HELCOM BalticBOOST Workshop on the development of joint principles to define environmental targets for pressures affecting the seabed habitats

Helsinki, Finland, 28-29 November 2016

Co-funded by the European Union

Document title	Objectives of BalticBOOST case studies under Theme 3
Submission date	22.11.2016
Submitted by	BalticBOOST project

Background

HELCOM is currently developing indicators that reflect the state of the seabed habitats in terms of the condition of benthic communities and the extent and distribution of habitats as well as an indicator reflecting the "Cumulative impacts on benthic biotopes". However, so far no environmental targets have been developed that address pressures from human activities on seabed habitats. Moreover, there are no common methods, guidelines or best practices for setting those. Development of environmental targets related to the seabed habitats is a complex task, involving the consideration of many different habitat types, their natural variation, as well as different types of pressures and activities.

Under WP 3.1, BalticBOOST has explored different approaches and good practices for setting such environmental targets which can be used in cumulative effect assessments, to develop measures as well as to follow up progress towards GES in relation to cumulative effect assessments in the Baltic Sea.

In addition to the literature review, a set of case studies have been carried out to find evidence and support for setting environmental targets and groundtruth the linkages between pressures arising from human activities and the environmental status of seafloor habitats. Test cases were selected based on the availability of data from different areas and discussed and confirmed during the BalticBOOST Theme 3 WS 1-2016, held in Copenhagen, Denmark, 2-3 June 2016.

This document aims to clarify the objectives of the BalticBOOST case studies and, hence, set the scene for the discussions in the workshop. It is also meant to guide the participants through the documents.

The meeting is invited to consider the information provided in this document.

Objectives of BalticBOOST case studies under Theme 3

Common story line – different approaches

To support the grand objective of the BaltocBOOST WP 3.1 – i.e. development of joint principles for setting environmental targets for benthic habitats – several case studies were carried out in different parts of the Baltic Sea. The case studies are presented in separate workshop documents and they represent different approaches to answer the grand objective.

Two case studies analyzed specifically fisheries impacts (document 1-1, Fishing intensity and effects on benthos in Swedish areas of the Baltic Sea, and document 1-2 Influence of fishing pressure on benthic invertebrate species diversity and density in the Western Baltic Sea and evaluation of robust indicators for this taking into consideration hydrographical and physical habitat characteristics (initial results)) trying to link benthic state parameters with fishing intensity and found a negative impact of fishing intensity on several parameters in some test areas.
The strength of this result varied between test areas and was not distinguishable from natural factors in some of the areas. Analyses of the impacts on different benthic communities showed that some areas of the Baltic seabed are more impacted than others.
As an attempt to bridge the approaches of the fisheries and non-fisheries case studies a further case study (document 1-3, ICES contribution towards BalticBOOST WP3.1, "a quantitative assessment of benthic impact from fishing disturbance in the Baltic Sea" – Rev 1) was carried out in an attempt to establish reference conditions for Baltic Sea benthic communities, based on longevity and age-at-maturity of organisms of areas not affected by pressures. The work on baseline conditions was used to model predicted impacts from fishing pressure on each of these communities, but further work is ongoing to include different pressures.

Results from the fishery case studies will be discussed in the workshop and at least the following questions should be answered:

- What is the level of fishing pressure that causes adverse effects? How does that depend on fishing methods?
- Which benthic communities or biotopes are most sensitive?
- How the 'physical disturbance' pressure caused by fishing relates to the same pressure caused by other human activities (dredging, sand extraction, disposal of dredged material)? This comparison does not include the 'core area' of those activities which are considered as 'lost' (see Figure 1).

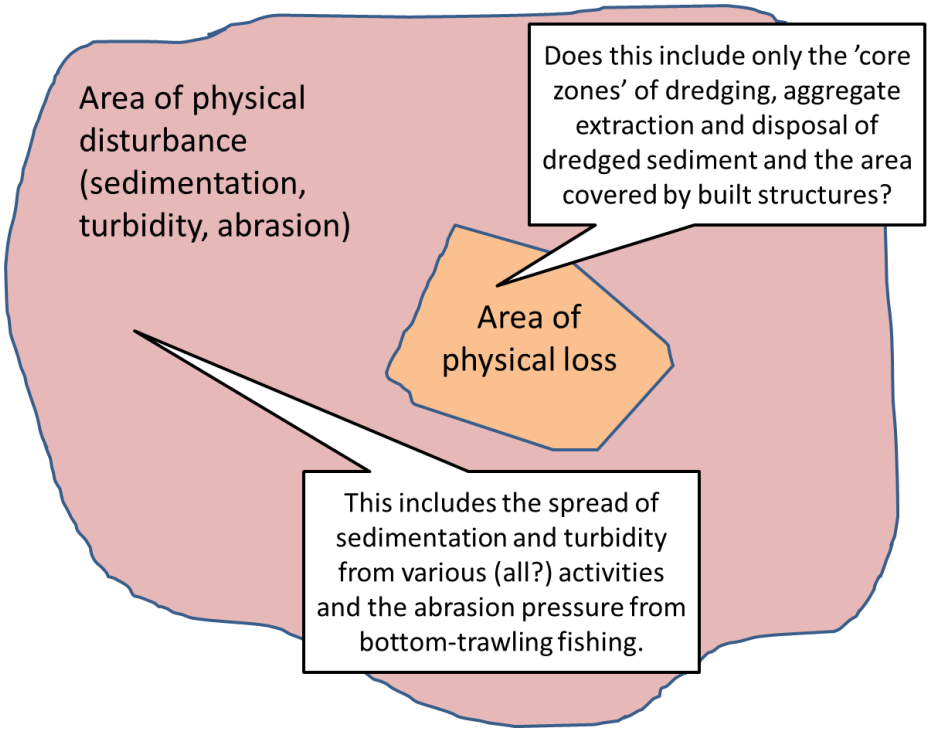

Figure 1. The difference of physical loss and physical disturbance. Physical loss has been defined in the revised MSFD Annex III as 'physical loss due to permanent change of seabed substrate or morphology and to extraction of seabed substrate. Moreover, the revised COM DEC defines this as 'a permanent change to the seabed which has lasted or is expected to last for a period of two reporting cycles (12 years) or more'. The revised MSFD Annex III pressure type 'Physical disturbance to seabed' is further defined in the revised COM DEC as 'Physical disturbance shall be understood as a change to the seabed which can be restored if the activity causing the disturbance pressure ceases'

Non-fishery case studies included a spatial test assessment of the pressure 'physical loss' (document 1-4, Effects of non-fishery pressures on seabed: two case studies from German waters) and an analysis of temporal and spatial 'disturbance effects' from a big construction project (document 1-5, Case study Gulf of Finland: Impacts of Vuosaari harbor construction works on the coastal ecological status east of Helsinki). With the spatial approach, it was analyzed how great proportion of benthic habitats (at the level of EUNIS 2 and HUB 6) was lost due to human activities (mainly wind farms, sand extraction and cable laying). This case study showed the importance of making the assessment on the detailed level of biotope classification as pressure effects will be diluted in the level of broad habitat types. With the analysis of the big construction project, the 'physical disturbance' pressure was the main focus and it was measured as sedimentation and turbidity. This analysis showed the spatial extent of the impacts and temporal recovery from it for a variety of benthic features. Although the latter case study was able to differentiate impacts from human activities, it was concluded that the local environmental conditions have a considerable influence on the pressure magnitudes and impacts.

Results of the case studies will be discussed in the workshop and at least the following questions should be answered:

- Which human activities cause highest physical disturbance pressure (and related impacts)? (see Figure 1).
- What is the level of activity that causes adverse effects?
- Which benthic communities or biotopes are most sensitive?