



## **Committee proposal on the use of the Best Available Technology (BAT) in wastewater treatment plants (WWTP) in the Baltic Sea**

### **1. Committee proposal**

The Environment and Natural Resources Committee proposes that

The Nordic Council recommends to the governments of Denmark, Sweden and Finland

to make demands that correspond to the use of the best available technology (BAT) for removing nitrogen and phosphorus at water treatment plants with outlets running into the Baltic Sea, and urge the other countries bordering on the Baltic Sea to make the same demands

### **2. Background**

The countries bordering the Baltic Sea have made significant inroads into reducing emissions of phosphorus and nitrogen into the Baltic Sea compared to the time when emissions were at their highest in 1980. The annual emissions are beginning to come down to the levels of the 1950s. The countries have come closer to achieving the targets for nitrogen emissions set in 2006 and updated in 2013. However, the effects of phosphorus will not disappear in the next few years because of the considerable amounts stored in sediments on the seabed and released into the water over a longer period. There are expectations, therefore, that the targets for a good ecological status in the Baltic Sea can be achieved; however, this is unlikely to be as early as 2021, the year the countries had set as the goal.

At HELCOM's ministerial meeting in October 2013 new targets were agreed for the reduction of emissions of phosphorus and nitrogen into the Baltic Sea. The targets are broken down by country. Poland has expressed reservations about the reduction targets imposed on the country.

Emissions from agriculture and wastewater are the main causes of the poor ecological status in the Baltic Sea. The same sectors are the key to solving this challenge. It is therefore a pivotal question how much each sector can contribute to the solution and what it will cost. An answer to this question is a pre-requisite for being able to develop and implement the most cost-effective solutions.

The EU wastewater directive from 1991 is the basis for regulation in this area<sup>1</sup>. HELCOM has adopted a recommendation that recommends higher standards than the EU Directive. HELCOM ascertains that better purification is a cost-effective initiative. Several countries bordering on the Baltic Sea have not yet managed to meet the requirements of the EU Directive, not to mention the HELCOM recommendations.

A report, presented at the Environment and Natural Resources Committee's summer meeting in Vasa in June 2013<sup>2</sup>, established that even though there are new and more efficient methods for purifying nutrients from wastewater, most of the wastewater treatment plants (WWTP) around the Baltic Sea use traditional and obsolete methods. The effects of using BAT: *best available technology* in WWTP will be great: 95% of phosphorus and 90% of nitrogen can be removed.

HELCOM claims also that improved wastewater purification around the Baltic Sea is a cost-effective<sup>3</sup> measure.

The table below shows what this means in terms of the reduction targets adopted by HELCOM in 2013; 9,000 tonnes of phosphorus can be removed where the target is 14,000 tonnes. 83,000 tonnes of nitrogen can be removed where the target is 99,000 tonnes.

Table

The reduction targets as agreed at HELCOM's ministerial meeting in October 2013, and possible reduction by requiring the use of BAT, are 95% purification of phosphorus (P) and 90% purification of nitrogen (N), respectively, in water treatment plants.

	Agreed reduction target in 2013 for P (tonnes)	Water treatment potential with 95% requirement	Surplus or deficit compared to target	Agreed reduction target in 2013 for N (tonnes)	Water treatment potential with 90% requirement	Surplus or deficit compared to target
Denmark	38	160	122	2,890	820	-2,070
Estonia	320	190	-130	1,800	1,300	-500
Finland	356	4	-352	3,030	7,300	4,270
Germany	170	1	-169	17,670	540	-17,130
Latvia	220	240	20	1,670	2,300	630
Lithuania	1,470	290	-1,180	8,970	2,500	-6,470
Poland	7,480	7,500	20	43,610	53,000	9,390
Russia	3,790	1,000	-2,790	10,380	7,600	-2,780
Sweden	530	3	-527	9,240	7,800	-1,440

<sup>1</sup> Council Directive concerning urban waste water treatment (91/271/EEC)

<sup>2</sup> Nutrient abatement potential and abatement costs of waste water treatment plants in the Baltic Sea Region, January 25, 2013, Author Sam Hautakangas and others.

<sup>3</sup> "Improving municipal waste water treatment is a highly cost-efficient measure to reduce phosphorus loads, a major cause of pollution in the Baltic Sea" a quote from www.helcom.fi.

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The Environment and Natural Resources Committee

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The table shows the reduction targets as they were distributed between the Baltic Sea countries at HELCOM's ministerial conference in October 2013. The use of BAT technology will mean that there will only be a deficit of about 5,000 tonnes of phosphorus and 16,000 tonnes of nitrogen to meet the purification targets. This means 65% of the reduction target for phosphorus and 84% of the reduction target for nitrogen can be achieved by applying BAT.

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According to the report this is a cost-effective initiative compared to implementing the same reductions in agriculture. The table shows that Sweden can meet the greatest proportion of its emission targets for nitrogen by using BAT in all of its water treatment plants. Finland can exceed its reduction targets for nitrogen with over 4,000 tonnes by insisting on using BAT. Denmark does not have as much to gain by insisting on the use of BAT, since most water treatment plants in Denmark already use BAT.

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Poland will realise the greatest gain by using BAT and will, in fact, be able to exceed the reduction targets agreed at the latest ministerial meeting in HELCOM. Poland is significantly behind the other countries with regard to purification of wastewater, and is not directly badly affected by the poor quality of the water in the Baltic Sea in the same way. The will and ability to implement BAT in water treatment in Poland may, therefore, be a problem that will require a particular solution.

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### 3. Hearing

The proposal has not been submitted to a hearing. As stated above, the Environment and Natural Resources Committee has been in dialogue with representatives from HELCOM and the farmers' organisations around the Baltic Sea. Furthermore, the committee has been presented with the results of a study carried out by Finnish scientists on the technological and economic prerequisites for improving wastewater purification around the Baltic Sea. The committee also raised the matter in a consultation meeting with the Nordic ministers for the environment in October 2013.

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The Environment and Natural Resources Committee

### 4. The Committee's views

The Environment and Natural Resources Committee has had the environmental challenges of the Baltic Sea on its agenda for some time. The committee's summer meetings in 2013 (Vaasa) and 2012 (Åland and Turku) were held in Baltic Sea locations with the aim of creating a better understanding of the initiatives required to meet the targets for a good ecological status in 2021. The committee has been conducive to ensuring that measures to follow up on HELCOM's action plan are included in the Nordic Council of Ministers' budget.

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Agriculture and wastewater are the two greatest sources of pollution in the Baltic Sea. Emissions from phosphorus (P) and nitrogen (N) act like fertilizer on algae in the sea, which for its part conceals the light and reduces the oxygen content of the water.

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The committee has been able to ascertain that there is great potential in the wastewater treatment plants around the Baltic Sea for cost-effective reduction of emissions of nutrients. There are indications that it is more cost-effective to increase purification of wastewater rather than introducing measures to reduce emissions from agriculture. Furthermore, the costs are significantly lower than indicated by previous analyses.

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The HELCOM Secretariat has informed the committee that the ecological status of the Baltic Sea is critical despite the fact that the countries bordering on it have been working together for 40 years to improve the situation. There is a need for further measures to improve the ecological status of the Baltic Sea. New reduction targets were adopted in 2013. The problems are complex. There are therefore no simple solutions. A recent analysis indicates that a large part of these reduction targets can be achieved by using BAT in the wastewater treatment plants around the Baltic Sea. Furthermore, this is a cost-effective measure compared to achieving the same reductions from agriculture. Better purification plants are therefore an important and cost-effective part of the solution.

The Environment and Natural Resources Committee believes, therefore, that the respective Nordic governments in Denmark, Sweden and Finland should set new and stricter limits on emissions of phosphorus and nitrogen in the purification of wastewater. The limits should be based on the degree of purification that can be achieved using the best available technology (BAT). Furthermore, the committee calls for the respective governments to urge the other countries around the Baltic Sea implement the same limits.

## 5. Conclusion

Based on the above, the Environment and Natural Resources Committee proposes that

The Nordic Council recommends to the governments of Denmark, Sweden and Finland

to make demands that correspond to the use of the best available technology (BAT) for removing nitrogen and phosphorus at water treatment plants with outlets running into the Baltic Sea, and urge the other countries bordering on the Baltic Sea to make the same demands

Copenhagen, 22 January 2014

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*The proposal was adopted at the Nordic Council session in Akureyri, Iceland, 8<sup>th</sup> April 2014.*

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