



# EXPERT AND STAKEHOLDER MEETINGS IN FINLAND

First stepping stones

NutriTrade – Voluntary Nutrient Offsetting Scheme for the Baltic Sea

A Flagship project of the EU Baltic Sea region strategy

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## INTRODUCTION

During the project we have identified first steps that need to be taken to design and implement flexible, market based mechanisms for Baltic Sea protection. One of the first, still ongoing steps, are summarized in this report. We organized an expert workshop in Helsinki, with the focus on issues of i) identifying the measured unit in a nutrient credit program ii) addressing jointly the impacts on spatially interlinked watersheds (i.e. inland waters and the coast) iii) addressing the issue of nutrient stocks versus the flow and the mitigation actions that can be undertaken to target the nutrient stock directly.

We also organized a series of stakeholder meetings (also still ongoing). The aim of these meetings was to find out whether and how would the stakeholders be willing to utilize a flexible nutrient regulation mechanism. Initially, the plan was to organize on a meeting and invite several stakeholders. However, there seemed to be some many and so diverse stakeholders that we decided to have one-on-one meetings with each stakeholder at the time.

## EXPERT WORKSOP

A group of Finnish and Swedish scientists gathered to the expert meeting of NutriTrade. The aim of the day was to share the latest understanding regarding salt pulses, relevance of different phosphorus fractions on eutrophication, innovative measures to mitigate internal phosphorus loading and coupling of eutrophication management of inland waters and the Baltic Sea. All presentations are uploaded to the EMS platform with the titles D381\_appendix\_“presentator’s family name.”

### ***Determining the unit of a nutrient credit***

Petri Ekholm from the Finnish Environment Institute was pondering whether measures in agriculture should target reducing dissolved phosphorous, which is readily algal available, or particulate phosphorous, of which only a proportion is ever converted into algal available form. The rule of thumb of this very complicated subject seems to be that the reduction of dissolved phosphorous leaching is always recommendable and the reduction of particulate phosphorous can be recommended if the amount of dissolved phosphorous won't increase at the same time.

### ***Joint impacts on spatially interlinked watersheds***

Stockholm University's professor of hydrology Gia Destouni talked about nutrient loads in Swedish rivers and lakes. Long-term monitoring shows clearly how nutrients accumulated in the soil continue to leach to surrounding rivers and lakes. The links between Gia's presentation and Pilot Gypsum of the Project NutriTrade are obvious and measures are needed to combat the adverse effects of this so-called legacy phosphorus.

### ***Nutrient stocks and flows***

Seppo Knuuttila's (Finnish Environment Institute) presentation on salt pulses opened up the day. Contrary to what has been generally thought, rarely occurring salt pulses might weaken the status of the Baltic Sea and especially the Gulf of Finland. Short term benefits brought by oxygen rich water are outweighed by increased stratification in the long run. With stronger differences in the salinity of top and bottom water layers, less oxygen is available for bottom sediments, accelerating internal phosphorus loading.

The main lesson for the development of the nutrient credit system is that we need to address the stock

pollution issues. They need to be addressed technically when creating the system for quantification of the credits. They also need to be addressed legally. At the outset, a credit system must allow for innovative measures tackling nutrients already in the sea. The two pilot programs of the project (Fish and Mussel) target nutrient at the sea. Quantifying nutrient abatement using these measures is relatively straightforward. There are, however, more experimental large scale measures which might prove to be effective – and cost-effective – as well.

Sven Blomqvist from the Stockholm University introduced such an innovative measure designed to tackle the internal loading. Marl – carbonate-rich clay obtained as by-product in Gotland mines – could be used to bind phosphate near anoxic and hypoxic sediments. A pilot study in Sweden is under preparation. It will shed light on the applicability of the measure in real world conditions.

The presentation highlighted the problem with such measures: their effects are extremely hard to measure in real world conditions. Marl, for instance, is supposed to be sprinkled to the sea surface above the deep anoxic sediments of the Baltic Sea, say, at the Baltic Proper. The environmental conditions, including the diverse microbial communities of the sediments, water fluxes etc, cannot be replicated in laboratory conditions. A large scale pilot study would be needed. But how large? The only way to isolate the treatment effect from natural variation, and hence be able to quantify the effect, is to have an extremely large experiment. This would mean high costs for an uncertain effect.

As there is a large, potentially inexpensive source of abatement measures in the sea, this problem should be solved somehow. It poses a challenge for a nutrient credit program, and for any cost-effective protection of the sea. We should find the most inexpensive, reliable and least risky ways to explore the sea based measures such as oxygenation, spreading marl or aluminium oxides to sediments.

The positive news is that even though the internal loading plays a major part in the Baltic Sea, the sea seems to respond to reduction of external nutrient loads. The work around these topics will continue in the project NutriTrade.

### **STAKEHOLDER MEETINGS**

Several stakeholders were identified based on different aspects regarding flexible nutrient schemes. The stakeholders were met individually and after short introduction about the project, their ideas and comments were discussed in a free flowing unstructured interview. The stakeholders are listed below

- Industrial Point-sources (Sami Lundgren, Esa Laurinsilta, UPM Kymmene; Timo Heikka, StoraEnso; Timo Kanerva, MetsäGroup; Nina Elomaa, Fazer)
- Regional environmental permitting authority (Raija Aaltonen, Regional State Administrative Agency, Southern Finland; Esa Lehtinen, Centre for Economic Development, Transport and the Environment, Uusimaa )
- HELCOM (Susanna Kaasinen)
- Åland's environmental authority and env. law expert (Mikael Wennström and Sara Kymenvaara)

The goal of the interviews was to understand the preliminary ideas, comments and attitudes of various stakeholder groups towards more flexible official nutrient offsetting schemes and a voluntary

Offsetting for the Baltic Sea (OBS) – platform. These meetings can provide insights into where are the pitfalls and is there a clear way to maximize the benefits from the platform.

### **NUTRIENT TRADING SCHEMES FOR THE PERSPECTIVE OF OFFICIAL POLICY MAKERS**

At the moment, Finnish environmental regulation does not recognize nutrient trading as a measure to limit nutrient loading. Trading schemes can be seen being against the main principles of Finnish environmental legislation, where polluters should reduce loading themselves as much as possible. Compensations are usually possible only if the area and time of the compensation are at the same as the nutrient pollution and the polluter bears the costs of the compensation. The measures also have to provide clear additionality.

Defining the additionality of the measures is one significant problem that rises from compensation schemes. For example, compensation measures cannot be used for raw material acquisition that would have happened in any case. Thus, e.g. commercial fish stocks do not provide additional nutrient removal.

The first commercial aquaculture project that employs fishing as a compensatory measure is coming into the environmental permit process and could provide more insight about the permit process for compensatory measures. The scalability and uncertainty of measures such as fishing was seen as a potential problem. Guaranteeing the fish catch and thus the removed nutrients can pose problems.

In the environmental permit process the “burden of proof” lies with the applicant, i.e. the applicant has to demonstrate and justify the environmental impacts of the actual operations and possible the compensatory measures. From the perspective of permitting authority, voluntary projects put in motion by e.g. the OBS – platform could be potentially used as a reference for the impacts of the measures in the environmental permit process. The data about the impacts however, has to be gathered reliable to be used as a reference.

As an autonomous region, Åland’s environmental regulation differs from the Finnish environmental regulation. Drafted in 1996 it has fairly progressive elements compared to Finnish or Swedish legislation. The standards in Ålandic Water act are rather demanding in terms of water quality requirements. The legislation has a “stop-paragraph” that prohibits new actions or enlargement of operations if any water quality attribute, presented in EU’s Water Framework Directive Annex 5, is in risk to deteriorate. However, the Water Act allows the use of “improvement surplus”, provided by either the operator or somebody who is willing to trade their surplus. Unfortunately, as a consequence from implementing Water Framework Directive and Marine Framework Directives to the Water act, law has evolved into inconsistent and unclear legislation, which has been difficult to apply.

The Ålandic Water Act is going through a revision at the moment and the new Water Act proposal includes several possibilities for flexible nutrient removal schemes. The trading and compensatory measures are defined more specifically and thus, enable at least in theory more flexible nutrient flow managements. According to the proposal, operators or beneficiaries can provide compensatory measures or pay for measures through some yet undetermined financial instrument. The law does not define the acceptable compensatory measures, so a wide range of measures that provide additionality and measurable impact can be used. The law also enables selling “improvement surplus” for projects that remove nutrients more efficiently than is required by the environmental permit.

Other key policy maker –aspect within the Baltic Sea catchment area are the major international agreements such as HELCOMs Baltic Sea Action Plan (BSAP). In BSAP, all Baltic Sea sea areas are given own nutrient load reduction targets, which are then broken down to country specific targets. These targets are still under some debate as Poland has not fully accepted them. At the moment HELCOM does not recognize nutrient trading or compensatory measures as way to diminish nutrient loading and thus, every country has to take care of nutrient removal domestically. One argument for supporting this is similar to the one in e.g. Finnish environmental law: the polluter has to clean as much as possible. Also, benefits from overall nutrient load reductions for separate sea areas may differ significantly. For example Swedish coastal areas might not benefit as much as Gotland from load reductions from Belarus or Poland, even though the overall nutrient load to the Baltic Proper would diminish. However, in terms of costs, cooperative solution could reduce the total nutrient abatement costs significantly (e.g. Elofsson 2010).

Some key knowledge gaps were identified. As discussed before, the additionality of the measures has to be defined properly to be used as a compensatory scheme. Also verifying the nutrient flows and the questions about short term impacts, such as is there a difference if compensatory measures and the actual nutrient pollution take place in a different time, have to be taken into account. Safety coefficients could be a way to tackle the uncertainty of the measures.

#### **NUTRIENT TRADING SCHEMES FROM THE PERSPECTIVE OF BUSINESS**

Based on the interviews, nutrient trading schemes or nutrient neutralization did not yield major interest. Regional cooperation and coordination already exists in many of the bioproduct facilities in terms of using the side streams of the manufacturing. The needs of the manufacturing plants can be rather unique, depending on the location, manufactured products, and surrounding industries. Also, the municipal wastewaters are diverted to some of the plants to improve the waste water treatment processes. In some cases, moving to tertiary treatment process can be difficult and expensive for bioproduct facilities and in those cases compensating for the nutrient load through other projects could be an interesting option.

Faster permitting process through some compensatory measures was somewhat interesting idea for the interviewees. However, in the case of large bioproduct projects, environmental authorities have had political pressure for allocating more resources to the environmental permit process of these plants. The economic impacts of these plants are significant and thus, the projects are fast-tracked in any case.

The interviewees saw PR and marketing advantages gained from nutrient neutralization quite limited compared to global challenges such as climate change. Eutrophication is rather an old challenge, and given the local nature of eutrophication problems, it is possible that nutrient neutralization is not that important especially to people who do not suffer from eutrophication. It is feasible to assume that trading schemes would not be feasible from direct PR point of view.

#### **VOLUNTARY MEASURES**

Joint voluntary efforts have been long the significant form of restoring small local creeks. Interest has been higher for especially small scale local projects. Identifying with the project and locality seem to

be important factors considering the success rate of a given project. The OBS-platform could benefit from cooperating with established local environmental protection associations especially in the launching phase of the platform. These local players have usually more active membership that could help providing the initial critical mass the platform needs to succeed (Evans & Schmalensee 2010). Given its good track record with small scale creek restorations, River Vantaanjoki catchment area could be a potential testing or launching site for the platform.

## REFERENCES

Elofsson, K. 2010. Cost-effectiveness of the Baltic Sea Action Plan. *Marine Policy*. Vol 34 (5). pp. 1045-1050. ISSN 0308-597X, <http://dx.doi.org/10.1016/j.marpol.2010.03.003>.

Evans, D. S., Schmalensee, R. 2010. Failure to Launch: Critical Mass in Platform Businesses. *Review of Network Economics*. Volume 9(4). ISSN 1446-9022. DOI: <https://doi.org/10.2202/1446-9022.1256>