establishing a SEIS in the pan-European region. The

document provides a brief introduction to SEIS (chapter II), the reporting process (III), the selection of data flows to be reported upon at the mid-term (IV) and a guidance document that explains how to answer the data flow-level questionnaire (V). The document concludes by explaining how responses to the questionnaire will be weighted to provide performance scores (chapter VI). In annex I, a tentative timeline for the mid-term review is presented. A template for the mid-term review report is attached in annex II, as proposed by the Bureau of the Committee on Environmental Policy (ECE/CEP/2017/16, annex II). The full list of ECE environmental indicators is included in Annex III.

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

D. Organizational arrangements

The Working Group on Environmental Monitoring and Assessment is supported by the ECE secretariat, in cooperation with EEA and UNEP. The organizations are helping to review the online availability and accessibility of data and information provided by the countries in the pan-European region under SEIS.

They thus help to ensure that the pan-European SEIS is managed effectively by the countries in accordance with the SEIS targets and performance indicators. ECE and EEA, in cooperation with UNEP, also help to ensure that the data and information are compatible with those produced and shared at other governance levels, such as under the Global Environment Outlook (GEO) process led by UNEP.

The pan-European SEIS is already active to a degree and is beginning to organize, regularize and coordinate the pan-European environmental knowledge base. When it is fully operational, in 2020, it will provide extensive data and information for the generation of assessments, whether for the environment as a whole or for thematic areas. It will also be available to underpin environmental policy development in the pan-European region and the identification of emerging issues at the regional level, as well as for providing regional input to global processes.

An overview on main activities and milestones in the establishment of SEIS in the pan-European region is presented in table 1.

Table 1. Overview on main activities and milestones in the establishment of SEIS in the pan-European region

<i>Date</i>	<i>Output</i>	<i>Responsibility / Event</i>
21–23 September 2011	Call for establishment of a regular environmental assessment process and a SEIS across the pan-European region to support this objective	7 th Environment for Europe Ministerial Conference in Astana
22–23 October 2013	Establishment of Group of Friends of SEIS	19 th session of the ECE Committee on Environmental Policy

<i>Date</i>	<i>Output</i>	<i>Responsibility / Event</i>
28–31 October 2014	Adoption of targets and performance indicators to monitor and evaluate the development of SEIS in the pan-European region The Committee on Environmental Policy requested the Working Group on Environmental Monitoring and Assessment to prepare an evaluation report on progress made in establishing SEIS for consideration at the Eighth Environment for Europe Ministerial Conference	20 th session of the ECE Committee on Environmental Policy
2015	Preparation of a Progress Report to evaluate SEIS establishment in the pan-European region based on 67 specific data sets that every country in the pan-European region should report on.	ECE with support of EEA, UNEP
8–10 June 2016	Ministerial Declaration stated that: “While welcoming progress in developing the Shared Environmental Information System (SEIS) to support a regular process of environmental assessment, we invite countries to continue their efforts and to further develop their national information systems to have SEIS in place in the countries of Europe and Central Asia by 2021” The Committee on Environmental Policy was invited to convene a mid-term review in 2018 to assess progress in the implementation.	8 th Environment for Europe Ministerial Conference in Batumi
28–29 June 2016	Several decisions and recommendations made regarding reporting on progress in establishing the SEIS (ECE/CEP/AC.10/2016/2, paras. 31-32). It was agreed that the secretariat would revise the review criteria and integrate a quality component as part of the SEIS assessment framework.	18 th session of the Working Group on Environmental Monitoring and Assessment
27–28 June 2017	The Working Group examined the results of the review of the SEIS assessment framework (ECE/CEP/AC.10/2017/5). The Working Group agreed that it would be necessary to pilot the assessment framework and its associated reporting application before moving on to data collection for the mid-term assessment.	19 th session of the Working Group on Environmental Monitoring and Assessment
2017/2018	Mid-term review of progress in establishing SEIS in the pan-European region	

II. Shared Environmental Information System – Overview and principles

For the pan-European region, EEA regularly reported on the state of the environment in the past as a support to the Environment for Europe process. The first comprehensive assessment by EEA of the state of the pan-European environment was presented in Sofia in 1995. Updated assessments were presented at the Ministerial Conferences in Aarhus (Denmark) in 1998, Kyiv in 2003 and Belgrade in 2007.²

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

A vast amount of environmental data on the state of Europe's environment, trends, pressures and drivers is being collected not only for policymakers but also to provide public access to data. As part of this process within the European Union, and to maximize the use of environmental data, the European Commission called for SEIS, in 2008, to connect existing databases and to make data more accessible.³ Since then, SEIS has become a collaborative initiative of the European Commission together with EEA and the 39 countries of the European environment information and observation network (Eionet).⁴

The Seventh Environment for Europe Ministerial Conference furthermore established a regular process of environmental assessment for the pan-European region based on SEIS principles.

In the pan-European region⁵ SEIS should function within a framework of enhanced networking and cooperation with and between national authorities concerned with environmental information and statistics. It should serve multiple policy purposes including reporting for multilateral environmental agreements.

In response to the ministers' decision and in accordance with the approved pan-European SEIS targets and performance indicators (see ECE/CEP/AC.10/2015/2), the Committee on Environmental Policy mandated the Working Group on Environmental Monitoring and Assessment to review the progress of member States in establishing SEIS.

SEIS should be seen as an approach to be followed for facilitating regular environmental assessments and reporting. At the heart of SEIS are existing data and information flows relevant at the country as well as the international level, which should be linked with the support of modern technologies such as the Internet and shared between existing networks.

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

The international data and information flows should make it possible to track changes in the environment, again as per specific thematic areas and the interlinkages between them,

² <https://www.eea.europa.eu/themes/regions/pan-european/pan-european-environment>

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

⁴ <https://www.eea.europa.eu/about-us/what/shared-environmental-information-system-1/shared-environmental-information-system>

⁵ The pan-European region under the Environment for Europe Process covers the full membership of ECE, i.e., the 56 ECE member States.

subregionally or regionally, and to provide information on the progress made on the agreed regional or global commitments. They should help in:

- (a) Preparing assessments on the state of the environment at the subregional, regional or global levels (e.g., a pan-European assessment, or the UNEP Global Environmental Outlook);
- (b) Understanding changes or progress in addressing the issues covered by the regional multilateral environmental agreements and further developing them or strengthening their implementation;
- (c) Contributing to global initiatives related to sustainable development, for which environmental data and information are key.

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

SEIS is based on the following seven principles:⁶

1. Information should be managed as close as possible to its source;
2. Information should be collected once, and shared with others for many purposes;
3. Information should be readily available to public authorities and enable them to easily fulfil their legal reporting obligations;
4. Information should be readily accessible to end-users, primarily public authorities at all levels from local to European, to enable them to assess in a timely fashion the state of the environment and the effectiveness of their policies, and to design new policy;
5. Information should also be accessible to enable end-users, both public authorities and citizens, to make comparisons at the appropriate geographical scale (e.g. countries, cities, catchment areas) and to participate meaningfully in the development and implementation of environmental policy;
6. Information should be fully available to the general public, after due consideration of the appropriate level of aggregation and subject to appropriate confidentiality constraints, and at national level in the relevant national language(s);
7. Information sharing and processing should be supported through common, free open-source software tools.

The development of SEIS is underpinned by three main pillars:

- (a) Cooperation: building partnerships between the providers and users of data and information;
- (b) Common content: generating policy-relevant and comparable information;

⁶ COM(2008) 46 final Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions Towards a Shared Environmental Information System (SEIS)

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

Across the pan-European region, the process of establishing SEIS in support to regular assessment and reporting is steered and implemented by ECE with guidance and support from UNEP and EEA.

At the European Union level, a recent report from the European Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on Actions to Streamline Environmental Reporting suggested to strengthen cooperation with relevant international organizations with the view to streamline reporting and information management between the European Union level and the international level⁷.

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

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

The assessment framework is based on responses by countries to questions on selected data flows in the following categories: relevance, accuracy, timeliness and punctuality, accessibility, clarity, comparability and institutional and organizational arrangements.

A reporting mechanism, currently known as the SEIS reporting tool, has been established and further developed by the Working Group on Environmental Monitoring and Assessment together with ECE, UNEP and EEA. This tool will serve as the basis to pilot the reporting and online tool across the pan-European region and for conducting the mid-term review of progress in establishing SEIS.

During a SEIS Assessment Framework Technical Meeting and Country Workshop (Vienna, 13–15 September 2017), the reporting tool was further developed with countries that volunteered at the thirteenth session of the Joint Task Force on Environmental Statistics and Indicators (Geneva, 29–30 June 2017). The workshop was also attended by representatives of ECE, UNEP and EEA.

Based on the outcomes of the meeting in Vienna, the assessment framework has been updated and further discussed during the fourteenth session of the Joint Task Force (Rome, 2–3 October 2017).

During this meeting member States agreed on the next steps (see annex I) including on the modalities and, tentatively, data flows (see next chapter) that would be included in the assessment of SEIS performance for the mid-term review as proposed as an outcome of the Batumi Conference.

This document intends to provide further information on the SEIS reporting tool that was developed in line with SEIS principles as the basis for the mid-term review. The SEIS reporting tool is a self-assessment to be undertaken by the countries using a web-based tool.

⁷ SWD(2017) 230 final Commission Staff Working Document, Fitness Check of Reporting and Monitoring of EU Environment Policy Accompanying the document Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Actions to Streamline Environmental Reporting

The document also describes how a SEIS performance score for the regional assessment of progress in establishing SEIS at the pan-European level is calculated, as developed jointly with countries. A first proposal on how to calculate performance scores was developed with pilot countries in the Vienna workshop and then presented during the fourteenth session of the Joint Task Force. Countries were invited to provide comments on the proposal. The review criteria, within the seven categories, were weighted, based on which the SEIS performance scores can be calculated. All data flows will be rated according to the review criteria and performance scores given.

This document was revised in the light of comments received in October and November 2017 to finalize the online reporting tool and will be presented as an official document to the twentieth meeting of the Working Group and, depending on decisions taken by the Working Group and later the Committee on Environmental Policy, will be further reviewed in preparation for the final review of progress in 2020–2021.

The web-based SEIS reporting tool:

- (a) Acts as a data interface by providing a link to the data;
- (b) Provides an online assessment framework to be completed by the countries;
- (c) Provides a scoring mechanism and ultimately evaluates to what extent SEIS is being established in the pan-European region;
- (d) Allows subregional comparisons in support of a regular process of environmental assessment, as well as an overall assessment of regional performance towards the implementation of SEIS principles.

IV. Selected data flows for the mid-term review

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

The secretariat therefore proposes that the mid-term assessment be carried out against the data flows underlying following environmental indicators from the core set of UNECE environmental indicators:

A. Air pollution and ozone depletion

<i>Indicator</i>	<i>Data flow</i>
<i>A2. Ambient air quality in urban areas</i>	PM10 SO ₂ - sulphur dioxide NO ₂ - nitrogen dioxide O ₃ - ground-level ozone

C. Water

<i>Indicator</i>	<i>Data flow</i>
<i>C10. BOD5 and concentration of ammonium in rivers</i>	BOD5 in rivers Ammonium in rivers (NH ₄)

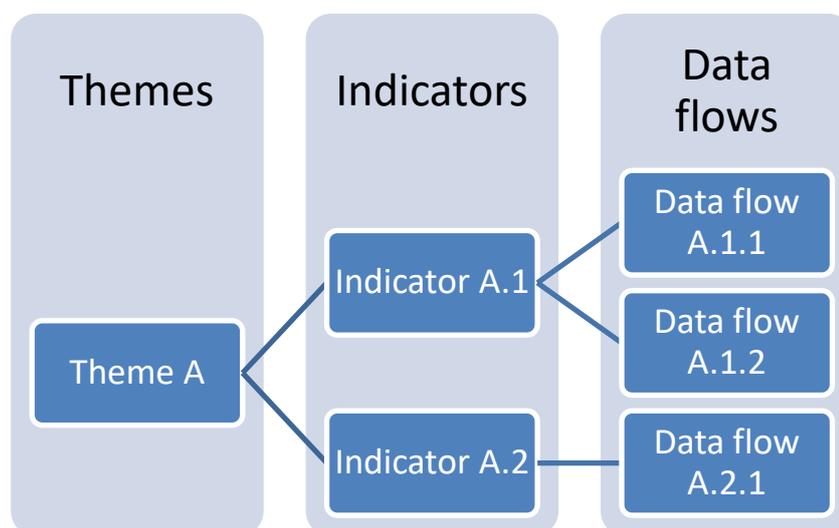
D. Biodiversity

<i>Indicator</i>	<i>Data flow</i>
<i>D1. Protected areas</i>	Total protected areas by IUCN categories

Countries are encouraged to report on a longer list of ECE environmental indicators and underpinning data flows.

V. Guidance document (with glossary) on mid-term reporting on progress under SEIS

The questionnaire and this accompanying guidance document have been designed to support the user in reporting on progress under SEIS by using the SEIS assessment framework. The SEIS assessment framework questionnaire has been designed for the data flow level, as illustrated in the figure below.



The questionnaire is specific to the data flow underlying the environmental indicator⁸ that it targets and has to be answered once for each separate data flow (e.g. BOD5 in rivers).

All questions that are scored (please see table 3) are mandatory as they will be used to calculate performance scores. Other questions are optional, but countries are encouraged to answer all questions.

It is also possible to review the SEIS assessment framework using the online reporting application, available at:

<http://environmentlive.unep.org/seis/>

⁸ See <http://www.unece.org/env/indicators.html>.

Click on the log in button and use the credentials (user name and password) that will be provided to you when the system goes live in December 2017.

Additional information on the SEIS assessment framework can be found in the background documentation prepared for the nineteenth session of the Working Group on Environmental Monitoring and Assessment (ECE/CEP/AC.10/2017/5) available at:

<http://www.unece.org/index.php?id=44829>

If you wish to receive further guidance, or if you have any questions, please contact the secretariat at WGEMASec@unece.org.

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

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

Table 2 below provides the criteria for review as agreed by the Working Group in June 2017.

The questionnaire has to be answered once for each separate data flow.

The questionnaire begins with an introductory form asking for three pieces of information:

- (a) The name of the country for which the questionnaire is being completed
- (b) The name of the institution that is taking the lead in completing the questionnaire;
- (c) Individual or organizational contact points for the data or metadata, including information on how to reach the contact points. This person will be contacted by the secretariat in case of need for clarification. The person will also likely be the person who takes the lead in completing the questionnaire.

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

A series of 23 questions then follows. Many of the questions require only a yes or no answer, or the ticking of a box. Questions D1, D2, D3, D5, D8, D15, D16, D17, D18, D21, D22 and D23 have a follow-up question. If you wish to qualify or clarify your answers, please send this information to the secretariat separately, but this should not be necessary.

Table 2: Quality components and Criteria for review

<i>Quality component/Review Criteria/Category</i>	<i>Description⁹</i>
Accuracy	The degree to which the information correctly describes the phenomena it was intended to measure.
Relevance	The degree to which the information meets the real or perceived needs of users (e.g. in terms of coverage, content, detail)
Timeliness and punctuality	Timeliness describes the length of time between data availability and the event or phenomenon they describe. Punctuality describes the time lag between the actual delivery of the data and the target date when it should have been delivered.
Accessibility	The ease with which users are able to access at any time the data and its supporting information online
Clarity	The degree to which information is presented in a clear and understandable form and released in a suitable and convenient manner, with supporting metadata and guidance.
Comparability	The extent to which differences between statistics can be attributed to differences between the true values of the statistical characteristic, or to methodological differences. Comparability includes: (i) comparability over time — the extent to which data from different points in time can be compared; (ii) comparability through space — the extent to which data from different countries and/or regions can be compared. The provision and application of international standards is particularly important here; (iii) 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

Relevance

D1. Do you actively or passively collect user feedback to assess whether the data flow meets the needs of users? Please specify how user feedback is collected.

The purpose of this question is to identify whether the disseminated information is adjusted to the users' needs. This question can be answered with actively (e.g. user satisfaction surveys), passively, or no user feedback is collected. You can also specify further how user feedback is collected more in detail.

D2. Is the data flow used for more than one purpose (multipurpose use, e.g. for production of national indicators, production of regional indicators, various reporting obligations)?

The purpose of this question is to assess whether the data flow is used for more than one purpose. Please answer according to your understanding with yes, partly or no. If the answer to this question is yes or partly, please specify.

⁹ Sources include : <http://sdmx.org/>, <http://ec.europa.eu/eurostat/documents/64157/4372717/Eurostat-Quality-Assurance-Framework-June-2013-ver-1-1-EN.pdf/352234ca-77a0-47ca-93c7-d313d760bbd6>

D3. Do you regularly improve your data (e.g. quality of data, representativeness, time or spatial coverage) to meet the needs of users? If the answer to this question is yes, please specify how you improve the data.

The purpose of this question is to see whether action is taken to improve the data to meet the needs of the users. This question needs to be answered with yes or no. If the answer to the first question is “yes”, please specify how the data is improved. This is an open question and you can type an extended response, though without formatting options.

Accuracy

D4. Where do you get the primary data from (please select all options that apply)?

The purpose of this question is to check the reliability of the data. This question allows the ticking of a number of boxes. Please tick as many boxes as apply.

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

The purpose of this question is to determine whether the data provided by a source can be checked for bias. This question requires only a yes or no answer.

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

The purpose of this question is to determine whether the data can be checked for bias. This question requires only a yes or no answer.

D7. Are data validation procedures in place?

The purpose of this question is to determine whether the data quality is checked. This question can be answered with yes, partly or no.

D8. Do you carry out revisions to the data?

The purpose of this question is to determine whether data are adjusted when necessary. This question can be answered with regularly, occasionally or no.

D9. If the answer to question D8 is regularly or occasionally, please indicate the circumstances in which revisions are carried out (please select all options that apply).

The purpose of this question is to identify the reason for revisions. This question allows the ticking of a number of boxes. Please tick as many boxes as apply.

Timeliness and punctuality

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

The purpose of this question is to determine how regularly the data is disseminated. Please tick the box that applies.

D11. When was the data flow released?

The purpose of this question is to determine when the data flow was published. Please indicate the date.

D12. What is the punctuality of the data flow online release?

The purpose of this question is to assess whether there was a delay in the release of the data flow compared to the planned date of the release. Please specify the delay in days, weeks or months.

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

The purpose of this question is to assess the temporal coverage of the data flow. Please specify.

D14. What is the timeliness of the data flow?

The purpose of this question is to determine whether the data flow was released in time to be policy relevant. Please indicate the timeliness by calculating the release year minus the reference year

Accessibility

D15. Is the data flow readily available and accessible online for users on any national platform? If the answer to this question is yes, please provide the link(s) to all platforms where the data flow is accessible. Please also specify whether there is an integrated platform available that provides access to all data flows and core environmental indicators.

The purpose of this question is to check the availability of information to the public. This question requires only a yes or no answer. If the answer to the question is yes, please provide the link(s) of the platforms and specify whether there is an integrated platform in place.

D16. Is the primary data from public authorities readily available and accessible for users? If the answer to this question is no or partly please specify the restrictions.

The purpose of this question is to determine whether there are restrictions to obtain data. This question can be answered with yes, no or partly. If the answer to this question is no or partly please specify the type of restrictions.

D17. In what formats is the information on the data flow presented? (Please select all options that apply.)

The purpose of this question is to see how information is represented and made available to the public. This question allows the ticking of a number of boxes. Please tick as many boxes as apply. If you tick the box “Other”, please provide a short description of the format.

Clarity

D18. Do procedures and guidelines for data quality management exist? If the answer to this question is yes, please specify.

The purpose of this question is to determine reliability. This question requires a yes or no answer. If the answer is “yes”, please specify what resources, such as procedures or guidelines, are available to assess data quality in general.

D19. Are metadata available for the data flow? If the answer to this question is yes, please select all options that apply.

The purpose of this question is to determine if further explanations including of the methods are provided and if the methods meet standards. This question requires a yes or no answer. If the answer is “yes”, please describe the metadata by ticking as many boxes as apply. If you tick the box “Other”, please provide a short description of the kind of metadata.

Comparability

D20. Do you apply internationally agreed procedures in the production of the data flow (e.g., compilation, data adjustments and transformations and statistical analysis)?

The purpose of this question is to determine whether standard techniques are used. Please answer this question with yes, partly or no.

D21. Are there any breaks in the time series of the data flow (e.g. owing to a change of methods)? If yes, please explain.

The purpose of this question is to determine consistency and/or impacts. This question requires a yes or no answer. If the answer is “yes”, please provide the information on such breaks.

Institutional and organizational arrangements

D22. Are there national legislation, plans, programmes or strategies in place related to the production of the data flow? If the answer to this question is yes, please specify.

The purpose of this question is to determine whether there are legislation, plans, programmes or strategies in place to identify necessary information. This question requires a yes or no answer. If the answer is “yes”, please provide the names of the legislation, plans, programmes or strategies and the period it covers. Also, please list all institutions that are involved in producing the data flow and provide the link to the most relevant website where further information may be found.

D23. Are there any legal or institutional arrangements for regular production and sharing of data between various institutions at national level in place? If the answer to this question is yes, please specify.

The purpose of this question is to determine whether there are inter-agency agreements in place that regulate the regular production of data flows and exchange and sharing of information and data. Inter-agency agreements include legally-binding procedures, specific inter-institutional agreements or procedures for production of data flows and exchange of data and information. This question requires a yes or no answer. If the answer is “yes”, please specify.

Box. Glossary

Data

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

Data Flow

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

Data quality

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

Data set

Any organized collection of data. (Source: OECD)

Data dissemination

The release of information. Data dissemination consists of distributing or transmitting data to users. In the context of SEIS data dissemination would be through online media.

Data validation

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

Environmental monitoring

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

Frequency of dissemination

The time interval at which the data are released over a given time period. (Source: Statistical Data and Metadata eXchange (SDMX) (2016))¹⁰

Indicator

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

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

Indicator profile (EEA environmental indicators)

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

Indicator specification (EEA environmental indicators)

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

Integrated platform

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

Metadata

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

Primary data

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

Punctuality

The time lag between the actual delivery of the data and the target date when it should have been delivered. Punctuality may be calculated, for instance, with reference to target dates

¹⁰ <https://sdmx.org/>

announced in an official release calendar, laid down by regulations or previously agreed among partners. (Source: SDMX (2016))

Reference period or reference year

Timespan or point in time to which the measured observation is intended to refer. (Source: SDMX (2016))

Release calendar

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

Timeliness

Length of time between data availability and the event or phenomenon they describe. It is measured with respect to the time lag between the end of the reference period/year and the release of data. (Source: SDMX (2016))

Statistics

Numerical data relating to an aggregate of individuals; the science of collecting, analysing and interpreting such data. (Source: OECD)

User

Primarily public authorities at all levels from local to pan-European as well as citizens (Source: EU)

Quality assurance

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

VI. Calculating a SEIS performance score

The following elements guide the performance score:

- (a) Not all aspects of the SEIS assessment framework can be considered of equal importance when determining a performance score, so a weighting scheme is needed;
- (b) Many of the questions in the questionnaire are assigned a score (0-1)
- (c) All questions with a score are weighted equally;
- (d) Each of the seven categories (review criteria) of the questionnaire is assigned a percentage weight.
- (e) The weights of all categories sum to 100 per cent.
- (f) Each data flow receives an overall performance score (0—100 %);
- (g) Each environmental indicator can be reported alongside an average of the scores assigned to the data flows underlying the indicator;

- (h) The average of all performance scores for data flows gives the overall performance score
- (i) Performance scores are presented in four bands:
- 0-50%: Requires improvement
 - 51-75%: Moderate performance
 - 76-95%: Good performance
 - 96-100%: SEIS Champion

Besides the questions posed to a country on selected data flows, the secretariat will answer one question (question D23) by visiting the website or websites identified by the country. The answer will not be scored (see table 3, below) and will not therefore be used in the performance scoring.

A. Scoring of questions

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

Table 3. Question scoring

<i>Category</i>	<i>Question</i>	<i>Format of response</i>	<i>Scoring of response</i>
Relevance	D1. Do you actively or passively collect user feedback to assess whether the data flow meets the needs of users?	Actively, passively or no user feedback is collected	Actively=1 Passively No=0
	Please specify how feedback is collected.	Open	None
	D2. Is the data flow used for more than one purpose (multipurpose use, e.g. for production of national indicators, production of regional indicators, various reporting obligations)?	Yes, partly or no	Yes=1 Partly=0.5 No=0
	If the answer to this question is yes or partly, please specify.		
	D3. Do you regularly improve your data (e.g. quality of data, representativeness, time or spatial coverage) to meet the needs of users?	Yes or no	Yes=1 No=0

<i>Category</i>	<i>Question</i>	<i>Format of response</i>	<i>Scoring of response</i>	
	If the answer to this question is yes, please specify how you improve the data.	Open	None	
Accuracy	D4. Where do you get the primary data from (please select all options that apply)?	A. We use the data that we produce ourselves B. We use other producers' data C. We use estimates obtained through, e.g. models, objective estimation methods	A-C=1 Max. score is 1	
	D5. Are any other data sources available on the same topic?	Yes or no	Yes=1 No=0	
	D6. If the answer to question D5 is yes, do you systematically compare the data with data from other sources?	Yes or no	Yes=1 No=0	
	D7. Are data validation procedures in place?	Yes, partly or no	Yes=1 Partly=0.5 No=0	
	D8. Do you carry out revisions to the data?	Regularly, occasionally or no	Regularly=1 Occasionally=1 No=0	
	D9. If the answer to question D8 is regularly or occasionally, please indicate the circumstances in which revisions are carried out (please select all options that apply).	A. Methodological change B. New data C. Errors D. Mandated	None	
	Timeliness and punctuality	D10. What is the frequency of dissemination of the data flow	Monthly, annually, multi-annually, or no regular frequency	Monthly, annually=1 Multi-annually=0.5 No regular frequency=0
		D11. When was the data flow released?	Date	None
D12. What is the punctuality of the data flow online release?		Deviation in days, weeks or months from planned release date	Deviation less than 4 days = 1 Deviation between 4 days and 8 weeks = 0.5 Deviation more than 8 weeks = 0	
D13. What is the reference year of the data flow?		Year	None	
D14. What is the timeliness of the data flow?		Timeliness = Release year - Reference year	1 year = 1	

<i>Category</i>	<i>Question</i>	<i>Format of response</i>	<i>Scoring of response</i>
			2 years = 0.5
			More than 2 years = 0
Accessibility	D15. Is the data flow available and accessible online for users on any national platform?	Yes or no	Yes=1 No=0
	If the answer to this question is yes, please provide the link(s) to all platforms where the data flow is accessible.	Open	None
	D16. Is the primary data from public authorities readily available and accessible for users?	Yes, partly or no	Yes=1 Partly=0.5 No=0
	If the answer to this question is no or partly please specify the restrictions.	Open	None
	D17. In what formats is the information on the data flow presented? (Please select all options that apply)	A. SEIS production template B. EEA format for data flows C. Report(s) e.g., a state of the environment report D. Additional information provided E. Metadata provided F. Visual presentation included (e.g., tables, maps, or graphs) G. Link to policy context and targets	Score=1 if one of the formats from A-B ticked. Score = 0.5 if one or more of C-G boxes ticked
Clarity	D18. Do procedures and guidelines for data quality management exist?	Yes or no	Yes=1 No=0
	If the answer to this question is yes, please specify.	Open	None
	D19. Are metadata available for the data flow?	Yes or no	Yes=1 No=0
	If the answer to this question is yes, please select all options that apply.	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	Score=0.1 for each box A-J ticked Scores are summed, maximum score = 1

<i>Category</i>	<i>Question</i>	<i>Format of response</i>	<i>Scoring of response</i>
		H. Information on Owner	
		I. Information on Processor	
		J. Data flows(s) made available in English	
		K. Data flow(s) made available in Russian	
		L. Other (please specify)	
Comparability	D20. Do you apply internationally agreed procedures in the production of the data flow (e.g. compilation, data adjustments and transformations and statistical analysis)?	Yes, partly or no	Yes=1 Partly=0.5 No=0
	D21. Are there any breaks in the time series of the data flow (e.g. owing to a change of methods)?	Yes or no	Yes=0 No=1
	If yes, please explain.	Open	None
	<i>Question answered by the secretariat:</i>	Yes, partly or no	None (as answered by the secretariat)
	D24. Are there any limitations in comparing the data flow across regions and countries?		
	If the answer to this question is yes or partly, please describe the limitations.	Open	None
Institutional and organizational arrangements	D22. Are there national legislation, plans, programmes or strategies in place related to the production of the data flow?	Yes or no	Yes=1 No=0
	If the answer to this question is yes, please specify.	Open (name of legislation, plan, programme or strategy; period covered; all institutions involved; website)	None
	D23. Are there any legal or institutional arrangements for regular production and sharing of data between various institutions at national level in place?	Yes or no	Yes=1 No=0
	If the answer to this question is yes, please specify.	Open	None

B. Weighting of categories

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

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

Table 4: Weighting of categories

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

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

Annexes

Annex I
Timeline for the mid-term review and beyond

<i>Timeline</i>	<i>SEIS mid-term review</i>
October–November 2017	Finalization of the SEIS assessment framework by the secretariat in consultation with member States and relevant international organizations. Translation
November–December 2017	Generation of online tool by UNEP
December 2017–February 2018	Data provision by countries using the online tool
March 2018	Analysis and compilation by the secretariat. Production of the first draft of the SEIS mid-term assessment
26–27 March 2018	Consideration of the draft mid-term assessment during the twentieth meeting of the Working Group on Environmental Monitoring and Assessment
April–June 2018	Revision of the draft mid-term assessment by the secretariat and validation by member States Finalization of the mid-term review by means of an online consultation
July–August 2018	Editing of the mid-term review and submission for translation and issue
13–16 November 2018	Consideration of the mid-term assessment by the Committee on Environmental Policy
2019	Working Group adjusts the SEIS assessment framework, as necessary
12–15 November 2019	Secretariat reports on progress to the Committee on Environmental Policy
2020	Data provision by countries
10–13 November 2020	Committee on Environmental Policy considers SEIS final assessment
2021	Ministers consider the SEIS assessment (to be confirmed)

Annex II

Template for the mid-term review report

Proposed template for preparing reports for the mid-term review

1. Title of the report.
2. Overview of main achievements and, as appropriate, key findings or key messages (up to three pages).
3. Lessons learned and challenges (up to one page).
4. Further steps (up to one page).
5. Fact sheets on key findings or key messages, including their quantitative representation through graphs and pie charts to ensure a user-friendly and interactive presentation of the mid-term review reports (up to three pages).

The mid-term report should be up to 4,500 words (up to eight pages), font Times New Roman, size 10.

Annex III

Full list of ECE environmental indicators

A. Air pollution and ozone depletion

- A1. Emissions of pollutants into the atmospheric air (updated October 2014)
- A2. Ambient air quality in urban areas (updated October 2014)
- A3. Consumption of ozone-depleting substances (updated October 2014)

B. Climate change

- B1. Air temperature (updated October 2014)
- B2. Atmospheric precipitation (updated October 2014)
- B3. Greenhouse gas emissions (updated October 2014)

C. Water

- C1. Renewable freshwater resources (updated October 2014)
- C2. Freshwater abstraction (updated October 2014)
- C3. Total water use (updated October 2014)
- C4. Household water use per capita (updated October 2014)
- C5. Water supply industry and population connected to water supply industry (updated October 2014)
- C7. Water losses (updated October 2014)
- C8. Reuse and recycling of freshwater (updated October 2014)
- C9. Drinking water quality (updated October 2014)
- C10. BOD and concentration of ammonium in rivers (updated October 2014)
- C11. Nutrients in freshwater (updated October 2014)
- C12. Nutrients in coastal seawaters (updated October 2014)

C13. Concentrations of pollutants in coastal seawater and sediments (except nutrients)
(updated October 2014)

C14. Population connected to wastewater treatment (updated October 2014)

C15. Wastewater treatment facilities (updated October 2014)

C16. Polluted (non-treated) wastewaters (updated October 2014)

D. Biodiversity

D1. Protected areas (updated October 2014)

D3. Forests and other wooded land (updated October 2014)

D4. Threatened and protected species (updated October 2014)

D5. Trends in the number and distribution of selected species (updated October 2014)

E. Land and soil

E1. Land uptake (updated October 2014)

E2. Area affected by soil erosion (updated October 2014)

F. Agriculture

F2. Fertilizer consumption (updated October 2014)

F4. Pesticide consumption (updated October 2014)

G. Energy

G1. Final energy consumption

G2. Total primary energy supply

G3. Energy intensity

G4. Renewable energy consumption

H. Transport

H1. Passenger transport demand (updated October 2014)

H2. Freight transport demand (updated October 2014)

H3. Composition of road motor vehicle fleet by fuel type (updated October 2014)

H4. Age of road motor vehicle fleet (updated October 2014)

I. Waste

I1. Waste generation (updated October 2014)

I2. Management of hazardous waste (updated October 2014)

I3. Waste reuse and recycling

I4. Final waste disposal

J. Environmental financing
