BONUS SHEBA, Sustainable shipping and environment in the Baltic Sea Region

Jana Moldanová, IVL

SHEBA Objectives and Structure

Objectives

The aim of Sheba is to provide an integrated and in-depth analysis of

- the environmental,
- economic
- and social impacts

of shipping in the Baltic Sea and to support development of the related policies on EU, regional, national and local levels

Runtime

SHEBA is running from April 1st 2015 to March 31st 2018

SHEBA`s research and coordination is structured into 7 working packages (WPs):

WP7
- Coordination

WP 6
- Interaction with stakeholders
- Data products and their dissemination
- Dissemination, education

WP1 Policies, scenarios and activity data
- Drivers (policies, economy, regulations)
- Scenarios (Technology, fuel, modal shift)
- Shipping activity data

WP2 Air Pollution
- Air pollutant sources
- Transport and transformation, deposition maps
- Effects on human health and land ecosystems

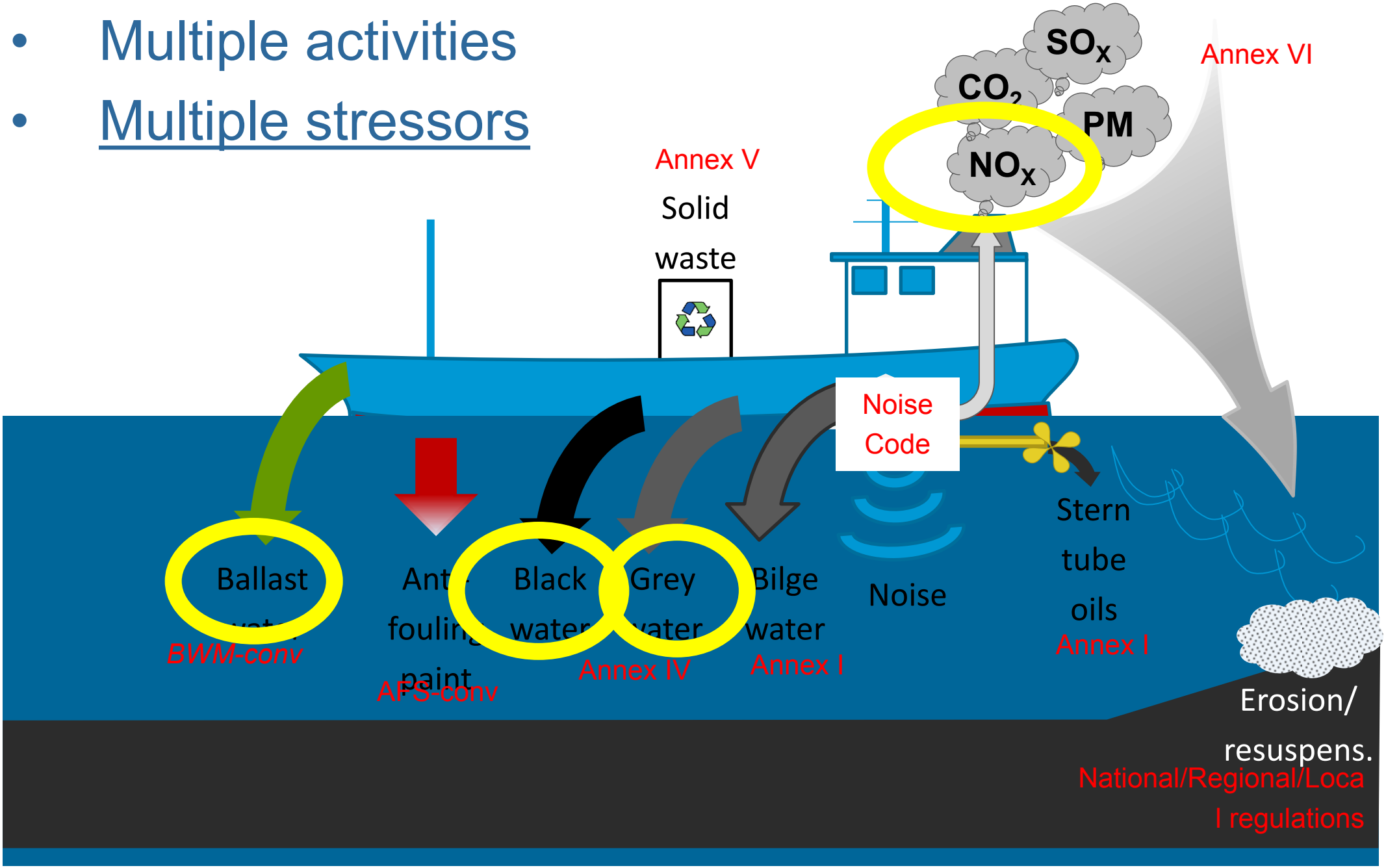
WP3 Water Pollution
- Line emissions sources (antifouling, open-loop scrubbers)
- Point emission sources (Litter, sewage, bilge & ballast water, closed loop scrubber sludge)
- Fate of pollutants in the Baltic Sea
- Effects of pollutants on the Baltic Sea ecosystem

WP4 Noise
- Noise sources
- Noise propagation
- Noise effects and conflict maps

WP5 Assessments
- Good environmental status descriptors
- Integrated assessment of economic, societal and ecological impacts
- Ecosystem services

Operational environmental impact from shipping

- Multiple activities
- Multiple stressors



Most important results:

Activity based emission inventory for shipping in the Baltic Sea Region using data from HELCOM and new developments in STEAM model

Used to calculate baseline and scenario emissions of:

- Air pollutants
- Water pollutants
- Underwater noise

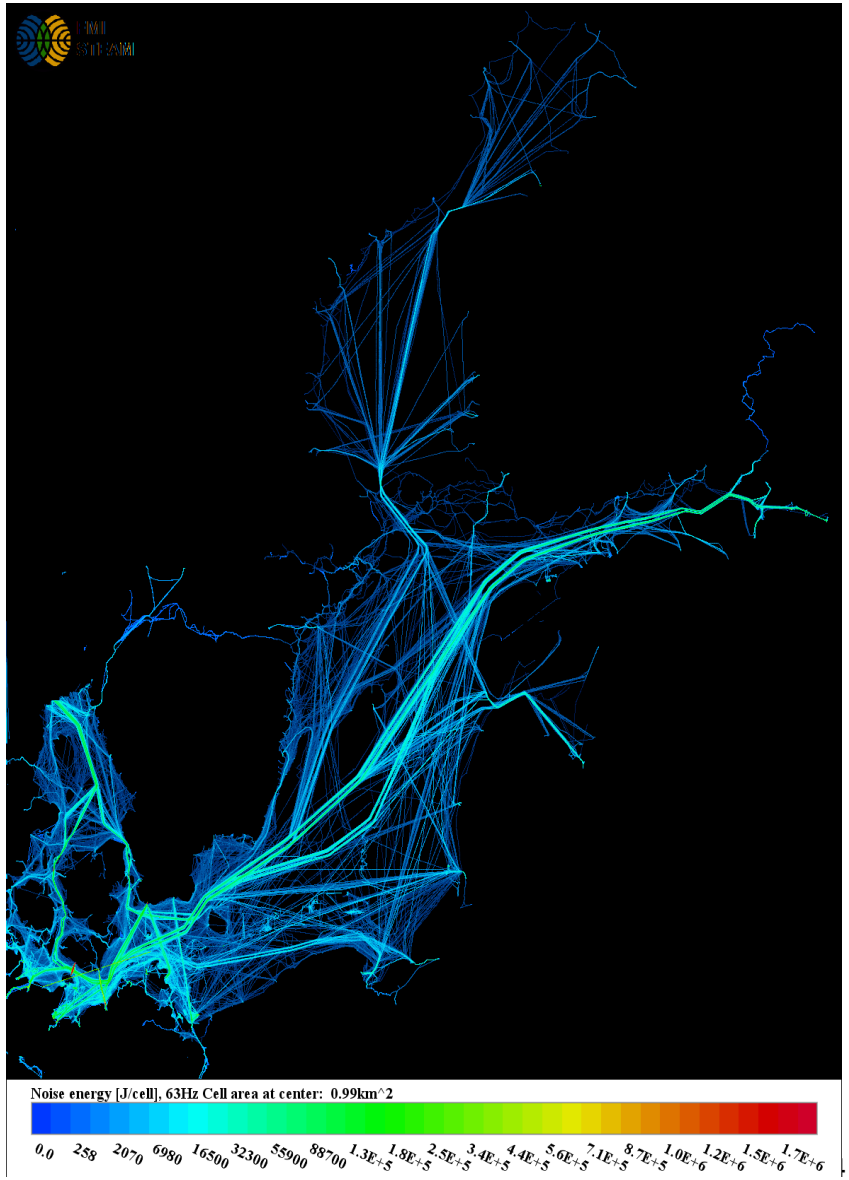
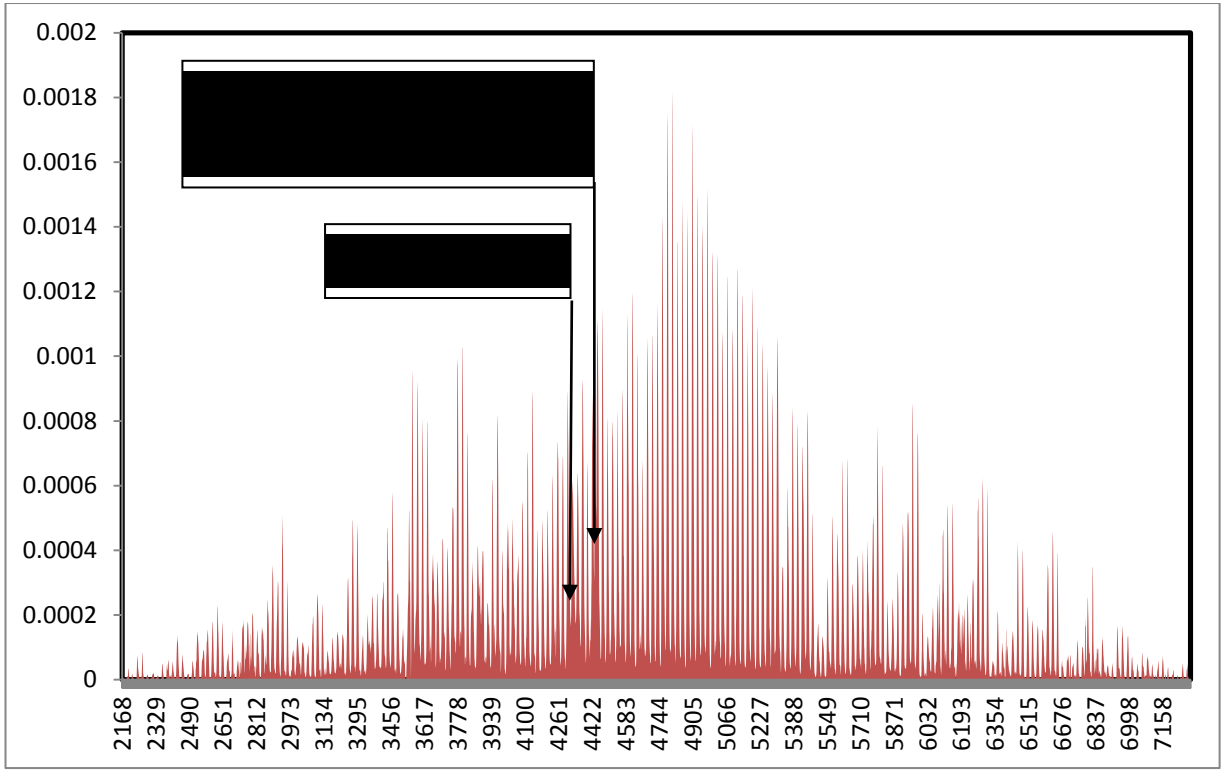
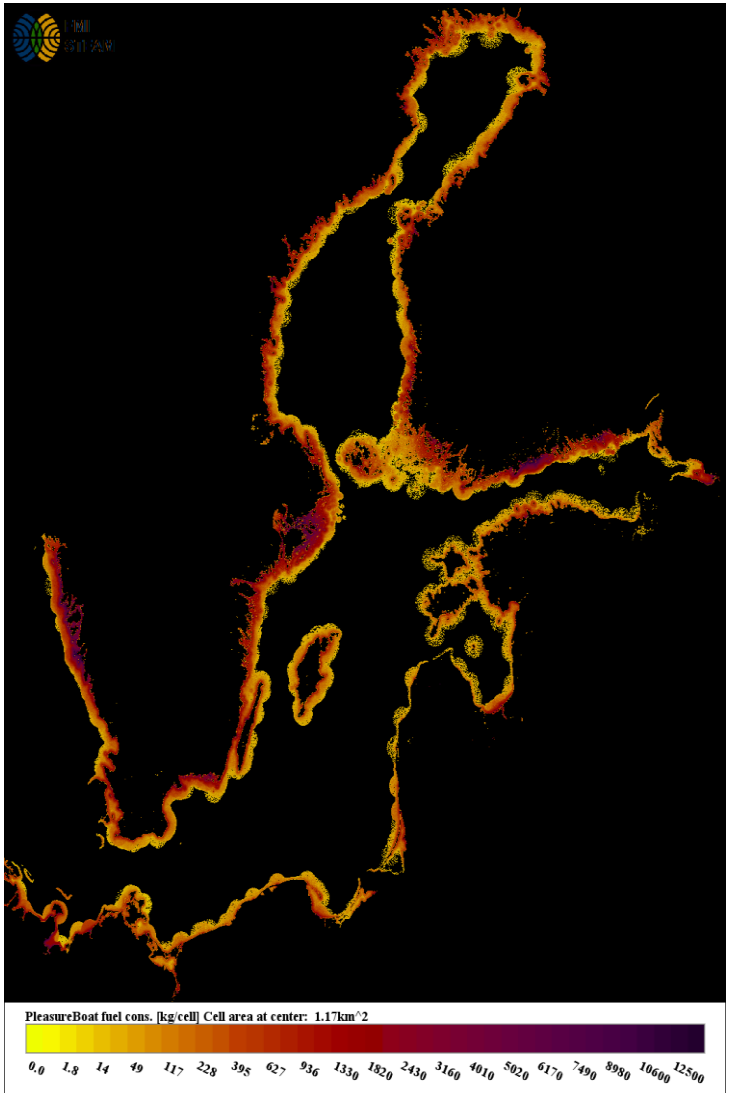


Figure 3. Shipping sound energy (63 Hz) in the Baltic Sea region. The unit is joules per square kilometre.

Database with activity data for **recreational shipping** produced based a top-down inventory based on survey data on fuel sales statistics, marina locations and fleet composition provided by the SHEBA partners, combined with AIS data. A newly developed pleasure boat modelling approach developed by FMI.

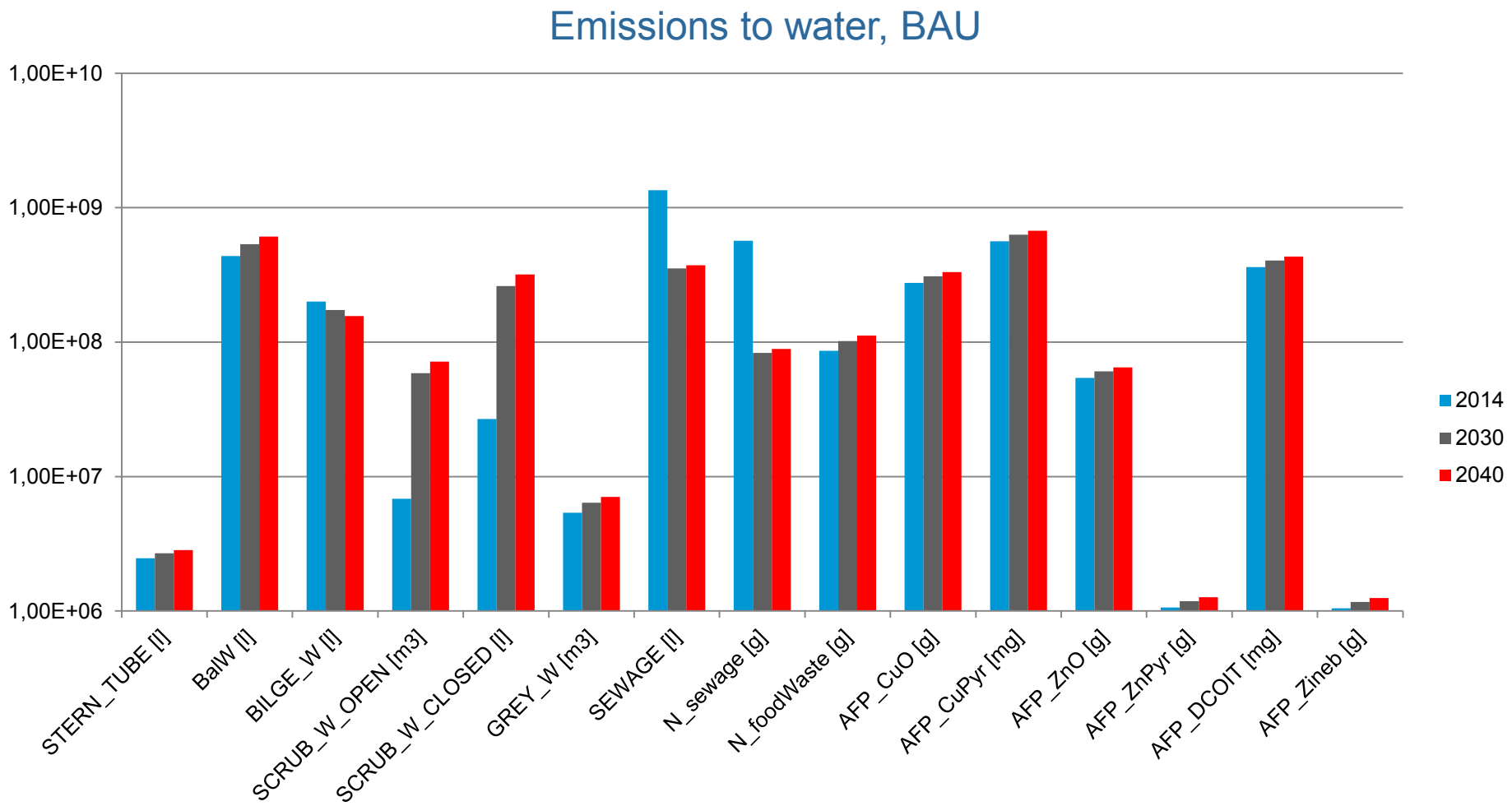


Estimated temporal profile of pleasure boat activities in the Baltic Sea based on AIS-data.



Leisure boar fuel consumption in kg/grid cell/year (Johansson, 2016)

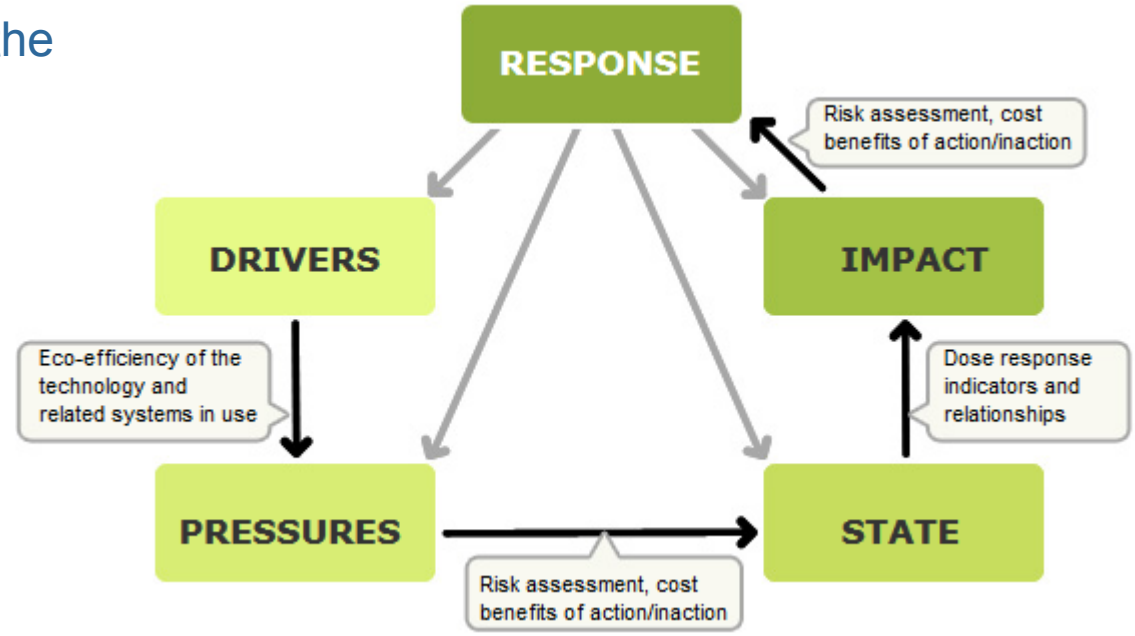
Emissions from shipping in the Baltc Sea calculated for the Business-As-Usual and alternative scenarios



Assessments

- Analytical framework for the integrated assessment of shipping in the Baltic Sea
  - Assessment of impacts of air pollutants (atmospheric chemistry modelling - health, land ecosystems)
  - Assessment of impacts of shipping on marine ecosystems (oceanic & marine ecosystem model)
- **Assessment of changes to ecosystem services compared to Business As Usual**

- Integrated assessment and policy analysis to reduce pressures from shipping in the Baltic Sea



Conclusions

We are developing a framework for a holistic assessment of impacts of shipping on environment and on human well-being and will provide assessment of shipping in the Baltic Sea Region for current and for a range of future scenarios.
Through improved knowledge of impact of shipping as such and of use of different abatement technologies, the project will help improving the environmental performance of the maritime sector in an environmentally and cost effective way.

We have a close dialogue with stakeholders from both industry and authorities to ensure that we give answers to relevant questions. Stakeholders have been involved in formulation of the scenarios, of the analytical framework and we have a continuous dialogue through activities organised by the project or other fora, such as EUSBSR PA Ship.

SHIPPING AND THE ENVIRONMENT - From Regional to Global Perspectives

2nd BONUS Symposium

24-25 October 2017

Gothenburg, Wallenberg Conference Centre, Medicinareberget

International conference on the environmental impact of shipping and its importance within policy, marine spatial planning and the maritime transport sectors. The conference is jointly organised by the BONUS SHEBA project and by the International Surface Ocean - Lower Atmosphere Study (SOLAS) and is a part of BONUS Symposia series.

Conference webpage http://shipping-and-the-environment-2017.ivl.se/

Abstract Submission open, **deadline 11 June 2017**

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