Water pollution data in the Baltic Sea basin – a local to regional approach

The Baltic Sea is one of the most polluted seas in the world. Most of the pollution originates from inland activities. Engaging and activating local stakeholders in the 1,500 municipalities in the Baltic Sea watershed is crucial to restore the Baltic Sea and would benefit the marine ecosystems as well as the 9 million people living in the region.

Water pollution data is key

The total environmental pressure on the Baltic Sea marine ecosystem is dominated by land-based sources of pollution. These sources, located in the Baltic Sea catchment area, are responsible for more than 90 per cent of the input of nutrients into the sea. Most of the hazardous substances transported to the sea, via rivers or precipitating from air, are land-based in origin. While some types of marine litter originate from human activities at sea, e.g. lost fishing gear, most have been dumped inland and are transported to the sea via different pathways.

Collecting and sharing water pollution data is key to monitoring progress towards environmental targets set in national and regional action plans and policies such as the Baltic Marine Environment Protection Commission (Helsinki Commission-HELCOM) Baltic Sea Action Plan (BSAP) (see Box 1) and the EU Water Framework Directive (WFD). To reach sustainable nutrient levels and begin restoring the waters in the Baltic Sea, local initiatives led by the 1,500 municipalities in the catchment area will play a crucial role in implementation, monitoring and reporting. Local authorities are an essential source for local knowledge on pollution sources, on the possible measures to reduce them and their effect, as well as the potential local benefits of positive environmental results. But, so far, cities and municipalities have not been encouraged to be actively involved in these important processes and have low awareness of the regional perspectives.

Box 1: About the HELCOM Baltic Sea Action Plan (BSAP)

HELCOM Baltic Sea Action Plan (BSAP) is a programme to restore the ecological status of the Baltic marine environment by 2021.

The Plan incorporates the latest scientific knowledge and innovative management approaches into strategic policy implementation, and stimulates goal-oriented multilateral cooperation around the Baltic Sea region. It was adopted by all the coastal states of the Baltic Sea and the EU in 2007.

The plan targets four specific goals:
- Baltic Sea unaffected by eutrophication
- Favourable status of Baltic Sea biodiversity
- Baltic Sea undisturbed by hazardous substances
- Environmentally friendly maritime activities

HELCOM (Baltic Marine Environment Protection Commission - Helsinki Commission) is the governing body of the Convention on the Protection of the Marine Environment of the Baltic Sea Area. HELCOM was established to protect the marine environment of the Baltic Sea from all sources of pollution through intergovernmental cooperation.

Source: HELCOM; www.helcom.fi

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Municipalities within a watershed, such as the Baltic Sea catchment, have a shared responsibility in managing pollution challenges. Pollution that is not reduced upstream will, to a large extent, end up in the Baltic Sea. Cost-efficient reduction of pollution in the Baltic Sea watershed therefore requires an up-stream-downstream (source-to-sea) approach including strategic decisions at local, national and regional levels.

Challenges for harmonized monitoring and reporting of water pollution data

Monitoring and reporting of pollution data in the Baltic Sea region is complex. It includes a multitude of different stakeholders and methods in the formal reporting process to HELCOM BSAP. Closer involvement of municipalities holds a lot of potential and value for various actions contributing to the implementation of the HELCOM BSAP agreements. But, there is no silver bullet when it comes to monitoring, reporting and sharing pollution data. Different prerequisites regarding environmental conditions, monitoring focus and methods (stations, sampling, analysis, time-series), modelling experiences, collection of statistics, conditions of emission permits, formal and informal structures and institutional set-ups within the countries of the Baltic Sea region make it a challenge to agree on harmonized ways to monitor and report the multitude of data available and needed. Harmonization of monitoring and reporting is therefore not the most urgent or effective measure to improve the Baltic Sea region's environmental challenges.

Benefits of sharing water pollution data between local and regional levels

For connectivity in the region | A more effective way forward can be to intensify connectivity and result-sharing on effects of various measures to reduce pollution and improve water quality in the region. Both, municipalities in our case study and HELCOM, express interest in this matter.

- HELCOM, as a regional actor, needs access to field data to evaluate the effectiveness of pollution reduction measures.
- An intensified communication of water pollution data in the region – between municipalities, and between municipalities and HELCOM – could improve awareness and engagement in water quality work with local politicians and citizens. This could benefit prioritization of environmental work at the municipality level.
- Finding formal or informal mechanisms and opportunities for interactions and knowledge exchange could promote and speed up the process to reach HELCOM BSAP targets.

For municipalities | Being more involved in the monitoring, reporting and implementation of measures to reach HELCOM BSAP targets offers a variety of possible benefits for municipalities. Municipalities are keen to ensure they are using the most effective and cost-efficient measures to improve local waters as well as the Baltic Sea and to capture socio-economic benefits for their citizens, such as an attractive environment to live and work in.

- Connecting local to regional levels can increase commitment from local politicians to allocate resources to local water pollution management.

Photo: istock
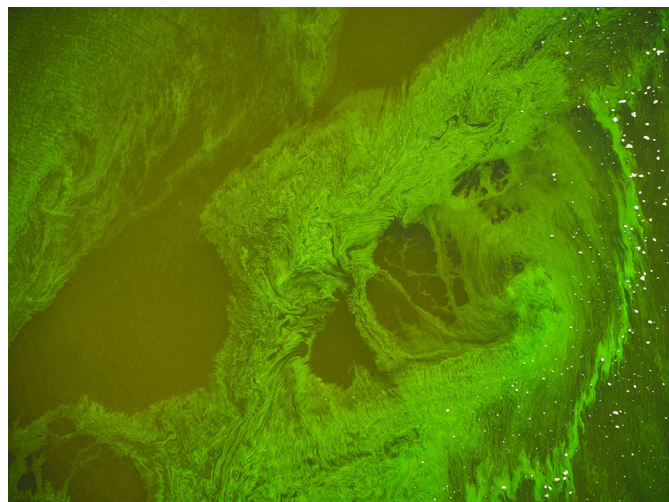
- Increased political awareness can make commitments more long-term.
- Transparent and attractive visualization which enables comparison of local water quality data with upstream, downstream and regional data can increase awareness and engagement of citizens, and thereby increase political interest and commitment.
- Sharing data between municipalities enables comparison of results on the municipal level. This is helpful for regional planning, for determining best practices on the local level, and for choosing the most cost-effective measures upstream and downstream.

For HELCOM | Involving municipalities in the implementation of HELCOM BSAP can help HELCOM in evaluating the effectiveness of measures to reduce pollution and to raise public awareness on water-related environmental challenges.

- Municipalities can monitor and report local effects of these measures and provide data on their economic components. Involving municipalities may thus significantly increase the knowledge base on the effectiveness of pollution reduction measures.
- An improved and more direct dialogue with local initiatives on data collection and sharing can catalyze action and coordination among municipalities to contribute to the agreed-upon targets in HELCOM BSAP.
- Raising public awareness is essential to reduce environmental pressure. This is easier done on a local municipality level than on the regional HELCOM level. Local monitoring or screening campaigns might also contribute to the knowledge of emerging pollutants, as well as better inform of sources and pathways of traditional pollutants.

Challenges and ways forward

Awareness | Municipalities in the region have, in general, low awareness of the regional aspects of water challenges, the connectivity between upstream and inland pollution sources, and their effect on the Baltic Sea environment. There is low awareness about HELCOM BSAP, regional environmental targets and the role their municipality plays in achieving these targets. There is also a limited awareness of what measures are most cost-effective to reduce water pollution.

Local actions to restore water bring many opportunities to boost the local economy and labor market, creating thousands of jobs and generating millions of Euros in economic output, mainly within the tourism, water technology and real estate industries. But there is generally low awareness of the potential socio-economic possibilities when addressing local and regional water pollution challenges. Measures to improve water quality are often seen as a cost and not as an opportunity.

Funding and commitment | There is often a lack of financing at the local level to implement long-term monitoring and reporting. Most actions undertaken by municipalities are on a project basis, and therefore lack long-term commitments and accountability. Private sector and local industries have an important role in water management, parallel to local govern-ments and citizens. Municipalities located upstream or inland do not get direct gains from marine ecosystem services and their involvement requires incentives and guidelines on how to reduce negative impacts on the Baltic Sea.

Sharing results | So far, there is no transparent harmonized reporting system for local governments to showcase their progress or successes and there are few guidelines available to assist local authorities to prioritize local measures to reduce water pollution. There is limited regional coordination of local monitoring, reporting and sharing of results in the Baltic Sea region and unclear guidelines for what data is needed from local authorities to contribute to national reporting to BSAP. This constrains the use of existing local data for tracking progress towards set national and regional environmental targets.

Photo: istock

Box 2: A roadmap for local governments to developing Local Baltic Sea Action Plans

Translating regional and national level targets laid out in the HELCOM BSAP into local/municipal BSAPs can increase engagement, commitment and responsibility for restoring local waters, as well as contributing to HELCOM regional targets. The Baltic Sea City Accelerator Programme (BSCA) supports participating municipalities in setting blue city visons and accelerating nutrient reduction measures and at the same time identify areas of cooperation for enhancing new knowledge, innovations, solutions, collaboration and new types of finance. In order for municipalities to create Local BSAPs, the following concrete steps must be addressed:

Increasing access to existing water quality data is key for municipalities to calculate local pollution sources, as a first step towards developing Local BSAPs. In Sweden, information resources are considered difficult to navigate, and municipalities expressed that receiving support from national agencies, e.g. *Länsstyrelsen*, to access data or assistance on calculations was difficult. Databases, such as Sweden's VISS (*Vatteninformationssystem Sverige*), can be good resources, but municipalities find it challenging to use them. In some other countries represented in the BSCA programme, municipalities did not have access to the necessary figures or any measurements at all.

Developing a digital knowledge-sharing and communication platform to showcase progress and motivate broader stakeholder engagement can support municipalities' work. Sharing data and case studies has the potential to increase awareness and engagement of citizens and local stakeholders, such as businesses and neighbouring municipalities, in protecting and restoring local waters and the Baltic Sea. Communicating and visualising data from socio-economic and environmental indicators will be key.

Increased communication and participation between municipalities and regional and national governing bodies within the BSCA programme would support and facilitate municipalities' work. There are possibilities to engage the EU Directorate General of Environment as well as national water authorities more actively in the BSCA programme. This engagement could be both in terms of communicating regional and national objectives, and in supporting or funding monitoring, collection and alignment of key data on municipal level with common indicators.

Recommendations

Local stakeholders such as cities and municipalities can contribute more to the goals and targets in the HELCOM BSAP through more structured monitoring, reporting and sharing of results, especially on the effectiveness of measures to reduce pollution to water.

Collecting and sharing data on water pollution and measures to reduce it in a transparent and structured way can increase awareness and willingness at the local level to allocate time and resources to implement more measures and improve methods for monitoring and reporting even further.

For municipalities, aligning their actions with HELCOM BSAP, e.g. by developing their own "Local BSAP" (see Box 2) can facilitate their environmental work and contribute to improved socio-economic development locally and in the Baltic Sea region.

There are some crucial prerequisites for this to happen:

- Municipalities need more information on and increased connectivity to HELCOM BSAP. This information needs to be provided by national agencies.
- HELCOM and national authorities need to provide guidelines and recommendations for municipalities as to which measures are estimated to be most effective in reducing water pollution. HELCOM must find ways to be accessible for questions from municipalities regarding these issues.
- Targets and recommendations provided by HELCOM BSAP could serve as indicators for municipalities to report their progress and contributions towards protecting the Baltic Sea environment.
- A transparent reporting system in which local governments can showcase their progress or successes can raise public awareness and publicize the effect of implemented measures. A specific tool for this could be online information systems that share water quality parameters – indicating the effect of the actions that have been undertaken. Information can be made available online either via mobile applications or as public screens and presented in actual numbers or in the form of an indicator, depending on the given parameter.

- One way for municipalities to contribute to improved water quality both locally and in the Baltic Sea is by developing their own "Local BSAP" as promoted by the Baltic Sea City Accelerator programme (see Box 2). Such plans address the water-related environmental and socio-economic challenges of the municipality, while working with the targets and recommendations in the HELCOM BSAP as a reference framework. To support and facilitate the development of Local BSAP, HELCOM could develop a provisional checklist based on their priorities. Municipalities can then use this to identify priorities relevant to local circumstances and with a potential to undertake environmental measures.

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