Towards Baltic Sea Citizenship
Experiences in public involvement

Katariina Kiviluoto, Martti Komulainen & Annika Kunnasvirta (eds.)

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CENTRAL BALTIC
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Towards Baltic Sea Citizenship
Experiences in public involvement

Foreword

Good and bad news on the protection of the Baltic Sea

Martti Komulainen
Turku University of Applied Sciences

\+ The poor state of the Baltic Sea has been acknowledged.

\+ The major point sources of emissions, such as gypsum piles of the fertiliser industry, are being carefully monitored and emissions can no longer be hidden.

\+ The state and future of the Baltic Sea are being showcased in the media.

\+ Protection activity measured in terms of seminars, protection initiatives and publications is breathtaking.

– The political binding strength of protection conventions is missing.

– The protection of the Baltic Sea is often seen only as a cost.

– **Citizens do not recognise their role in the protection of the Baltic Sea.**

As is well known, the Baltic Sea is in poor shape. It is troubled by algae, increasing maritime transports, losses in biodiversity and climate change which accelerates eutrophication and threatens ringed seals depending on sea ice.

In its estimate, WWF issues quite a harsh evaluation of the implementation of conservation measures related to the Baltic Sea (WWF 2013): measures are lagging badly behind schedule, common reporting is hobbling along and cooperation between states leaves much room for improvement. No HELCOM state received a good grade, even though Finland and Germany have proceeded according to plan in the struggle against eutrophication.

It is probable that the objectives set in HELCOM's Baltic Sea Action Plan (HELCOM 2007) for the good state of the Baltic Sea in 2021 will not be achieved. Now if ever, extensive commitment is necessary, along with public participation. In a situation where states and decision-makers hem and haw in terms of protection measures and conservation of the sea is mainly regarded a question of costs (even though the benefits of conservation have been estimated to be higher than the costs), citizens need to take a grip on the matter and put pressure on decision-makers to take determined steps in the protection of the Baltic Sea.

Now, if ever, public participation is necessary.

We launched the concept of Baltic Sea citizenship in the BalticSeaNow.info project. It includes environmentally-aware citizens and proactive action for the Baltic Sea. Citizens do and can have a significant role in the conservation of the Baltic Sea, not only through environmentally sound consumption choices but also be putting pressure on decision-makers to proceed swiftly in conservation measures. In addition to strengthening awareness, citizens' participation requires channels for dialogue and influence as well as tips on how to be Baltic Sea-friendly in one's everyday life.

In spite of the involvement of the public being emphasised in several conservation programmes and initiatives concerning the Baltic Sea, there is not much experience of its methods and success. Most Baltic Sea communication projects focus on sharing information without a clear element of active involvement.

"Harmaja Ice" by Tero Koski, Harmaja, Helsinki, Finland, March 2011.

The BalticSeaNow.info project aimed to arouse citizen activity and offer channels for discussion on the state and future of the Baltic Sea. The research objective was to test and develop various participation methods and ways to present research data on the Baltic Sea. This publication compiles and assesses them, and provides an overview of the project on the whole. We hope that these experiences can also be utilised in other contexts involving citizen participation.

Turku, October 23, 2013

Martti Komulainen
Project Manager / BalticSeaNow.info project
Turku University of Applied Sciences

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WWF Baltic Ecoregion Programme.

Baltic Sea needs environmentally active citizens

Katariina Kiviluoto, Martti Komulainen & Annika Kunnasvirta
Turku University of Applied Sciences
Photo: Kärt Kokk

The Baltic Sea is a sea of conventions, strategies and declarations. Its environment has been on the agenda ever since the Helsinki Commission (HELCOM) was first introduced to the political arena in 1974. Many political steps to tackle the environmental challenges have been taken. An internationally binding agreement, however, is, still missing.

A number of conventions, strategies and declarations addressing the Baltic Sea issues have been introduced by inter-governmental bodies. The key document is the Baltic Sea Action Plan (BSAP) (HELCOM 2007), adopted on November 2007, with a vision of achieving "a healthy Baltic Sea, with diverse biological components functioning in balance, resulting in a good ecological status and supporting a wide range of sustainable human, economic and social activities" by 2021.

A legally binding agreement for the protection of the Baltic Sea, involving all countries in the Baltic Sea catchment area, is desperately needed.

The results in efforts to save the Baltic Sea have been moderate, though there are many positive signals and much work has been done. According to a recent evaluation by WWF (WWF 2013), there is a serious delay in national implementation of BSAP. Moreover, a sound reporting system on the success of BSAP is needed, and cooperation between states leaves much room for improvement.

Therefore, more power and political will is needed to change the course towards a healthier sea. A legally binding agreement for the protection of the Baltic Sea, involving all countries in the Baltic Sea catchment area, is desperately needed.

Key conventions and strategies

1974	Helsinki Convention
1992	Convention on the Protection of the Marine Environment of the Baltic Sea Area (1992 and entered into force on 17 January 2000), or Helsinki Convention. (HELCOM)
2000	The Water Framework Directive (of 23 October 2000) (EU)
2002	Finland's Programme for the Protection of the Baltic Sea (26.4.2002)
2005	Marine Strategy Framework Directive (EU)
2007	Baltic Sea Action Plan adopted on 15 November 2007 (HELCOM)
2009	Strategy for the Baltic Sea Region (2009, revised 2012) (EU)
2010	Baltic Sea Action Summit (BSAG)
2013	European Union Strategy for the Baltic Sea Region ACTION PLAN

Wanted: active and environmentally aware citizens

Almost all key stakeholders acknowledge the need to protect the Baltic Sea, but the role and responsibility of the general public has been absent from the largely institutionalized discussion. Conventions and strategies clearly recommend that countries, regional and local government and organizations engage the public and stakeholders in activities promoting a healthy Baltic Sea and actively promote public participation in decision making. They also stress that communication measures and measures raising the public awareness must be taken. Unfortunately, we still lack concrete means to promote the active role of citizens, which could lead to greater public participation.

We need encouraging examples on how individual choices and smaller acts can make a difference.

Close cooperation and a dialogue between actors from national to international level and from private persons to officials are required to reach the challenging goals ahead. More awareness, information sharing and involvement in the public arena are needed to incorporate the desire to protect the Baltic Sea into our everyday lives. We also need encouraging examples on how individual choices and smaller acts can make a difference. Many individual actors might have the will and the awareness, but clearly lack the means and channels to participate.

Environmental citizenship and the willingness to act for the environment

Environmental citizenship combines the concepts of environmental and citizenship education (fig.1) (see Koskinen 2010). It offers a critical perspective to the environmental discussion and stresses the importance of active citizens. It also extends the sphere of civic duties: people need to consider the well-being of not only other people but also nature and future generations.

Figure 1: Environmental Citizenship as a combination of Environmental and Citizenship Education (applied from Koskinen 2010).

The main driving force in environmental citizenship is a sense of compassion and equity as well as the concept of ownership, all of which will ideally create commitment and responsibility towards the environment. Environmental citizenship also has a global dimension: environmental problems do not respect national borders. This is especially true when considering the Baltic Sea environmental problems, which affect the citizens of several countries either directly or indirectly.

According to the classic environmental education models a person's willingness to act for the environment arises in a linear process (fig. 2). First a person is sensitized by invoking his or her feelings, sentiments and emotions in regard to the environmental question at hand. A sensitized person will then seek more information, which leads to environmental awareness, empowerment (i.e. a deeply rooted feeling of the capacity to make changes to reach a certain outcome) and finally creates the willingness to act for the environment. Ideally individuals act for a certain goal, if they find the issue important, and have a feeling that they can make a difference.

Figure 2: A simplified, linear model of creating the willingness to act for the environment.

Willingness to act for the environment is built in a complex process, where a person's experiences, appreciations, capabilities and knowledge mix with the demands and possibilities offered by the operational environment, such as society, workplace, school or home.

The linear model cannot, however, thoroughly explain the process of creating the willingness to act for the environment. Hence a more intricate model is needed. The elements of sensitivity, awareness, empowerment and action do not necessarily have a linear relation, but instead can be present simultaneously. According to Koskinen (2010), the willingness to act for the environment is built by a complex process, where a person's experiences, appreciations, capabilities and knowledge mix with the demands and possibilities offered by the operational environment, such as the society, workplace, school or home. For example, a person might be willing to adopt an environmentally active role in the Baltic Sea discussion, but a discouraging operational environment (e.g. work place) can suppress this willingness to act.

The operational environment and a person's interpretation of it have a decisive role in determining actions. Research shows that the willingness to act does not necessarily imply commitment. Willingness to act does not automatically lead to civic engagement, either.

Baltic Sea citizenship as an instrument for a healthier sea

The role of the general public in the Baltic Sea environmental issues has been clearly emphasized in the strategic level and in the political arena, but the real challenges of increasing public participation remain unanswered. Environmental citizenship is a valuable concept to be taken into the multilayered Baltic Sea environmental arena. The concept could easily be widened to include the idea of Baltic Sea citizenship, i.e. a regionally inclined idea that includes environmentally aware and actively participating Baltic Sea citizens, who will act for the common sea regardless of their nationality. But as the willingness to act for the environment does not necessarily lead to deeds, neither does the mere concept of Baltic Sea citizenship lead to active participation for the Baltic Sea. What we need to do is to develop channels and means for both discussion and active participation.This was the central aim of the BalticSeaNow.info project, the results and key findings of which are presented in the publication at hand.

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BalticSeaNow.info – Innovative participatory forum for the Baltic Sea

Katariina Kiviluoto
Turku University of Applied Sciences
Photo: Juha Kääriä

The role of the general public in the Baltic Sea environmental discussion has been largely ignored, even though this need has clearly been acknowledged in political parlance as well as in the various strategies and policies related to the Baltic Sea environment.

BalticSeaNow.info project's main task was to introduce new ways to initiate public participation and discussion about Baltic Sea environmental issues. Various ideas and novel ways to engage the public were tested in different types of arenas from the internet to a wide range of events.

General description of the project

The three-year long (11/2009–2/2013) BalticSeaNow.info project concentrated on developing and introducing new innovative communication tools to foster information sharing and discussion about the Baltic Sea environment. The target group was the general public i.e. people living in the coastal areas of Finland, Sweden, Estonia and Latvia. The results of the project were made accessible to all parties interested in the Baltic Sea regardless of their geographical position.

The project aimed to:

- raise environmental awareness, concern and commitment of the general public to the Baltic Sea environmental issues,
- offer an arena for discussion, participation and information sharing and
- promote networking of educational institutes.

The project consisted of 4 work packages:

WP1) Administration
WP2) Innovative Communication Tools
WP3) Materials and Events
WP4) Networking, Research and Follow-up

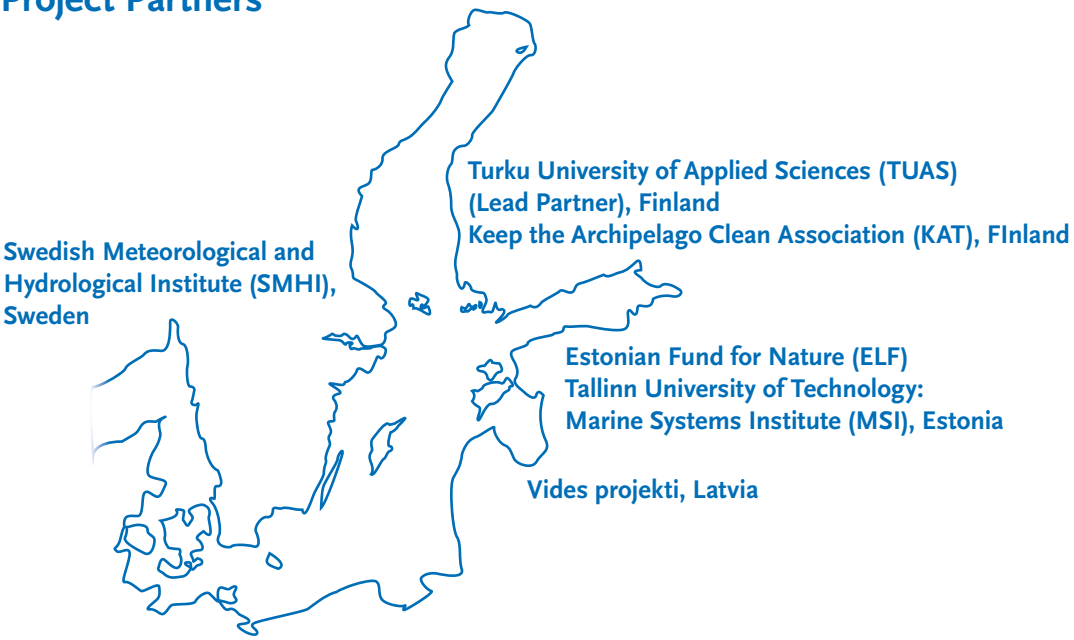
The BalticSeaNow.info web portal was planned to be in the core of the project with web cameras, online environmental information, social media channels, discussion groups and observations by the public, which were meant to create a framework for joint discussion, information sharing, development and participation.

As a novelty the project aimed to offer routes for active participation, which other Baltic Sea information portals have clearly lacked. Easy all-available methods to monitor the state of the sea were also to be developed and introduced to the public. Experts were to be present in the discussions and authorities and decision makers were to be informed about the new ideas emerging from the web discussions to a certain degree. A series of events were planned to be organized in participating countries.

Financing and project partners

The BalticSeaNow.info project was financed through the Central Baltic Interreg IVA Programme 2007–2013. The total budget of the project was close to 1,4 M€.
The project was carried out by partners from Finland, Sweden, Estonia and Latvia representing universities, research institutions and NGOs. The Lead Partner was Turku University of Applied Sciences.

List of Project Partners



Main objectives, aims and expected results

The BalticSeaNow.info project had several objectives and aims, all of which had the basic function of increasing awareness of the Baltic Sea environmental problems and finding new ways to increase and promote active participation and public involvement in the Baltic Sea discussion; both key objectives found in several strategies, policies and conventions tackling Baltic Sea environmental issues. To achieve these, new approaches, methods and tools were researched, developed and assessed. The theoretical background of environmental education served as the basis for this work.

The project was also interested in reaching a better understanding of the possibilities of web-based approaches in environmental discussion as well as to improve the dialogue between the science community and the general public. Additionally, the project aimed to exchange of know-how and good practices between accompanying countries, institutions and actors.

BSNI project organized two field courses for Finnish and Estonian Bachelor-level students. (Photo: Annukka Österlund)

Furthermore, the BalticSeaNow.info project had additional, supportive goals, such as:

- to strengthen integration and a common "Baltic Sea identity"
- to promote environmental consciousness, concern, involvement and commitment
- to bring forth everyday choices making a positive effect on the future of the Baltic Sea
- to affect policy-making by informing decision makers about the views and ideas of the public
- to activate people to observe the state of environment and discuss it
- to bring the Baltic Sea beauty and the diverse nature attainable via new communication methods (web cameras, online environmental information, sensors etc)
- to promote protection activities by disseminating information and arranging an impressive series of events and
- to promote networking of educational institutes.

Project implementation

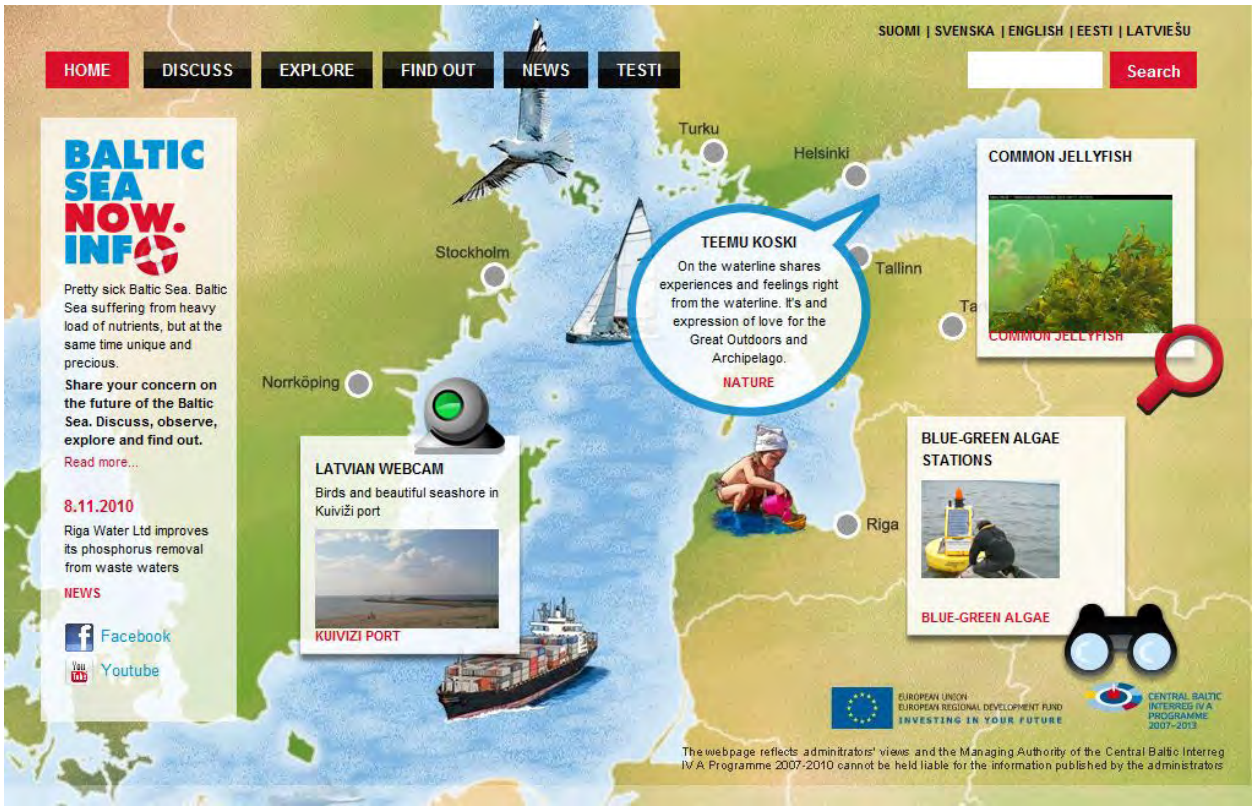
Lifecycle of the project: Project management and communication

The project was managed and administrated by the Lead Partner, Turku University of Applied Sciences, with a project coordinator working full-time to take care of the financial management and administration of the project. Another person was working halftime as the responsible Project Manager in charge of project implementation and management.

In addition to this, each project partner had appointed staff to handle implementation of the project. The Central Baltic Interreg IVA Programme 2007–2013 required very close financial monitoring and reporting making it quite demanding from the managerial and administrative point of view.

BSNI project published four newsletters.

Communication was recognized to be a vital part of project management, especially as the project was spanned to a period of three years. Particular attention was paid to internal communication, which also proved to be the key challenge. Different methods of internal communication were adopted from the very beginning to ensure the fulfillment of project aims and objectives. As can be expected, internal communication was occasionally challenging, but despite the problems, the communication worked relatively well between the partners. The face-to-face partner meetings proved out to



The multifunctional BSNI portal was published in Spring 2010.

be very important venues and strengthened the motivation of partners. These meetings also ensured that the objectives and aims of the project were known and accepted by all partners.

BalticSeaNow.info portal

The main output of the project was the creation of a versatile, multifunctional and participatory web forum and information sharing portal with channels for environmental observations. The portal was built bearing in mind one of the main goals of the project: promoting active participation of the general public. The concept of the portal was based on environmental education theories, where the route to empowerment and civic action is reinforced by enhancing people's sensitivity to the Baltic Sea environment as well as raising awareness by providing topical information on the subject.

The face-to-face partner meetings proved out to be very important venues and strengthened the motivation of partners.

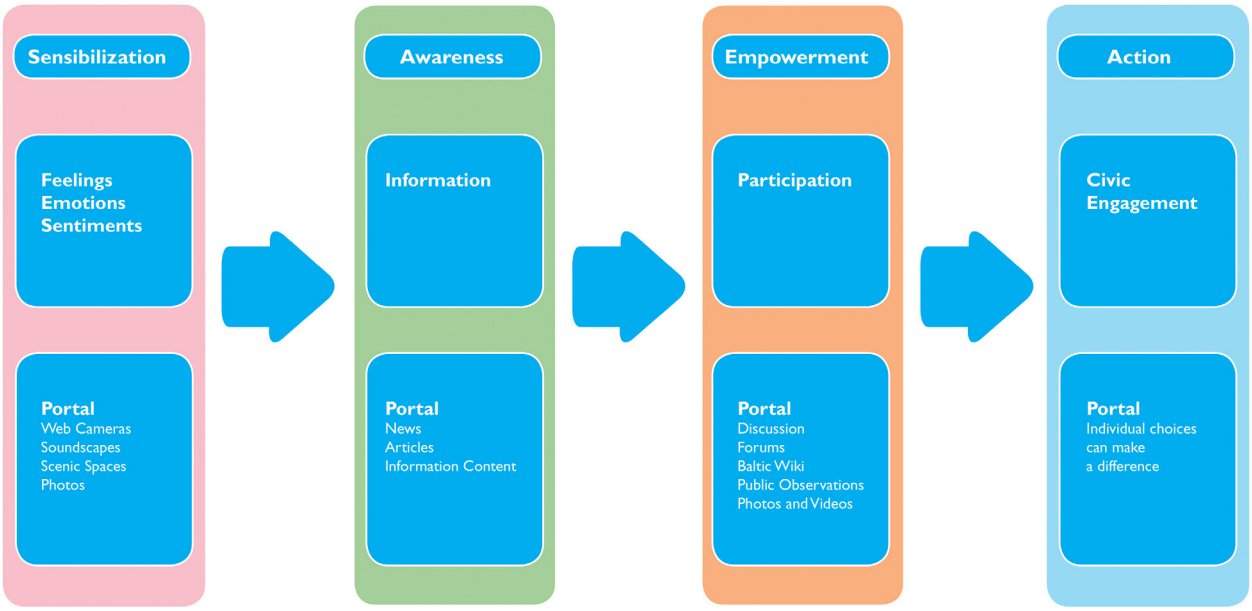


Fig. 1. Portal was based on environmental education theories and each section of the portal had a specific task to fulfil.

The BalticSeaNow.info portal was designed to have four main sections: discuss, explore, observe and find out. The titles of these sections were carefully chosen to bring about active participation: to encourage the general public to discuss, observe, explore and find out about the Baltic Sea and its environmental problems and ideally also to engage in discussion and environmentally aware action.

Discuss, explore, observe and find out.

There were unfortunately major delays in the portal process and it was published almost a year behind schedule. The very ambitious goal of 9 million visitors in 3 years was not reached and the portal had about 400 000 individual visitors and 1,7 million visits with most visiting the popular webcams (table 1.). Individual page views were close to 5 million concentrating mainly on the webcams.

Period	Visits	Individual visits	New visitors	Old visitors	Pages / Visit	Average duration of the Visit (min)
1.2.2011–31.5.2011	4 624	2 901	63 %	37 %	5	3
1.6.2011–31.8.2011	145 437	43 000	29 %	71 %	3	2
1.9.2011–30.11.2011	115 048	30 782	23 %	77 %	3	3
1.12.2011–28.2.2012	95 570	32 857	31 %	69 %	3	3
1.3.2012–31.5.2012	477 146	116 643	23 %	77 %	3	3
1.6.2012–31.8.2012	492 780	104 733	19 %	81 %	3	3
1.9.2012–30.11.2012	156 257	44 668	24 %	76 %	3	2
1.12.2012–28.2.2013	139 941	42 068	27 %	73 %	3	2
1.2.2011–28.2.2013	1 626 803	380 472	23 %	77 %	3	3

Table 1. Portal visitors from launch to the end of the project. (from Österlund, 2013)

Page	Page views	Average time spent on the page
Osprey nest webcam	1 763 079	0:02:17
Osprey nest, webcam (live)	397 865	0:03:26
Discussion forum (Finnish)	240 454	0:00:29
Osprey Foundation webcam	206 604	0:01:11
Service Boat webcam	181 960	0:01:10
Keri Island webcam	153 638	0:00:48
Index (Finnish)	140 502	0:00:22
Cormorant Colony webcam	131 653	0:00:42
Salacgriva webcam	129 590	0:00:32
Discussion Forum, Nature (Finnish)	128 366	0:01:15
Underwater webcam	82 208	0:00:30
Webcam Index	58 072	0:00:41
Seal webcam	40 208	0:02:06
Käsmu webcam	31 430	0:01:01
Index (English)	30 741	0:00:31

Table 2. Page views and average time spent on the page. (from Österlund, 2013)

Establishing a firm portal visitor flow will take some time, and two years might not be enough to make judgements on the success or failure of a particular portal.

The main reasons for not reaching the initial goal of 9 million visitors have not been analysed in depth, but some ideas have surfaced, such as inadequate marketing, language barrier, problems with finding the right target group and general lack of interest in Baltic Sea environmental issues.

It is worth pointing out that establishing a firm portal visitor flow will take some time, and two years might not be enough to make judgements on the success or failure of a particular portal. Although the goal of 9 million visitors was not reached, the portal has had a steady flow of visitors and can be considered to have found its place among the webpages providing information on Baltic Sea environmental issues.

It can be argued that with a more robust marketing budget, the portal could have reached the target audience more effectively. However, the reasons behind the more modest flow of visitors cannot entirely be explained by failures in marketing and thus other reasons have also been considered.

Language barrier or the use of English as the main language in the portal may have averted some of the visitors. The idealistic view behind the choice of English as the main language was to strengthen the common Baltic Sea identity by discussing common issues supranationally in an equally foreign language. It was quite soon discovered that people were not that interested in discussing Baltic Sea matters in a cross-border setting, at least not in English. More contents should definitely have been produced in the national languages as an answer to this signal.

The idealistic view behind the choice of English as the main language was to strengthen the common Baltic Sea identity by discussing common issues supranationally in an equally foreign language.

Another potential reason for visitor flow problems might be found in the wide target group of the portal: the general public. Careful thought was put on providing interesting contents to a wide audience, but as the portal statistic shows (table 2.), most of the visitors were mainly interested in

just one segment of the portal: the webcams. The general public target group should maybe have been segmented into smaller subgroups in order to produce more specific and attractive contents to different target and age groups.

Portal sections

The webcams proved out to be the most popular attractions in the portal. With over 3 million page views, the webcams can be singled out as the most successful sections of the portal, with the Osprey nest webcam as the clear winner.

The webcams proved out to be the most popular attractions in the portal.

Underwater webcam portrayed underwater life in the Archipelago Sea. (Photo: TUAS)

Webcam visits (April 2011 – March 2013)

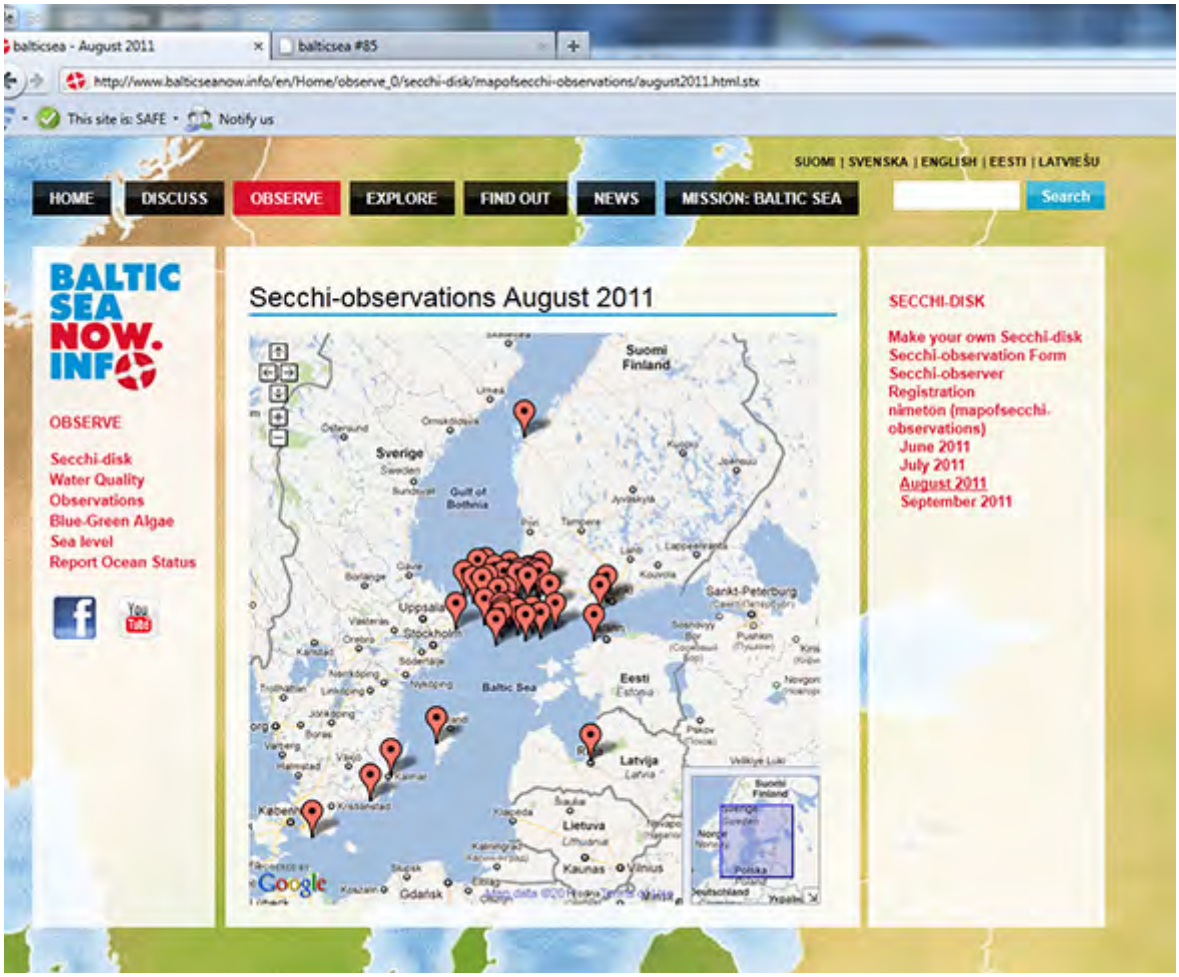
Osprey nest	2 100 000	visits
Osprey foundation	200 000	visits
Service boat	180 000	visits
Keri island	150 000	visits
Cormorant colony	130 000	visits
Salacgriva	128 000	visits
Underwater	82 000	visits
Käsmu	46 000	visits
Seal camera	30 000	visits (opened in summer 2012)

The reasons behind the enormous success of the webcams have not been analysed in-depth, but some thoughts have emerged. The nature webcam concept was very popular at least in Finland before the launch of the portal. The Osprey nest webcam was first launched in concordance with another TUAS project in 2006 and has been very popular ever since. Its introduction to the BSNI portal was one of the key attractions of the portal right from the beginning of the portal launch in April of 2011. Other existing webcams were the Osprey Foundation webcam, the Keri Lighthouse webcam and the seal webcam, all of which had some fan following prior the launch of the BSNI portal.

The Osprey nest webcam was firmly established in Finland before the launch and a self-governing discussion group was formed around the webcam with people returning to the webcam on a daily basis to discuss the happenings and other issues concerning the nest. This discussion group continued to gather in the portal also after the portal launch.

The success of the webcams may indicate a need for the general public to engage with nature in new ways. Not all have the possibility or the will to go outside and observe nature in the traditional sense. The webcams have clearly answered to this emerging need by providing unique views to events, which previously have only been available to a handful of experts or true enthusiasts.

The success of the webcams indicate a need for the general public to engage with nature in new ways.



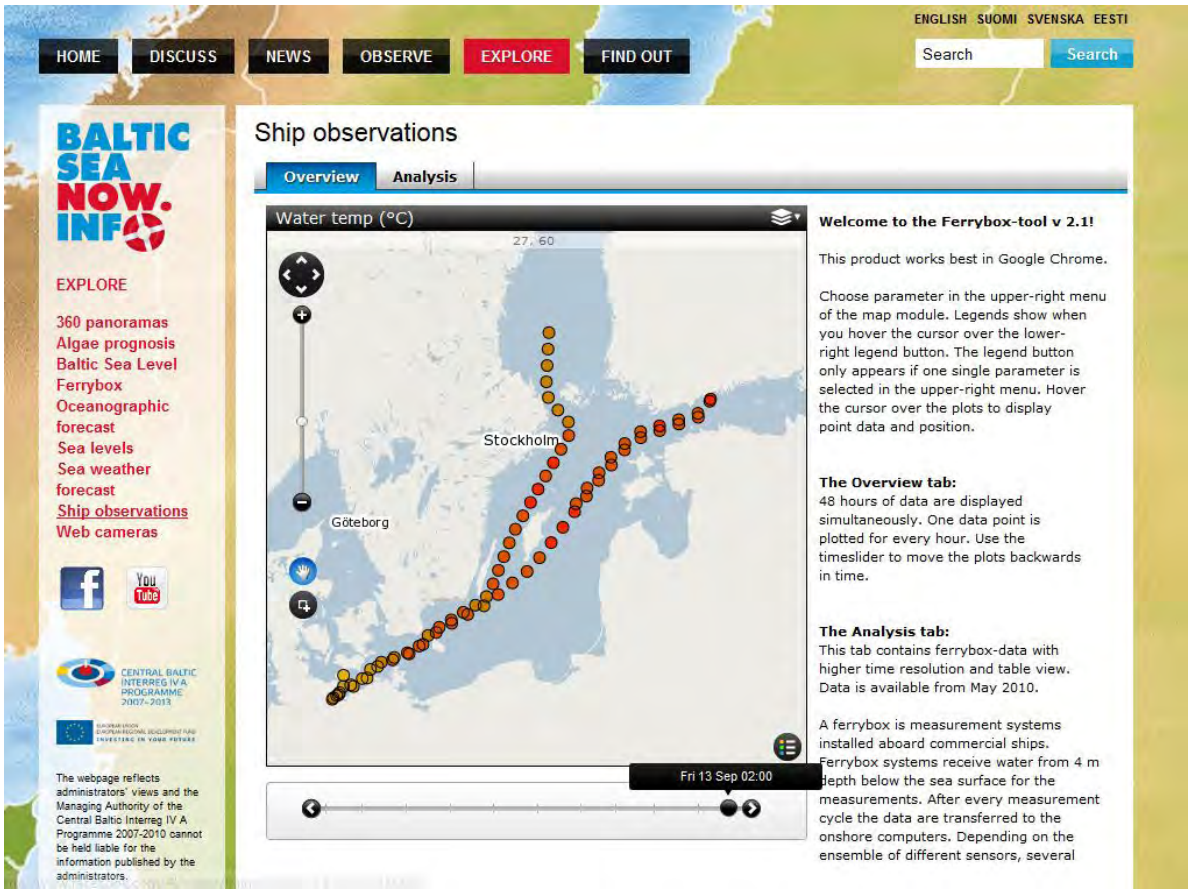
Secchi observations were presented on a map in the BSNI portal.

Realtime data

One of the tasks of the project was to strengthen the dialogue between the science community and the general public as well as to increase environmental awareness through providing topical information on Baltic Sea environmental issues. This aim was met in the portal by devoting the "explore" section to real-time data.

The idea was to present real-time data gathered from MSI's and SMHI's "ferryboxes", SMHI's information systems and data from profiling buoys of TUAS and MSI as well as data from TUAS's blue green algae stations. The real-time data was to be presented with laymen explanations in order to make it easier to understand. Additionally a scientist was to be present to provide the general public direct contact with marine science, and to reduce the gap between scientists and the general public.

Due to some technical problems, the real-time data section was considerably delayed. Real-time data was, nevertheless, embedded to the portal and current information on e.g. salinity, temperature, chlorophyll a and other parameters has been available for the general public together with explanations.



Realtime ship observations in the BSNI portal.

For some reason, the real-time data section of the portal was not attractive, as the page views in this section were very modest with less than 20 000 page views. Most probably real-time data as such or the way in which the data was presented was no entirely successful from the visitor's point of view.

Observations made by the general public

One of the ideas of the BSNI project was to encourage people to observe the Baltic Sea and provide information, which could be used eventually scientifically. For this reason 500 Secchi disks for measuring visibility depth were made and spread to committed observers in the project countries. Despite its simplicity, Secchi depth measurement is an important indicator of water quality, particularly if observations are made on a regular basis.

To encourage people to observe the Baltic Sea 500 Secchi disks for measuring visibility depth were made and spread to the public.

The voluntary observers were provided with Secchi disks and instructions on how to make the measurements. The observers were asked to measure the visibility depth and optionally to report also other parameters such as temperature, wind and weather information. A map application was available in the portal, but unfortunately due to technical issues, the observations had to be sent first to the project personnel, who then uploaded the data to the portal.

No platform for submitting Secchi observations was available for the general public and the process of sending observations by e-mail might have made the percentage of returned Secchi observations lower than was initially expected. All in all around 40 active observers made Secchi observations regularly in over 50 different locations and four countries.

Discussions

The initial aim of the BSNI portal was to promote discussion of Baltic Sea environmental issues, something clearly lacking from other websites dedicated to Baltic Sea environment. For this reason, the portal was designed to have separate discussion forum, comment boxes on each page as well as participative elements such as “Make a Promise” section and “Mission:Baltic Sea” section.

The idea was to offer discussion platforms where the threshold for participating and initiating discussions would be low. Scientific experts were to be available and ready to comment and answer questions presented by the general public. All the language versions had their discussion forums and comment boxes, but main focus of the portal was on the English site. There were high hopes that discussions would have been ignited in English and the dialogue between different nationalities as well as scientists would have truly taken off. Unfortunately the discussions were few and far apart and circled around the popular webcams, especially the osprey nest webcam, which was discussed on a daily basis both by regular visitors and first timers.

Lack of interest in discussing Baltic Sea environmental issues, language barrier and cultural reasons could be potential culprits, but also the chosen media could have been wrong. Maybe the general public was not interested in discussing these issues online with total strangers in a foreign language.

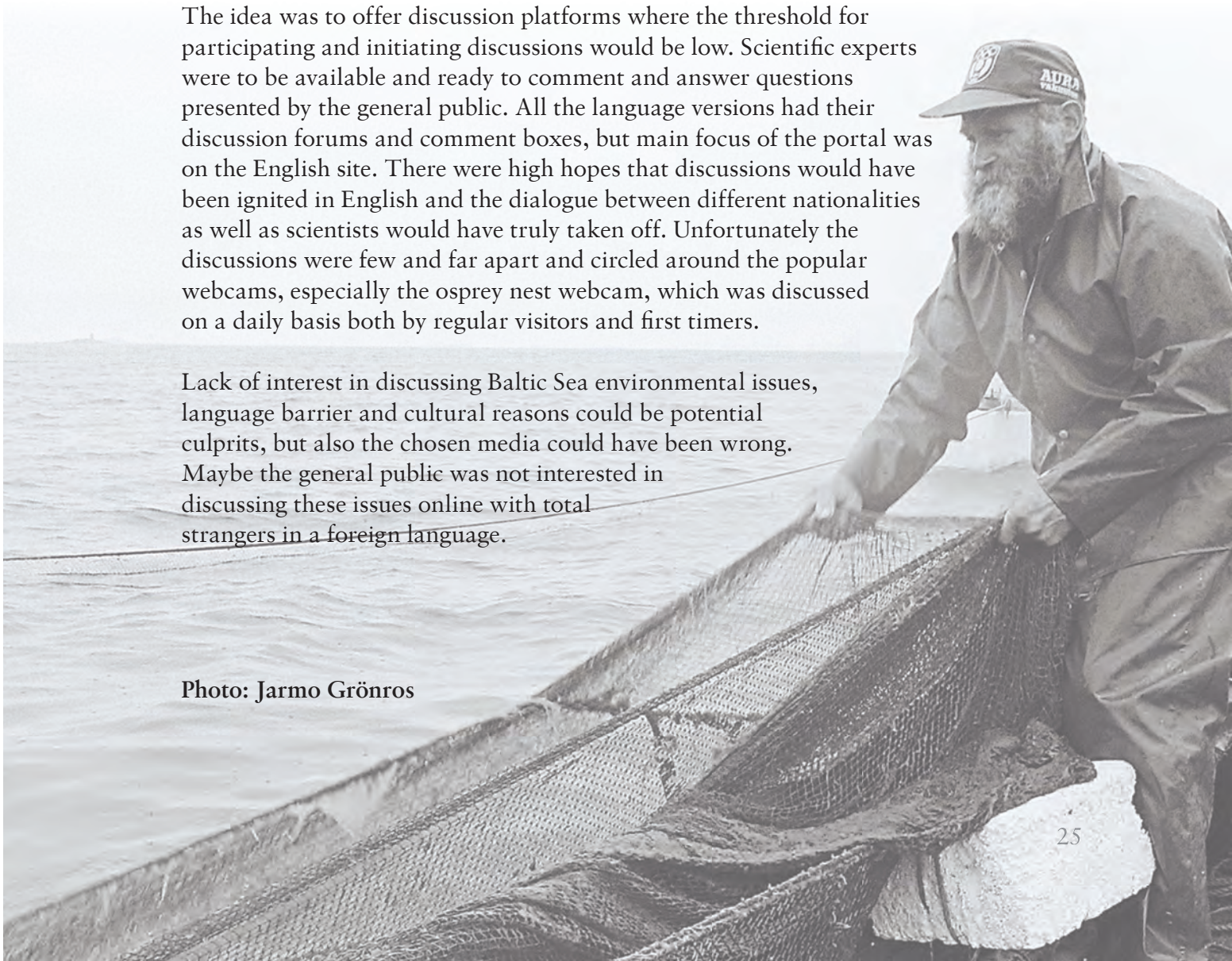


Photo: Jarmo Grönros

BSNI portal presented a blog by artist Pive Toivonen.

Blogs

The BSNI portal had also other participative elements. There were blog writers from each partner country. The idea was to introduce bloggers with different interests and backgrounds, but sharing similar concerns towards the Baltic Sea.

The Finnish artist living in the archipelago was the most prolific blogger, producing an entry on a monthly basis. Other bloggers were more sporadic in their blogging.
A series of video portraits were produced by the Latvian project partners and these were embedded also into the portal. Some commenting and discussion was generated by the blogs, but all in all the participative impact of the blogs was modest.

Blogger Pive Toivonen at home in Högsåra, Finland. (Photo: Vides projekti)

Finland
Environmental activist
School teacher
Artist
Skipper
Leisure time fisherman

Sweden
Marine Scientist

Latvia
Student
Photographer

Baltic Sea in My Eyes photo competition

Another way to encourage participation and raise environmental awareness was the launch of the "Baltic Sea in My Eyes" photo competition. The idea behind the competition was to challenge the public to contemplate on their relationship with the Baltic Sea by sending up to three photographs representing their relationship with the sea. The competition was enormously successful with over 250 photographers and around 750 photos from all around the Baltic Sea. The reasons for this success have not been speculated as such, but nice prizes and the fact that people nowadays photograph a lot could potentially lie behind the success. The success could also indicate that the Baltic Sea has a special meaning for people living close to the sea.

Winner of 1st prize / jury's vote in the Baltic Sea in my Eyes photo competition. (Photo: Anete Eklone)

The competition was twofold: there was a Jury's Choice, where a jury consisting of project partners selected their favorite photos and a Public's Favorite, where the winners were selected by popular vote. More than 8500 votes were given in the BSNI portal.

The winners of both categories were announced in spring 2012. A photo exhibition with a selection of both competition entries and competition winners began circulating in the partner countries in 2012. A photo book titled "Baltic Sea in My Eyes", introducing a selection of the photos, was published in 2012.

BSNI project in the Social Media

BSNI project was also active in social media. A Facebook page was created. Topical news, information about events and other interesting issues were introduced to the FB page. The FB page was seen as a good way to market especially the events organized by the project and also the portal. The FB pages has had close 600 likes after its launch. The Facebook pages could definitely have been updated and utilized more in order to promote both the portal and the project.

Winner of 1st prize / public vote in the Baltic Sea in my Eyes photo competition.
(Photo: Juha Lampinen)

Events

The BSNI project was involved in close to 50 different events and a relatively large audience of around 60 000 people was reached through involvement in them. In fact, it could be argued that the main focus of the project was switched from the portal to event participation at the latter part of the project, as the portal experienced problems discussed above. Taking part in different events was based on the general objectives of the project and all events had the same goal: to raise awareness, encourage discussion and test new ways to initiate participation.

The events could be divided into mass events and events with a smaller scale. Most of the events were local events, but some had a more cross-border approach. The project participated in the events both independently and in cooperation with other actors. For example, the Finnish partners were very active in a loose network of Baltic Sea environmental communication experts representing different projects, NGO's as well as research organizations. Some of the bigger events, such as Baltic Sea Village in Kotka Maritime Days and World Village Festival were organized together with this Finnish network.

Baltic Sea in My Eyes photo esxibition in Forum Marinum Museum, Turku (Photo: Martti Komulainen).

BSNI project participated in Kotka Maritime Days in 2012. (Photo: Martti Komulainen)

The events were like a living lab for testing novel methods for participation.

The events were like a living lab for testing novel methods for participation. Among the participative methods tested were e.g. the voting wall, Secchi disks, interactive voting, various competitions and the fishing net. Especially the voting wall proved out to be a well-functioning method of initiating participation among the public. It is, however, hard to estimate the true impact, which these events had on people and whether or not the BSNI project managed to increase public awareness and participation in Baltic Sea environmental issues by participating in them.

BSNI project at Nature Concert Hall in Liepaja, Latvia. (Photo: Anne Hemmi)

Events

Small-scale events

Baltic Sea goes Kapakka	Turku, Finland
Aurajoki Excursion	Turku, Finland
Education Day for Schoolkids	Turku, Finland
Pallomeri happening in Brinkhall Manor	Turku, Finland
Nature soirée	Turku, Finland
Talguregatt (2010 + 2011)	Estonia
Research Vessel visits (2010 + 2011 + 2012),	Estonia

Mass events

International Boat Fair (2010 + 2011 + 2012)	Helsinki, Finland
Sea is Calling – Boat Fair (2011 + 2012)	Turku, Finland
Floating Boat Show	Naantali, Finland
World Village	Helsinki, Finland
Kotka Maritime Days (2011 + 2012)	Kotka, Finland
Pori Jazz	Pori, Finland
Meri valvoo at Turku Library	Turku, Finland
Tartu Hanseatic Days	Tartu, Estonia
Tallinn Maritime Days	Tallinn, Estonia
Elukvaliteet	Tartu, Estonia
Matsalu Nature Film Festiva	Matsalu, Estonia
Kuressaare Maritime Days	Kuressaare, Estonia
Havets Dag	Falsterbo, Sweden
Skärgårdsmässan	Stockholm, Sweden
Photo Exhibitions in several locations	Finland and Estonia

International events

Tallink-Silja ferry event	
Final Semina	Tallinn, Estonia
Nature Concert Ha	Latvia

Materials produced by the BSNI project

Brochures and other promotional material
General brochure
Secchi brochure
Postcards
Newsletters
Roll-Up
Board Game "Ronena Podzina Celojums – Baltijas jura"

Video materials
Blogger portraits
Boater's tips videos

Participative elements
Secchi disks
Secchi cylinders
Gallup Wall
Fishing net with Baltic Sea species
Flag of Promises (KAT)

Artistic productions
Pallomeri – installations at Brinkhall Manor
Meri Valvoo – installations at Turku City Library

Educational, promotional and participative materials produced by the project

The BSNI project produced materials and elements aimed for raising awareness in the various events. The materials and elements varied from traditional brochures to new and innovative participative elements such as the voting wall, Secchi disks and the fishing net. Also video material was made by Vides projekti as well as Keep the Archipelago Tidy Association. An electronic newsletter was produced four times and sent to stakeholders via e-mail.

Voting wall, Secchi disks and fishing net

The voting wall was used in many of the events organized by the BSNI project. (Photo: Kata Kiviluoto)

The Voting wall and fishing net were designed by TUAS students and realized by the BSNI project. The Voting wall was a much used element in the events and served as a lure, with which people were attracted to the stand to discuss Baltic Sea environmental issues. The Fishing net was popular with kids and proved out to be a relatively easy way to demonstrate the complexities of Baltic Sea ecosystems.

List of publications

Annika Kunnasvirta & Martti Komulainen (eds.). BalticSeaNow.info – Experiences in Public Involvement. Reports from Turku University of Applied Sciences 135. Turku University of Applied Sciences. 2012.

Beverley Carpenter & Susana Nevado. Meri valvoo & Pallomeri – Ethico-aesthetic Interventions in Public Space. Reports from Turku University of Applied Sciences 144. Turku University of Applied Sciences. 2012.

Annika Kunnasvirta (ed.). Baltic Sea in My Eyes. Comments from Turku University of Applied Sciences 66. Turku University of Applied Sciences. 2012.

Inga Lips & Urmas Lips. BalticSeaNow.info. Marine Research – Mereteadus. Marine Systems Institute at Tallinn University of Technology. 2013.

Martti Komulainen & Katariina Kiviluoto. Baltic Sea needs public involvement. Baltic Rim Economies. 2011.

The best photographs of the photo competition were published in the book Baltic Sea in My Eyes.

Students taking part in the BSNI field course listening to an open air lecture at Seili island, Finland. (Photo: TUAS)

Cooperation between educational organizations

Cooperation between educational organizations was one of the objectives of the BSNI project. The partners involved in the educational process were Turku University of Applied Sciences and Marine Systems Institute. An international field course was organized twice in the autumn of 2011 and 2012. First week of the course was on board MSI's research vessel RV/Salme in the Estonian coast and the second part was organized in the Archipelago Sea Research Institute on Seili Island in the Archipelago Sea, SW-Finland. About 30 bachelor level students from MSI and TUAS participated in the two field courses together with five teachers.

The main idea was to introduce Marine Science to the students and also to demonstrate the differences in the ecosystems in two different parts of the Baltic Sea and develop an international Bachelor level study module closely linked to the Baltic Sea environmental issues.

Lessons learned

The emphasis of the BalticSeaNow.info project was clearly on the portal at the beginning of the project. Due to technical problems and delays, the focal point

The underwater webcam in Stora Hästö, Finland. (Photo: Metsähallitus 2010, Kevin O'Brien)

BSNI project at Global Village-festival in Helsinki, Finland. (Photo: Martti Komulainen)

switched more to events and testing various methods of public participation in the latter half of the project. The delays and technical problems demanded some flexibility from the financial program, as the project did not quite follow the set timeframe and concentrated on event participation even more than was initially planned.

It can justly be argued that especially a longer project should be allowed to evolve during its lifespan, even if it is not facing any major delays or problems. In fact the level of detail demanded in the application phase should be somewhere between very detailed and totally open to leave enough space for situational flexibility and project evolution.

The delays and other problems, which the project faced namely with the portal, clearly show how challenging it is to build a successful information portal. The keys for success can be found in the combination of user-friendliness, finding the right technical and visual executors, having attractive contents as well as having a clever marketing plan, enough financial leverage and sheer luck.

When looking back at the strategic planning phase prior to the portal launch, the project should definitely have invested more time and effort on viral marketing, media relations and social media, which all can attract people without investing a lot of money into marketing. Also the importance of user-friendliness and good co-operation between the project team and the technical and visual experts cannot be stressed enough. Maintaining a steady flow of visitors is likewise a challenge and requires constant work and effort. The signals coming from visitor behavior should have been more thoroughly analyzed and the possible results taken into account immediately to ensure that both the regulars return and newbies find the portal.

A longer project should be allowed to evolve during its lifespan, even if it's not facing any major delays or problems

Participating in both mass and small-scale events allowed the project to test methods and elements in different kinds of situations and with various target groups from children to grown-ups and from environmentally aware people to skeptics.

The aim of the project was not only to build up an information portal, but also to study different methods for public participation, especially diverse participative elements developed for and/or used by the project. Taking part in the events was a good way to evaluate the effectiveness of both the methods and elements in real situations.

Participating in both mass and small-scale events allowed the project to test these methods and elements in different kinds of situations and with various target groups from children to grown-ups and from environmentally aware people to skeptics. The most successful participative element was the Voting wall, a relatively simple, yet attractive element, which lured people into the project stand in the mass events. With more time and resources even further elements could have been developed and more methods could have been tested.

Photo: Pirjo Salmi

The highly popular webcams and the successful photo competition “Baltic Sea in My Eyes” were examples of participative elements which were quite traditional, but with a new twist. The webcams could be described as virtual windows to nature providing the viewer a peek at events not traditionally open for the regular nature friend.

The popularity of both the webcams and the photo competition demonstrate that people will both participate and discuss eagerly, if they find the subject interesting and are provided with relatively easy ways to participate.

An online community was evolved especially around the Osprey nest webcam with people gathering on a daily basis to discuss the webcam and issues related to the ospreys. The photo competition “Baltic Sea in My Eyes” was a traditional photo competition, but the online voting system provided the general public the possibility to choose the winner of the Public’s Favorite prize giving them more room for participation. The popularity of both the webcams and the photo competition demonstrate that people will both participate and discuss eagerly, if they find the subject interesting and are provided with relatively easy ways to participate.

Event	Time	Place	Participants / other
Marine Campaign	2009-2012	Estonia	+ 50 articles
Baltic Sea in My Eyes – Photo Exhibition	2012 (Summer)	Kuressaare, Viro	
”Ranta Roope” –events for children	2011 (Summer)	4 marinas, Finland	
Visitfestivalen	2012	Västervik, Sweden	
Conference: Esi Verigs!	2011	Latvia	80
Helsinki Boat Fair	12-21.2.2010	Helsinki, Finland	
Talguregatt	15.-28.08.2010	Virtsu-Manija-Ruhnu-Roomassaare-Abruka-Vahase-Vilsandi-Virtsu / Estonia	35
Helsinki Boat Fair	11-20.2.2011	Helsinki, Finland	78 000
Tallinn Boat Fair	March 2011	Tallinn, Estonia	
Turku Boat Fair	10.-13.3.2011	Turku, Finland	
Pallomeri – Art Event	18.3.2011	Brinkhall Manor, Turku, Finland	40
Baltic Sea goes Kapakka	18.5.2011	Turku, Finland	30
Aurajoki Excursion	22.5.2011	Turku, Finland	40
Naantali Floating Boat Fair	27.-29.5.2011	Naantali, Finland	5000
Tartu Hanseatic Days	22.-23.07.2011	Tartu, Estonia	60 000*
Kotka Maritime Days	29.-30.7.2011	Kotka, Finland	200000/3000
Talguregatt	17.-31.07.2011	Roomassaare-Abruka-Vahase-Vilsandi-Virtsu, Kesse-Osmussaar-Vormsi / Estonia	30
Kuressaare Maritime Festival	5.-6.08.2011	Kuressaare, Estonia	70 000
Nature Concert Hall	6.8.2011	Nica, Latvia	
Nature Concert Hall	13.8.2011	Mersrags, Latvia	
Education Day for Schoolchildren	30.8.2011	Turku, Finland	200
Matsalu Nature Film Festival	14.-18.09.2011	Matsalu, Estonia	8032
Meri Valvoo – Art Event	13.11.2011	Turku, Finland	9200
Baltic Sea in My Eyes – photo competition	1.4.-30.11.2011		753 photographs
Elukvaliteet 2012	7.-8.12.2011	Tartu, Estonia	36 000
Helsinki Boat Fair	8.-17.2.2012	Helsinki, Finland	72 000
Turku Boat Fair	7 -11.3.2012	Turku, Finland	8000

***(5000 on Toome Hill's science campus)**

Event	Time	Place	Participants / other
Nature Soirée	22.3.2012	Turku, Finland	80
Onboard Tallink Superstar	28-29.03.2012	Tallink Superstar-ferry, Tallinn - Helsinki	about 100 passangers / trip
Baltic Sea in My Eyes Photo Exhibition	1.3-31.3.2012	Turku, Finland (Forum Marinum)	
Onboard Tallink Superstar	28.4.2012	Tallink Superstar-ferry, Tallinn - Helsinki	1500
Maailma kylässä festival	26-27.5.2012	Helsinki, Finland	105 000
Skärgårdsmässan	1-2.6.2012	Tukholma, Sweden	50
Archipelago Sea Square Anniversary	5.6.2012	Turku, Finland	
Tallinn Maritime Days	13.-15.7.2012	Tallinn, Estonia	4500
Tallinn Maritime Days	15.-16.07.2012	Tallinn, Estonia	100 000
Pori Jazz	14.-22.7.2012	Pori, Finland	140 000
Havets Dag	29.7.2012	Falsterbo, Sweden	200
Kotka Maritime Days	26.07. - 29.07.2012	Kotka, Finland	200 000
Baltic Sea in My Eyes – Photo Exhibition	1.7-1.8.2012	Turku, Finland (Tammenterho Nature Center)	
RV Salme Research Vessel Visits	5.7. and 21.8.2012	Gulf of Finland, Estonia	12+16
Baltic Sea in My Eyes – Photo Exhibition	1.8-1.9.2012	Turku, Finland (Miller's House)	
Final Seminar	15.1.2013	TV Tower, Tallinn, Estonia	100

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Role of members of the public in the protection of the Baltic Sea

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Photo: Valdur Rosenvald

The BalticSeaNow.info project included a survey among those involved in the protection of the Baltic Sea in spring 2013, surveying the significance of involvement in the protection of the Baltic Sea. How do those involved in protection measures concerning the Baltic Sea experience the state of the sea and to what extent do they feel that individuals can influence the state of the environment in the Baltic Sea region?

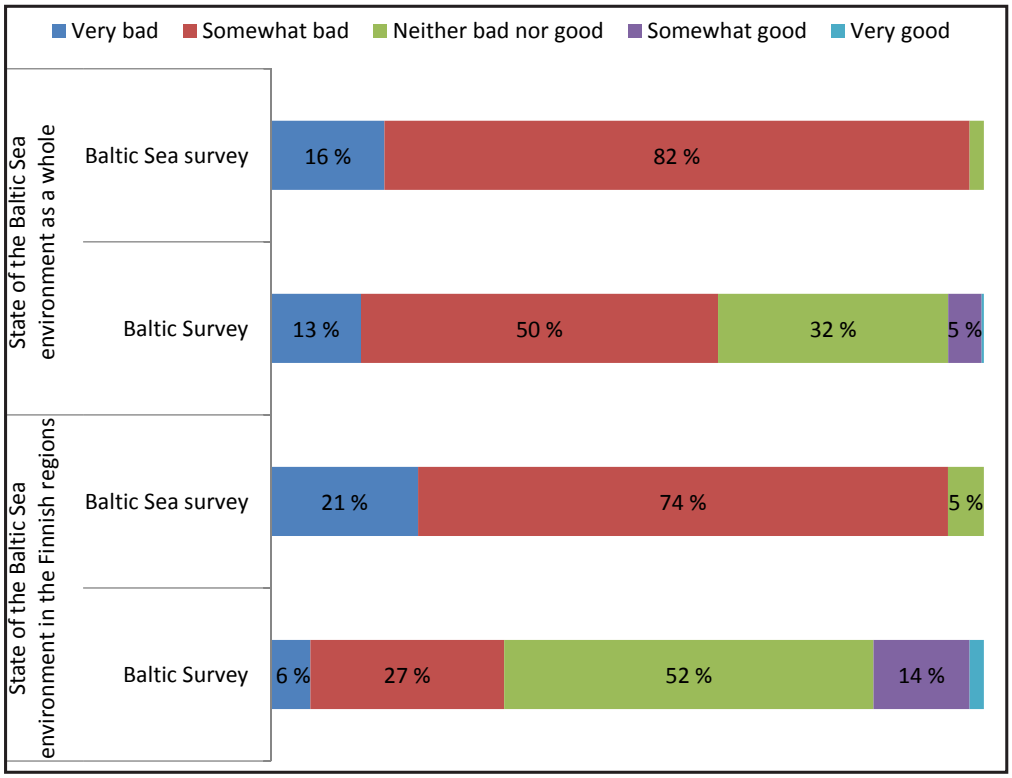
The significance of inclusion has been considered extensively in the field of environmental education. The significance of inclusion was investigated by means of a survey aimed at those working with the protection of the Baltic Sea. The aim of the survey was to clarify Baltic Sea experts' thoughts about the need for involving the public and the opportunities provided by inclusion.

The first part of the two-part survey concerned the state of the Baltic Sea and attitudes towards the protection of the Baltic Sea, while the second part concerned involving the public in the protection of the Baltic Sea. The questions of the first phase were selected from the extensive Baltic Survey concerning attitudes and recreational use of the Baltic Sea carried out by the BalticSTERN research network in 2010 (Söderqvist et al. 2010). The results of the expert survey carried out in this report were compared to the results of the survey aimed at the citizens of countries of the Baltic Sea region.

The second part of the survey is related to the involvement of the public in the protection of the Baltic Sea and surveys in more detail experiences of measures aiming for involvement and the role of members of the public in the protection of the Baltic Sea. The basic assumption of the survey was that those working with the Baltic Sea have better knowledge of the Baltic Sea and its current state than the average citizen. Only responses to the Baltic Survey obtained from Finland have been included in the comparison, as the survey was sent to persons mainly operating in Finland. The survey was qualitative, and it was implemented electronically and sent to approximately 100 persons via various networks. A total of 39 responses were received.

Current state of the environment in the Baltic Sea

The beginning of the survey charted the respondents' view of the current state of the Baltic Sea both within its Finnish regions and as a whole.

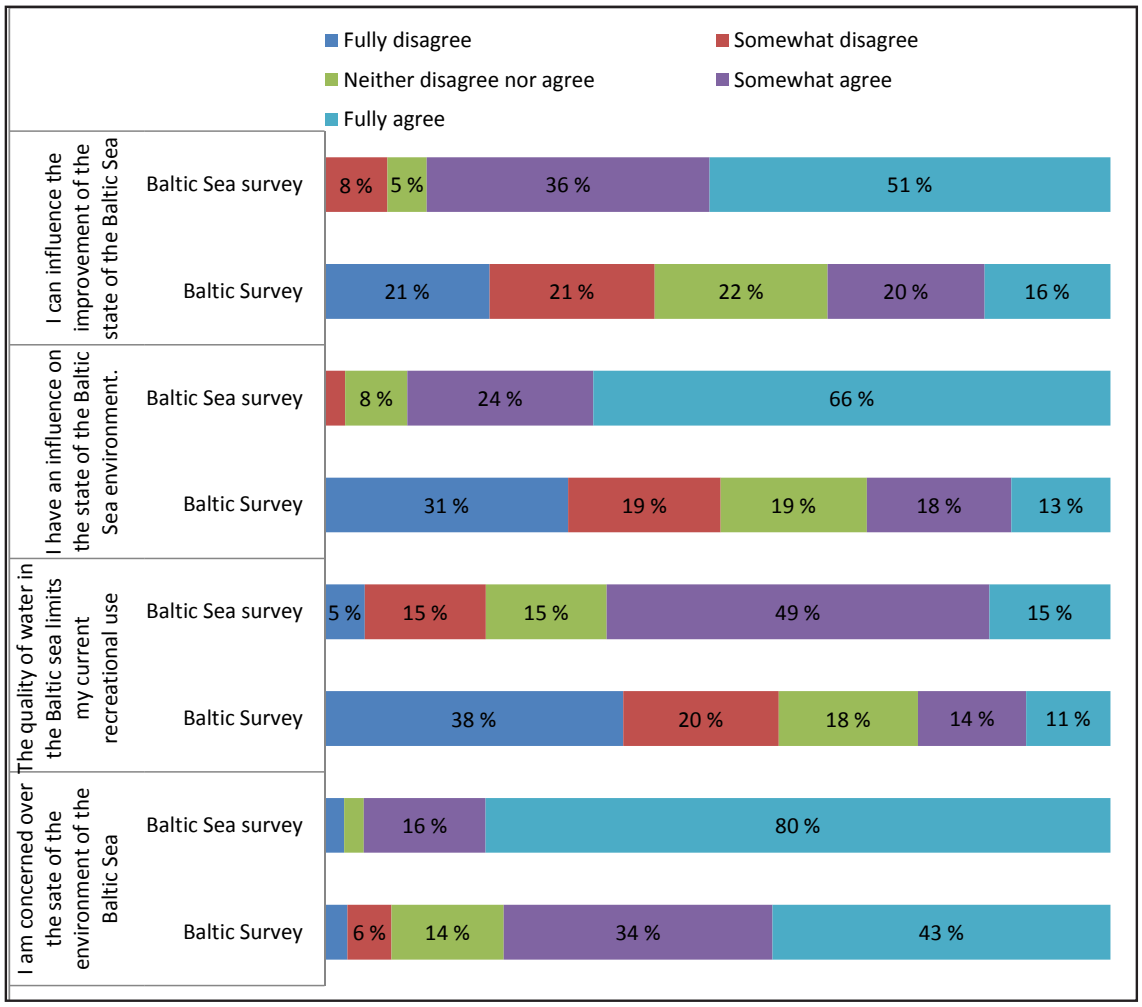


The state of the Baltic Sea in the Finnish regions and the Baltic Sea as a whole according to the Baltic Sea survey and the previous Baltic Survey respondents. The respondents of the Baltic Sea survey (n 39) are people working with the Baltic Sea, and the respondents of the Baltic Survey (n approximately 1,000) are a sample of members of the public.

Based on the responses, one can notice that the respondents of the Baltic Sea survey consider the state of the Baltic Sea to be worse than the respondents of the Baltic Survey. This may be due to differences in the level of knowledge among the respondent groups of the different surveys. Even though a lot of campaigning has taken place recently to improve knowledge of the Baltic Sea among the public, its state is not considered as bad as those who work with the Baltic Sea consider it.

Possibility to influence the state of the Baltic Sea

The respondents' personal possibilities to influence the state of the Baltic Sea were charted by way of statements concerning the Baltic Sea.



Statements concerning the state of the Baltic Sea presented to the respondents of the Baltic Sea survey and the Baltic Survey.

The respondents' perceptions of their own role in the protection of the Baltic Sea were investigated by claiming that the respondents can personally contribute to the improvement of the state of the Baltic Sea. A majority of the experts felt that they could personally influence the state of the Baltic Sea, while 42% of the respondents of the Baltic Survey did not feel that they were able to influence the improvement of the state of the Baltic Sea.

A majority of the experts felt that they could personally influence the state of the Baltic Sea.

As awareness increases, emphasis on the role of the citizen is important. The thought of one's personal actions being of no significance is something that should be addressed. It is difficult to expect activity and participation of a person who does not believe in the possibilities of taking his or her own actions. The idea of emphasising the role of citizens, which has recently emerged in protection work, has not been fully adopted by people.

Photo: Mari Malmstein. Hiiumaa, Estonia.

According to the next statement, the quality of water in the Baltic Sea limits the people's opportunities to use it recreationally. Experts considered the current state of the Baltic Sea a more limiting factor for recreational use opportunities than the respondents of the Baltic Survey. This result may be directly attributable to the respondents' views of the current state of the sea. It is natural that those who consider the state of the sea worse also consider the state of the sea to limit their recreational use more. The result may also be due to citizens not necessarily having a good view of the problems that the worsened state of the sea may cause to people, such as skin irritation due to blue-green algae or changes in fish stocks.

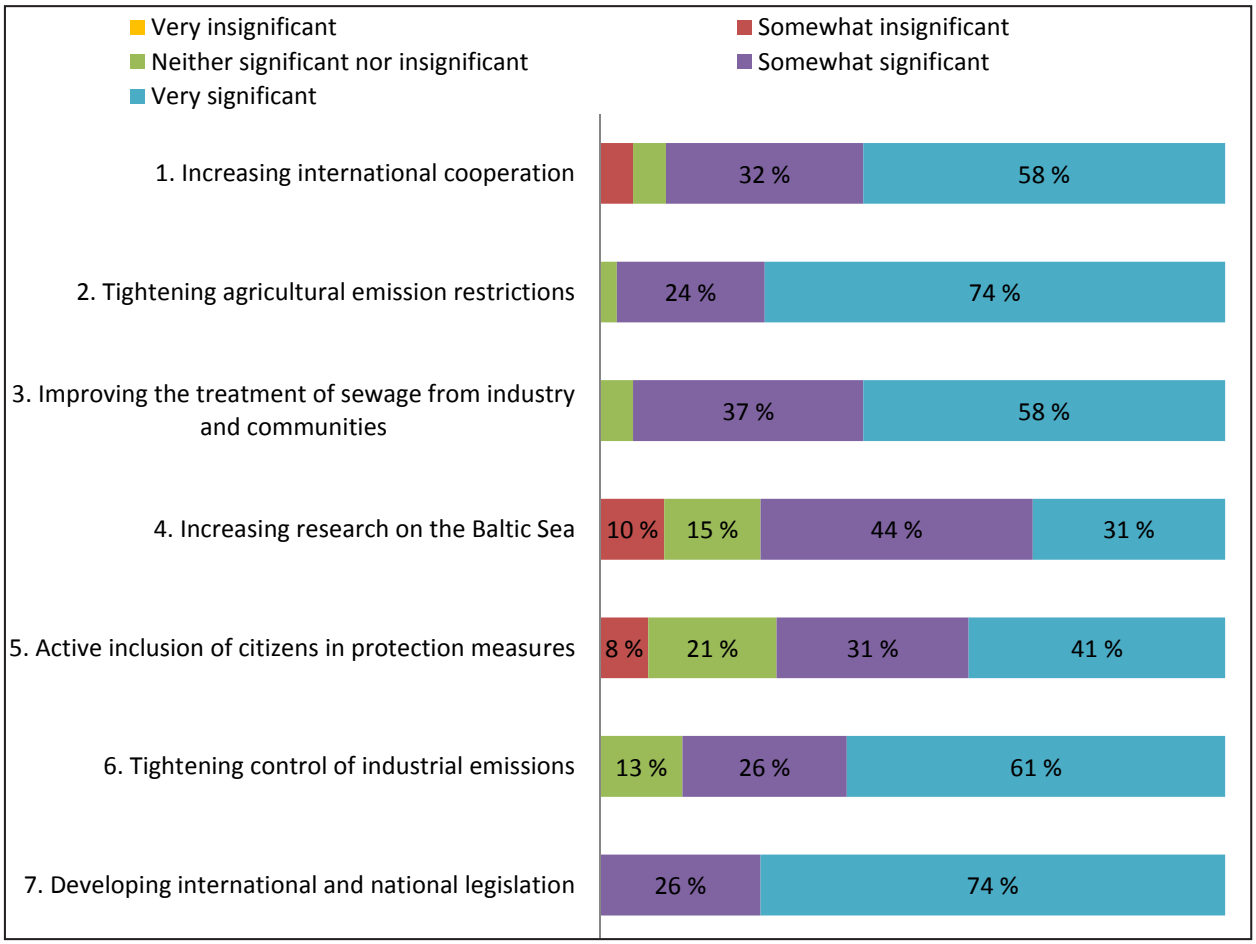
With regard to the statement "I am concerned over the state of the environment of the Baltic Sea", 80% of the respondents of the Baltic Sea survey "Fully agreed" with the statement. A majority of the respondents of the Baltic Survey also agreed with the

statement, although opinions were divided more evenly between the different options. Based on these two items, one can say that everyone is concerned over the state of the Baltic Sea, which is certainly also partially due to increased general awareness about the Baltic Sea.

Involving the public in the protection of the Baltic Sea

The second part of the Baltic Sea survey concerned involving the public in the protection work of the Baltic Sea. The second part also included questions concerning the protection of the Baltic Sea. These questions were only asked from experts working with the Baltic Sea.

This section surveyed the respondents' opinions of the operating models of protection activities concerning the Baltic Sea and their effectiveness. The respondents deemed the development of international and national legislation, improving the treatment of sewage from industry and communities, stricter industry emission restrictions, international cooperation and tightening agricultural emission restrictions the most important measures. Active participation of citizens in the protection of the Baltic Sea and increasing research-based information on the Baltic Sea were also significant to more than 70% of the respondents.



Effectiveness of operating models related to the protection of the Baltic Sea according to the respondents of the Baltic Sea survey.

Role of members of the public

The respondents' thoughts about the role of citizens in the protection of the Baltic Sea were investigated by means of an open-ended question. A majority of the respondents considered the role of citizens to be important. The answers emphasised the role of citizens as voters and pressure groups. The consumer role was also brought forth in several answers, as was the importance of individual actions. Vegetarianism and expression of opinions were also considered important. On the other hand, the responses emphasised the diversity of the Baltic Sea issue.

It is wrong to imagine that the Baltic Sea will be saved through citizens' consumption choices. The problems are so multi-dimensional that a consumer cannot be expected to know how to "shop right".

Only a few respondents deemed the role of citizens insignificant or very insignificant. According to a few respondents, citizens' personal choices could be significant, as long as the level of knowledge is high enough and there is will. New citizen involvement methods such as making environmental observations and increasing awareness play a crucial role to make it easier for members of the public to reduce their own "Baltic Sea footprint."

Baltic Sea experts were requested to voice their opinions on the effectiveness of individual methods in activating citizens. They were requested to evaluate whether the significance of a consumer's role, aspects related to nature protection, financial aspects or something else should be emphasised in connection with protection measures. A majority of the respondents were in favour of all of the means described above, as so many different factors appeal to people.

Many respondents were of the opinion that the role of an individual consumer is the best method as it is the easiest to grasp. However, it would be good to share more information so that citizens would be informed of the possible impacts of an individual's actions and the kind of small choices that everyone can make. However, the conflicting information available on the harmfulness of certain chemicals, for example, aroused suspicions of citizens' possibilities to make "the right choices." One respondent formed his opinion on the topic as follows:

The awareness of citizens is more important than consumption choices, as awareness enables citizens to guide politicians to make decisions favourable to the Baltic Sea.

"How could a consumer be aware of the environmental friendliness of different cultivation methods, the impact of pharmaceutical residuals on fish, the harmfulness of shoe moisture protection sprays, etc. and then choices at the shop accordingly, when even experts investigating these matters cannot reach a mutual understanding – or if they do, reforms grind to a halt at the decision-making level either due to the difficulty of changing the prevailing ways (stiffness of bureaucracy), the prevailing method being economical for the industry or agriculture, or simply failing to present the matter correctly to the decision-makers. In this respect, education of the public could have such a role that pressure caused by the Baltic Sea-favourable strategic intent would also influence the decision-makers. The perspectives of environmental protection and finances would be the most important ones."

Photo: Asko Hakola

According to some respondents, emphasising the financial risks related to the worsening of the state of the Baltic Sea could be the most effective way to wake people up. A few respondents also considered that emphasising aspects related to nature conservation would be the best way to bring the protection of the Baltic Sea closer to citizens. A variety of methods have already been tried for the protection of the Baltic Sea. The use of various emphases may lead to the desired outcomes in one group of people, while among another group it may have the opposite effect. Perhaps protection activities related to the Baltic Sea should adopt the segmentation of customer groups used in marketing, so that the most effective information could be offered to the target group with the right perspective.

Baltic Sea identity

The respondents were asked about the significance of strengthening a shared Baltic Sea identity among people living in the Baltic Sea region by way of an open-ended question. The respondents were asked to consider its significance or insignificance in an open-ended answer.

A Baltic Sea identity was considered important in several responses, as people are more prone to act in favour of things that they consider their own. However, many respondents considered that the Baltic Sea identity was a difficult matter, as the runoff area of the Baltic Sea is so extensive and lots of people live very far from the coast,

The Baltic Sea identity is difficult to build inland. The focus should be more on developing a comprehensive environmental mindset. What improves the state of the Baltic Sea also slows down climate change.

and thus the Baltic Sea might seem quite a remote thing for them. It is also feared that the identity would remain at the level of speeches, not action. Several respondents thought that instead of an actual Baltic Sea identity, one should focus on improving the citizens' relationship with nature and increasing the appreciation of nature.

Some respondents considered the Baltic Sea identity insignificant, and a few responses emphasised the different cultural backgrounds of the states in the Baltic Sea region, which make it impossible to establish a common identity. The diversity of the Baltic Sea region does present challenges to protection measures, and perhaps the same measures should not be emphasised in the same ways in different areas. Emphasising the Baltic Sea identity might work best in areas close to the sea, and due to cultural differences, the use of the same methods in different areas should be carefully considered.

Increasing Baltic Sea awareness and involvement as keys to change

Some conclusions can be made on the basis of the responses to the Baltic Sea survey. Even though quite a lot of Baltic Sea awareness has been distributed in recent years, it still has not reached a sufficient crowd for the public's thoughts about the state of the Baltic Sea to match the views of those working with the Baltic Sea.

Citizens consider the sea important and worth protection, but they do not feel that they can personally influence its state. The respondents suggest that social actors should make their operations more effective in order to realise the conservation goals. The respondents of the Baltic Sea survey also considered the role of citizens to be significant in the protection of the Baltic Sea. However, emphasising the Baltic Sea identity was considered a somewhat problematic issue, and it might not be the most functional way to involve the public across the Baltic Sea region, even due to geography alone. There is no single correct way to distribute environmental knowledge; the best outcome is achieved by choosing the right way to disseminate information by considering the target group. However, a personal relationship and sufficient knowledge are the preconditions for environmentally responsible activity.

The significance of the Baltic Sea identity was considered problematic by the respondents of the Baltic Sea survey. Due to the huge size of the runoff area of the Baltic Sea, some of the residents of the runoff area live far away from the sea, which makes it difficult to build an actual Baltic Sea identity. Based on literature and the survey, one can state that an individual's personal relationship with the Baltic Sea is very important in inspiring an urge to protect the Baltic Sea. If the individual has no personal experience of the Baltic Sea, it is quite improbable that a relationship will be formed. In these areas, it might make sense to focus more on developing personal relationships with nature, which would make it possible for environmentally responsible activity to arise.

A lot of work has been done recently to increase Baltic Sea awareness. Nevertheless, citizens do not identify their personal role in the protection work and consider their own capabilities to be insufficient. Based on this survey, however, one can state that concern over the state of the environment increases with increasing knowledge. Being concerned means becoming sensitive to the subject, and sensitivity plays a key role in the emergence of environmentally responsible action.

The actual impacts of different projects on the state of the environment should be explained better to the public. The advances and success achieved should be presented visibly enough in publicity to maintain the interest and hopes of the public in protection measures. Information about the impacts of everyday choices on the state of the environment should be subjected to public debate in order to enable people to act in an environmentally favourable way. Citizens are interested in the state of the Baltic Sea, and with information and action tips, an increasing number of people would certainly choose the environmentally friendlier way of acting. However, people's will to act is based on hopes for the better and personal relationship with what is being protected.

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Public-science dialogue and the Baltic Sea

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Photo: Vitalijs Rusanovs

Research is needed in order to obtain a clear picture of the state of the Baltic Sea, the protection measures needed and how to target them. The relationship between research and the public community benefits both parties. Members of the public need research-based information to gain an understanding of the state of the Baltic Sea and the ways they can make a difference. Research, on the other hand, can benefit from the perceptions and views of the members of the public.

The BalticSeaNow.info project introduced research on the Baltic Sea and its results, harnessed the members of the public to monitor the quality of water and tested the methods of promoting dialogue between marine research and the public through events and an online portal.

Baltic Sea-related research (oceanographic, hydrological, physical, ecological, economic and social) aims to increase the understanding of the functioning and state of the ecosystem, disturbances caused by man and how to prevent them. Research builds up the base of information for decision-making concerning Baltic Sea conservation measures and the use of natural resources. It interacts with society and members of the public in several other ways as well.

The relationships between (Baltic Sea) research and members of the public can be reviewed via three concepts: science communication, citizen science and open science. The concepts make up a continuum in which the degree of openness and interaction grows from traditional research and communication of its results to open science. In the latter, the boundaries between research and the public are blurred at least substantially, if not entirely.

The BalticSeaNow.info project introduced research on the Baltic Sea and its results, harnessed the members of the public to monitor the quality of water and tested the methods of promoting dialogue between research and the public through events and an online portal.

Baltic Sea research provides information on the state of the Baltic Sea and changes in it, fish populations and other natural resources, environmental problems and models for solving them. Research also produces forecasts of future developments. All of this information is required in the preparation of sea policy and planning and in the implementation of conservation measures. The BONUS research programme covering over 100 research institutes defined the main aspects in the Baltic Sea research agenda as (BONUS 2011):

o Baltic Sea ecosystem functioning
o catchment area dynamics
o sustainable use of marine resources
o capabilities of societies to respond to environmental and other challenges
o innovative observation and monitoring systems.

In recent years, the social dimension of the conservation of the Baltic Sea has been emphasised. A multidisciplinary point of view is required in research on the state of the Baltic Sea and on conservation measures. It is not possible to advance in the conservation measures without combining economic and social reviews with ecological information, e.g. how the costs of conservation can be allocated fairly.

Networks in Baltic Sea research

BONUS programme has engaged over 100 research institutes and universities in nine Baltic Sea countries. BONUS research projects produce knowledgebase to support development and implementation of regulations, policies and management practices for the Baltic Sea region http://www.bonusportal.org/

BalticSTERN is an international research network covering all nine Baltic Sea countries. The main research focus is on combining ecological and economic models with the purpose of doing cost-benefit analysis regarding the environmental problems of the Baltic. http://www.stockholmresilience.org/21/research/research-programmes/balticstern.html

Baltic Nest Institute (BNI) is an international research alliance between the Stockholm University Baltic Sea Centre, the Swedish Agency for Marine and Water Management, the University of Aarhus and the Finnish Environment Institute (SYKE). The research activities focus on developing a decision support system aimed at facilitating adaptive management of environmental concern in the Baltic Sea. http://www.balticnest.org/

Awareness through information – the science communication perspective

In the linear environmental education model of the BalticSeaNow.info project (a combination of existing models), increasing awareness plays a significant role. Environmental sensitivity, combined with adopted information on the environmental problems of the Baltic Sea and related corrective actions, results in environmentally-friendly choices and activity following an experience of empowerment. Most environmental education projects related to the Baltic Sea have focused on sharing information and increasing awareness.

In order for the public to be able to form their own opinions about the problems of the Baltic Sea and make environmentallysound consumption and other choices, research-based information in a consumer-friendly format is required.

Science communication (also known as science outreach or public outreach) offers research-based information to non-professionals in an attractive and understandable format. The aims of science communication are

1) to promote democracy and "build a society of trust",
2) to engage in science education and arouse interest in research among young people,
3) to promote a multidisciplinary approach and
4) to implement the "third task" of universities, i.e. increase social impact, offer support for political decisions and increase social dialogue.

The role of research-based information in the conservation of the Baltic Sea is clear: it is needed in order to support political decisions and allocate cost-efficient conservation measures. In order for members of the public to be able to form their own opinions about the problems of the Baltic Sea and make wise consumption and other choices that improve the state of the Baltic Sea, research-based information and organisations that adapt it to a consumer-friendly format are required.

The BalticSeaNow.info project focused on a diverse information and discussion portal with online information on water quality and basic facts about the sea environment. In addition, several events were organised to promote the interaction between the scientific community and the public. Some cases are described below.

Case: Online information on water quality

Filip Hvitlock
Swedish Meteorological and Hydrological Institute (SMHI)

The main focus in the information content of the portal produced in the BalticSeaNow.info project was to introduce realtime data on various aspects of the Baltic Sea. During the project SMHI has developed a number of web products presenting meteorological and oceanographic data. The products are made to supplement each other, and together provide usable, interesting and easily understandable information about the weather and water conditions in the Baltic Sea area.

Below is a list of the web products that SMHI has provided and brief explanations of what they present.

- Sea weather: Presents 24 hour forecasts for the Baltic Sea districts as well as the regions between the Baltic Sea and the North Sea. The forecasts consist of one describing text for each district.
- Weather radar: Shows the precipitation based on radar data from the last 24 hours over the Scandinavian countries, Finland, and most of Estonia.
- Sea levels: 60 hour time series of model data together with observational data are shown on several stations. The observations are updated every hour.
- Oceanographic forecast: Maps with oceanographic and meteorological parameters presented in a self-explaining way with pop-up legends and a time-slider. The parameters are surface currents, salinity, temperature, ice concentration, wind and pressure.

- Ship observations: This web product visualizes ferrybox data in a convenient way. Measurements from different ships are displayed in the same window. The user can choose between two different tabs, one simplified and one advanced.

Ship observations will be used here as an example when describing how to cope with the challenges that web product development involves. The ship observations product contains ferrybox data from measurement systems installed aboard five commercial ships: Transpaper, Baltic Princess, Finnmaid, Oden and Atle. Ferrybox systems receive water for the measurements from 4m depth below the surface. After every measurement cycle the data are transferred to the onshore computers. Depending on the ensemble of different sensors, several parameters can be measured. In this case the parameters are: water temperature, salinity, air temperature and chlorophyll. The set of parameters presented is different for each vessel. Data is viewed on demand, directly from the SMHI database.

How to sort and present information

The user groups might vary between experienced oceanographers and people that just want to know some more about the conditions in the Baltic Sea. These two groups have different expectations about the information presented when using the web product. A basic problem is to keep a sensible balance between the amount of information and the simplicity of the product. More information usually implies slower performance and increasing difficulty for the user to navigate.

In the case of ship observations, the problem mentioned above is solved by dividing the product into two tabs, one simple (Figure 1) and one more advanced (Figure 2). Both tabs use the same basic structure, but differ in content. The simplified Overview tab displays data with one hour time resolution to keep up the performance and make the data plots easier to read. A time slider is used to visualize the ship routes and to make ferrybox data from the last three days available. The plots can only visualize one parameter at a time. Therefore the pop-up works as a complement displaying all available parameters as well as position, measurement time and ship name.
The Analysis tab displays ferrybox data with 10 minute time resolution instead of one hour. A calendar is used to select time span, and the table content can be exported to a file. Thus, it takes more time to visualize the requested data in the Analysis tab, but it offers more information.

Positive and negative experiences

The advanced graphic visualization system that is used in this case makes the products very easy to understand and nice to look at. The on-demand technique is also good in the way that it makes data available fast and historical data is easy to collect. On the other hand it requires more advanced web browsers and a decent internet connection, which results in poor performance for some users. Also, it is more expensive to maintain than a simpler product would have been.

Photo: Arto Kangas. Near Utö, Finland.

In a world with an increasing amount of open source code and free available data, people will expect good looking and easily usable web products.

In a world with an increasing amount of open source code and free available data, people will expect good looking and easily usable web products. The overall experience from this is that there is always a trade-off between resources and technical possibilities, but regardless of this, the logical structure and composition of information are very important to prioritize when developing a new web product. It might also be reasonable to concentrate on a low number of products and keep the quality high, instead of having a high number of mediocre products.

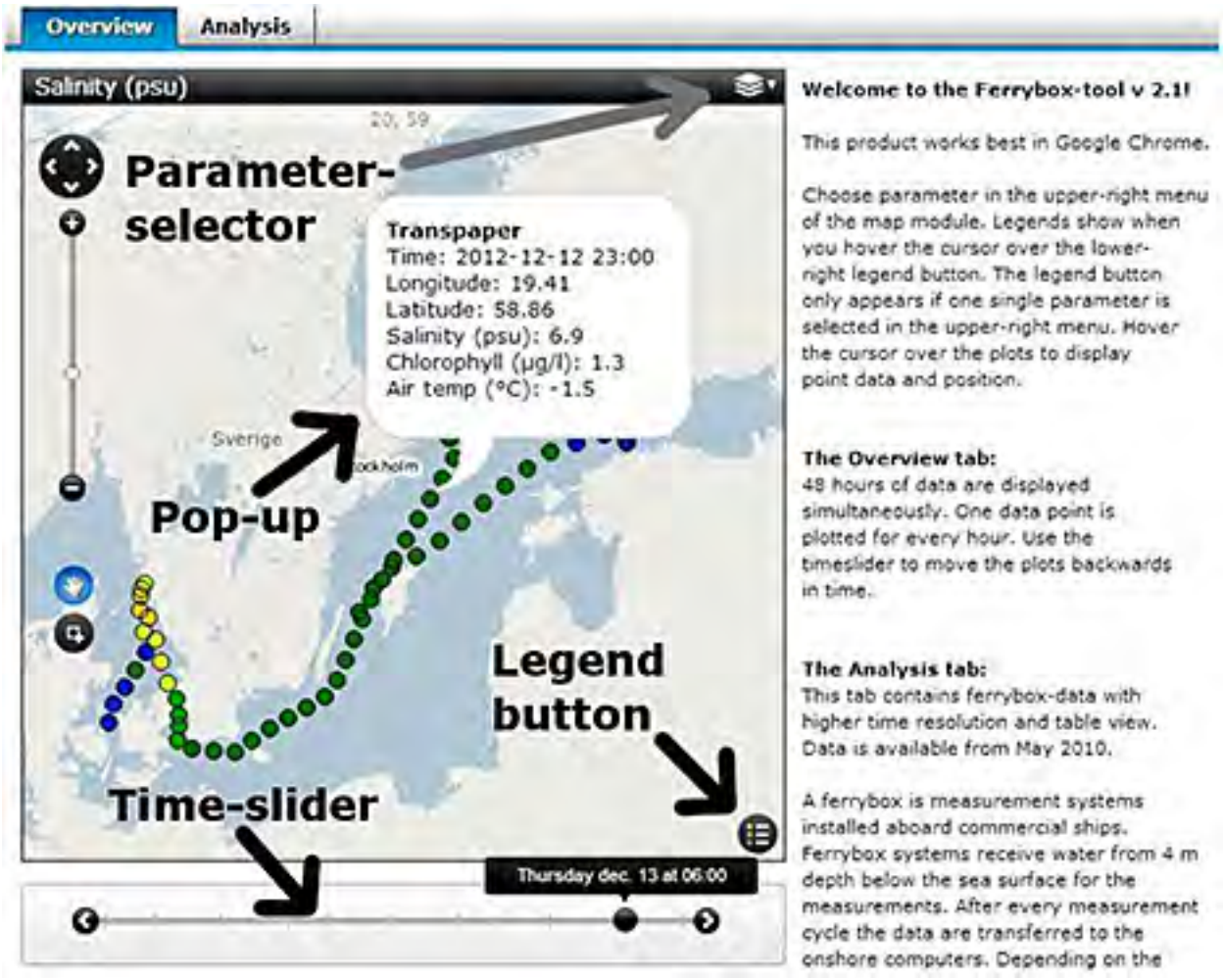
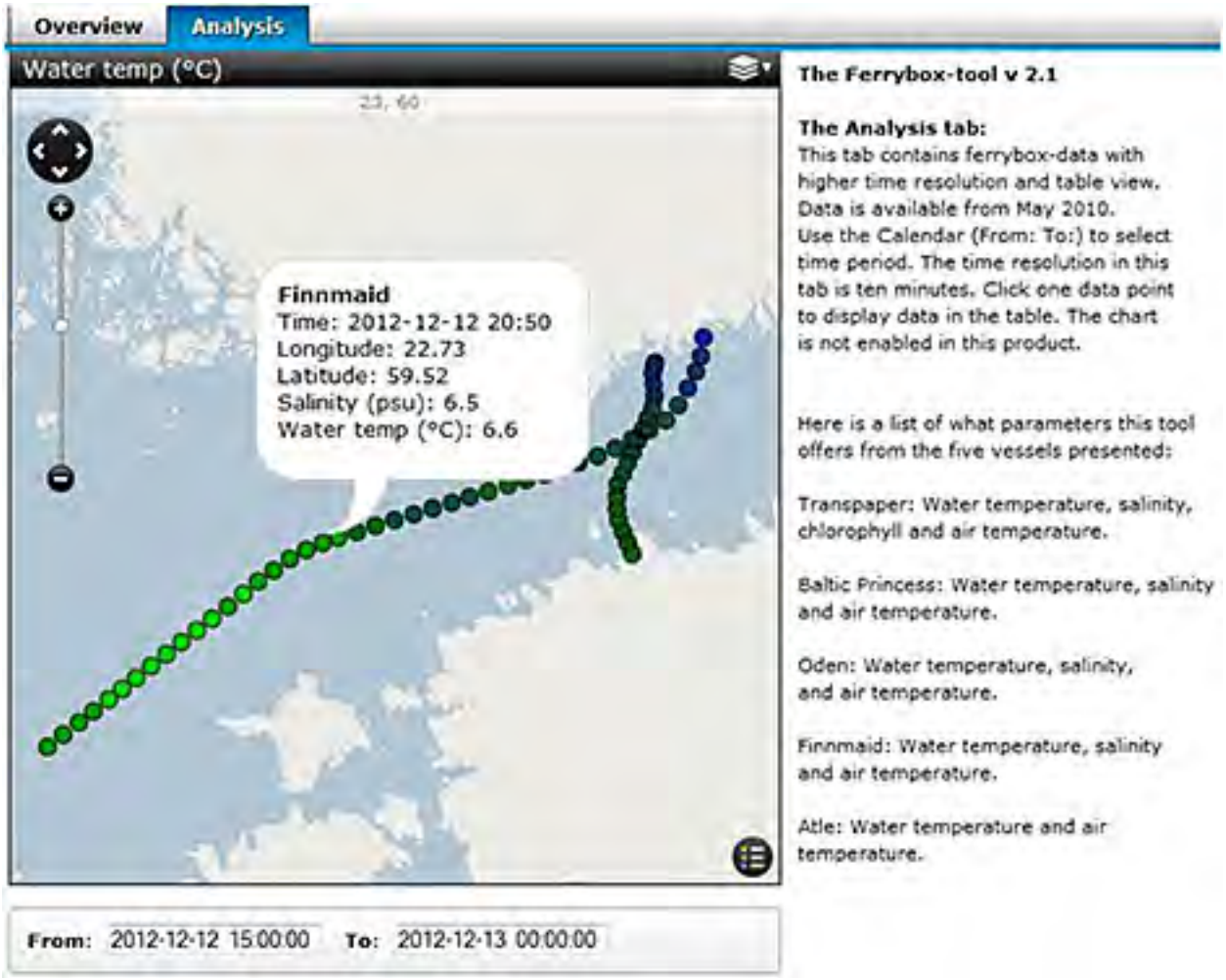


Figure 1. The Overview tab. 48 hours of data is displayed simultaneously. One data point is plotted for every hour.



Finnmaid Search location

Table Chart

Chosen computed point: SWEREF99: X: 6537628, Y: 841998

Time	Long	Lat	Water temp (°C)	Salinity (p...	Air temp (°C)	Chlorophyll (µg/l)
2012-12-12 23:50	20.93	58.84	6.6	6.8		
2012-12-12 23:40	21.03	58.88	6.5	6.8		
2012-12-12 23:30	21.14	58.92	6.3	6.8		
2012-12-12 23:20	21.23	58.96	6.9	6.9		
2012-12-12 23:10	21.33	59	7.1	6.9		
2012-12-12 23:00	21.42	59.04	7.2	7		
2012-12-12 22:50	21.51	59.07	7.2	7		
2012-12-12 22:40	21.61	59.11	7.2	7		
2012-12-12 22:30	21.71	59.15	7.1	6.9		
2012-12-12 22:20	21.81	59.19	7.1	7		
2012-12-12 22:10	21.91	59.23	7.1	7		
2012-12-12 22:00	22.01	59.27	7.1	7		
2012-12-12 21:50	22.11	59.31	6.9	7		
2012-12-12 21:40	22.21	59.36	7.2	6.8		

Figure 2. The analysis tab contains ferrybox data with higher time resolution and table view. Data is available from May 2010.

Case: Research vessel visits

Karin Ojamäe
Marin Systems Institute Tallinn University of Technology, Estonia

Objectives

At the completion of a study-trip onboard research vessel participants will be able to:

- Understand the basics of a marine scientist's work at sea
- Recognize common environmental impacts to the sea
- Identify if observed indicators describe good or bad environmental condition
- Discuss experiences with friends, teachers, family or co-workers.

Case description

Invitations to take part in a one-day study trip on a research vessel equipped with scientific equipment were sent out to teachers and students with special interest in natural sciences. Research vessel visits were arranged in three consecutive years – 2010, 2011 and 2012. The arrangement of the study trips was as follows. In three consecutive summers research vessel took groups (usually consisting 12 to 16 members) to the sea and visited several research stations where water samples for further analysis were collected. During sample collections its necessity and further protocol for analysis was explained to participants.

In measuring stations (points) practical assignments were given to use Secchi disk for water transparency measurements, also water surface was visually observed for blue-green algae biomass accumulation. Other practical activities included demonstrations of the scientific equipment, setting up water collection rosette for next sampling, observation of CTD measurements for temperature, oxygen and fluorescence while the sampling rosette was lowered to near-bottom water layer. Oxygen concentration measurements were done using oxygen electrode and water filtration was practiced (for chlorophyll analysis).

To fill participants' time between the stations and on the way back to the harbor, talks and practical lessons were given. Lectures and seminars covered topics on the state of the Baltic Sea and interesting sea organisms currently under scientific investigation. Observation of common benthic fauna, which were collected beforehand, was arranged for the study-trip with teachers only. During practical work, visitors were actively drawn into dialogues to discuss if the measured parameters describe good or bad environment conditions and what are the natural and anthropogenic agents, which have an effect to observed indicators.

Photos: Marine Systems Institute

Selection of participants

Participants from educational institutions are already actively involved in the process of learning or teaching in their everyday life. They are open-minded, prone to gain new knowledge and are likely to use and share that information further in a classroom. Improving public discussion and promoting environmental thinking was also one of the many aims. For some high school graduates taking part in a sea expedition may induce choosing a career in earth sciences, e.g., to become an environmental specialist.

Participants were of different age groups:

- Basic school pupils
- High school graduates
- Teachers

Environmental awareness develops best by personal experiences.

Though, average research vessel visitor is aware of the alarming situation of the Baltic Sea, pointing out concrete measurable indicators, which are used to characterize the state of the sea, is already a problematic assignment for them. Study-trips to the sea were an ideal tool to fill in the gap. The trips were a proof concept -- environmental awareness develops best by personal experiences.

Nevertheless, the target groups were of excellent choice, creating a group of high school students, who were mostly strangers to each other, turned out not to be the best solution. Students with special interest (from different educational institutes) were chosen and therefore, it was believed they have a higher potential to be more engaged in activities. Modesty and communication problems suggested this group probably experienced a 'mixed group effect', which resulted in difficulties to motivate them to work as a team.

Lessons learned

When organized effectively, study-trips gave a good impression to the participants. Clearly, they must have been sharing and discussing experiences back in school, since teachers were asking for opportunities to participate with more students in the following year.

It is challenging to estimate what was the impact of these events. Their understanding might have been altered and individual perspective might have been changed but it is not known if the impact manifests in behavioral change. It is premature to expect attitudes to change immediately but introducing new concepts in a person's consciousness is a start.

During visits environmental problems in the sea were shown but perhaps environmentally sustainable behavior should have been more emphasized: specific steps, do's and don'ts. In this way they would receive a list guidance, which they choose to fallow or not.

Harnessing the public in making observations – citizen science perspective

Citizen science (also known as participatory science) harnesses members of the public in science, mainly by using observations collected by citizens as research data. It has long traditions in natural science, especially astronomy and ornithology, where citizens' observations have been utilised for decades. In connection with climate change, citizens' observations have indicated e.g. changes in the distribution of organisms and the timing of bird nesting and migration.

In the context of the Baltic Sea, citizen science, with its multiple eyes, is effective in surveying phenomena such as the occurrence of invasive species or algae in the Baltic Sea. Observations made by members of the public benefit research, but they also include problems related to the observers' differences in measurements.

Citizen science, with its multiple eyes, is effective in surveying phenomena such as the occurrence of invasive species or algae in the Baltic Sea.

In addition to research benefit, the involvement of members of the public in research by making observations increases general awareness of research among the public. Citizen science can also be seen as a method of involvement (Dickinson et al. 2012), involving members of the public in considering the significance of research and its objectives and the questions being studied, such as the environmental problems of the Baltic Sea. The significance of involvement was emphasised in the BalticSeaNow.info project in which observing the state of the sea aimed to arouse public awareness of the state and future of the Baltic Sea.

Case: Secchi disk

The BalticSeaNow.info project offered information in the portal on how to make observations on algae and the state of the sea. The project also implemented a campaign to seek volunteers to measure water transparency. The method was the standard Secchi disk, which, when lowered down in the water, disappearing indicates the visibility (Secchi depth or transparency) of water. When repeated at the same location, the measurements indicate changes in the state of water. Since weather conditions (wind in particular) influence the measurement results, Secchi depth measurements should be made often enough.

Metal disks with instructions were given to observers who submitted the observations (due to the technical limitations of the portal) by e-mail to the administrator. The observations were presented on a map (figure 4) in the portal. Observers were

recruited via the portal and in connection with events arranged by the project.

The activity of the observers varied considerably. Some worked very systematically, and such data (see figure 5) are useful for research. Most, on the other hand, made observations very sporadically. Maintaining observer activity would have probably required closer contacts from the project team, along with interim reporting that would have shown the significance of the observations.

Country	No of observers	Observations
Estonia	6	12
Latvia	2	2
Sweden	5	25
Finland	29	183
In total	42	222

Table 1. Number of observers and observations in different countries.

In the Secchi method, a disk, typically with a diameter of 30cm, is lowered slowly down into the water. The depth at which the disk disappears from sight indicates the Secchi depth (transparency) of water.
(Photo: Marine Systems Institute)

Figure 3. Map of the water transparency measuring stations in August, 2011 (Source: Google Maps)

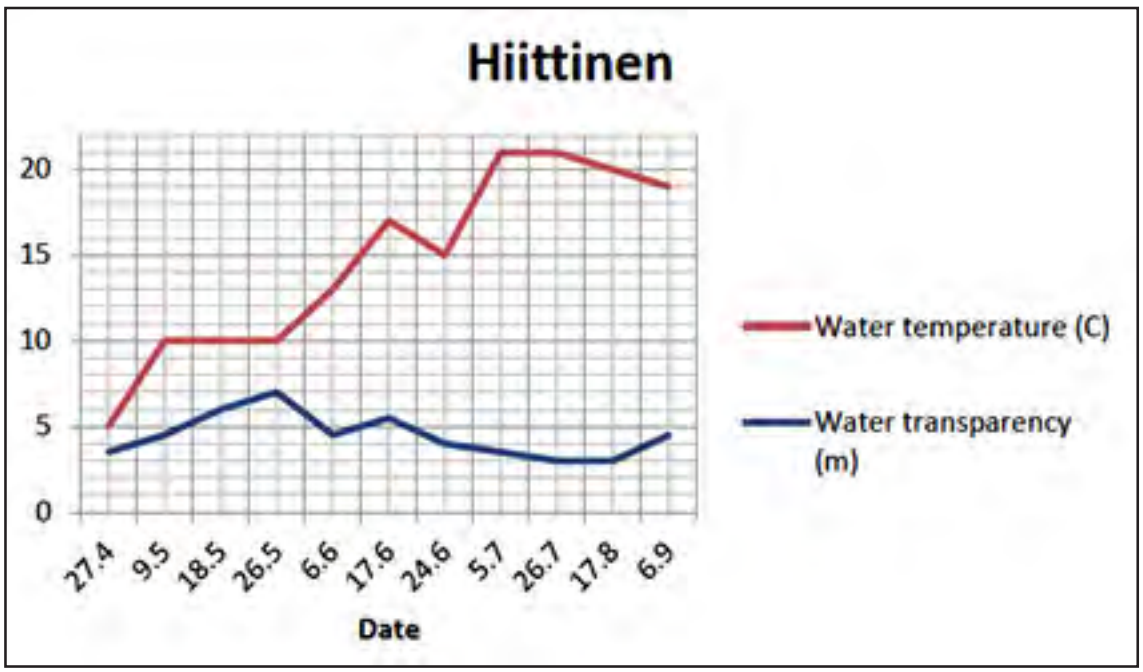


Figure 4. Water transparency measurements from Hiittinen, SW Finland, in 2011.

Partnership between science and the public – Open science perspective

Open science fades out the borders between science and the public by including citizens more extensively in dialogue on the starting points of research and research problems. Collaborative research approaches a kind of collective intelligence and Open source mindset. At its best, it can enrich research by providing new perspectives (Dickinson et al. 2012).

Lowering the threshold to engage in dialogue by bringing the event to an informal place aroused lively debate on environmental research and the state of the Baltic Sea.

The BalticSeaNow.info project arranged events in the spirit of "Open science" by offering an opportunity for dialogue between scientists and members of the public. The events were encouraging: in particular, lowering the threshold to engage in dialogue by bringing the event to an informal place aroused lively debate on environmental research and the state of the Baltic Sea.

Volunteers were recruited to make water transparency measurements using Secchi disk. (Photo: Katariina Kiviluoto)

Case: "Baltic Sea goes Pub" discussion

Katariina Kiviluoto
Turku University of Applied Sciences

From our previous experiences we have observed that events organised in a formal setting do not necessarily encourage people to participate in discussions, leaving the outcomes vague and at a relatively general level. With the Baltic Sea goes Kapakka (Baltic Sea goes Pub) discussion event the aims were to explore how the milieu affected the level of public participation and to test a wireless polling device with a restricted audience and see if it is a worthwhile technical aid to be used in public involvement events.

The objective of the event was to create a lively discussion event, where ideas would flow freely and a dialogue between expert speakers and the audience would be ignited.

The Baltic Sea goes Kapakka event was organised in late May 2011 at a local pub called "Koulu" in Turku city centre. Being a popular spot for discussion events, the pub was seen to fit our objectives as the locals already identify the pub to have a conversational atmosphere.

In order to enable and encourage a dialogue between scientists and the general public, three expert speakers were invited to speak at the discussion event. The expert speakers represented Marine Research at the Finnish Meteorological Institute (FMI), Environmental Office of Turku City and the The Center for Sustainable Development and Energy at Turku City.

We decided to use a professional host to ensure public participation and to minimize any awkward or quiet moments. The professional presenter was also in charge of the wireless polling device, which was used to keep the discussion alive and on track. The device allows people to remain anonymous while voting, which can be seen to lower the threshold of answering truthfully.

Questions were prepared beforehand on Baltic Sea environmental issues ranging from people's personal relationship to the Baltic Sea to the worst environmental problems the sea is facing. We also asked questions on the attendees' views on how they saw their own role in this problematic situation and what measures they were prepared to take to protect the Baltic Sea.

The discussion event Baltic Sea goes Kapakka had a more restricted audience due to its more intimate setting at a local Turku pub. All in all around 35 people gathered to the discussion event. The audience, three expert speakers, the professional presenter as well as project personnel made the location quite full.

The objective of the event was to create a lively discussion event, where ideas would flow freely and a dialogue between expert speakers and the audience would be ignited. Another objective was to test the wireless polling device and this objective was also reached with encouraging results. The wireless polling device was easy to use and served its purpose well in keeping the discussion both alive and on track. As the objectives were reached, the event can be considered as a success.

The duration of the event should be considered. Baltic Sea goes Kapakka could have been maybe a half an hour longer. The audience was just starting to warm up to the subject when the event came to an end. The audience could clearly have continued with the discussion even longer.

The professional host and the expert speakers were vital to the success of the event and their importance cannot be stressed enough when planning future discussion events.

The way forward

- In citizen science projects, recruiting volunteer observers is challenging. The observers must be committed and motivated in the project in order to provide usable data. Regular contacts and presentation of interim results after recruitment maintain motivation.

- Information on the Baltic Sea (including research-based information) is scattered on sites maintained by different organisations. The aim should be a joint portal for the entire Baltic Sea, offering the information in a single location and offering members of the public an opportunity to take part in the discussion.

- The common Baltic Sea site should have scientists present to comment on real-time water quality data, answer citizens' questions and take part in discussions.

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Art meets science – Conveying scientific information through art

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Photo: Hanna Virtanen

How can environmental education turn environmental concern into action? Which methods would induce desired pro-environmental behavior?

BalticSeaNow.info project approached the combining of art and science at two events in 2011. Artists and students from Turku University of Applied Sciences combined their creative powers with marine scientists and project experts to create two public works of art. These events aimed to engage the public through art into action for a healthier Baltic Sea.

With all the information in the world at our fingers, one might assume the message conveyed would reach its targets and incite action. Unfortunately, although people are often very much aware of the state of the environment, behavioral changes do not follow suit as might be expected. How can environmental education turn environmental concern into action? Which methods would induce desired pro-environmental behavior?

Conveying science-based information through traditional channels in the media is a rather straight-forward task, which at best might reach its target audience in a satisfactory manner. Channeling information in a manner that induces actual behavior, however, is another matter entirely. Art presents a different approach to conveying information and getting the desired response from the audience. The artist and the scientist need to combine their different yet compatible goals: creating attention and action for their subject-matter. How could the artist and scientist work together to change behaviors and attitudes to environment?

BalticSeaNow.info together with scientists and artists approached the problems in the Baltic Sea at two different events. The events were centered around the ecological problems and the endangered marine environment, aiming to engage the public through art to act for these causes.

Art as a tool for popularizing science

Popularizing science, providing scientific information to the public in a way that is concise, comprehensible – and perhaps most importantly interesting – is the key in creating action for a better environment. Scientists possess a crucial ability having everything to do with environmental communication and education: the ability to produce scientific data on different phenomena. Rather often, however, the data is lost in the masses of information presented through different media each day. In a world filled with a continuous stream of knowledge, data, numbers and fact, understanding the message conveyed may not always come granted.

Various methods exist to make scientific information more approachable for the everyman. Art represents a powerful means to make scientific data presentable to the audience, and, more importantly, making an effect and even creating change. Every so often, however, science and art are considered opposites and the possible connections between the two fields are not utilized. Popularizing science through art should be seen as a welcome platform for integrating these two fields instead of reasserting their division.

Art presents a useful means of popularizing science.

But does art, in all its attractiveness and potential, present a real possibility for changing the attitudes and values that might hinder environmentally responsible behavior? How does art help the audience to connect the choices they make in everyday life to environmental problems? Environmental art, by definition, is created and functions in interaction with its environment and often the viewer. Environmental art should help improve people's relationship with the natural world. Educating the audience about environmental problems is thus a natural part of creating site-specific installations.

Artists have dealt with environmental issues like climate change in different ways. Three general strategies artists have adopted have been found (Giannachi 2012, 125):

1. Representations —emphasizing visualization and communication
2. Performance environments — emphasizing immersion and experience
3. Interventions — emphasizing mitigation and behavioral

Although sometimes effective in both art and science, gruesome images may not always achieve the desired effect in raising concern.

Photo: Jussi Laaksonlaita

Each of the strategies can produce important and effective works also in environmental art. In many cases, all three aspects are embraced. The categorizations will be explored further in the following chapters.

Raising awareness through art

Today's environmental challenges present risks for the whole society. Awareness of these challenges has grown during recent years, as well as efforts to transform the awareness into action. Doing the latter, however, is neither a straightforward nor an easy task. It has been acknowledged that for many people, there exists a value gap – a gap between the expressed, high level of concern and actual actions. In general, people are willing, at least to some extent, to decrease the environmental impact of their actions. However, the understanding on what they can actually do (and what would indeed make a difference) remains somewhat low. (DEFRA 2008, 28.)

Where science is considered to represent the objective and the reason, art is more often than not seen to portray the subjective and the emotional. These two fields need

For many people, there exists a value gap – a gap between the expressed, high level of concern and actual actions.

not be separate, however. The reason in science can, for instance be conveyed with some help from the emotional. Creating emotions, after all, can create involvement. From the point of view of raising awareness, art presents multiple methods of bringing important issues to the forefront, and a possibility for reaching a range of emotional responses from the viewer.

It is not insignificant, however, what sort of emotions are created. Getting coverage in the media and generating public debate may well bring attention to an important issue or shed light to complicated problems. From the point of view of understanding human identity and the reasons behind particular behaviors, strong campaigning such as showing crude images of spoiled nature, or portraying certain types of people and behavior as unquestionably bad, may have unforeseen negative consequences (Crompton & Kasser 2010, 30).

The reason in science can be conveyed with some help from the emotional.

On the façade of the Brinkkala hall underwater images were projected from webcams around the Baltic Sea. (Photo: Salla Keskinen)

At the Pallomeri event projections in the bathroom illustrated flowing water in different forms. (Photo: Salla Keskinen)

Strong negative labeling of certain types of behaviors may create and strengthen the resolve to continue the said behavior instead of the opposite. It is an acknowledged psychological fact that information which conflicts with a person's identity may actually lead to denial of the information. Also, portraying certain type of behavior as inherently bad may discourage those who do not share the said behavior of acting in such a way as to minimize their other, possibly environmentally detrimental behavior. (ibid.) This should be borne in mind also when using art to convey scientific information to audiences – depicting the most gruesome details through may not always achieve the desired results.

Experiences in combining art and science

Human influence on the state of the Baltic Sea is apparent in many ways. Due to its special characteristics in terms of geology, climatology and oceanography the Baltic Sea is particularly sensitive to environmental pressures stemming from the surrounding countries. (BalticSTERN 2013, 83.) Eutrophication, overfishing, invasive species oil spills and marine litter are among a range of environmental problems affecting the Baltic Sea.

BalticSeaNow.info project approached the combining of art and science at two events in 2011. Artists and students from Turku University of Applied Sciences combined their creative powers with marine scientists and project experts to create two public works of art. These events aimed to engage the public through art into action for a healthier Baltic Sea.

The "Pallomeri" event brought around 150 visitors to experience an installation event at Brinkhalli Manor in Turku. The event was a cooperative effort of Turku Arts Academy and Brinkhalli manor in Turku. On the façade of the manor underwater video from web cameras was projected. Inside Brinkhalli different spaces were created and decorated to illustrate environmental problems (Nevado & Carpenter 2012a).

Conceptually, the Brinkhalli was transformed into a ferry liner. Underwater images illuminated the building front and indoors. Strobe lights, singing and dance portrayed a ferry liner disco brought the atmosphere to the audience. A number of varied performances and spaces from live performances, a room full of balloons and another full of strobe lights and black plastic debris, to tranquil spaces with video and sound elements created a special atmosphere (Nevado & Carpenter 2012b).

The "Meri Valvoo" event was organized during the Polar Nights library happening at the Turku City Main Library in November 2011. The Meri Valvoo addressed the multiple environmental concerns in the Baltic Sea: littering, eutrophication and alien species. Although marine litter is not among the most visible threats facing the Baltic Sea, studies have shown that marine litter among the shores and in the water pose a potential threat to flora and fauna, as well as reduce the aesthetic quality of coastal environments (BalticStern 2013, 86).

At Meri Valvoo event the front of the library formed an impressive whole with changing visual elements and a mountain of garbage collected from the archipelago. (Photo: Hertta Kiiski)

The happening comprised an outside projection of underwater moving images together with a large pile of trash, an installation made of discarded items from the archipelago. Inside the library, the installation gave the audience a chance to relax, listening to sounds of the sea and poetry through headphones in the hospital clinic built for the ailing Baltic Sea. The installation was interactive, giving people a chance to engage in discussion about the state of the sea (Nevado & Carpenter 2012b).

The Meri Valvoo event reached an estimated 9000 visitors during the Polar Night weekend. As the main installation was placed within and outside the entrance to the library, the installation was bound to raise the attention of most people entering the library (ibid.) The chosen method was to create alarm for one of the sea's problems – littering. The huge pile of trash and discarded items will most likely create emotions, possibly even deeper involvement in preventing the littering of our shores. As discussed in this article this sort of an approach can be effective.

On the other hand, it is debatable whether the portrayal of the shock effect of such installations works best for inciting action and behavioral change for a better environment. Both the events represented a form of site-

It is debatable whether the portrayal of the shock effect of installations works best for inciting action and behavioral change for a better environment.

specific environmental art: interventions in specific locales and integrated to their surroundings. At the events new ways were offered for the public to engage and participate actively. In this way the audience brought new meaning to the work through their own action. A method used to initiate public involvement and action was centered around the front of the building at both events. In "Meri Valvoo", for instance, the visuality of the entrance was combined with artists walking around, giving the public a chance to share their thoughts on the work and the subject matter in general. Inside, the hospital ward with its nurses continued the participatory effect.

Following Giannachi's (2012) strategy categorizations, the works of art depicted above can be seen to encompass at least two of the categories. In one way, they were representations – the art created were very visual by nature and communicative in purpose.

The sleep clinic at the Meri valvoo event. (Photo: Hertta Kiiski)

At both the events, visuality was a very central element, underwater projections forming large installations together with other elements.

On the other hand, the works were at the same time performance environments, giving special emphasis to the viewer's immersion in the work of art and experiences. At the Meri Valvoo event, for example, the audience formed a part of the artwork as patients in the hospital ward for the ailing Baltic Sea.

The third strategy of intervention – emphasizing mitigation and behavioral change – was at least the wish of the organizers of the events. The actual effect is of course

hard to estimate as no long-term follow-up is possible. Traditionally, however, interventionist art is seen to produce change in a particular community as part of the work (Giannachi 2012, 128).

Whatever the strategy chosen, in addition to portraying environmental problems to an audience, public works of art can provide a venue for dialogue between the often too separate worlds of research community and the "common man", science and the public. Interaction at any rate should be key to any scientific endeavor. At a time when so many decisions are being made on the basis of science, it is becoming increasingly important to inform the public about the issues at stake.

Conclusion

Knowledge alone does not suffice.

Information on how to make the Baltic Sea healthier is abundant. It is clear that most people are aware of the state of the environment. However, facts alone do not suffice. There is clear evidence that facts only play a partial role in determining individual behavior. Emotion is often very important in sparking behavior. Art is, naturally, a useful tool in sparking those needed emotions. It is, however, another matter altogether whether the needed emotions lead into action.

Art has been instrumental in raising awareness to numerous issues. Artists can work alongside scientists to create awareness and incite change in individual behavior. Today, this creative collaboration is not, however, utilized very much. But does art, in all its attractiveness, present a real possibility for changing the attitudes and values that might hinder environmentally responsible behavior? How does art provide help the audience to connect the choices they make in everyday life to environmental problems?

In general, it is safe to argue that art offers channels through which to distribute information on environmental concerns. As presented in this article, there are other, possibly more empowering ways in which a sense of involvement can be created apart from presenting scientific data in the traditional way or top-down environmental education (Eden 1996, 119). Involving the public, public participation, is seen as a necessary means to raising awareness and inciting action. Yet, as stated by Eden (1996, 185), public participation is rather often connected to discussion on awareness and education, thus implying a passive absorption of information instead of active consultation and interaction.

The deeper values and principles behind behavioral patterns should be addressed when raising attention to environmental issues.

Motivating people to uptake environmentally friendly behaviors demands a lot from the party opting for such a change. Using shock effects, such as portraying the "ugly" side of environmental issues can be effective in raising concern. However, the effect of such a manner of representation can, although certainly awareness-raising, create a sense of helplessness and therefore prevent action – changing one's behavior, for instance. Therefore any means by which attention is brought to environmental issues, including art, should try and address the deeper values and principles behind behavioral patterns. More often than not, however, the linkage between environmental art and the problem it is trying to address is left somewhat unclear.

The Way Forward:

- When using art as a tool for popularizing science, artful methods should not override the deeper message conveyed.
- In environmental communication, shock effects and negative communication should be used only with careful consideration as they may discourage pro-environmental behaviour.
- Involvement of the public and concrete actions may not be brought about with facts alone. Therefore methods that address the deeper values behind behavioural patterns should always be taken into account when planning environmental education and communication.

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Involving boaters in environmental work

Heini Kaasalainen & Hanna Haaksi
Keep the Archipelago Tidy Association
Photo: Tiia Suorsa

This article focuses on the challenges related to environmental education targeted at boaters and the role of boaters as a special group contributing to the protection of the Baltic Sea. Involving boaters in environmental work is the core issue here. Membership in the Keep the Archipelago Tidy Association is an example of such involvement, and also a concrete action for the benefit of the environment. Moreover, the Association continues to rely strongly on voluntary unpaid work by boaters and others, the very starting point of its activities. For these reasons, we use the key activities of the Association as examples of methods to involve boaters in the protection of the shared recreational environment.

The association's activities in a nutshell

Founded in 1969, Keep the Archipelago Tidy is a nationwide environmental organisation for boaters and others on the waters. The association operates in the archipelago and coastal areas, as well as the Finnish Lake District. The purpose and aim of the association is to keep Finnish shores and islands clean and tidy, and to support boating opportunities in all waters in Finland. In addition to practical waste management work, the association is active in the field of environmental education.

The association is a reliable, membership-based expert organisation. It contributes to the protection of seas and lakes in a diverse manner and jointly with other organisations engaged in the same type of work. The association collaborates with actors in the other Baltic Sea rim states. Various projects are an important part of the association's activities, since they produce environmental information and solutions for boaters and the general public.

The waste management work comprises a range of facilities and services for boaters, including waste disposal sites, dry toilets, floating pump-out stations and excursion harbours. Geographically, the operations of the Association cover the Archipelago Sea, Gulf of Bothnia, Eastern Gulf of Finland, Lakes Päijänne and Saimaa, and the Pirkanmaa region. Each of these areas has its own service boat.

A Rubbish Seal collection point in the archipelago. (Photo: Keep the Archipelago Tidy Association)

The target audience for the environmental education work carried out by the association includes all those who live or move around on the waters and islands: boaters, cottage owners, permanent residents, tourists and harbour keepers. The objective is to provide guidance on how to travel in the sea and lake areas with a respectful and due consideration of nature and the environment. We operate in line with a common policy across all our operational areas and support boating opportunities equally in all regions.

Boating in Finland

Boaters are a wide and diverse group of individuals that comprises up to one half of the people in Finland. It is estimated that about 10 per cent of the population are active in recreational boating or yachting on an annual basis. The number of boats is estimated at about 750,000.

The actual boating season is short, from June to mid-August. As a country of thousands of lakes, Finland offers opportunities for boating in both the coastal areas and inland lakes. Larger sail yachts and motorboats are mainly used in coastal areas, while smaller motorboats are more common in inland waters. Rowing is the most common form of moving by water, and hence, rowing boats are the most usual boat type in Finland. Boating takes place mostly during the holiday season, and the most frequently reported purpose for boating is a daily outing. The majority of boaters own their boats themselves.

Problems in the Baltic Sea are very concrete for boaters.

In terms of getting organised, boaters usually join a yacht or boating club or association. Yacht and boating clubs offer guidance, training and various services, such as a berth in a marina or launch and hoisting services. The exact number of yacht and boating clubs in Finland is not known. Other associations for boaters include, for instance, the Finnish Offshore Racing Association (racing activities), the Finnish Sailing and Boating Federation (an interest organisation for Finnish yacht and boating clubs), the Keep the Archipelago Tidy Association (boaters' environmental organisation), and the Finnish Cruising Association "Merikarhut" (focused on the promotion of long-haul sailing). Not all boaters or sailors belong to a club or association. While the size of this group is unknown, it is likely that the general information and communication concerning the Baltic Sea and various environmental campaigns reach them as well.

Boaters as a target group for environmental education

Environmental issues related to the Baltic Sea have come to the knowledge of the general public largely through the numerous campaigns and active communication efforts by environmental organisations. The Baltic Sea Communication Network established by the Finnish Environment Institute (SYKE) already has more than 50 active participants.

The issues are constantly topical and raise emotions, and for anyone boating or sailing in our coastal seas, the problems emerge as tangible and concrete. Algal blooms, invasive species and trash on the shores and propellers will not be unnoticed. Boaters who travel long ways all over the Baltic Sea have the opportunity to observe the environmental state and its development at a close range. They can also take concrete actions to save the sea, for instance, by using the pump-out stations to empty their septic tanks or by choosing alternative methods, rather than toxic paints, to protect the bottom of their boat. The boaters are interested in the well-being of their recreational environment; the opportunity to experience nature is the topmost motive for people to boat and sail.

A floating septic tank pump-out station. (Photo: Keep the Archipelago Tidy Association)

On the other hand, in the Finnish climate, the boating season is very short, only 2–3 months. It is a reasonable question to ask why spending a few summer weekends at sea would make this group so special for the Baltic Sea. In relation to the overall population, there are relatively many boats and boaters in Finland, but only about 10 per cent of all Finns are actively engaged in recreational boating; it is a rather

Reaching boaters through environmental communication demands consistent and year-round efforts.

small portion of population when compared to the summer cottage or second home owners. This is sometimes reflected in the boaters' attitudes – it is not considered a serious sin to empty the septic tank into the sea when the general idea is that eutrophication is mainly caused by agricultural nutrient run-off. After a boat overhaul in spring, one easily leaves hazardous waste on the shore if there is no collection point readily available, thinking that a couple of tins will not be the end of the world or the Baltic Sea. Environmental education intended for boaters is faced by the same challenges as environmental education in general. How to make boaters trust that their environmentally-friendly actions can make a difference?

Environmental information or communication does not necessarily reach boaters during the summer season when they are out at sea and on holiday. In winter, the topic seems distant and not so relevant. In spring and autumn, there is a lot of maintenance and repair work to do and people are busy launching or hoisting their boats. Thus, the key role in terms of involving boaters is played by long-term systematic work carried out all year round and taking seasonal variation into consideration.

Involvement of boaters: experiences of Keep the Archipelago Tidy as a boaters' environmental organisation

Keep the Archipelago Tidy is the only association in Finland that has profiled primarily as a boaters' environmental organisation. Many parties provide general information and environmental education related to the Baltic Sea, and the increased awareness and knowledge about the Baltic Sea is largely a result of the activities of the relevant associations, consortiums and projects. Anyone seeking environmental information intended for boaters is usually instructed, by both the authorities and boaters themselves, to contact our association.

Reaching also the boaters who are not already involved in the association with environmental information is the critical issue.

The association's operations are designed to serve the demands of our membership, totalling around 12 500 (2012). Those boaters who are neither our members nor members of any yacht or boating club remain more or less out of reach from the viewpoint of environmental education intended for boaters. The problem,

therefore, is how to reach these boaters. Our environmental education work focuses largely on the dissemination of information and distribution of materials through our website and at fairs, exhibitions and other events. The information is freely available for the general public, but it is assumed to primarily interest those boaters who already are prepared to receive information – in other words, who are concerned about the state of their environment and wish to do something for it.

By becoming a member in the association, boaters can contribute to the protection of our shared archipelago nature. The membership fees are used to finance the waste management systems and other Rubbish Seal services across its operational areas, including the maintenance of floating pump-out systems and dry closets. These services are used not only by our members, but also by other boaters, others on the waters and cottage residents. The association has a total of 200 waste management sites and 200 dry closets across its operational areas in the Archipelago Sea, Gulf of Bothnia, Eastern Gulf of Finland, Lakes Päijänne and Saimaa, and the Pirkanmaa region. Boaters who have joined the association presumably already understand the value of their environment and wish to protect it. One task of the Association is to deepen the membership's environmental knowledge by means of providing practical tips and advice in the actual boating context.

Part of the environmental load of boating is attributable to harbours and harbour services. The association has initiated a Roope Harbour Programme to involve the keepers of guest harbours, in both the coastal areas and in Lake District, in

The Roopeboat on one of its summer trash rubbish collection routes.
(Photo: Keep the Archipelago Tidy Association)

environmental work. In order to qualify for the programme, an individual harbour must review and adjust its services and basic operations in a more environmentally friendly direction. Currently, the number of harbours engaged in the programme totals 42 (2012), which is slightly less than one half of all the guest harbours in Finland. The harbours engaged in the programme commit themselves to arranging their waste management and waste water processing in an appropriate manner, to appointing a person to be in charge of environmental issues for the harbour, and to keeping the harbour area clean and free of trash. The association also provides a forum for the harbour keepers to be in touch with other harbours in the programme and to share their best practices at an annual harbour seminar.

In addition to its basic activities, the Association implements various projects that are related to the boating environment and the protection of waters. The projects provide a framework for environmental education not only among boaters, but also among children and youth. For example, as part of the BalticSeaNow.info project and in cooperation with the MARLIN project, the association launched a Trash Hunt contest for families, encouraging them to examine the litter found on the shore, to investigate their origin and reasons why they had been left behind or driven to the shore. Within the BalticSeaNow.info project, Secchi plates were also distributed, free of charge, for independent monitoring of the state of the water. When implemented within a particular project, the environmental education activities may thus reach even other people apart from boaters, and also such boaters who are not members in any organisation and thereby easily reached.

Practice-oriented videos proved to be a useful tool for educating boaters.

Experiences of involvement of boaters within the BalticSeaNow.info project

The purpose of the BalticSeaNow.info project was to develop new tools for promoting environmental awareness and to stimulate public discourse. The aim was to encourage people to observe and discuss the state of the environment. Another aim was to introduce and make available new and innovative methods for communication and nature observation. Materials produced for the portal by Keep the Archipelago Tidy include videos that give tips for boaters, the Trash Hunt contest, the Eco Boater test, as well as articles and images related to environmentally friendly boating.

At fairs and other events, environmental education took place through discussion and material distribution. A special feature at fairs was a poll wall that allowed visitors to vote for their preferred methods to influence the state of the Baltic Sea; the poll wall also inspired and deepened discussions with visitors. Within the project, people were encouraged to independently monitor the state of their environment, for example, by using Secchi plates; a total of 29 Secchi plates were delivered to those interested

in Finland. How many of them are boaters is not known. The portal offered an opportunity for the Secchi plate recipients to report their observations regarding the transparency of water, but participation has been limited. Participation could perhaps have been promoted by giving more explicit reporting instructions. It is not possible to say how many of the Secchi plate recipients have actually used it actively but kept their observations to themselves.

As a part of the project, the association produced five tutorial videos about how to sail and boat eco-friendly. Videos included practical tips and instructions. Videos proved to be a good and efficient way to educate boaters, perhaps better than plain instructions in text. Also the making of the film is a good example of involving a boater in environmental work; films were shot during one day in the sea with help of a volunteer, who offered his boat to our purposes.

Summary

In terms of the operations of the Keep the Archipelago Tidy association, boaters' participation in the care and maintenance of our shared environment is both a goal and a starting point for activities. Many boaters do small, local things for the benefit of the environment, and sometimes these actions expand and result in wider consequences. The mere existence of our association is a good example of such a process. The association would not exist today if it were not for its members whose motivation to take action is based on the concern for the state of the environment and the Baltic Sea. Recreational boaters have an opportunity to experience nature at a personal level, and it is harder for them to close their eyes for environmental problems. This is why boaters are a special group when viewed from the perspective of environmental education. A boater who is ignorant about environmental issues can cause a lot of damage, but in the best case scenario, a responsible boater leaves practically no traces behind. To achieve this goal, it is important to continue long-term and systematic cooperation with boaters, and also look for new audiences among those who are currently not reached by any club or association.

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Venebarometri 2009

Learning with computer games and simulations

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Photo: Vitalijs Rusanovs

Protecting a common asset does not come as granted, although the loss of its value may be to the detriment of all. Environmental education and communication have to battle with finding the ways to communicate the importance of contributing to a common cause, for example the state of the Baltic Sea. An alternative and innovative method of teaching about nature protection and sustainable use of natural resources is by utilizing games. The KALA! game was created to demonstrate the tragedy of the commons in the Baltic Sea. Although testing of the game is still in process, the attention and interest demonstrated by the participating students prove that learning by computer games could be an effective way to educate and increase awareness.

There are a few constant questions that will haunt you if you work in the field of communications. For years I was impressed by the very usual habit of making negotiations between different stakeholders without creating any common ground. This claim might seem too strong but actually it is not, at least in environmental negotiations one can notice a chronic failure of understanding each others' views. We see the world in different ways, and if there is disagreement with others it is not always because someone is wrong. Opinions and our background information just do not let us see the world in other ways. But is there a solution?

Maybe we can find this necessary common ground by playing computer games that simulate some real life situations on an abstract level and help participants understand those underlying complicated problems on their background?

KALA! – Environmental education by games

In our KALA! game countries collect money trying to fish from the Baltic Sea. At first it seems to be a simple investment game. Players must expend in order to buy a ship and send them to the sea. Money invested in ships will give revenue. Success comes through a bold, aggressive business strategy. The more money players accumulate the more they are able to purchase new vessels and therefore fish. It will, however, lead to over-fishing: the fish population is unable to recover. If stock is exhausted then all players will lose. Thus, a bold and aggressive strategy is not good enough to win the game.

The tragedy of the commons is ever present in the Baltic Sea.

KALA! simulates the tragedy of the commons. In economics, the tragedy of the commons indicates the depletion of a shared resource. Individuals use resources rationally according to one's self-interest but cannot avoid depleting the common resource even if they understand that it is opposite to the group's long-term best interests. In 1968, ecologist Garrett Hardin explored this social dilemma in "The Tragedy of the Commons", published in the journal Science. In our game each rational player tries to fish as much as possible, even if overfishing is evident. Thus, everybody will eventually lose. If some players limit their catch, others will still empty the sea.

Central to Hardin's article is an example from medieval European herders sharing a common land on which they are each entitled to let their cows graze. In Hardin's example, it is in each herder's interest to put the next (and succeeding) cows he acquires onto the land, even if the quality of the common is damaged for all as a result, through overgrazing. The herder receives all of the benefits from an additional cow, while the damage to the common is shared by the entire group. If all herders make this individually rational economic decision, the common will be depleted or even destroyed. Hardin stated that the overfishing of the world's oceans is basically the same situation.

KALA! game.

The metaphor illustrates the argument that free access and unrestricted demand for a finite resource ultimately reduces the resources through over-exploitation, temporarily or permanently. The tragedy of the commons has particular relevance in analyzing behavior in the fields of economics, evolutionary psychology, game theory, politics, taxation, and sociology. Some examples of this situation include uncontrolled human population growth leading to overpopulation; air polluted by industrial emissions and cars; wasting water due to overirrigation; burning of fossil fuels and consequential global warming; as well as overfishing.

Finding solutions

Some solutions can include privatization, but in case of the Baltic Sea exclusive economic zones (EEZ) which are good for offshore wind farms and marine mining, they will not work for over-fishing – even if countries fished only in their own economic zone, fish will swim over the zone's borders so it would fail to prevent the tragedy. Another solution could then be a supranational authority to prohibit overfishing. HELCOM is the organization for the Baltic Sea countries for cross-border decision-making. However, HELCOMs workshops only address the problematic issues, but do not have power for punishing for overfishing. Consequently, no solution proposed by Hardin (privatization and regulation from above) will work for the Baltic Sea fisheries. In that case, how is it possible to preserve fish stocks and in the KALA! game to win the game at all? How is it possible that the fish stocks in the Baltic Sea have not been caught? There must be a third option.

Elinor Ostrom won the Nobel Prize in economics, providing a third way out from the tragedy of the commons. She identified "design principles" of stable local common pool resource management. And one of her design principles considered the sad fact that bureaucratic regulations are often inadequate, and the parties involved have low motivation to perform them. Therefore, it is better to have collective-choice arrangements that allow most resource appropriators to participate in the decision-making process. So the resource appropriators themselves should work together to develop a common resource management, including joint decision-making mechanisms, rules, compliance monitoring and penalties for breaking the rules.

In real life the Baltic Sea countries agree upon annual total catch quotas. These quotas have helped save the fish from extinction. However, all species of fish suffer from over-pressure, as the fishermen give priority to short-term interests. In KALA! game players can also agree on quotas. The game has a special window for players to argue, make agreements and to inform each other of violations and sanctions. If a stock tends to diminish, more stringent allowances must be set. If replacing stocks grow rapidly, it may allow for more intensive fishing again. In the game each player can see how many ships other players will send to sea. Consequently, the game allows agreeing upon the quotas with each other, to monitor the keeping of promises and also to escape overfishing.

Utilizing games in teaching nature protection

KALA! game is based on a conceptual model of the game Fishbanks by Dennis Meadows (2001). However, KALA! is a completely new game – all equations, software, code, and layout are new. KALA! was created in 2013 for simulating the Baltic Sea on a multiplayer web-based online game. The biggest difference with reality is that the starting positions and capacities are very different in real life, whereas in KALA! game they are all equal for countries. In other aspects KALA! tries to match the concepts, parameters and values as much as possible to simulate the actual fishing in the Baltic Sea.

Creators hope that the game is well-suited for teaching nature protection and sustainable use of natural resources. The game is suitable for high school students but also for everybody else with an interest in the economic, business, the environment and human behavior. If players choose aggressive (i.e. rational) strategy and the rules of the common fisheries management cannot be established, the herring stocks are exhausted after about 12 years and everybody loses. If all players choose the cautious (and thus, non-rational) strategy, or if a fishing quota can be agreed upon and put into effect, the stock will be not exhausted and the game ends at a random moment between 20th and 30th turns. The winner is the player with the most money at this point.

Increasing awareness can also be entertaining.

Ivar Tamm testing the KALA! game with students. (Photo: ELF)

Making of: pain and gain

Pain. After realizing the need for such an innovative communication tool, all of a sudden it became clear that it is not so easy to do it in Estonia. Bigger companies were not interested and small web companies estimated their costs a lot higher than was possible vis-à-vis funding. Therefore it seemed for some time that this aim was just not realistic. But after some planning it became clear that there are many possibilities for reducing costs just by simplifying concepts and using voluntary work. After finding the right team willing to solve problems and experienced enough it became a lot easier to understand the reality of game making. There are different technologies for team building and actual development of games and it might be that those that were used by our team were not the best ones. So maybe it is better just to be assured that it is possible and worth doing.

Gain. We tested our game in different schools in Estonia and even as we were psychologically prepared for such a response, it just shocked us how many programming and other errors pupils discovered during first testings. So we decided not to be discouraged and thanks to the teachers who were very understanding and also open-minded, we had chance to improve our game very fast. So the first lesson learned was that risk pays off. As a new and actually not very well-known form of communication for students, learning by computer games seems to be a very effective

way in terms of attention and interest. However, it is still too early to tell if it is a valuable method of learning – more time is needed to research the impact of our simulation.

For us as the developing team it was a really interesting experience – not only making of this game (that was like one prolonged, very creative problem solving exercise) but also interactive communication with those who played our game as well as analysis of different strategies that groups used for winning this game. However, as analysis is still in progress it is too early to draw very strong conclusions on the game's effectiveness.

You can play here: http://kala.elfond.ee/ (Estonian version)

Above: Juho Sipilä
Below: Risto Hunt

Photo: Agnese Matisone