

Report of the project EConnect's workshop



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Introduction

The Project EConnect organised an online workshop 21st of January 2021. The aim of the workshop was to find out what kind of information planners and climate experts need in their work regarding the impact of climate change on the Gulf of Bothnia. In addition, we wanted to hear how participants would prefer EConnect to publish its results.

In this introductory chapter you can view the conclusions, the list of participants, the workshop's programme and the 5 premeditated questions that were discussed during the workshop. The next 5 chapters give you a more detailed description of the discussions per question.

Conclusions

In summary, the workshop showed that EConnect is producing relevant information that the participants would need in their work. The participants emphasized targeted communication to the general public, politicians and decision-makers as important. They also thought that the focus should be on the large perspective instead of species-specific details. Communication methods could include reports, maps, videos, and a story map. Webinars, digital leaflets or graphics, and news on different webpages were also mentioned as ways for EConnect to communicate its results. Language is always a topic that needs to be discussed when working transboundary. In the workshop, it was suggested to write the report(s) in English, Swedish and Finnish. These suggestions will be taken into consideration when deciding on the language(s).

Regarding the creation of future models displaying the changes to species distribution and physical parameters, the participants were mainly interested in changes to key species in the project area and in changes to water temperature, salinity, sea level, ice coverage, river outputs and nutrient levels. Furthermore, it was discussed that EConnect's results should explain what these changes in species distribution and physical parameters will mean to us humans; will these changes affect the way we live?

EConnect will use the results of the workshop to guide the rest of the project and form of the results. In future projects, the connection between land and sea could be of interest.

Participants

The invitation to the workshop was sent out to around 80 people. There were 41 participants in total, including the project EConnect's personnel. The majority of the 41 participants took part in both the presentations and the workshop, and a few just listened to the presentations.

The participants of the workshop represented the following sectors

- County Administrative Boards of Västerbotten and Västernorrland

- Municipalities in EConnect's project area (only representants from Swedish municipalities had the possibility to participate)
- Swedish Agency for Marine and Water Management
- Parks and Wildlife Finland
- Centre for Economic Development, Transport and the Environment (Finland)
- Swedish Meteorological and Hydrological Institute SMHI
- Österbottens förbund
- Geological Survey of Sweden SGU

Programme and workshop questions

The half-day workshop included introductory presentations from EConnect and Swedish Meteorological and Hydrological Institute SMHI. Along the presentations, the participants were warmed up with simple questions in Slido, which is an online polling platform. Due to the COVID-19 situation, the workshop was organised online as a Teams meeting, and the group discussions were held in separate Teams breakout rooms. During the group discussions, Google Docs documents with post-it notes were used to collect the participants' thoughts.

The following questions were discussed in the workshop

1. How do you use climate change data in your work?
2. In your work, what needs/wishes do you have regarding information about climate change effects on the coast and the sea?
3. Based on your need of information, how would you like EConnect to publish its results?
4. What kind of information do you need in your work/generally regarding changes to the distribution of organisms or changes to physical parameters?
5. How does your organisation work with climate adaptation? What measures do you see as most effective?

Question 1

How do you use climate change data in your work?

Identifying and planning. Climate change data was used in many ways among the workshop's participants. Many mentioned planning, management and protecting of marine areas and related species or endangered species as part of their work. Knowledge both about species distribution in the future and the effects of climate change on the marine environment help to identify the areas with high nature values which need to be protected. This in turn influences the local planning regarding e.g., wind power plants and coastal planning. As climate change data can provide predictions of future changes, it can be used to help plan how to reduce the effects of climate change.

Spreading the information. Communication aspects of climate change data were also discussed. Some of the participants use the data at information centres to answer questions about how the climate is changing. Some use it as a base when informing the general public, politicians and colleagues about related topics. Regional climate data for example from SMHI is also distributed to local municipalities so they can take it into account in their planning and strategies.

Some extras. For overall comparison, a couple participants stated that they use climate change data relatively little in their work. According to some infrequent answers climate change data was also used for analysing the effects on agriculture and forestry, environmental restoration and invasive species.

Question 2

In your work, what needs/wishes do you have regarding information about climate change effects on the coast and the sea?

Information belongs to everyone. Although the workshop participants were experts in their field, every group mentioned that information about climate change effects on the coast and the sea should be easily understandable and targeted to the general public. If the information is targeted to people with little or no background information or knowledge of marine environment, it is bound to serve more people. Also, other more specific groups like politicians, ecologists, coast and sea professionals were mentioned in relation to this.

Maps for the win. Many participants emphasized practical information in the form of maps. Especially Shapefiles were preferred as a file format. Overall, the participants would like to have maps that illustrate changes in the sea over time. Some also mentioned the interest in maps illustrating bathymetry, i.e. the study of underwater depth. When it comes to species and habitats in the Gulf of Bothnia, it was suggested that the maps could cover species distribution now and in the future, preferably also including invasive and endangered species. Maps related to species distribution could be done with different levels of salinity, as future changes in salinity are highly uncertain. Scenarios of cyanobacteria outbreaks was also of interest among the participants.

The participants also stated that they would be interested in future changes in physical parameters such as water temperature, ice coverage and sea level rise. In maps showing the present and future sea level, the connection to extreme weather conditions was of interest. All in all, extreme weather events representing maximum and minimum values are of high interest for planners working with climate change adaptation. One participant also mentioned maps that would illustrate property damage and erosion damage due to extreme weather and sea level rise, among other things.

What the changes mean for us. Maps could be complemented with information that describes the meaning of the changes for us humans. This information could cover the effects on our society and the need for climate adaptation. The impact of climate change on fishermen and aquaculture was also mentioned.

Question 3

Based on your need of information, how would you like EConnect to publish its results?

Recipe for the results. Concerning this question, the participants lifted many ways to publish EConnect's results (see the list below). Overall, all the information should be downloadable and

open for everyone. Instead of focusing on just species-specific details, the focus of the information should lie in the large perspective and it should be communicated both to the general public and decision-makers, but also to professionals working with climate data. It was also discussed to create maps that represent the connectivity between important areas for species distribution. The published information was seen more valuable if it can be compared with other existing climate data (e.g., as in maps). However, not everyone has a GIS software or a need to analyse maps themselves, so also 1-page PDF summaries of the expected changes and future conditions were mentioned as a useful format for many people. In general, short summaries of major changes were preferred over longer and more detailed reports.

Suggestions about the form of EConnect's results

- Report(s) – one simpler one to glance through and another more detailed one
- Maps, Shapefiles and GIS- layers in map services, SeaGIS and EMODnet
- Films – the existing films at [EConnect's YouTube channel](#) were liked too
- Story map
- Webinars
- Digital leaflets and graphics
- News – for example at [klimatanpassning.se](#)

Language question. As for the language of EConnect's results, Swedish, English and Finnish came up in the discussions and in one of the Slido-questions. The language discussion concerned mainly EConnect's final report, which is of interest to the participants. Most of the material that is targeted at the general public is published in all three languages in any case. Many participants were Swedish-speaking so Swedish was a natural choice for the report's language, but English was also seen as a good and mutual option. It was also suggested that a short, summarising report could be written in all three languages, and a more detailed report in English.

Future models with metadata. As the future scenarios include several sources of uncertainty, the participants emphasized that it is important to keep a simple metadata document always available together with the results. For example, all maps should be downloaded together with a short description of the assumptions behind the models. It is crucial that all users of the project's end results understand that the models include high uncertainty especially for salinity, and that the models are based on future scenarios that assume RCP 8.5 (very high greenhouse gas concentration) and Baltic Sea Action Plan (low nutrient levels) in the future.

Question 4

What kind of information do you need in your work/generally regarding changes to the distribution of organisms or changes to physical parameters?

Only two of the four groups answered this question. To clarify this question, the distribution of organisms refers to the distribution of e.g., blue mussels or bladder wrack. The physical parameters refer to e.g., water temperature or salinity.

Organism distribution. As for organisms, the participants were interested in changes to the Baltic Sea's key organisms such as blue mussel, Baltic clam and bladder wrack. Changes to endangered and invasive species were mentioned as well. The impact of climate change on other macrophytes

(aquatic plants large enough to be seen by the naked eye) than bladder wrack was also of interest. The discussion also continued to the consequences of the changes; what the moving or partly disappearing of species mean to us humans.

From a communicational point of view, it was suggested to focus on species that the general public can relate to or that are economically important. In addition to species distribution, some participants were interested in the distribution of habitats.

Physical parameters. Discussion about changes to physical parameters included changes to water temperature, ice coverage, salinity, nutrient levels, sea level rise and river outputs. Like with the distribution of organisms, the consequences of the changes were lifted here too; how the changes in the parameters affect species, marine environment and humans. What are the long-term effects of future changes and how do the changes affect the way people live and build?

Some extras. For both organisms and physical parameters, it would be essential to know what consequences our current actions have on them. Information about the worst-case scenarios also strengthens the understanding of the consequences of our actions. Some also mentioned that it would be good to have observational data on physical and biogeochemical parameters to compare with the modelled data. Others wondered whether the need for protected areas will change in the future, one way or another.

Question 5

**How does your organisation work with climate adaptation?
What measures do you see as most effective?**

Climate adaptation

The participants' organisations work with climate change mainly through climate adaptation. This can regard e.g., erosion, cloud bursts, heat waves and floods. Climate adaptation plans often have a societal perspective.

Measures

Identify. As for the most effective measures for climate adaptation in EConnect's project area, the participants emphasized recognising marine areas with high nature values. Similarly, mapping the possible distribution and spreading of species was discussed as a measure for helping to predict the changes due to climate change. Regarding this, participants were interested in identifying the connection between species' distribution and increasing temperature and/or decreasing salinity.

Communicate and cooperate. Once again, the participants emphasized the importance of communication. Thus, the information about climate change and its effects should be targeted and spread efficiently. Also action plans work better, if they are clearly targeted at specific areas or phenomena, for example. It was mentioned that especially decision-makers should understand that we need to act urgently and understand the reasons behind the actions. Active cooperation, even transboundary one like in EConnect, was seen vital for efficient climate adaptation. For example, cooperation between sectors with different intentions could work towards comprehensive climate adaptation measures.

The participants also discussed about including the future changes into physical planning. It was also pointed out that working with climate change should rather be about preventing than just merely adapting.