Nutrient management from source-to-sea in the Baltic Sea

Mr. Rene Reisner
Head of Marine Environment Department
Ministry of the Environment
Estonia
The Baltic Sea Region
Baltic Sea Marine Environment Commission - HELCOM

Unique but fragile ecosystem (brackish water, ice winters...)

Catchment area: 4* area of the sea

Population (catchment): 85 million

Multitude of pressures
Main environmental problems and SDG-s to be addressed in the region

Problems

- High level of nutrients from land based sources to the lakes, rivers, groundwater and coastal waters
- Eutrophication of lakes and coastal waters
- Hydro morphological barriers in rivers (hydro energy production, water reservoirs), obstructing the movement of migrating fish
- Industrial releases and pharmaceutical residues in rivers, lakes and coastal waters
- Litter and debris from land based sources, such as wastewater treatment plants, agriculture, industries, storm water systems
- Rivers, lakes and coastal waters not in the good status
- Marine areas not in the good environmental status

Relevant SDG-s

- 14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution
- 14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans
- 6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally
- 6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate
Nutrients and eutrophication in the Baltic Sea

- 12,000 t in 1910
  - Phosphorus (P) input to the Baltic Sea (waterborne)

- 71,295 t in 1981
  - Establishment of HELCOM Secretariat

- 1982
  - Signing of the Helsinki Convention (7 members)

- 1992
  - Revision of the Helsinki Convention (expanded to 10 members)

- 2000
  - Ratification of the 1992 Helsinki Convention

- 2007
  - Baltic Sea Action Plan

- 2007
  - HELSI Assessment of the ecosystem health of the Baltic Sea

- 2021
  - Baltic Sea Action Plan update

- 2020
  - 22,749 t
General approach for the nutrient management

- The goal is to improve the status of the sea, lower the nutrient content in the sea.
- For each sub-basin of the sea **maximum allowable nutrient inputs** are defined.
- Nutrient reduction needs are dividend by HELCOM countries.
- Each HELCOM country has its **Nutrient Input Ceiling** for each sub-basin.
- Each country is expected to decrease the nutrient loads from its territory and stay below the input ceiling.
- Pollution loads of transboundary rivers take into account inputs of all countries in the catchment area.
- Countries identify pollution sources on land and their share in total nutrient load.
- Measures to lower the pollution load are designed and implemented by river basin management plans.
- Measures for transboundary waters are agreed or coordinated in transboundary water commissions.
Measuring and managing progress

Table 2a. Net nutrient input ceilings (NIC) of nitrogen for the HELCOM countries, non-HELCOM countries in the Baltic Sea catchment area, other countries with airborne input, Baltic Sea shipping and North Sea shipping (in tonnes/year).

<table>
<thead>
<tr>
<th>Country</th>
<th>Bothnian Bay</th>
<th>Bothnian Sea</th>
<th>Baltic Proper</th>
<th>Gulf of Finland</th>
<th>Gulf of Riga</th>
<th>Danish Straits</th>
<th>Kattegat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>947</td>
<td>3,920</td>
<td>34,077</td>
<td>1,645</td>
<td>1,747</td>
<td>23,647</td>
<td>4,661</td>
</tr>
<tr>
<td>Denmark</td>
<td>280</td>
<td>1,148</td>
<td>9,025</td>
<td>421</td>
<td>462</td>
<td>28,067</td>
<td>28,538</td>
</tr>
<tr>
<td>Estonia</td>
<td>113</td>
<td>404</td>
<td>1,478</td>
<td>11,334</td>
<td>13,099</td>
<td>22</td>
<td>24</td>
</tr>
<tr>
<td>Finland</td>
<td>35,087</td>
<td>28,700</td>
<td>1,827</td>
<td>20,457</td>
<td>295</td>
<td>76</td>
<td>89</td>
</tr>
<tr>
<td>Lithuania</td>
<td>108</td>
<td>495</td>
<td>25,878</td>
<td>305</td>
<td>8,820</td>
<td>66</td>
<td>80</td>
</tr>
<tr>
<td>Latvia</td>
<td>73</td>
<td>330</td>
<td>6,457</td>
<td>246</td>
<td>43,074</td>
<td>31</td>
<td>34</td>
</tr>
<tr>
<td>Poland</td>
<td>668</td>
<td>3,125</td>
<td>151,997</td>
<td>1,407</td>
<td>1,596</td>
<td>1,480</td>
<td>1,443</td>
</tr>
<tr>
<td>Russia</td>
<td>839</td>
<td>1,993</td>
<td>10,317</td>
<td>61,503</td>
<td>3,296</td>
<td>238</td>
<td>245</td>
</tr>
<tr>
<td>Sweden</td>
<td>17,718</td>
<td>32,633</td>
<td>30,690</td>
<td>626</td>
<td>525</td>
<td>6,056</td>
<td>32,799</td>
</tr>
<tr>
<td>Other countries</td>
<td>1,375</td>
<td>5,008</td>
<td>26,947</td>
<td>2,986</td>
<td>2,188</td>
<td>4,933</td>
<td>4,502</td>
</tr>
<tr>
<td>with airborne</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>input</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belarus</td>
<td>-</td>
<td>-</td>
<td>13,456</td>
<td>-</td>
<td>12,820</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>-</td>
<td>-</td>
<td>3,551</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ukraine</td>
<td>-</td>
<td>-</td>
<td>1,693</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Baltic Sea</td>
<td>284</td>
<td>1,141</td>
<td>5,180</td>
<td>675</td>
<td>345</td>
<td>651</td>
<td>701</td>
</tr>
<tr>
<td>North Sea</td>
<td>131</td>
<td>475</td>
<td>2,427</td>
<td>196</td>
<td>150</td>
<td>729</td>
<td>884</td>
</tr>
</tbody>
</table>
Some technical considerations

- Pollution Load Compilations by participating countries at regular intervals.
- Monitoring and reporting of waterborne pollution input from rivers.
- Modelled data on airborne nutrients.
- Coordinated data reporting, data management, processing and quality assuring.
- Annually reported information includes total inputs of nutrients, from monitored rivers, unmonitored areas, and point sources discharging directly to the sea.
- Continuous improvement in data quality and target setting.
- Main constrains – unmonitored areas, missing data.
- Effective and coordinated information exchange among all participants.
For additional information, please visit: www.helcom.fi