Actions by the cities of Helsinki and Turku for improving the state of the Baltic Sea – a challenge to other actors


FIN
VICTORY

Communiqué

With this undertaking and the associated challenge, the cities of Helsinki and Turku are demonstrating their concern about the state of the Baltic Sea and of its future. Through this commitment the cities resolve to put into practice such measures that will enable the cities of Helsinki and Turku to have an influence on the state of local waters as well as the entire Baltic Sea.

The measures of the two cities concern point loading, improving the cities' sewage networks, loading from scattered settlement areas, agriculture in the two cities, the handling of wastewater from shipping and boating, and dredging carried out by the harbours.

In addition to the concrete measures for water protection, the cities are also committed to investing in international environmental collaboration, research into water protection, and providing general information.

Through this challenge campaign the cities would also like to get other actors involved in the work for improving the state of the Baltic Sea. As far as the cities' actions are concerned, Helsinki and Turku are proposing targeted challenges for different actors. In particular, the cities are challenging other cities on the Baltic Sea, and propose that the cooperation networks of the Baltic cities, BaltMet and UBC, would together take the challenge campaign forward.

Furthermore, with this declaration the parties involved also want to get other Finnish actors – municipalities, businesses, universities and ministries – to increase their ef-forts for improving the state of the Baltic Sea.

Helsinki and Turku will report on the progress of the campaign and monitor the participation of the parties that have been challenged.

In their declaration, the cities of Turku and Helsinki are also taking into account the Convention on the Protection of the Marine Environment of the Baltic Sea Area, the Helsinki Commission's targets and programmes for furthering the protection of the Baltic Sea, regional environmental strategies and programmes both in the Uusimaa and Southwest Finland areas, and Helsinki and Turku will strive to achieve the targets set forth in these.

Review of the state of the Baltic Sea and the factors affecting it

THE BALTIC SEA AND THE ITS STATE

The Baltic Sea is a young and ecologically very sensitive marine area. In terms of volume, it is the world's second largest inland body of brackish water, and in addition to the Baltic Sea itself, it includes large bays such as the Gulf of Bothnia, the Gulf of Finland and the Gulf of Riga.

In addition to its unique nature, the Baltic Sea is unfortunately also one of the most polluted bodies of brackish water. The Baltic Sea's susceptibility to pollution and to poisons is due to its shallowness and shape, the small volume of water, and the poor water exchange. The average depth of the Baltic Sea is just 55 metres and it is estimated that a complete exchange of water takes around 30 years.

Eutrophication is regarded as being one of the greatest and most serious threats. The most visible signs of this are the plentiful algae blooms that occur almost every summer, and the slime that gets on beaches and fishing nets. Eutrophication is mainly due to the high loading coming from the catchment area, which is around four times the size of the surface area of the sea. There are 14 countries and around 90 million residents in the catchment area. There is a great deal of industry and agriculture in all the surrounding countries, and therefore both nutrients and environmental poisons have entered the sea over several decades.

As a result of eutrophication, the dead algae that sinks to the seabed consumes oxygen as it decomposes, and there has been an increase in the seabed areas where oxygen is depleted. Up to a third of the entire Baltic seabed suffers from oxygen depletion. In these conditions of oxygen depletion, more nutrients dissolve in the water, which leads to even further eutrophication. Even as the external loading decreases, the internal loading will continue for a long time, and the improvement in the state of the sea is slow.

The Gulf of Finland is the area where eutrophication is greatest, and it will not be able to withstand its current nutrient loading, which is three times greater than that of other areas of the Baltic Sea. According to the latest research results, in summer 2006 the oxygen-depleted area of the Gulf of Finland was exceptionally large, and the state of the seabed was worse than it has ever been during the 2000s. Furthermore, there was hydrogen sulphide in the water close to the seabed over the whole area of the Gulf of Finland. Oxygen depletion will always cause the internal phosphorous loading to start up, when the stratification of water masses create favourable conditions for this.

Although it has been possible to reduce the loading of organic material, nutrients and various environmental poisons entering into the Baltic Sea, especially during the last two decades, the nutrient loading from Finland as well as from the other surrounding countries is still too high in terms of ecological balance.

The last decades have also shown that there have been great changes in the Baltic Sea and the waters have worsened over the entire Baltic Sea area. Achieving a permanent improvement calls for a significant reduction in phosphorous and nitrogen loading over the entire Baltic Sea catchment area.

FACTORS THAT AFFECT THE SITUATION

At present, the Baltic Sea is being burdened most by the nutrient loadings and hazardous substances that have entered and are entering the sea, and also the greatly increased amount of shipping.

Eutrophication is caused by the activities of people, such as community wastewater, agriculture, scattered settlements, traffic, energy production, and industry. Research has shown that the wastewater from the St Petersburg area affects the entire open sea area of the Gulf of Finland, whereas the poor condition of our coastal waters is mainly due to domestic emissions.

From 1997 – 2001, the total amounts of nutrients entering the Baltic Sea were 35,000 tons of phosphorous and 650,000 tons of nitrogen. During the same period, Finland's share of the overall nutrient loading entering the Baltic Sea from rivers and from wastewater amounted to 10%.

From Finland's land area, an average of 3,000 tons of phosphorous and 42,000 tons of nitrogen enter the Baltic Sea each year as a result of people's activities. When the airborne nutrient deposition and natural leaching are also taken into account the annual phosphorous loading is 4,200 tons and that of nitrogen is 84,000 tons. In comparison with the loadings from 1992 to 1996, the amount of phosphorous has remained approximately the same, but the amount of nitrogen has risen by 8,000 tons.

Agriculture is the most significant loading source for Finnish coastal waters, and its significance is underscored in the reduction of point loading sources of nutrient emissions. From 1997 – 2001 agri-

culture accounted for almost half of the phosphorous loading and over one third of the nitrogen loading. The share from agriculture in the Helsinki and Turku areas is even greater. The share from agriculture in the Helsinki area is over one half for both phosphorus and nitrogen loading, and in the Archipelago up to three quarters.

Industry, fish farming and residential centres are also significant sources of nutrients, although there has been a significant reduction in the phosphorous and nitrogen loading from these sources during the last twenty years.
The living organisms and seabed sediment of the Baltic Sea accumulate large amounts of hazardous substances in comparison with the oceans. This is due the high loading of the Baltic Sea, unfavourable conditions for decomposition, and also the low water exchange. The discharges of hazardous substances into the Baltic Sea mainly come from community and industry wastewater, and from runoff waters. In addition to this, there are also airborne depositions of emissions.

Heavy metals are also carried directly into the sea along with the emissions from industrial plants, but also as diffuse loadings. Heavy metals affect the growth, reproduction and activity of living organisms. The amounts of heavy metals have decreased over the last twenty years, but the values are still significantly higher than in the North Sea, for example.

Heavy metal emissions from industry are generally concentrated in the coastal waters close to the factories. Heavy metal loading from river waters, however, spread more evenly over a larger area, and is tens of times greater than industrial emissions. Heavy metals accumulate in the sediment and seabed layers, from where they can move back into the Baltic Sea food web. For example, dredging and the disposal of dredging waste transfer the heavy metals accumulated in the seabed back to the water.

There are tens of thousands of different chemicals in use, and for only a small proportion of these is there any basic information in terms of assessment of environmental impact. Furthermore, the combined impact of various substances is often unknown. There has been a great deal of research into the effect of environmental poisons on living organisms. Poisons cause, for example, deformities in fish, and weaken the ability of shellfish to catch prey. One example that can be mentioned of the problems caused by hazardous substances is the high dioxin concentrations in Baltic herring.

Although the amount of certain environmental poisons has decreased, environmental poisons continue to accumulate in the living organisms of the Baltic Sea. Accurate information on the concentrations of hazardous substances in the Baltic Sea only exists for some of the most significant organic materials and for some heavy metals.

A large part of the oil in the Baltic Sea has come from land, river waters and the air. These oil emissions mainly pollute the sediment, but also the entire Baltic Sea ecosystem. The continuously growing volume of tankers has considerably increased the environmental risks and the risk of an accident in the Baltic Sea. Furthermore, deliberate discharging of oil into the Baltic is continuously happening. There are also over 1,000 wrecks with oil storage in the Finnish marine area.

The natural balance of the Baltic Sea is being shaken by the increased amount of shipping, and by boating and recreational activity. Problems are also caused by the construction of bridges, harbours and fairways, removal of sand from the seabed, and other activities being carried out in the Baltic Sea area, For example, the excavation of sea sand causes changes to the underwater landscape, the depth relationships, and the currents.

NEW THREATS

The latest major threats to the Baltic Sea are the increase in the transportation of oil and chemicals, environmental poisons, the arrival of alien species in the Baltic Sea, and climate change.

When chemical transportation and other marine traffic increases in the Baltic Sea, the risk of a chemical spill also increases. It is estimated that in the Gulf of Finland alone the overall amount of tanker traffic could be as much as 160 million tons by 2010, and about half of the tankers would be oil tankers. There is also a threat from the barrels of poison and other waste was that was dumped in sea several decades ago.

In addition to the eutrophication affect of the risk of accident, wastewater from shipping, and exhaust gases; the wave and suction effect of shipping as well as the wake from ships causes erosion of the inner archipelago and raises nutrients and other substances from the seabed to the surface. Dredging and disposal also cause muddiness of the water and may put back into circulation substances that have already been sedimented, such as environmental poisons.

Alien species that have been carried from one water system to another in vessels' bilge water are one of the biggest threats to the biodiversity of seas. The alien species may displace original species and thereby shake up the equilibrium of the sea.

With the rapidly increasing amount of shipping, more alien species than ever before, and from different sea areas, are entering the Baltic Sea. So far over 100 alien species have been recorded in the Baltic Sea, 60 –70 of which have managed to establish themselves permanently at least in some areas of the Baltic Sea. This number is significant in relation to the small amount of species in the Baltic, due to its young age.

The number of animal species in the Baltic Sea varies from around 450 in the Kattegat to around only 50 species in the Gulf of Bothnia.

The effects of climate change on the Baltic Sea are still partly unpredictable. However, we can assume that there will be several environmental and biological impacts as a result of, for example, a higher summer temperature, increased rainfall, and changing ice conditions.

For example, the increased rainfall and runoff caused by climate change will increase the loading and make the eutrophication of the Baltic Sea even worse than before. The impacts caused by climate change are also important in areas such as land use planning in towns and cities, and the functioning of the water supply and sewage systems.

Actions by the cities

1. REDUCING THE AMOUNT OF POINT LOADING

1.1 Improving the cities' sewage networks

- The cities will prepare up a storm water handling plan which clarifies, for example:
  - the environmental impacts of storm water and the possible need for storm water handling
  - preventing floods caused by storm water
  - the possibilities for reducing the amount of storm water entering the combined sewage network

- Increase the renovation of the sewage network, try to minimize wastewater overflow, and possibly try to channel the fees paid for using the combined sewage network primarily to improving the network. Minimise overflows particularly by upgrading areas with combined sewage systems. Encouraging real estate owners to direct drainage and rainwater from their properties into the storm water sewer, if they are directed to the present wastewater or combined sewer.

Reasoning:

It is thought that climate change will increase the occurrences of extreme weather, increasing the risk of flooding in cities. The storm water from the roads and industrial areas that enters ditches, streams and onwards to the sea may contain hazardous substances to such an extent that there is a need to study the quality of the storm water and clarify the need for treatment.

The management of storm water in the city can best be advanced by preparing a plan for handling storm water, which specifies the main principles and procedures for managing storm water. During flood situations, sewage water from the combined sewer has to be discharged as an overflow to the sea. The amount of storm water entering the combined sewer can be reduced by upgrading the network, thereby reducing network overflows entering the sea.

Challenge to other actors:

Helsinki and Turku challenge the following to improve the sewage networks:

- Other municipalities
- Water and sewage departments

2. REDUCING DIFFUSE POLLUTION

2.1 Reducing agricultural loading

- Fields owned by the cities (e.g. Haltiala fields in Helsinki, and the fields at Ruissalo in Turku) to be changed to model fields as far as agricultural water protection actions are concerned.
  - the fields will be planted by the direct sowing method
  - the fertilizer level to be reduced to match realistic harvest targets, taking into account the phosphorous situation of the land
  - the annual nutrient levels for different sections to be calculated, in order to determine the following year's need for fertilizer.
  - field areas that are repeatedly flooded or are particularly sensitive to erosion not to be cultivated
  - between the field and water system, is always left a sufficiently wide unfertilised and uncultivated protection area from which the vegetation is cut
  - set special requirements in terms of water system protection for those fields that the city rents out

- Using land exchange or other methods, concentrate on ending cultivation of erosion-sensitive land and land at risk from flooding, also from private owners.

Reasoning:

From its present state, there can be no significant improvement in the protection of the Baltic Sea without intervening in the loading caused by agriculture. Diffuse pollution has a great impact on the state of the coastal waters. Measures to reduce erosion will enable the quality of the water to be improved, and will reduce the loading from solids and nutrients caused by agriculture.

Methods used in the specific environmental support of agriculture: protection zones and bands, sedimentation basins, wetlands, and submerged weirs, have been used to stop the flow of solid substances along with water. In terms of water protection, keeping the solid substances on the fields is more efficient than actions to stop solid substances in channels. Direct sowing refers to the sowing and spreading of fertilizer on untilled soil. Direct sowing can protect the land surface from erosion all year round. Another advantage of direct sowing is the low cost. Not using a plough saves time and cost.

Similarly, the use of carefully measured nutrients on the blocks of field saves both money and the environment. The best method of all for reducing loading of the water system from fields susceptible to flooding is to stop cultivating them altogether.

Although the cities of Helsinki and Turku are not significant agricultural producers, the cities endeavour to reduce the nutrient discharges to the water systems through their agriculture and from the fields they own.

Challenge to other actors:

Helsinki and Turku challenge the following to reduce pollution from agriculture:

- Other municipalities
- University of Helsinki
- Southwest Finland Agricultural Producers Union
- Uusimaa Agricultural Producers Union
- ProAgria
- Rural Advisory Centres: ProAgria Farma and ProAgria Uusimaa

2.2 Reduction of wastewater emissions from scattered settlement areas

- Improving and extending the sewage networks from the scattered settlement areas that are most important in terms of water protection

- The cities will encourage the establishment of wastewater consortiums in built-up scattered settlement areas, providing they do not have the possibility for connection to the pressure sewage network.
  - using support activity to speed up connection to centralized water supply for those areas without a sewage network
  - the target areas are the Helsinki archipelago, the Turku archipelago and the Aurajoki river catchment area

- By 2010, the cities will upgrade the wastewater treatment systems to the standard specified in the regulations for their own real estate in the scattered settlement areas

- Real estate owners will be given information and advice to encourage them to upgrade and improve the wastewater treatment systems before the time limits specified in the so-called wastewater decree.

Reasoning:

In the sparsely populated areas, the organic materials and total phosphorous in the wastewaters of a household pollute the environment 6 – 8 times more than the household wastewater of a resident whose house is connected to the water supply company's sewage network. Improving the wastewater treatment systems of real estate owned by the cities (schools, camping areas etc) will speed up making wastewater treatment more efficient, compared with the time limits specified in the so-called wastewater decree.

Challenge to other actors:

Helsinki and Turku challenge the following to reduce diffuse pollution
- Other municipalities
- Water and sewage departments

3. DREDGING OF CONTAMINATED SEDIMENT

- Dredging to remediate the areas of worst pollution by organotin compounds or other hazardous substances.
  - dredging will focus on those areas that have high concentrations of hazardous substances, or that have the risk of spreading the substances to clean or already cleaned areas.

- In Helsinki the worst problem areas are off the West Harbour and Sörnäinen Harbour, and in certain places at Kruunuvuorenselkä, In Turku in the Aurajoki river estuary.
  - the sediments in nearly all the small boat marinas have been polluted with TBT etc,

- The cities work in cooperation with other actors for the establishment of treatment and disposal areas for contaminated sediment, and the development of treatment methods.

Reasoning:

The seabed sediments of the marine areas of the cities are contaminated in many areas as a result of industrial activity. In recent years the most harmful and most usual polluting compounds have proved to be organotin compounds, the most common of which is tributyl tin (TBT), which has been used in painting the hulls of ships and boats.

In several dredging areas the concentrations of hazardous substances in the sediments have been so high that these cannot be dumped at sea, but the sediment has to be dumped in special disposal areas that will be constructed in such a way that the hazardous substances cannot enter the marine environment. The contaminated sediments on the seabed can also harm the environment as a result of other actions. The wake from ships propellers and river dynamics can cause the sediment to drift, causing the hazardous substances to enter the water and the living organisms that are there.

For this reason, the worst polluted dredging areas, other than those in connection with harbour or fairway construction, should be included in the scope of remediation dredging, as the benefits from remediation are significantly greater than the harm caused by the work.

Areas suitable for the disposal of contaminated sediments should be established through cooperation between the municipalities and the state. This would give areas better suited for disposal than at present, also for actors other than the city harbours.

Challenge to other actors:

Helsinki and Turku challenge the following for reducing the impact of dredging on water systems:

- Harbour towns
- Harbours
- Marinas and docks
- Ministry of the Environment
- Regional environment centres
- Finnish Maritime Administration

4. REDUCING THE WASTEWATER DISCHARGES FROM SHIPPING AND BOATING

- Change the harbour dues so that a wastewater charge is automatically included in the vessel waste fee, irrespective of whether the vessel discharges its wastewater to sewage system or to sea.

- Reduce or eliminate the wastewater fee for those vessels that are exempt from paying vessel waste fees so that it is more attractive for them to discharge their wastewater on land, and try to arrange discharge points at the docking berths.

- Create better preconditions for vessels in regular operation to use shore to ship -electricity.

- Increase the number of septic tanks at boat harbours and camping areas in the city.

Reasoning:

Under the vessel waste legislation, vessels that operate internationally can discharge their untreated latrine wastewater at sea at a distance of 12 nautical miles from the coast, and treated wastewater at a distance of 3 nautical miles from the coast. A wastewater fee has to be paid for discharging wastewater at the harbour. At present the vessel waste fee does not include a wastewater charge, but this is paid separately when the wastewater is discharged. Vessels in regular operation are generally exempt from the vessel waste fee (Finnish Maritime Administration) and they manage their waste themselves. However, they do have to pay a fee for any wastewater they discharge at the harbour.

The Turku and Helsinki harbours have the facilities to accept wastewater. Wastewater discharged at sea by shipping has a direct impact on the eutrophication of the sea. One effective way to promote the receiving of wastewater is to fit the appropriate equipment for receiving wastewater at the docking berths.

Using shore to ship electricity reduces the emissions to the air and the noise pollution from ships in the harbour. Increasing the use of shore to ship electricity requires investments in the ships and in the harbours.

The septic tank network for small boats is still too limited, and for large recreational yachts in particular, there are few emptying places on offer.

Challenge to other actors:

Helsinki and Turku challenge the following to reduce emissions from shipping:

- Harbour towns
- Harbours
- Ministry of Transport and Communication
- Finnish Maritime Administration
- Shipping companies

Helsinki and Turku challenge the following to reduce loading of water systems caused by boating:

- Other municipalities
- Marinas
- Turku and Helsinki boating societies

5. INTERNATIONAL COOPERATION

- The cities support international environmental projects focusing on the Baltic Sea through their own networks, such as through cooperation with BaltMet, or the Union of the Baltic Cities
  - For example, the Clean Sea project by the John Nurminen Fund, where the aim is to establish chemical phosphorous elimination at wastewater treatment plants in St Petersburg

- Invest in international environmental cooperation, particularly in Russia
  - To forge closer environmental cooperation between the cities of Helsinki, Turku and St Petersburg, emphasising cooperation on water protection

Reasoning:

We have been actively involved in the work of the cooperation networks, and the cities have an important role in international cooperation. These networks include BaltMet (Baltic Metropoles), which is a network of the major cities in the Baltic Sea region, and UBC, the Union of the Baltic Cities. Through these networks it is possible to efficiently promote the environmental protection actions of the cities to focus on improving the condition of the Baltic Sea, taking into account the optimal use of funding possibilities from the States, the EU and from the private sector.

The environmental work aims to support the progress of environmental protection in Russian cities, particularly St Petersburg. Phosphorous encourages algae growth, and chemical phosphorous removal at St.Petersburg's three largest wastewater treatment plants would reduce the phosphorous discharge into the Gulf of Finland by almost 27%.

According to research carried out by the Finnish Environment Centre, this is the quickest and most cost-effective way to improve the state of the open sea in the Gulf of Finland when compared to all the other possible water protection actions in Finland and Russia. This action would reduce the amount of algae in the Gulf of Finland within a few years. (www.puhdasitameri.com)

Challenge to other actors:

Helsinki and Turku challenge the following to get involved in international cooperation:

- Other municipalities
- Businesses
- Organisations
- Ministry for Foreign Affairs
- Ministry of the Environment
- Ministry of the Interior
- Baltic Metropoles
- Union of the Baltic Cities

6. RESEARCH PROJECTS AND THE ESTABLISHMENT OF A PROFESSORSHIP

In cooperation with universities, institutes of higher education, and research institutes, the cities participate in technical/scientific research projects connected with improving the state of the Baltic Sea

- In connection with this, Helsinki will establish an endowed professorship in the field of environmental research or protection.
  - Participate in research projects concerning the state of the Baltic Sea.

Reasoning

Since 1998 the University of Helsinki, the Helsinki University of Technology and the cities in the metropolitan area have had urban research professorships, whose task has been to undertake scientific research in connection with the cities' needs and activities.

Similarly, the city of Turku has endowed professorships at the University of Turku and the Turku School of Economics. Under the same principle, the professorship to be established would concentrate on environmental protection or on furthering environmental research.

The research projects would be focused on cooperation with universities, research institutes and the practical stakeholders involved. For example, one project starting up is studying the nitrogen emissions and impacts of ships that operate between Helsinki and Tallinn.

Challenge to other actors:

Helsinki and Turku challenge the following to participate in research projects:

- Universities
- Polytechnics
- Other municipalities
- Businesses

7. TO ESTABLISH A FUND FOR THE PROTECTION OF THE ARCHIPELAGO IN ASSOCIATION WITH THE CENTRUM BALTICUM FOUNDATION

- Turku is taking part in establishing the Archipelago Protection Fund in association with the Centrum Balticum foundation.

Reasoning:

The aim of this fund is to support concrete water protection activity for the archipelago, and research into water protection. Improving the state of the archipelago calls for even more purposeful actions and significant financial investment.

Because of this there is a need for new, innovative, precisely targeted and cost-effective water protection actions that are based on research. The money from the fund would be directed towards water protection activities that would achieve significant benefits in terms of water protection. The cities play an important role in the establishment of the protection fund.

Challenge to other actors:

Turku and Helsinki challenge the following to action and funding for the Archipelago Protection Fund:

- Municipalities and firms in the archipelago catchment area

8. INCREASING AWARENESS ABOUT THE STATE OF THE BALTIC SEA

- Increase the awareness of the municipal residents about their possibilities to contribute to improving the state of the Baltic Sea by, for example, organising thematic evenings and information events, and by increasing cooperation with other actors.

Reasoning:

Education and information relating to environmental issues and water protection in particular will increase the municipal residents' awareness of the impact of their own actions on the immediate surroundings, and in this way promote environmentally-friendly behaviour.

Challenge to other actors:

Helsinki and Turku challenge the following to increase communication of information:

- Other municipalities
- Educational institutes
- Societies
- The media

Concerned about the state of the Baltic Sea and its future, and committing themselves to the actions put forward above, the Cities of Helsinki and Turku wish to show a good example to others for saving the Baltic Sea for future generations.

The Cities challenge the other municipalities, State organizations and other parties mentioned above, as well as all citizens, citizens' organizations, businesses, unions and educational institutes to become involved in action to achieve the common goal.

Esite painettu Galeri Art Silk paperille, joka täyttää ympäristövaatimukset.