

MSP data in the Baltic Sea Region supporting cumulative impacts assessments

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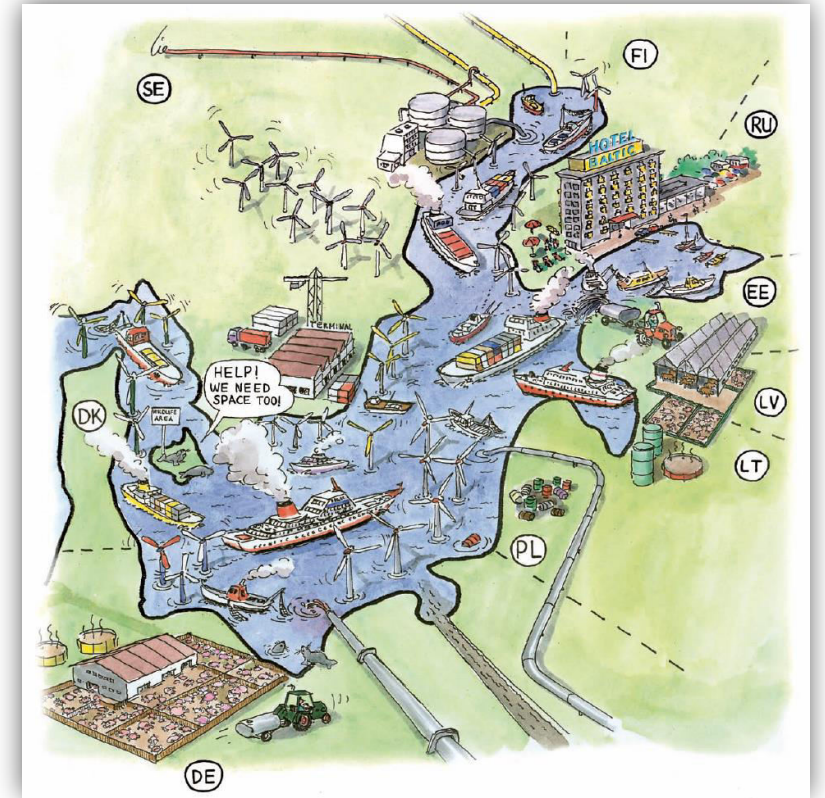


Introduction

- The Baltic Sea has several uses and activities – increase in **competition** for space and **environment is negatively affected** by the intense exploitation and cumulative impacts
- Need for **evidence-based decision making**



data and analysis demands
assessment schemes



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Challenges

- Access data
- Assessment schemes development → what to do with the data?

How to access data that supports MSP and cumulative impact assessment tools?

HELCOM Map and Data service and BASEMAPS

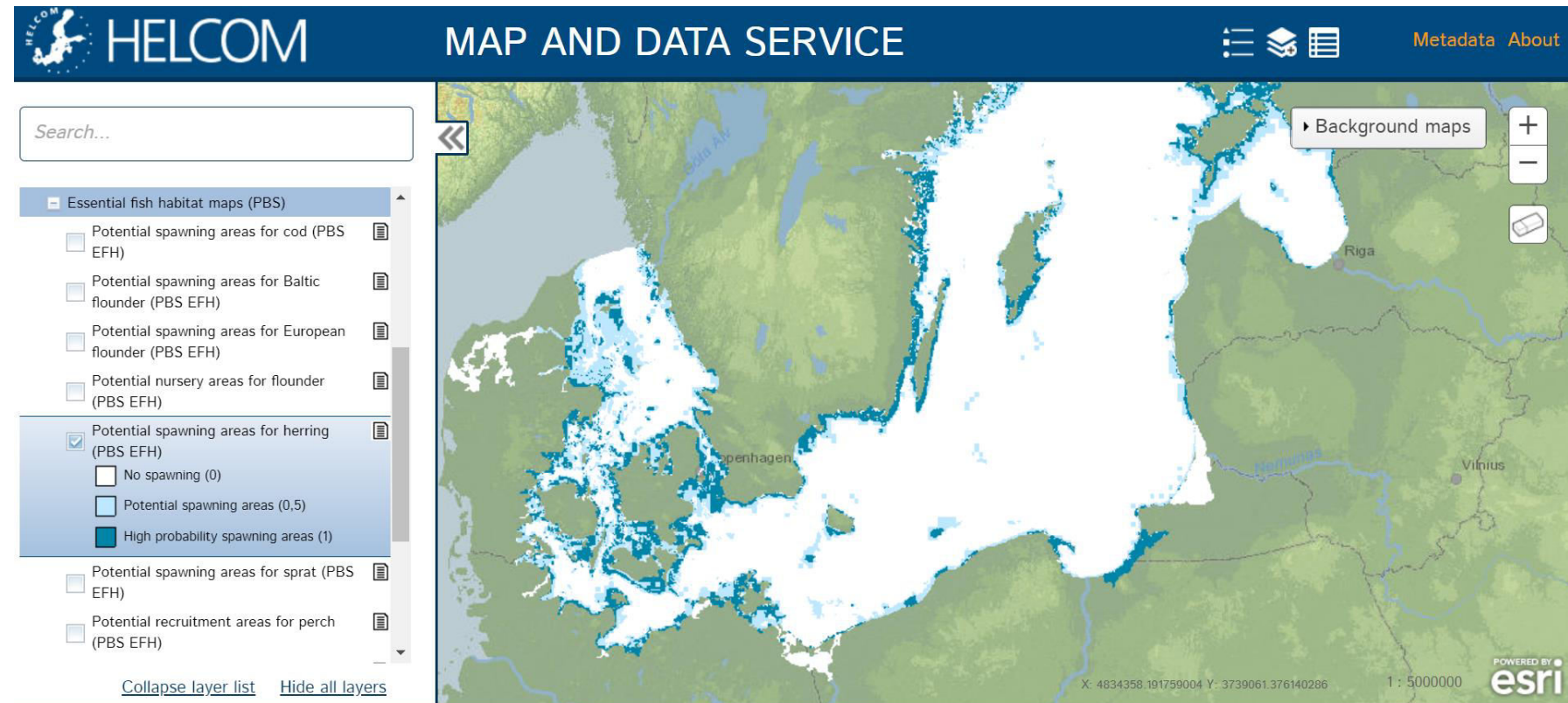
Baltic Sea up-to-date data for MSP

→ human activities and MSP plans

→ environment?

→ Based on national data and modeling outputs

→ Harmonized data: regional / European level data products





Challenges

- Access data
- Assessment schemes development

How different approaches to address those challenges have been used in the Baltic Sea Region for CIA?

ArcGIS based tool to calculate the **Baltic Sea Pressure Index** and the **Baltic Sea Impact Index** for the Baltic Sea Region

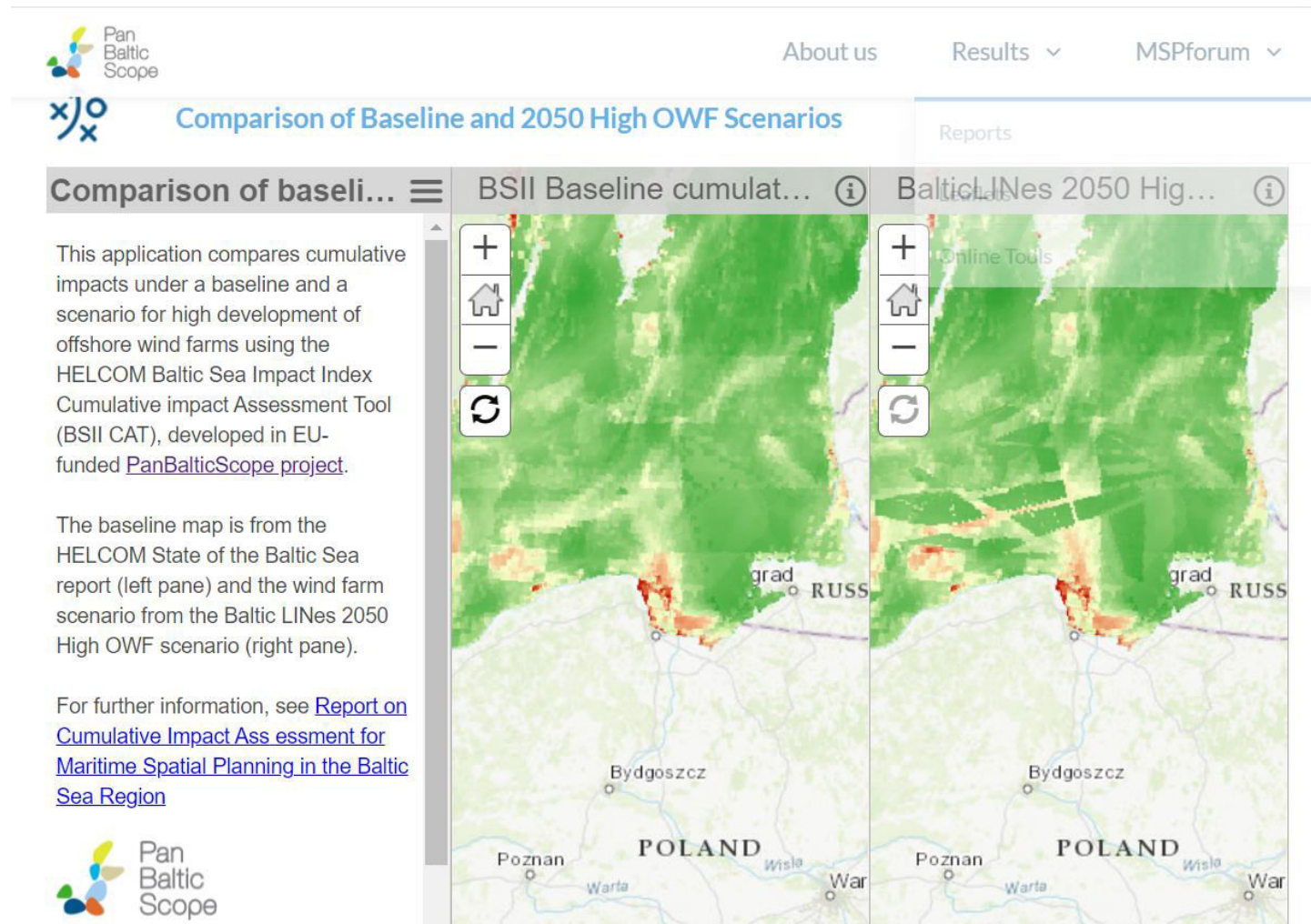


Baltic Sea Impact Index Tool

- The tool uses pressures and ecosystem raster layers and sensitivity score table as input data
- input data and results are at the resolution of 1x1 km grid for the whole Baltic ~430 000 km²
- <http://maps.helcom.fi/website/bsii/>
- The online BSII tool is **open source**:
<https://github.com/helcomsecretariat/Cumulative-impact-Assessment-Toolbox>

Baltic Sea Impact Index Tool: usage

- The tool was used in HOLAS2 to **assess areas which are most impacted by human activities**
- The tool was **used to compare different offshore wind energy production development scenarios** in PanBalticScope project



PlanWise4Blue (EE)

Tool quantifies **cumulative human impacts** on key ecosystem elements at 1 km² spatial scale

PlanWise4Blue

Human pressures

Nature assets

Impact matrix

Human impact

€ Economy model

PlanWise4Blue

PlanWise4Blue is an application that combines models of marine economy and cumulative impact assessment. Such a model allows one to assess the economic benefits of various management scenarios along with their environmental impact across Estonian sea space. Outcomes of the model make it possible to work towards sustainable solutions to maximize the economic benefit gained from the use of marine resources with minimum damage to the environment. The aim of the economy model is to increase the capacity for knowledge-based management of marine resources and accounting for their potential economic benefits. The aim of the cumulative impact model is to identify various human pressures and account for their cumulative effects on the natural environment, while considering regional differences of nature. The spatial resolution of the model is 1 km², and the temporal timescale is 1 year.

Uses of the model:

- Assesses economic benefits of sectors such as fisheries, aquaculture, reed harvesting, wind energy, maritime transport and recreation;
- Assesses cumulative impacts of human uses on various natural resources;
- Displays values of ecosystem service (provisioning, regulating and maintenance services) indicators across Estonian sea space;
- Assesses the effect of various scenarios to model output.

For further questions, please contact Ms Triin Lepland from the Estonian Ministry of Finance (triin.lepland@fin.ee).

Disclaimers

The outputs of the model should be tackled ONLY as a discussion platform, NOT as a final result due to the limitation of knowledge or data availability that may increase uncertainty of the model output. The European Commission or the Executive Agency for Small and Medium-sized Enterprises is not responsible for any use that may be made of the information the model contains. Estonian Ministry of Finance is not responsible for any use of model output data in subsequent processes. The economy model does not account for indirect benefits to the economy that arise as a by-product and/or value added of production chain. PlanWise4Blue only accounts for Estonian sea space and does not consider cross-border effects.

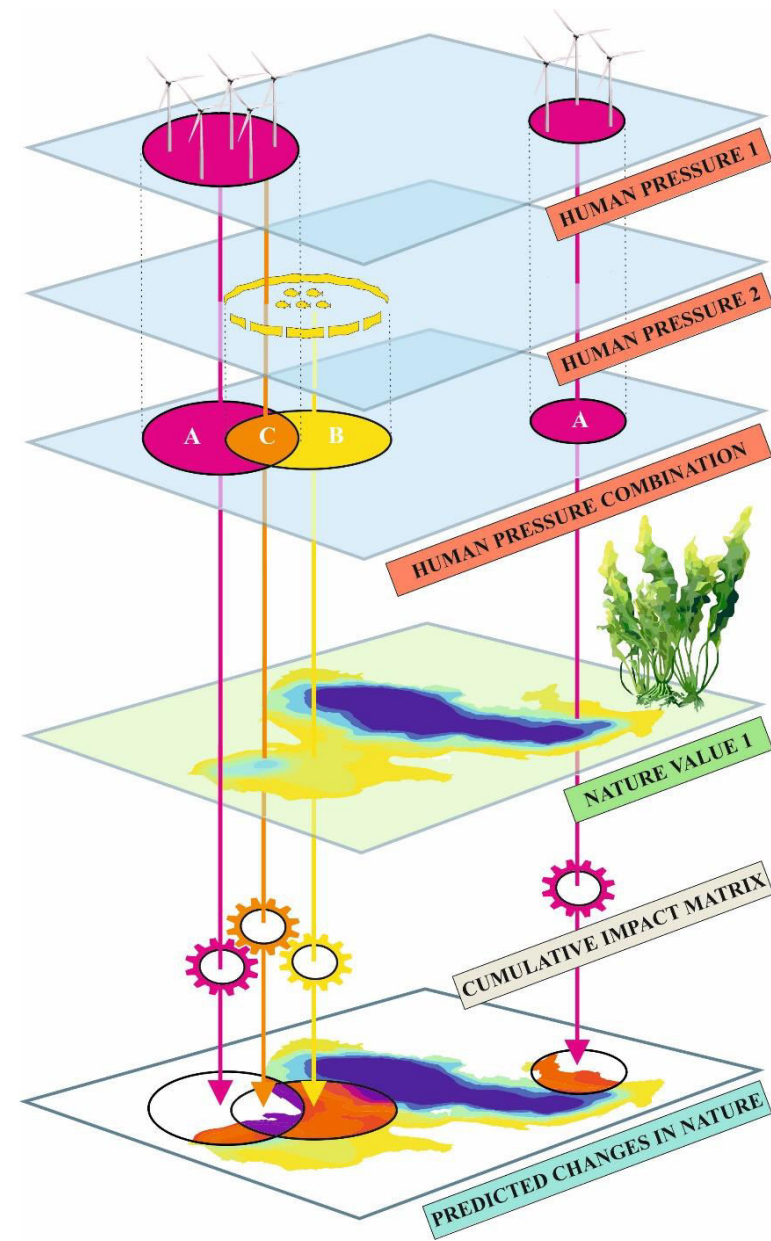
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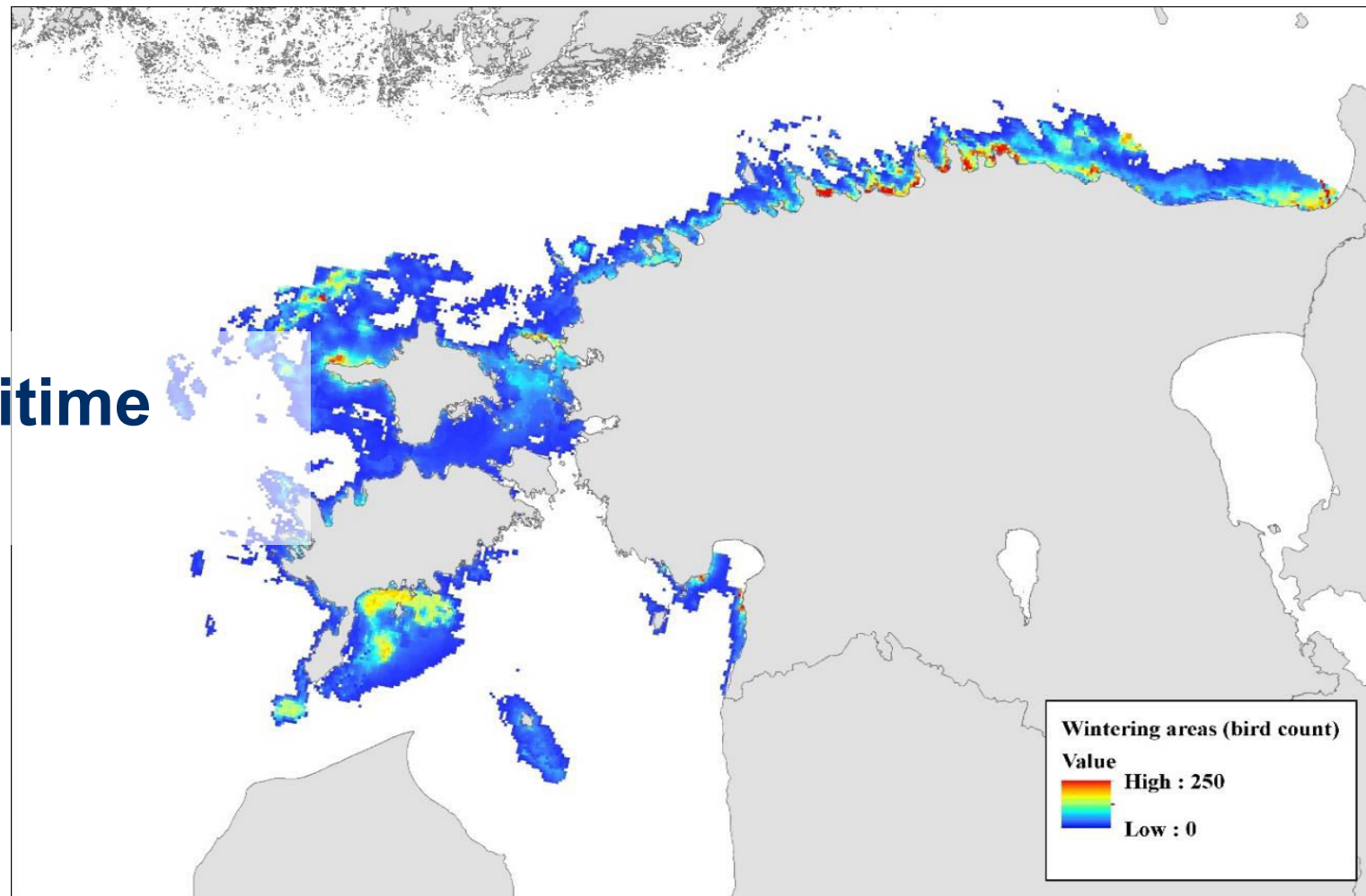
PlanWise4Blue

- The tool combines layers of key **NATURE ASSET** values based on the **current best available data and knowledge**
- **Contain rules** (knowledge) on how different human pressures affect different nature assets
- **USERS** can **UPLOAD** polygons of human use



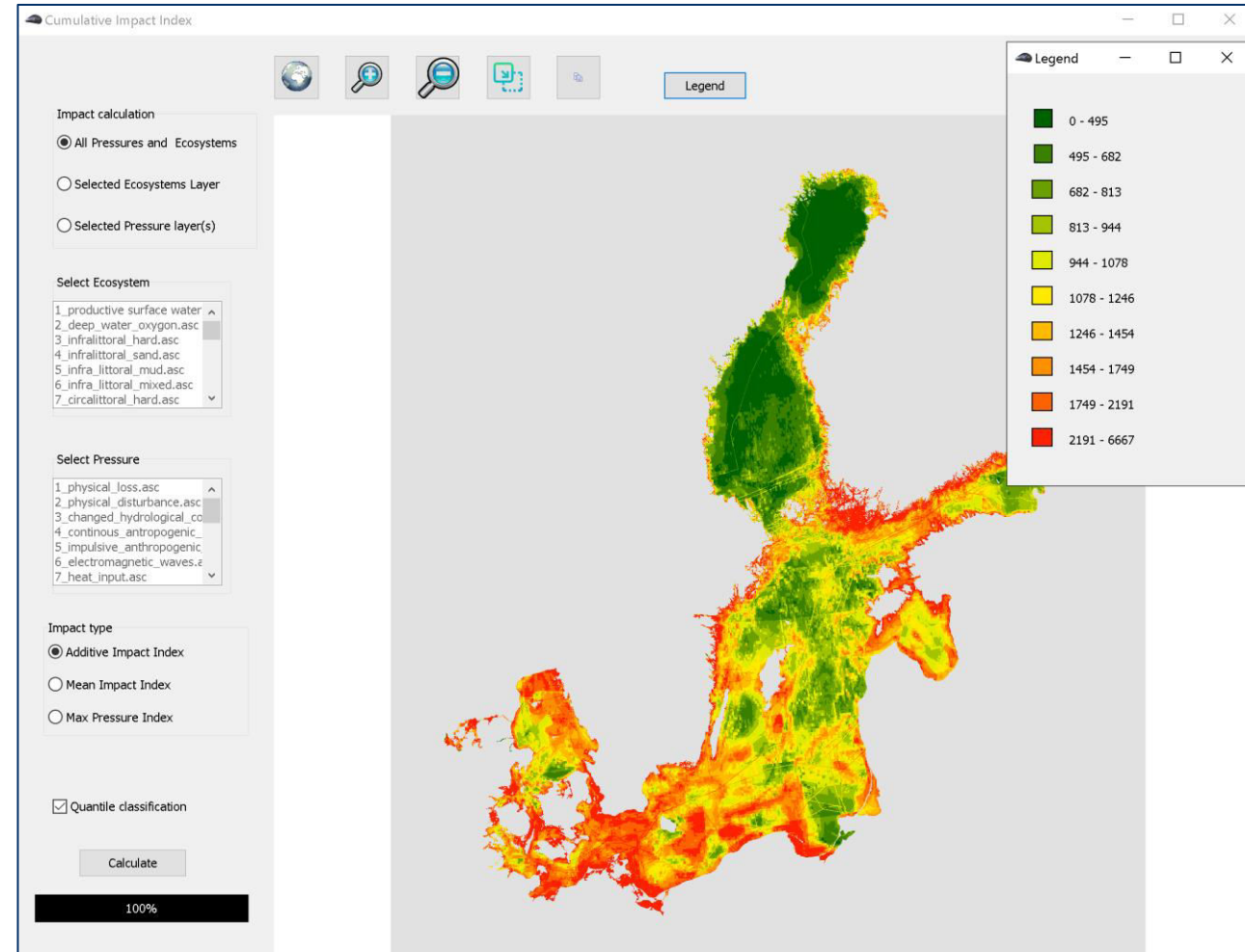
PlanWise4Blue use

Tested in Estonian Maritime
Spatial Planning



Mytilus (AAU)

General purpose tool for **cumulative impact assessment** and the spatial scope spans from local sea areas over regional seas like the Baltic Sea to global level



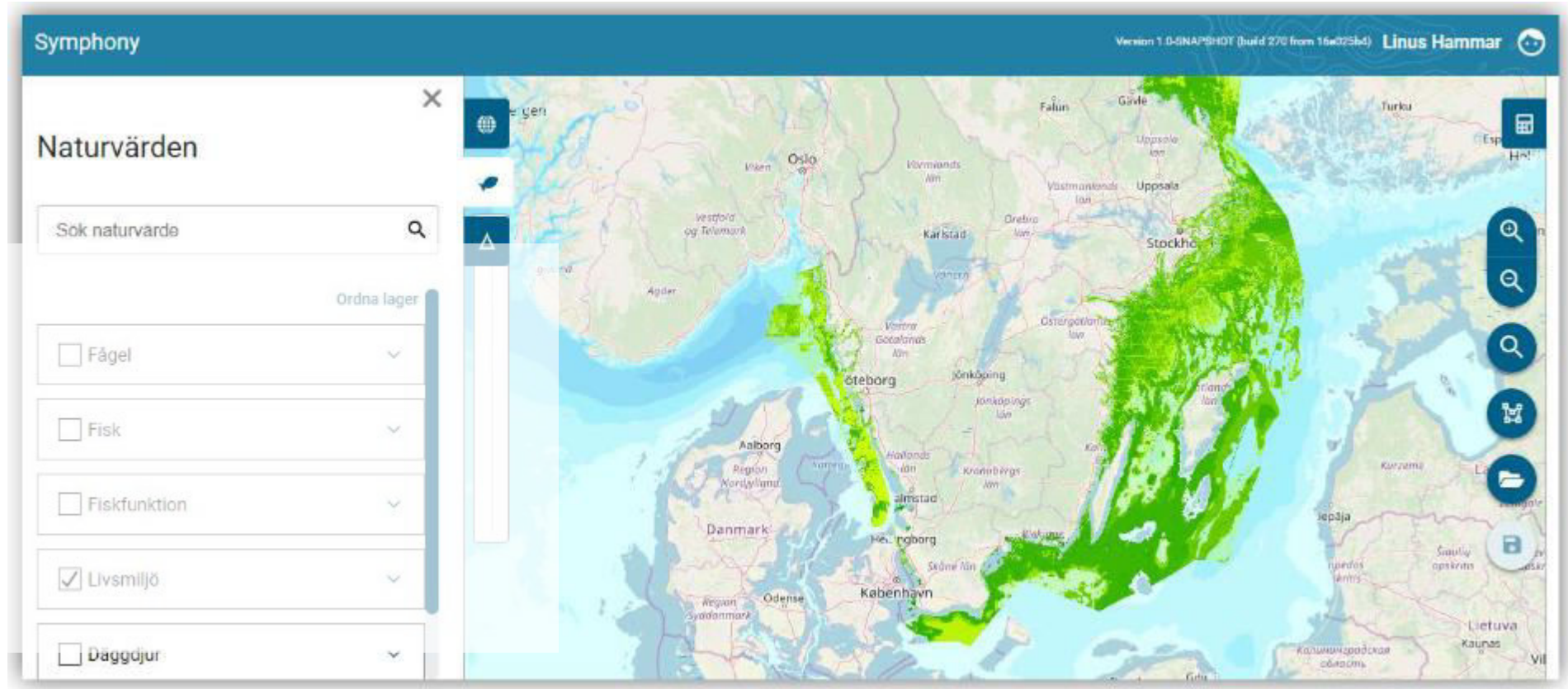


Mytilus

- All map results are in principle in the **same spatial resolution as the provided input data** and results can be aggregated into larger spatial units like Baltic Sea sub-basins
- MYTILUS is scenario-based supporting assessments of alternative plans
- MYTILUS support a broad range of calculation principles and also includes tools to assess conflicts and synergies between maritime uses
- MYTILUS is an independent desktop application running under Windows 10 – is **free and open source**

Symphony (SE)

Developed for
the Swedish
MSP in 2015
and
continuously
developed





Symphony

- 40 pressures and 32 ecosystem component layers as raster files – GeoTIFF, which are downsampled to Symphony grid.
- Results are provided at the resolution of 250 x 250m grid
- It is owned by SwAM and is open source, but not published yet.



Symphony use

- MSP
 - Evaluation planning alternatives
 - Communication
 - SEA document
- International work
 - Nairobi Convention – WIO Symphony
 - South Africa
 - UN Ocean Conference 2022 voluntary commitment



Conclusion

- **Existing tools are rather similar:**
 - Based on Halpern type of method
 - Need spatial data, as good resolution as possible
- For the whole Baltic scale, **there is need to acquire data products that cover large areas rather than pointwise raw data**
 - Modelled results, extended surveys are needed
- It would be beneficial to harmonize the approaches by **picking up the best elements of each tools**
 - Within HELCOM this work is underway to develop Spatial Pressure and Impact Assessment tool (SPIA) for upcoming State of the Baltic Sea report (HOLAS III in 2023)

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Delivering MSP Interactions and Capacities Across All Levels

