

# ***HELCOM Baltic Sea Action Plan***

**Towards the Baltic Sea unaffected by  
eutrophication**

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# Baltic Sea Action Plan

**Ministerial Meeting in Kraków, Poland - 15 November 2007**

The Ministers of the Environment of the HELCOM Member States, an international organization for the protection of environment, adopted an ambitious action plan to reduce pollution to the Baltic Sea and restore its good ecological status by 2021.

## **The long-term strategy**

The strategy is designed to solve all major environmental problems affecting the Baltic Sea.

It sets an ambitious target of achieving a good ecological status of the Baltic Sea - *a sea with diverse biological components functioning in balance and supporting a wide range of sustainable human economic and social activities.*

The plan contains concrete and meaningful actions to stop eutrophication, prevent pollution involving hazardous substances, improve maritime safety and accident response capacity, and halt habitat destruction and the decline in biodiversity.

# **Ecosystem Approach as a basis for HELCOM BSAP**

**With the ecosystem approach, the protection of the marine environment is no longer seen as an event-driven pollution reduction approach to be taken sector-by-sector.**

**The starting point is the ecosystem itself  
and a concept of a healthy sea with  
a good ecological status.**

**The new plan is based on a clear set of Ecological Objectives  
defined to reflect a common  
vision of a healthy Baltic Sea.**

**Targets for good ecological status should be based on  
the best available scientific knowledge.**

**The vision determines the needs for reductions in  
pollution loads and human activities.**

# Overall HELCOM goal to stop eutrophication of the Baltic Sea

The environmental state of the Baltic Sea is rapidly deteriorating and requires urgent and comprehensive actions. The most serious environmental **challenge is** the continuing eutrophication of the Baltic Sea.

**Eutrophication** is a condition in an aquatic ecosystem where high nutrient concentrations stimulate the growth of algae which leads to imbalanced functioning of the system.

**Eutrophication is caused by** excessive nutrient pollution loads of nitrogen and phosphorus to the sea originating from agriculture and untreated sewage.

For a century the Baltic Sea has changed from an oligotrophic clear-water sea into an eutrophic marine environment and nitrogen input to the Baltic Sea has increased ninefold.

## **Eutrophication leads to the following problems:**

- ☒ intense algal growth (phytoplankton blooms)
- ☒ production of excess organic matter
- ☒ increase in oxygen consumption
- ☒ oxygen depletion with recurrent internal loading of nutrients
- ☒ lifeless sea bottoms (death of benthic organisms, including fish).

# **Causes of Eutrophication :**

**Excessive nitrogen and phosphorus loads**

coming from land-based sources **within and outside**  
the catchment area of the Contracting States.

About **75% of the nitrogen** load and

at least **95% of the phosphorus** load

enter the Baltic Sea **via rivers** or

as direct **waterborne discharges**.

About **25% of the nitrogen** load comes as

**atmospheric deposition**.

# **Ecological objectives for the eutrophication segment of HELCOM BSAP**

The aim is to reach a HELCOM's vision for the good environmental status in the Baltic Sea.

For this reason HELCOM has adopted the following ecological objectives to describe the characteristics of the Baltic Sea, which is unaffected by eutrophication:

- ∞ Concentrations of nutrients close to natural levels**
- ∞ Clear water,**
- ∞ Natural level of algal blooms,**
- ∞ Natural distribution and occurrence of plants and animals**
- ∞ Natural oxygen levels**

# Operational indicators

**Ecological objectives** will be monitored by the following operational indicators with agreed target values :

**Winter surface concentrations of nutrients**

(for *Concentrations of nutrients close to natural levels*);

**Summer Secchi depth**

(for *Clear water*);

**Chlorophyll a concentrations**

(for *Natural level of algal blooms*);

**Depth range of submerged vegetation**

(for *Natural distribution and occurrence of plants and animals*);

**Area and length of seasonal oxygen depletion**

(for *Natural oxygen levels*).

**The transparency of seawater** integrates many of the concrete effects of eutrophication; Clear water was chosen as the primary ecological objective with water transparency as the indicator. The other indicators can be regarded as supportive indicators to give additional information on whether good environmental status has been achieved.

# National Programmes

Contracting States will develop national programmes **by 2010**, with the aim to ensure a proper implementation of the HELCOMBSAP and reaching the reduction targets in order **to achieve a good ecological and environmental status** of the Baltic Sea with regard to eutrophication.

**National programmes** will be submitted for HELCOM's assessment with the aim to evaluate the effectiveness of the programmes at a HELCOM Ministerial Meeting in 2013 and whether additional measures are needed.

The national programmes leave flexibility for the countries to choose the cost-effective measures to be implemented.

# Allowable inputs of nutrients to the Baltic Sea

On the basis of the MARE NEST model, the maximum nutrient input to the Baltic Sea that can be allowed to reach a good environmental status was estimates to be about:

**21,000 tonnes of phosphorus and 600,000 tonnes of nitrogen.**

In 1997-2003 an average input was as follows:

36,310 tonnes of phosphorus and 736,720 tonnes of nitrogen.

Needed reduction to achieve the objective „*clean water*”:

**15,000 tonnes of phosphorus (about 40%)**

**135,000 tonnes of nitrogen (about 20%)**

	Maximum allowable nutrient inputs [tonnes]		An average input in 1997-2003 [tonnes]		Needed reduction in relation to the average input in 1997-2003	
	P	N	P	N	P	N
Bothnian Bay	2 590	51 440	2 590	51 440	0	0
Bothnian Sea	2 460	56 790	2 460	56 790	0	0
Gulf of Finland	4 860	106 680	6 860	112 680	2 000	6 000
Baltic Proper	<b>6 750</b>	<b>233 250</b>	<b>19 250</b>	<b>327 260</b>	<b>12 500</b>	<b>94 000</b>
Gulf of Riga	1 430	78 400	2 180	78 400	750	0
Danish Straits	1 410	30 890	1 410	45 890	0	15 000
Kattegat	1 570	44 260	1 570	64 260	0	20 000
<b>Total</b>	<b>20 690</b>	<b>601 710</b>	<b>35 940</b>	<b>736 710</b>	<b>15 250</b>	<b>135 000</b>

# Country-wise reduction requirements

	<b>phosphorus [t]</b>	<b>Nitrogen [t]</b>
Denmark	16	17,210
Estonia	220	900
Finland	150	1,200
Germany	240	5,620
Latvia	300	2,560
Lithuania	880	11,750
Poland	8,760	62,400
Russia	2,500	6,970
Sweden	290	20,780
Transboundary	1,660	3,780
<b>Total</b>	<b>15 016</b>	<b>133 170</b>

The environmental and nutrient reduction targets presented above are provisional. All the figures related to targets and maximum allowable nutrient inputs will be periodically revised using both a harmonised approach and updated information from the Contracting States. The work towards a revision will start in 2008, on the basis of the results of the Fifth Pollution Load Compilation (PLC-5) and national river basin management plans.

# How to cut the nutrient loads?

In order to diminish nutrient inputs to the Baltic Sea to the maximum allowable level countries will take actions to reduce the nutrient load from waterborne and airborne inputs aiming at reaching **a good ecological and environmental status by 2021.**

The Baltic Sea Action Plan covers all sources of nutrients loads to the Baltic Sea:

❧ **Waterborne inputs**

*(municipality, industry and agriculture)*

❧ **Airborne inputs**

*(atmospheric deposition)*

❧ **Transboundary pollution sources**

# Municipal Wastewater Management

*Implementation of the following two recommendations on wastewater treatment will allow to reduce the current total nutrient input to the Baltic Sea by **6,700** tonnes of phosphorus:*

## ➤ HELCOM RECOMMENDATION 28E/5

*on more stringent requirements for P-removal from municipal wastewater treatment plants (above 10,000 p.e.) and introduction of requirements for wastewater management for small- and medium-sized municipalities (300-10,000 p. e.);*

## ➤ HELCOM RECOMMENDATION 28E/6

*on improvement of on-site wastewater treatment of single-family homes, small businesses and settlements up to 300 p.e.*

In order to achieve country-wise nutrient reduction targets, the Contracting States should choose the most appropriate and cost-effective measures taking into account requirements of the two aforementioned recommendations and include them into national programmes.

# **HELCOM RECOMMENDATION**

## **on municipal wastewater treatment plants and requirements for wastewater management**

superseded HELCOM Recommendations 7/3, 9/2 and 16/9 relating to wastewater management and introduced stricter requirements concerning phosphorus concentrations in treated wastewaters in all identified size classes of WWTPs.

**The Recommendation will be implemented in stages:**

- ⌘ **by the end of 2010 for agglomerations of more than 200,000 p.e.,**
- ⌘ **by the end of 2012 for agglomerations of more than 100,000 p.e.,**
- ⌘ **by the end of 2015 for agglomerations of between 10,000 and 100,000 p.e.,**
- ⌘ **by the end of 2018 for agglomerations of between 2,000 and 10,000 p.e.,**
- ⌘ **by the end of 2018 for agglomerations of between 300 and 2,000 p.e.**

For agglomerations above 10,000 p.e. the requirements for phosphorus in the wastewater would be 1.0 mg/l or 90% reduction until 2013. The implementation of the requirement of 0.5 mg/l will be decided by the Contracting States according to national programmes by 2010.

# Wastewater quality requirements

Scope P.E.	HELCOM Recommendation	EU UWWTP Directive	Updated HELCOM Recommendation
<b>&gt;100 000</b>	N: 70-80 % or 10 mg/l P: 1,5 mg/l BOD5: 90% and 15 mg/l	N: 70-80 % or 10 mg/l P: 80 % and 1 mg/l BOD <sub>5</sub> : 70-90% and 25mg/l	N: 70-80 % or 10 mg/l P: 90% or 0,5 mg/l BOD <sub>5</sub> : 80% and 15 mg/l
<b>10 000- 100 000</b>	N: 70-80 % or 15 mg/l P: 1,5 mg/l BOD: 90% and 15 mg/l	N: 70-80 % or 15 mg/l P: 80 % or 2 mg/l BOD: 70-90% and 25 mg/l	N: 70-80 % or 15 mg/l P: 90% or 0,5 mg/l BOD <sub>5</sub> : 80% and 15 mg/l
<b>2 000 – 10 000</b>	No requirements	Secondary treatment BOD <sub>5</sub> : 70-90 % or 25 mg/l COD: 75% or 125 mg/l	N: 30 % reduction P: 80% or 1,0 mg/l BOD <sub>5</sub> : 80% and 15 mg/l
<b>300 – 2 000</b>	No requirements	No requirements	P: 70% or 2 mg/l N: 30 % or 35 mg/l BOD: 80 % or 25 mg/l
<b>Up to 300</b>	No requirements	No requirements	28E/6 HELCOM Recommendation

# HELCOM RECOMMENDATION

## on improvement of on-site wastewater treatment

Wastewaters from single family homes, small businesses and settlements should be treated so that emissions *per capita* to the environment reach the values:

**BOD<sub>5</sub> - 8, P<sub>tot</sub> - 0.65, N<sub>tot</sub> - 10 (g person<sup>-1</sup> d<sup>-1</sup>)**

The requirements based on emissions *per capita* need not apply, where:

**Alternative 1:** it can be shown that an on-site wastewater treatment plant results in a concentration of **BOD<sub>5</sub> of 20 mg/l, P<sub>tot</sub> 5 mg/l and N<sub>tot</sub> 25 mg/l** in the effluent.

**Alternative 2:** it can be shown that an on-site wastewater treatment plant using the Best Available Technology (BAT) is installed and operated so that the treatment results in a concentration of **BOD<sub>5</sub> of 40 mg/l and 150 mg/l COD** in the effluent of the treatment plant.

**Alternative 3:** Improved treatment shall be introduced in areas where **the quality of the waterbody** is below the desired quality, and only when it can be shown that that the quality of the waterbody is poorer due to the influence of discharged wastewater. The attached table shows different levels of treatment, depending on the sensitivity of the waterbody.

# **HELCOM RECOMMENDATION 28E/7**

## **on measures aimed at**

### **the substitution of phosphorus in detergents**

- a) Polyphosphates as builders in laundry detergents for consumer use should be substituted according to national programmes and measures with a timetable to be presented and decided at the HELCOM Ministerial Meeting in 2010. In practical terms, a maximum limit for the content of total phosphorus should be applied and a hurdle of 0.2 to 0.5% P weight/weight could be recommended;
- a) Further considerations on the substitution of the use of polyphosphates as builders in dishwasher detergents for consumer use should be reconsidered in 2010; possibilities for the substitution should be further investigated;
- c) Further investigations on alternative builders, especially on their use and environmental effects, should be carried out.

The action taken by Contracting Parties in accordance with the Recommendation should be reported annually.

# **Actions in the field of agriculture**

Agriculture is considered as **a main source of nutrient inputs to the Baltic Sea,** and when nutrient losses from urban as well as scattered settlement are reduced to an acceptable level, with full implementation of the HELCOM recommendations, **the agricultural sector will remain the land-based source where major reductions are needed.**

BSAP proposes actions in the field of agriculture on both **regional and European level.**

# Co-operation within the European Union

The European Commission is about to adopt a communication on **the Health Check of the EU Common Agricultural Policy**, which will start a EU consultation process, and the Contracting States which are also Member States of the EU will make **a joint submission** stressing:

- the need to integrate better the specific environmental concerns of the Baltic Sea, and
- the need to adopt additional and targeted agricultural measures in particular to reduce eutrophication of the Baltic Sea.

The Contracting States which are also Member States of the EU **agreed to take all necessary steps towards designating relevant parts of agricultural land in the catchment area as a zone vulnerable to nitrates under the Nitrates Directive.**

# Actions on the regional level

- ✎ Revision of the **Annex III part II** of the Helsinki Convention *on prevention of pollution from agriculture* by adopting the HELCOM Recommendation 28E/4 and application of rules of agricultural Best Environmental Practice (BEP) and Best Available Technology (BAT);
- ✎ Adoption the HELCOM **list of examples of technical measures** for reducing phosphorus and nitrogen losses from agriculture;
- ✎ Elaboration by 2009 a **list of agricultural Hot Spots** identifying existing installations for the intensive rearing of cattle, poultry and pigs not fulfilling the requirements of the revised Annex III;
- ✎ Agreement on the need to address also other sources which can have significant eutrophication impacts such as **forestry, peat mining, aquaculture and fur farming.**

**Annex III part II of the Helsinki Convention**  
**Prevention of pollution from Agriculture**  
**HELCOM RECOMMENDATION 28E/4**

**Amendments to Annex III „*Criteria and measures concerning the prevention of pollution from land-based sources*”  
of the 1992 Helsinki Convention**

The Recommendation supersedes HELCOM Recommendation 21/1

Regulation 1: **General provisions**

Regulation 2: **Plant nutrients**

Regulation 3: **Plant protection products**

Regulation 4: **Environmental permits**

Regulation 5: **Monitoring and evaluation**

Regulation 6: **Education, information and  
extension service**

# HELCOM system of Environmental Permits

Farms with livestock production above a specified size should require approval with regard to environmental aspects and impacts of the farms.

## ∞ Permit fully co-ordinated by the relevant authorities

Installations for the intensive rearing of poultry, pigs and cattle with more than **40,000 places for poultry**, **2,000 places for production pigs** (over 30 kg), **750 places for sows** or **400 animal units of cattle** shall have a permit fully co-ordinated by the relevant authorities.

The permits must take into account the whole environmental performance of the enterprise, covering e.g. emissions to air, water and land, generation of waste and prevention of environmental accidents. The permit conditions must be based on BAT.

The competent authorities, in determining permit conditions, can take into account the technical characteristics of the enterprise, its geographical location and the local environmental conditions.

## ∞ Simplified permit

For **installations with more than 100 AU** the Contracting Parties shall put in practice general rules or a system corresponding to a **simplified permit system** to ensure the implementation of the requirements in this Annex.

Both of these permit systems

shall be applied to existing and new installations by 2012.

# Transboundary sources of pollution

An estimated amount of **1,660 tonnes of phosphorus and 3,780 tonnes of nitrogen** comes from transboundary waterborne pollution.

Transboundary pollution originating in the non-Contracting States: Belarus and Ukraine should be addressed by initiating joint activities e.g.

- ☞ by bi- and/or multilateral projects;
- ☞ through other existing funding mechanisms;
- ☞ international agreements such as the 1992 UNECE *Convention on Transboundary Waters and Lakes*,
- ☞ the River Basin Management Plans of the EU *Water Framework Directive* for HELCOM Contracting States being also EU Member States.

# Atmospheric deposition

**25% of the total nitrogen** input to the Baltic Sea is airborne of which sources outside the Baltic Sea catchment area **contribute about 40%** of the direct nitrogen deposition.

**Solution:** international co-operation on the following fora

The governments of the HELCOM Contracting Parties will make use of the assessments of the inputs and effects of airborne nitrogen to the Baltic Sea in the revision of the emission targets for nitrogen under **the UNECE Convention for Long-Range Transboundary Air Pollution,**

and

HELCOM Contracting States that are also EU Member States, in order to strengthen the emission targets for nitrogen under **the EU National Emissions Ceilings Directive (Directive 2001/81/EC),** will aim to include also emissions from ships and the achievement of ecological objectives for eutrophication in the marine environment,

and

all HELCOM Contracting Parties will aim to do so likewise for the emission targets in **the 1999 Gothenburg Protocol** under the UNECE Convention for Long-Range Transboundary Air Pollution.

# Development of assessment tools and methodologies

HELCOM Baltic Sea Action Plan requires a harmonised approach to assess the eutrophication status of the Baltic Sea and relates to:

**HELCOM RECOMMENDATION 28E/14 on *development of harmonised principles for quantifying diffuse losses throughout the Baltic Sea catchment area***. The aim of the recommendation: harmonisation of methods to assess diffuse nutrient loads to have more reliable estimation of nutrient loads **from agriculture and other diffuse sources** and to develop joint catchment models, covering the whole Baltic Sea area;

Development of the common **HELCOM eutrophication assessment tool**, by promoting the HELCOM Project to elaborate the **HELCOM Baltic Sea-wide thematic assessment on eutrophication (HELCOM EUTRO-PRO)**, taking into account the Common Implementation Strategy (CIS) **Guidance document on eutrophication assessment** made in the context of European water policies;

Efficient use of analytical tools, such as models, to **support management decisions**;

Development of information provision from **ecosystem models** and close co-operation, bearing in mind targets for good ecological status, indicators and allowable nutrient inputs to the Baltic Sea.

# Financing

According to NEFCO's findings all projects for which the UAC in reduction of phosphorus is below € 150,000 per tonne reduced are examples of cost-efficient actions.

The main sources of funding are:

- ✧ The state budgets
- ✧ The EU's structural funds including the **Cohesion Fund**  
(available to the new EU Member States);
- ✧ EU Neighbourhood and Partnership Instruments (non-EU Member States)
- ✧ the European Neighbourhood and Partnership Initiative (ENPI) and
- ✧ Northern Dimension Environmental Partnership (NDEP)  
(grant financing for high priority environmental projects in Russia)
- ✧ Bilateral sources

Funds for the protection of the Baltic Sea can be provided by **private companies** and **non-profit foundations** on a voluntary basis.

Contracting Parties shall investigate how to make better use of available funding for the financing of the implementation of the HELCOM Baltic Sea Action Plan.

# EU Marine Strategy Directive

The proposed EU Marine Strategy Directive foresees an action plan for each eco-region, including the Baltic Sea.

The concept of the HELCOM Baltic Sea Action Plan is considered as a pilot project for European seas in the context of the new Directive.

The Baltic Sea Action Plan will be a basis for further action in the Baltic Region and a tool for implementation of the EU Marine Strategy Directive in the region.

The Baltic Sea Action Plan is an example of the practical application of the ecosystem approach and can be an example to be followed by the Regional Seas Conventions and Action Plans under the auspices of the United Nations Environmental Programme Regional Seas Programme.

# **European Regional Champions Award**

The HELCOM Baltic Sea Action Plan to reduce pollution to the Baltic Sea and restore its good ecological status by 2021 has received **European Regional Champions Award 2007** in the environment category.

This award has been developed to showcase and celebrate the very best in regional innovation and examples of best practice throughout EU regions in 10 different categories.

The ceremony attended by the European Union's Committee of the Regions CoR President Michel Delebarre took place in Brussels on **27 November 2007**.

*(The great news was distributed by the HELCOM Information Service)*



**Thank you for  
your attention!**