SHARED EUROPEAN AND NATIONAL STATE OF THE ENVIRONMENT (PHASE 3): SENSE-3

Project Plan

European Environment Agency

Version management

Number	Date	Changes	Author
1.0	28.05.2013	Project plan for NFP consultation	Sven Schade (SSC) and Darja Lihteneger (DLI)
1.1	24.07.2013	Revisions after consultaiton	SSC

Table of contents

Terms and Definitions

DaViz	A web tool developed by the European Environment Agency which helps creating interactive data visualizations easily through the web browser, no extra tools are necessary. It is free and open source (http://daviz.eionet.europa.eu/learn-more).
Environmental indicator	An environmental indicator is a measure, generally quantitative, that can be used to illustrate and communicate complex environmental phenomena simply, including trends and progress over time – and thus helps provide insight into the State of the Environment (SOE).
SEIS	The Shared Environmental Information System aims (amongst others) at the streamlining of EU reporting requirements towards fully on-line reporting. It promotes seven fundamental principles for sharing environmental information, and resides on the three pillars for implementation. Both, the principles and pillars can directly be specified for the sharing of SOE information – as a subset of environmental information. For a detailed explanation of SENSE as a SEIS implementation with a focus on implementing an approach for online sharing of national and European information on the state and outlook of the environment, see the SENSE-2 final report.
SENSE	The process for improving the sharing of environmental indicators between the national, sub-national and European levels. It includes capacity building activities for making Eionet use SOE Online and experiments for advancing this infrastructure.
SENSE-3	The third phase of the SENSE process, which focusses on the country support to the European Environment - State and Outlook Report 2015 (SOER 2015), i.e. primarily for SOER 2015 – Part C.
SOE Online	The infrastructure that supports the exchange and management of SOE information using web technologies, for which SENSE is the supporting process for the sharing of environmental indicators between the national, sub-national and European levels. It is an online element to provide the underpinning content for environmental reporting and thus also provides a backend to SOER 2015 Online. The added value of SOE Online is to render the whole SOER process sustainable in the future, i.e. also beyond 2015.
SOER 2015 – Part C	The part of SOER 2015 that deals with the national level, including its relation to the European dimension and cross-country comparisons. SOER 2015 – Part C is provided as part of SOER 2015 Online.
SOER 2015 Online	The web presence of SOER 2015, which primarily deals with the presentation of the related information, including references to underlying environmental indicators, graphs, interactive maps and data sets. This presents a user experience for SOER 2015 – Part C. It will require specific tool support for its development. All content will be static in the sense that no additional information will be added to SOER 2015 Online after the official release, i.e. new versions of any SOER 2015 content will be available as a resource from SOE Online, but not directly from SOER 2015 Online. For SENSE, this implies that proper versioning and archiving has to be provided for environmental indicators.

Acronyms

CSI	Core Set of Indicators
EEA	European Environmental Agency
EEA PT	EEA Project Team, established for the SENSE-3 project
EIONET	European environment information and observation network
IMS	Indicator Management System
IT	Information Technology
MDIAR	Monitoring, Data, Information, Assessment and Reporting
NFP	National Focal Point
NRC	National Reference Centre
NRC EIS	NRC for Environmental Information Systems
NRC SOE	NRC for State of the Environment
RDF	Resource Description Framework
Reportnet	EIONET's infrastructure for supporting data and information flows
SEIS	Shared Environmental Information System
SENSE	Shared European and National State of the Environment
SENSE-1	Shared European and National State of the Environment - Phase 1
SENSE-2	Shared European and National State of the Environment - Phase 2
SENSE-3	Shared European and National State of the Environment - Phase 3
SOE	State of Environment
SOER	State of Environment Reporting
SOER 2015	European Environment - State and Outlook Report 2015
XML	Extensible Markup Language

1 SENSE-3: a Support-Project to SOER 2015

The Shared European and National State of the Environment (SENSE) is part of the implementation of the Shared Environmental Information System (SEIS), with a focus on the online sharing of national and European information on the state and outlook of the environment. The SENSE process focusses on the timely on-line access to environmental indicators – as a specific form of State of Environment (SOE) information – and the connections to underlying data sets and indicator-based assessments. While *indicators specifications* might undergo refreshments every few years, *assessments* are usually updated in annual circles – on particular dates that depend on the theme and related reporting obligation(s). Underlying *data flows* might have their own (independent) life-cycle – which mostly relate to small areas or even points; they usually have to be aggregated to values for larger (administrative) areas before they can be used in an assessment. An according positioning of SENSE within the MDIAR value-chain for state of the environment reporting is presented below (Figure 1). Notably, SENSE does not consider live content streams, i.e. continuous near real-time deliveries are out of the scope of SENSE.
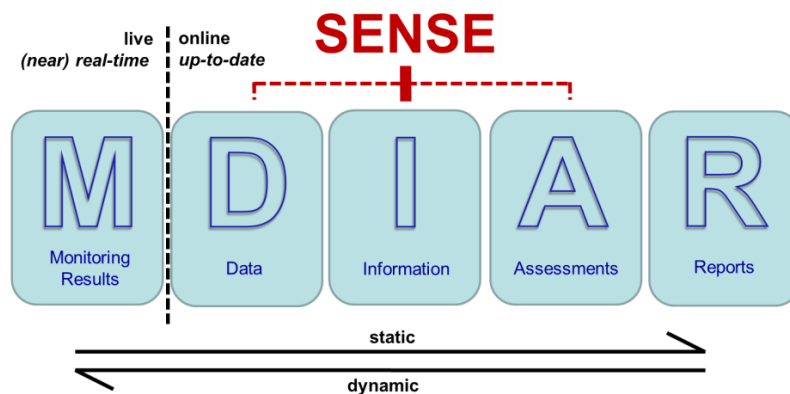

Figure 1: SENSE in the SOE value-chain.

As the web-based provision of MDIAR content is often also referred to as *SOE Online*, SENSE backs the development of the country perspective on SOE Online with a particular focus on indicators. It is the goal of SENSE to establish an operational exchange of environmental indicators between the EEA and Eionet.

The EEA provides assessments based on data inputs from member countries. Depending on the theme, those inputs might be already aggregated. In parallel, the countries use partially the same data – sometimes in different aggregations – for own assessments. Currently, these two levels are only loosely connected, if they are connected at all. This is where we see a high potential for complementary SOE monitoring and reporting. With the help of SENSE, we want be access latest indicator specifications and assessments on-line, as soon as they become available from the EEA or Eionet countries – both at different times and in diverse intervals – and still being able to go back to older versions. This shall be achieved by the timely sharing of indicator specifications, and metadata (data about data) about associated assessments and data sets. Explicit connections between national and European indicators shall be established where possible.

The SENSE organizational structure is presented in Figure 2, below. A continuous thread for capacity building is complemented with short term activities in focussed groups, which work on merging issues and might carry out experiments for influencing future directions. The concrete exploitation activities will originate from the SENSE-1 and SENSE-2 projects and next capacity building activities and feed their findings back into new trainings, workshops and support actions, where considered appropriate. The actual implementation work focusses on the development of SOE Online, with the release of SOER 2015 as a major milestone.
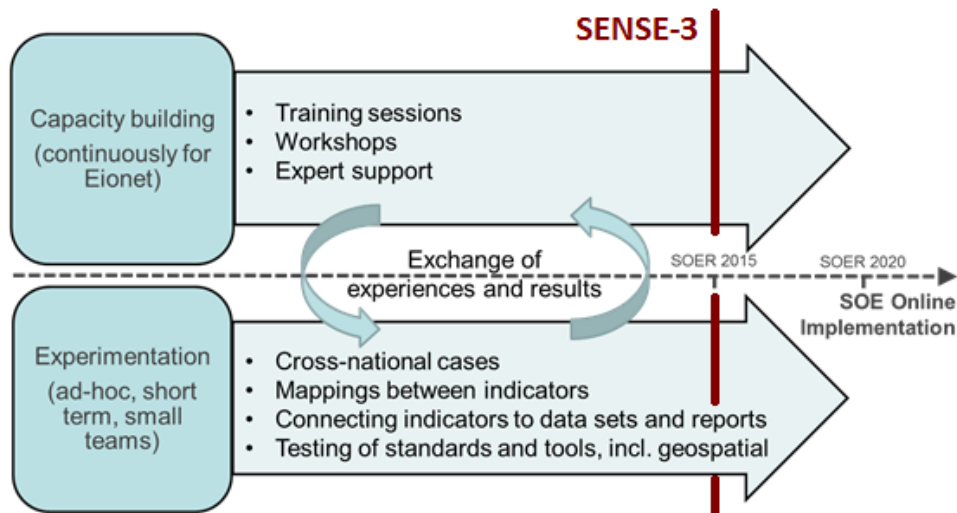
Figure 2: SENSE organizational structure with SENSE-3 positioning

The next phase of SENSE (SENSE-3) focuses on SOER 2015 and builds on the experiences from the previous phases (SENSE-1 and SENSE-2) in a twofold way. On the one hand, it adds continuity and provides interested Eionet countries with the possibility of building the required capacities to use the results of the two previous SENSE projects for SOER 2015 – Part C implementation. On the other hand, it offers the possibility to further explore the use sematic web technologies in sharing environmental indicators and data, which will be – to the extent possible – taken over for SOER 2015 Online. More details on SENSE-3 follow below.

2 Project Objectives

2.1 Main focus

EEA indicators and (sub-)national indicators – specifications and interpretations/assessments.

2.2 Main flow of information

From European level (EEA) to the details at national/sub-national levels (established connections should be bi-directional to enable cross-national use cases where there is interest).

2.3 Objectives

- Support the EEA and Eionet thematic expert community, especially NRC SOE in connecting already existing *indicator specifications and assessment* at European, national and sub-national level and achieve proper matching between the existing indicators. On the EEA side, this will be the subset of the EEA CSI that will be selected for SOER 2015.

- Support the EEA and Eionet technical expert community, especially NRC EIS, in advancing the *technological infrastructure* and enable participating countries to access EEA indicator information from EEA's indicator management system http://www.eea.europa.eu/data-and-maps/indicators in order to implement the inter-linkages with regard to the existing national or sub-national indicators. Technical implementation of the sharing of indicators (EEA indicators <> national / sub-national) will continue to rely on Semantic Web/Linked Data technology.

- Facilitate the *collaboration* between the two communities mentioned above in order to ensure the handshake between thematic desires and technical capabilities.

2.4 Technology

XML/RDF, vocabularies, semantic web technology (amongst others, specific tools include DB2RDF and DaViz).

3 Project Structure

The SENSE-3 organizational structure follows the SENSE overall structure, as presented in Figure 2, above. A continuous thread for capacity building is complemented with short term activities in focussed groups, which work on merging issues and might carry out experiments for influencing future directions. The concrete exploitation activities will originate from the SENSE-2 project, and next capacity building activities and feed their findings back into new trainings, workshops and support actions, where considered appropriate. Actual implementation work of SENSE is focussing the development of SOE Online, with its next phase (SENSE-3) focussing on the release of SOER 2015 as a major milestone. Accordingly, the SENSE-3 timeline has to be synchronised with the SOER 2015 Implementation Plan.

4 Expected Outcomes

The expected outcomes can be separated into three blocks, of which <u>the first two apply to each country that decides to participate in SENSE-3, while the third block is optional for those countries that want to take an additional step forward</u>. Details for this third block will be evaluated once interest has been indicated. Expectations for each block can be grouped in respect to content and technology.

In terms of capacity building we expect:
- For thematic experts: understanding of required information, particularly including the description of environmental indicators and possible indicator matching.
- For technical experts: understanding the technology used within SENSE, particularly including Linked Data and RDF, the SENSE conceptual schema and the facilitated vocabularies, possibilities for thematic content delivery.

Considering the direct contribution to SOER 2015 – Part C we expect:
- From thematic experts: agreement on criteria for indicator selection; indicator descriptions, including specifications and assessments that are relevant for SOER 2015, and where possible matching between them; country interpretations on European level statements and visualisations within the cross-country comparisons in SOER 2015 – Part C.
- From technical experts: supporting infrastructure for thematic content delivery to the EEA (and update where applicable), respecting the country specific capabilities.

From optional additional experimentations we suggest:
- For thematic experts: possible extensions for integrating available sub-national, national and European level SOE, for example also looking into possible future scenarios, or the underlying data sets – usually aggregates of small areas and point data. This might result in dynamic graphics for country fiches in SOER 2015 Online.
- For technical experts: advanced demonstration of linked indicators (catalogue, service); and recommendations for the development of additional components in the stable infrastructure which supports the bi-directional data and information flow.

5 Contributions and Project Organisation

5.1 Contributions

5.1.1 EEA contribution

- Project overall coordination, communication and networking;
- EEA indicator information:
    - Thematic content: SOER 2015 subset of the EEA Core Set of Indicators (CSI) specifications and interpretations/assessments, selection criteria;
    - Technology: Information structures in RDF format with the relevant guidelines, technical knowledge for using and creating the RDF format, indicator catalogue and service; harvesting service; visualisation tool DaViz;
- Support to training sessions and workshops for capacity building;
- Helpdesk function to support the technical questions; and
- Forum as shared documentation repository.

5.1.2 Participating countries contribution

- National indicator information:
    - Thematic content: selection criteria, indicator descriptions and preparation of the logical mapping of the national/sub-national indicators to the selected set of EEA CSI for SOER 2015 – Part C;
    - Technology: Implementation of the linked data approach on indicators and explore how the indicators might be used (search for, combined display, comparing, etc.);
- Supporting capacity building activities, e.g. by providing training material or running (parts of) a workshop;
- More advanced requirements might be included based on the countries' proposals (e.g. inter-connecting data flows); and
- Where desired national interpretations complementing European level cross-country comparisons.

5.2 Project Organisation

5.2.1 SENSE Task Force

The EEA thus proposes to establish a joint project group between the EEA and the participating countries that involves NFP, NRC-SOE and NRC-EIS as "SENSE Task Force".

5.2.2 EEA Project Team (EEA PT)

An EEA project team will coordinate the project, and provide thematic and technical expertise.

Table 1: Overview of EEA team members for SENSE (in alphabetical order of first name)

Name	Initials	Group	Role
Anne-Dorthe Christensen	ADC	SES3	Secretariat
Antonio De Marinis	AMA	OSE3	User experience
Darja Lihteneger	DLI	SES3	Deputy project leader, user requirements
Milan Chrenko	MCH	GAN1	Eionet
Roberta Pignatelli	RPI	SES2	Indicators

Sheila Cryan	SCR	SES2	Data flows
Søren Roug	SRO	OSE3	Technical support
Sven Schade	SSC	SES3	Project leader
Thomas Henrichs	THE	IEA0	SOER 2015 coordination
Cathy Maguire	CMM	IEA1	SOER 2015 - Part C coordination
PM - SOE Online	N.N.	SES4	Data flows (once recruited)

Participating countries (to define the participants or/and contact points):
- List of NFPs (organizational aspects, or any of the below);
- List of expert(s) or/and a contact point from the country's NRC SOE (conceptual aspects, related to indicators; mapping between the indicators; evaluation of provided technical implementation);
- List of expert(s) or/and contact point from the country's NRC EIS (high technical IT knowledge, related web technologies, RDF).

Countries interested in participating are asked to notify their interest to the project manager Sven Schade (sven.schade@eea.europa.eu) **by 15 July 2013**.

The list of the participating experts from each of the countries will be available in the common project documentation space (a special Forum place is established for this purpose).

6 Tasks Overview

6.1 Dependencies with SOER 2015

As SENSE-3 is set-up as a support project to SOER 2015, it will be affected by several decisions within SOER 2015, those include:

- Agreement on criteria for indicator selection, where SENSE-2 criteria are used as a basis.
- Agreement on a set of indicators to focus on, where SENSE-2 indicators are considered.
- Agreement on templates for thematic information, also on country level. While the overall use of SENSE technology has been already agreed, the thematic discussions will cause updates of the information structure that has been used in SENSE-1 and SENSE-2.

Following this close connection, the timelines of SENSE-3 and SOER 2015 have been well aligned; and the SENSE-3 input to SOER 2015 will be continuously monitored.

6.2 Parts

After the initial preparation, the project has four major parts which overlap in time:

1) **Part 1 Capacity Building**: This part will train thematic experts on the EEA indicator concept and model, as well as it will address technical experts in terms of infrastructural capabilities and capacities. This will require participation of NRC SOE and NRC EIS. It will continue through the project duration and include (depending on member state needs):
   - Basics of RDF and semantic web technology for those who lack experiences with XML, RDF, etc.
   - Indicator Management System (IMS): introduction to the EEA approach, approaches from other countries with existing systems (how to generate RDFs out of IMS, etc.).
   - Use of the DaViz tool for indicators with underlying data (with examples from EEA).

2) **Part 2 SOER 2015 Contribution**: This part will establish a thematic and technical mapping of indicator components (i.e. indicator metadata structure), and agree on the overall technical approach based on the outcomes of the SENSE-1 and SENSE-2 projects and the individual technical capabilities of the participating countries. This part will also provide the appropriate links between selected indicators at different levels and exploring the linked data and semantic mapping between the indicators. The technical support for the management of fiches still has to be discussed. This part will require participation with the NRC EIS for implementation and the NRC SOE for evaluation of the outcomes. The results of this part should also build a basis for future reporting, i.e. beyond 2015.

3) **Part 3 Experimentation**: This part will allow interested countries to further exploit the use of SENSE capabilities. This particularly includes new possibilities of integrating European level SOE information with national and sub-national information; and new technology, especially Linked Data and RDF, for sharing SOE information. This part might, for example, include the integration of SOER 2015 information into country web pages, the including of national SOE data into EEA graphics and much more. This is open for any interested members of NRC SOE or NRC EIS. Details will be decided once individual interests have been articulated.

4) **Part 4 Evaluation**: This part will evaluate the outcomes and viability of approaches used to support future SOE reporting, both at European and national levels. This part will require participation of the complete SENSE Task Force and might also embrace the EEA internal SOER 2015 project team.

A SENSE forum, as part of the Eionet Forum, will be used to collect and exchange information about all the parts.

6.3 Tasks

6.3.1 Main tasks:

1. Project preparation
- Finalize project description, including the proposals and comments from the countries;
- Receive countries confirmation and providing contact information of the participants of the project;
- Receive interests in experimentation;
- Get an overview of the countries individual situations, i.e. available systems;
- Get an overview of capacity building needs per country;
- Get an overview of training offers per country;
- Set-up a common project / documents place (Forum);
- Set-up of initial training material; and
- Set-up a technical support – Helpdesk.

2. Execution of capacity building activities (Part 1)
- Prepare training material for thematic experts;
- Run Webinars or workshops for thematic experts – to get familiar with the current work on the EEA indicators review etc.;
- Prepare training material for technical experts;
- Run Webinars or workshops for technical experts – to get familiar with the SENSE technology stack; and
- Run the technical support – Helpdesk.

3. Providing direct contributions to SOER 2015 (Part 2)

a. Thematic experts
   - o Identify the relevant national/sub-national indicators against their EEA counterparts, including their mappings;
   - o Identify the indicator components to be connected (i.e. indicator metadata structure);
   - o Provide feedback on proposed information structure; and
   - o Evaluate technical realizations.

   b. Technical experts
   - o Define the technical approaches for the implementation;
   - o Implement the appropriate links between selected indicators at different levels (European, national, sub-national) and define information structure (the conceptual model, together with all necessary vocabularies);
   - o Provide the indicators as RDF; and
   - o Make tools available (EEA Indicators Management systems; data visualisation tools; catalogue).

4. **Experimenting for future exchanges of SOE information (Part 3)**
   - *To be defined once country interest has been indicated.*

5. **Evaluation and recommendations (Part 4)**
   - To evaluate the outcomes and viability of approaches used to support SOER 2015 in a survey and provide the results as input to continued SENSE activities.

6.3.2 Requested Participation in the Main Tasks

Table 2: Task overview including requested participation

Task	EEA PT	NFP	NRC EIS	NRC SOE
1. Composition of the project and project set-up	X	X	X	X
2. Execution of capacity building activities (Part 1)	X	x	X	X
3.a Providing direct contributions to SOER 2015 – (Part 2, thematic)	X	x	X	
3.b Providing direct contributions to SOER 2015 – (Part 2, technical)	X	x		X
4. Experimenting for future exchanges of SOE information (Part 3)	X	x	X	X
5. Evaluation and recommendations (Part 4)	X	X	X	X

   X – main participation requested; x – minor participation requested

7 SENSE-3 Time Planning

- Project preparation: on-going, until August 2013
- Part 1-3: September 2013 – September 2014 (systems to stay in place afterwards)
- Part 4: January 2015 – May 2015

It is planned to continue the capacity building and experimentation activities beyond SOER 2015, for the (sub-)national components for SOE Online. Details will be specified once part 2 has been completed.

7.1 Detailed planning

Again, as SENSE-3 is closely connected to the implementation of the SOER 2015 part C (set-up as a support project), it will be affected by several processes within SOER 2015. Those include the criteria for indicator selection and finally selected CSI for SOER 2015 Part C.

For SOER 2015, we will introduce check points – where needed – for each relevant content type, e.g. country fiches or national-level indicator, in order to finally determine the extent to which SENSE-3 results will directly influence the SOER 2015 product.

- Presentation at the Eionet NFP meeting on 06.06.2013
- Confirmation of attendance, contact information and expression of interests in experimentation by 15.07.2013;
- Information on systems that are currently available in countries, capacity building needs, training offers by 31.07.2013;
- Project set-up by 31.08.2013

Table 3: Detailed time table

2013	
Jul	SENSE-3 Project Preparation – confirmation of participation, info on capacities and needs
Aug	SENSE-3 Project Set-up, including provision of initial training material
Sep	SENSE-3 kick-off (Parts 1 to 3)
Oct	NRC SOE/NFP consultation and discussion and agreement at NFP/Eionet meeting
Nov	NRC EIS consultation and discussion and agreement at NRC EIS meeting
Dec	Part 1 – Capacity Building, Part 2 – Technical Preparations (schemas), Part 3 – Selected Experiments
2014	
Jan	Part 1 – Capacity Building, Part 2 – Technical Preparations, Part 3 – Selected Experiments
Feb	Part 1 – Capacity Building, Part 2 – Technical Preparations, Part 3 – Selected Experiments
Mar	NFP/NRC-SOE discussion
Apr	Part 2 – Inputs to SOER 2015 – Part C, Part 3 – Selected Experiments
May	"
Jun	Part 2 – Confirmation of inputs to be expected by September, Part 3 – Selected Experiments
Jul	Part 2 – Inputs, Part 3 – Selected Experiments
Aug	"
Sep	Parts 2 and 3 - Final update of schemas and vocabularies for SOER 2015 Online
Oct	Parts 2 and 3 - Final update of content for SOER 2015 Online
Nov	
Dec	
2015	
Jan	Part 4 – kick-off, i.e. survey preparation and launch
Feb	Part 4 – Survey
Mar	Part 4 – Survey analysis and final presentation

7.2 Milestones

Table 4: Overview of SENSE-3 milestones

Mid-July 2013	Eionet confirmation of participation	Preparation
July 2013	Eionet input to preparation (for Part 1)	Preparation
August 2013	EEA project set-up	Preparation
September 2013	SENSE-3 kick-off	Part 1, Part 2, Part 3
June 2014	Agreement on SOER 2015 input	Part 2, Part 3
September 2014	Last possibility for minor structural changes for SOER 2015	Part 2, Part 3
October 2014	Last possibility for input for SOER 2015	Part 2, Part 3
March 2015	Final evaluation of SENSE-3 project	Part 4

Major other milestones are related to SOER 2015, and especially to SOER 2015 Online. For part 3 (experimentations) we should be aware of these deadlines. We contemplated a minimal buffer by scheduling first inputs for April 2014, whereas the SOER 2015 Implementation Plan requests those only in May.

The capacity building activities will focus on the end of 2013 and the first few months of 2014. While required Webinars or workshops should be scheduled in this period – depending on country requests – all material will of course still be provided afterwards and the helpdesk remains active.

8 Meetings and Workshops

8.1 Meetings and Workshops Schedule

Table 5: Overview of meetings and workshops

Meetings and workshops schedule	Period
EEA Project Team meetings	Project duration
Tele/web-conferences on the main tasks	Project duration
Project kick-off (Webinar)	September 2013
Thematic consultation and discussion and agreement at NFP meeting	October 2013
Technical discussions and planning at NRC EIS workshop	November 2013
Capacity building virtual meetings (Webinars etc. – as required)	November 2013 to February 2014
First outcomes and open issues discussions at NRC SOE/NFP workshop	March/April 2014
Joint meeting with SENSE Task Force	June 2014 (t.b.d.)
Presentation of results at different events (EEA, NRC-EIS workshop, NFP/Eionet meeting)	In 2014

8.2 Meetings and Workshops Participation

Table 6: Meetings and workshops – overview of expected participation

Workshops and meetings participation	EEA Project Team	NFP	NRC EIS	NRC SOE
The EEA Project Team meetings	X			
Tele/web-conferences on the main tasks	X	X	X	X
Project kick-off (Webinar)	X	X	X	X
Thematic consultation and discussion and agreement at NFP meeting	X	X		
Technical discussions and planning at NRC EIS workshop	X	x	X	
Capacity building virtual meetings (Webinars etc.)	X	X	X	X
First outcomes and open issues discussions at NRC SOE/NFP workshop	X	X		X
Joint meeting with SENSE-3 Task Force	X	x	X	X
Presentation of results at different events (EEA, NRC-EIS workshop, NFP/Eionet meeting)	X	X	X	X

X – main participation requested; x – minor participation requested