

OpenRisk II Mid-Term Conference on Maritime Risk Management and Piloting in the Baltic Sea Region

Day 1, 26-27.3.2025 Tallinn, Estonia



Introduction to the event

Anneliis Kõivupuu, University of Tartu

Jakub Montewka, Gdansk University of Technology

OpenRisk II Mid-Term Conference on Maritime Risk Management and Piloting in the
Baltic Sea Region - 26-27.3.2025 Tallinn, Estonia



Agenda

Keynote speakers

12:00 – 12:30 Registrations and coffee table with snacks

12:30 – 12:45 Introductions / Context of the event

- **Anneliis Kõivupuu**, University of Tartu
- **Jakub Montewka**, Gdansk University of Technology

12:45 – 13:45 International and EU approaches and needs for new risk management tools

- **Omar Frits Eriksson**, Deputy Secretary-General, IALA
- **Víctor Díaz Seco**, Senior officer, European Maritime Safety Agency (EMSA)

13:45 – 14:15 National and regional approaches in managing hybrid threat in current situation on the Baltic Sea

- **Jaak Viilipus**, Head of the Maritime Affairs Department, Ministry of Climate (Estonia)

14:15 – 14:45 “Chairmans summary” of the keynotes

- **Sakari Kuikka**, University of Helsinki

14:45 – 15:30 Coffee Break

Agenda OpenRisk II project presentations

15:30 – 15:45 Overview of OpenRisk II project and key points from the Kick-off Conference

- **Mirka Laurila-Pant**, Finnish Transport and Communications Agency Traficom

15:45– 16:45 Presentation of the OpenRisk II tools

AlSyRisk Baltic & Ice module

- **Jon-Arve Røyset**, Norwegian Coastal Administration
- **Osiris Valdez Banda**, Aalto University
- **Jakub Montewka**, Gdansk University of Technology

Environmental sensitivity decision support tool

- **Jonne Kotta**, University of Tartu

R-Mare & Risk quality method for tendering process

- **Valteri Laine**, Finnish Transport and Communications Agency Traficom
- **Hermanni Backer Johnsen**, Northern Dimension Partnership on Transport and Logistics Secretariat

16:45 – 17:00 General discussion about OpenRisk II tools

17:00 – 17:05 Wrap-up of the day

- **Anneliis Kõivupuu**, University of Tartu

17:05 – 18:30 Free time

18:30 – ca. 20:30 Dinner at F-Hoone ([Telliskivi street 60a, 10412 Tallinn](#); covered by the project)

Keynote Speakers

International and EU approaches and needs for new risk management tools

- o Omar Frits Eriksson, Deputy Secretary-General, IALA
- o Víctor Díaz Seco, Senior officer, European Maritime Safety Agency (EMSA)

National and regional approaches in managing hybrid threat in current situation on the Baltic Sea

- o Jaak Viilipus, Head of the Maritime Affairs Department, Ministry of Climate (Estonia)

“Chairmans summary” of the keynotes

- O Sakari Kuikka, University of Helsinki

OpenRisk II Mid-Term Conference on Maritime Risk Management and Piloting in the Baltic Sea Region - 26-27.3.2025 Tallinn, Estonia



Chairman's summary

Sakari Kuikka, University of Helsinki

OpenRisk II Mid-Term Conference on Maritime Risk Management and Piloting in the Baltic Sea Region - 26-27.3.2025 Tallinn, Estonia



Overview of OpenRisk II project and key points from the Kick-off Conference

Mirka Laurila-Pant, Traficom

OpenRisk II Mid-Term Conference on Maritime Risk Management and Piloting in the Baltic Sea Region - 26-27.3.2025 Tallinn, Estonia



OpenRisk II

*Better Maritime Risk Management
for the Baltic Sea Region*



@ Mikko Törmanen

Interreg
Baltic Sea Region



Co-funded by
the European Union

SUSTAINABLE WATERS
OpenRisk II



Duration: November 2023 - October 2026

Total budget: 2 M EUR

Funding: Co-funded by the EU Interreg BSR
programme 2021-27

Project consortium



UNIVERSITY
OF TARTU



GDAŃSK UNIVERSITY
OF TECHNOLOGY

TRAFICOM
Finnish Transport and Communications Agency



KYSTVERKET
NORWEGIAN COASTAL ADMINISTRATION

A"
Aalto University



 UNIVERSITY OF HELSINKI

Background & OpenRisk II Project Overview

The Baltic Sea's maritime risk environment is dynamic and uncertain, necessitating innovative joint risk assessment initiatives for safety and spill response.

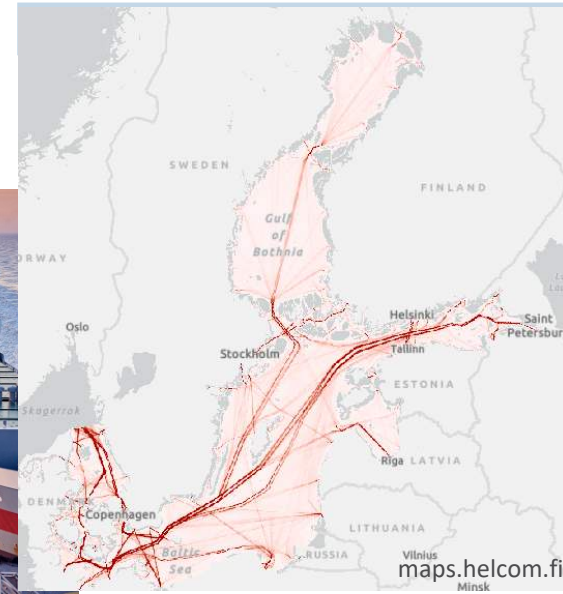
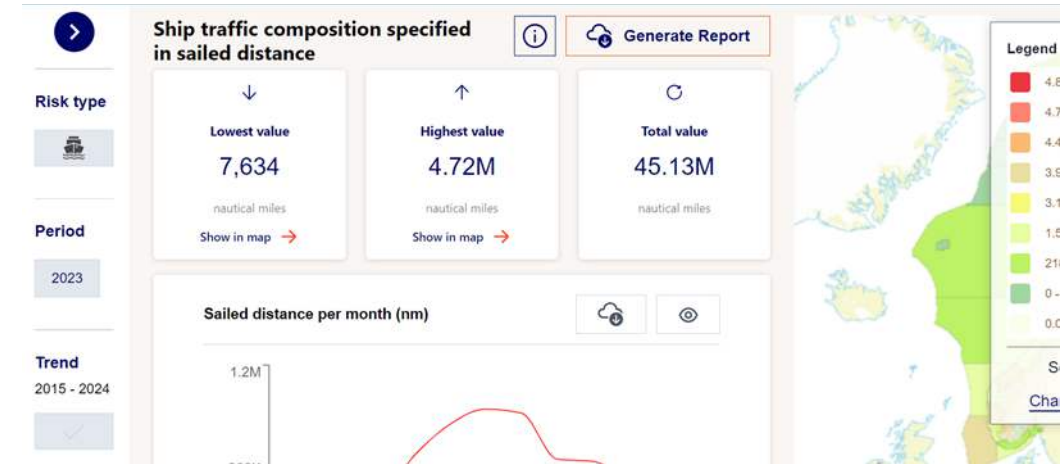
OpenRisk II delivers user-focused risk assessment and risk management tools aimed at preventing maritime accidents, minimizing their impact, and improving risk management.

These tools are designed for national maritime authorities, intergovernmental organizations, and other stakeholders.



AISyRISK Baltic together with module on ice

- **AISyRISK Baltic** presents the risk picture in the Baltic Sea through interactive maps and graphs accessible online.
- A new **risk assessment module on ice navigation** will be developed, with potential applications extending beyond the Baltic Sea Region.
- The tool is primarily designed for long-term planning and risk mitigation purposes.



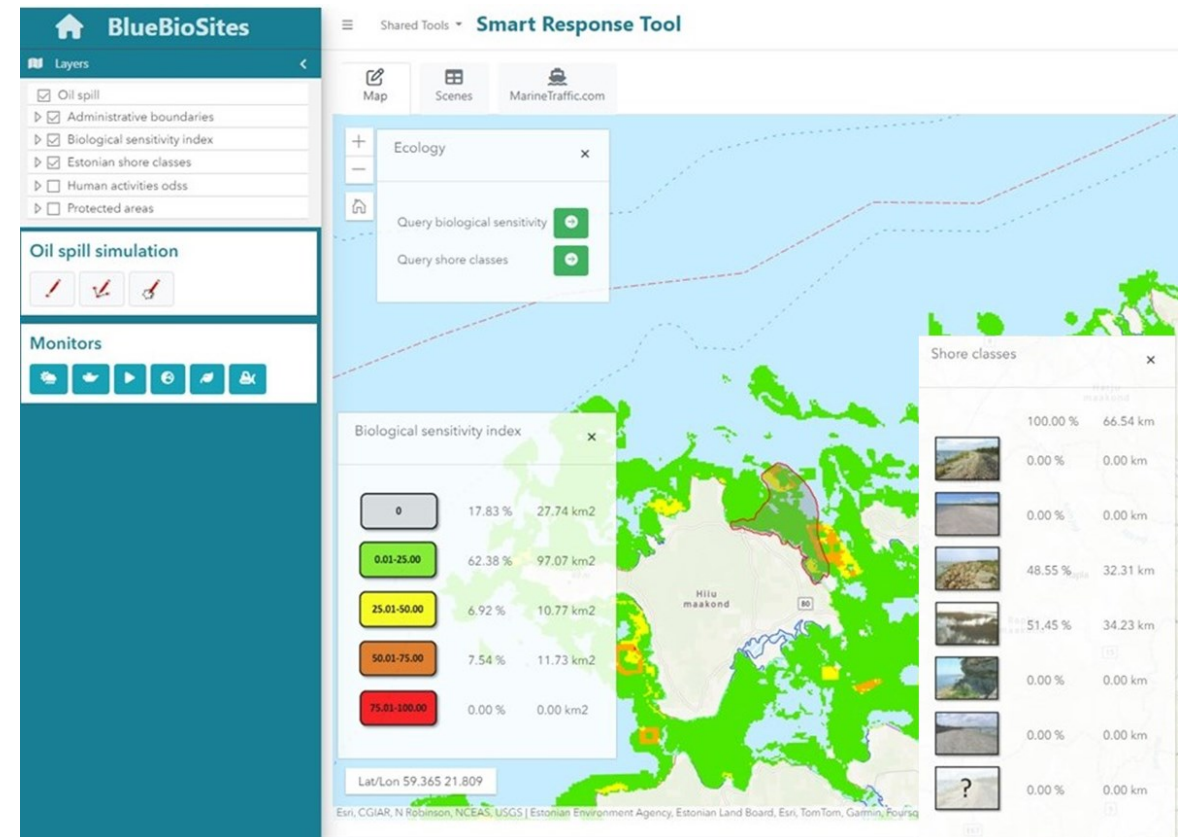
EcoSensitivity tool

- **EcoSensitivity** is a web-based decision support system designed to evaluate the consequences of oil spills on the marine environment.
- It covers all stages, from defining accident specifics to modelling oil distribution and ecological impacts.
- It predicts oil spill dynamics, assesses environmental risks, and provides actionable guidance to enhance decision-making and response efficiency.

Article

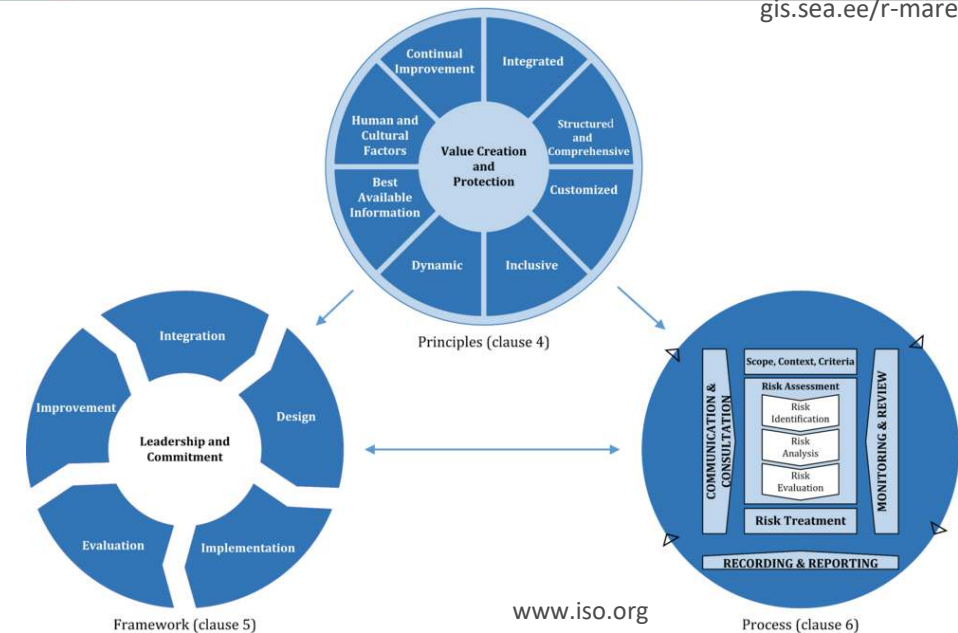
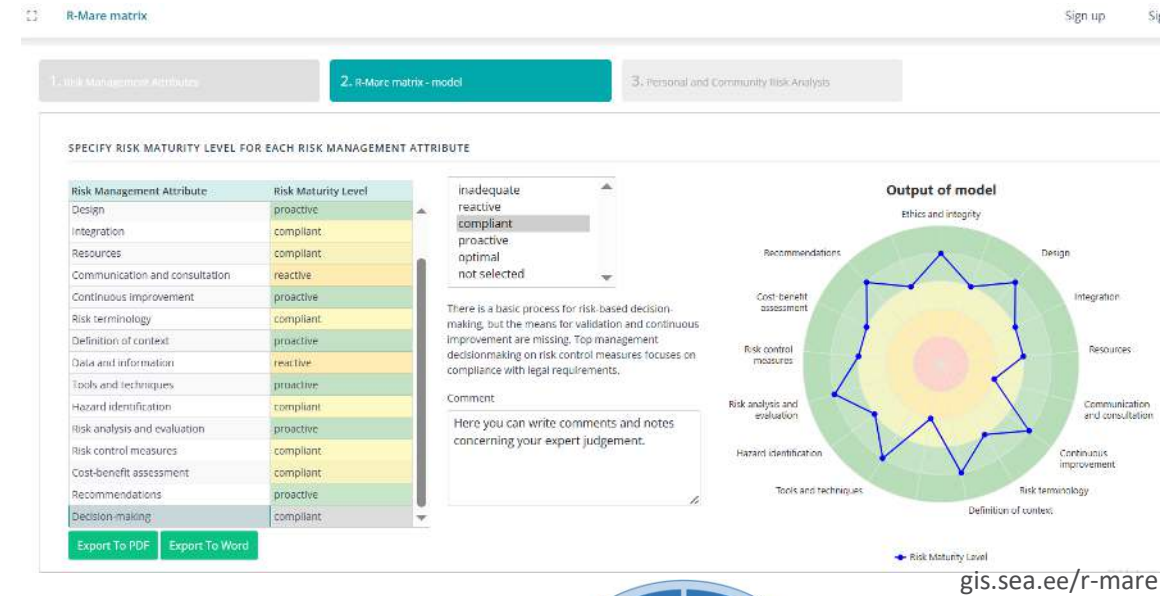
Towards Resilient Marine Ecosystems: EcoSensitivity as an Operational Model for Strategic Oil Spill Management

Anneliis Kõivupuu ^{1,*}, Mihhail Fetissov ^{1,2}, Robert Aps ¹, Helen Orav-Kotta ¹, Valtteri Laine ³, Mirka Laurila-Pant ³, Merli Rätsep ¹ and Jonne Kotta ^{1,2,*}



R-Mare Matrix & a risk quality method for tendering process

- **R-Mare matrix** is an online tool that enables maritime administrations to assess their current risk management performance and identify areas for improvement, guiding them towards higher maturity levels.
- **A risk quality method** for the tendering process ensuring that maritime risk studies meet high standards, delivering reliable and actionable results.



Work plan overview and the progress

Work Package 1: Preparing Solutions

- The goal is to develop and prepare solutions to address the identified challenges.

Work Package 2: Piloting and Evaluating Solutions

- Focuses on piloting, evaluating, and refining the solutions to ensure they meet the desired objectives.

Work Package 3: Transferring Solutions

- The finalized solutions will be communicated and transferred to the target groups for implementation

Experiences from the OpenRisk II Kick-off Conference in March 2024

Work Package 1: Preparing Solutions

The conference gathered national and international end-user needs for the risk assessment and management tools under development, shaping the OpenRisk II project plans for real-world applicability.

Work Package 2: Piloting and Evaluating Solutions

End-user workshops provided detailed feedback on the three main project products, including tool-specific needs, requests, and user experiences, guiding the refinement and development of the tools in the next phase.

Work Package 3: Transferring Solutions

The aim of the OpenRisk II Mid-Term Conference

**Work Package 1:
Preparing
Solutions**

**Work Package 2:
Piloting and
Evaluating
Solutions**

**Work Package 3:
Transferring
Solutions**

Current Status: Technology Testing and Validation

Engaging national and international end-users to gather valuable feedback, refine, and validate the initial versions of risk assessment and management tools.

AlSyRisk Baltic & Ice module

Jon-Arve Røyset, Norwegian Coastal Administration

Osiris Valdez Banda, Aalto University

Jakub Montewka, Gdansk University of Technology

OpenRisk II Mid-Term Conference on Maritime Risk Management and Piloting in the
Baltic Sea Region - 26-27.3.2025 Tallinn, Estonia



AISyRisk a strategic risk tool

- The AISyRisk including the new ice module is a strategic planning tool for use in:
 - Maritime administration, government, research and development
 - Maritime spatial planning
 - Oil spill contingency and response planning
 - Traffic regulation
 - Evaluating the need for new measures on macro level (high level).
 - Other tools like for example IWRAP is normally used to analyse on a smaller scale.

AISyRisk, including the new Ice module, is not a tool for operational voyager planning.

Strategy	Tactics
Planning	Doing
Large Scale	Smaller Scale
Why	How
Difficult to Copy	Easy to Copy
Long Time Frame	Short Time Frame

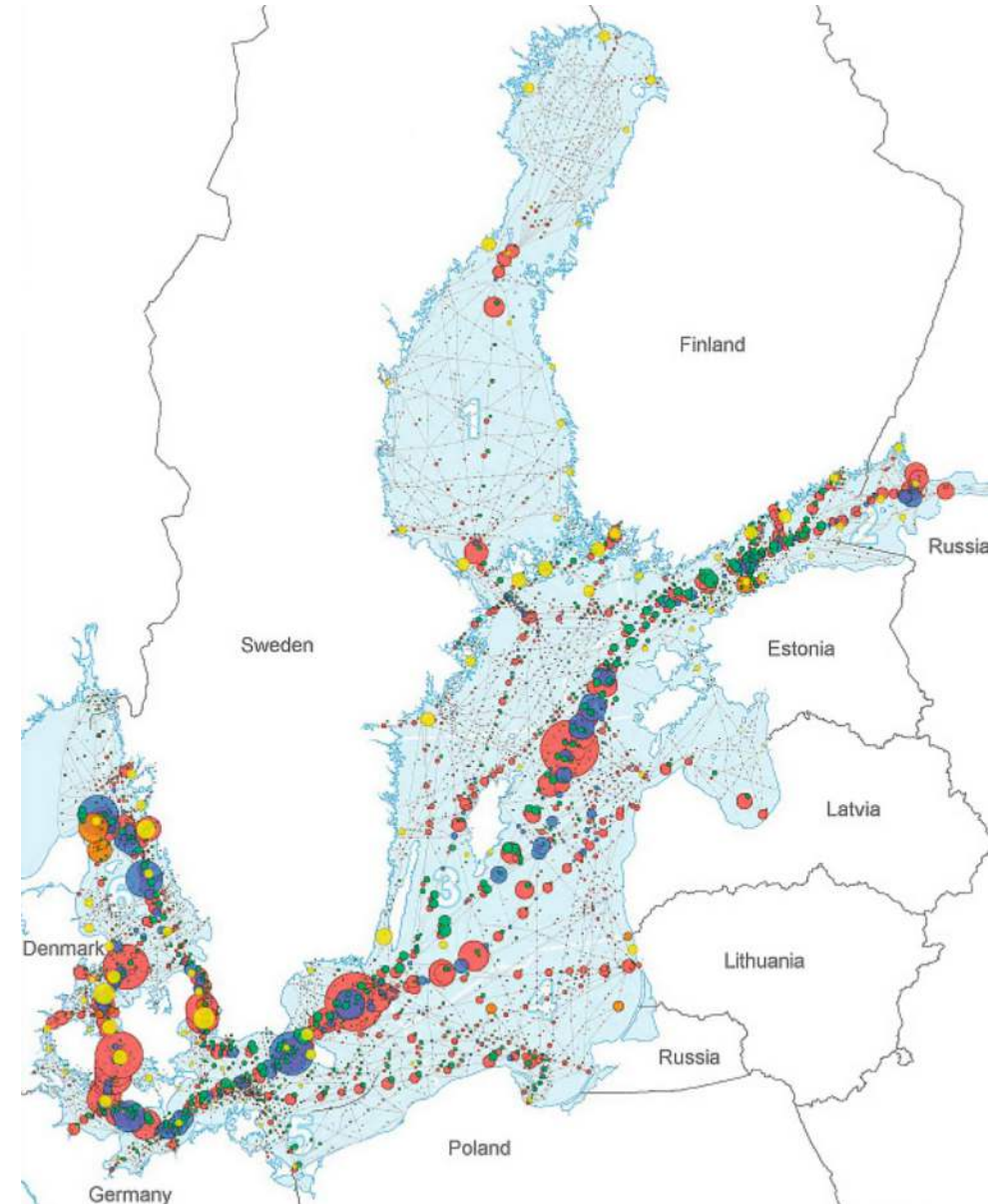
Background and objective

What is AISyRISK?

- AISyRISK is a method for automated estimation of risk. It is also a system for presenting the estimated risk in a dynamic and understandable way.

Why do we do it?

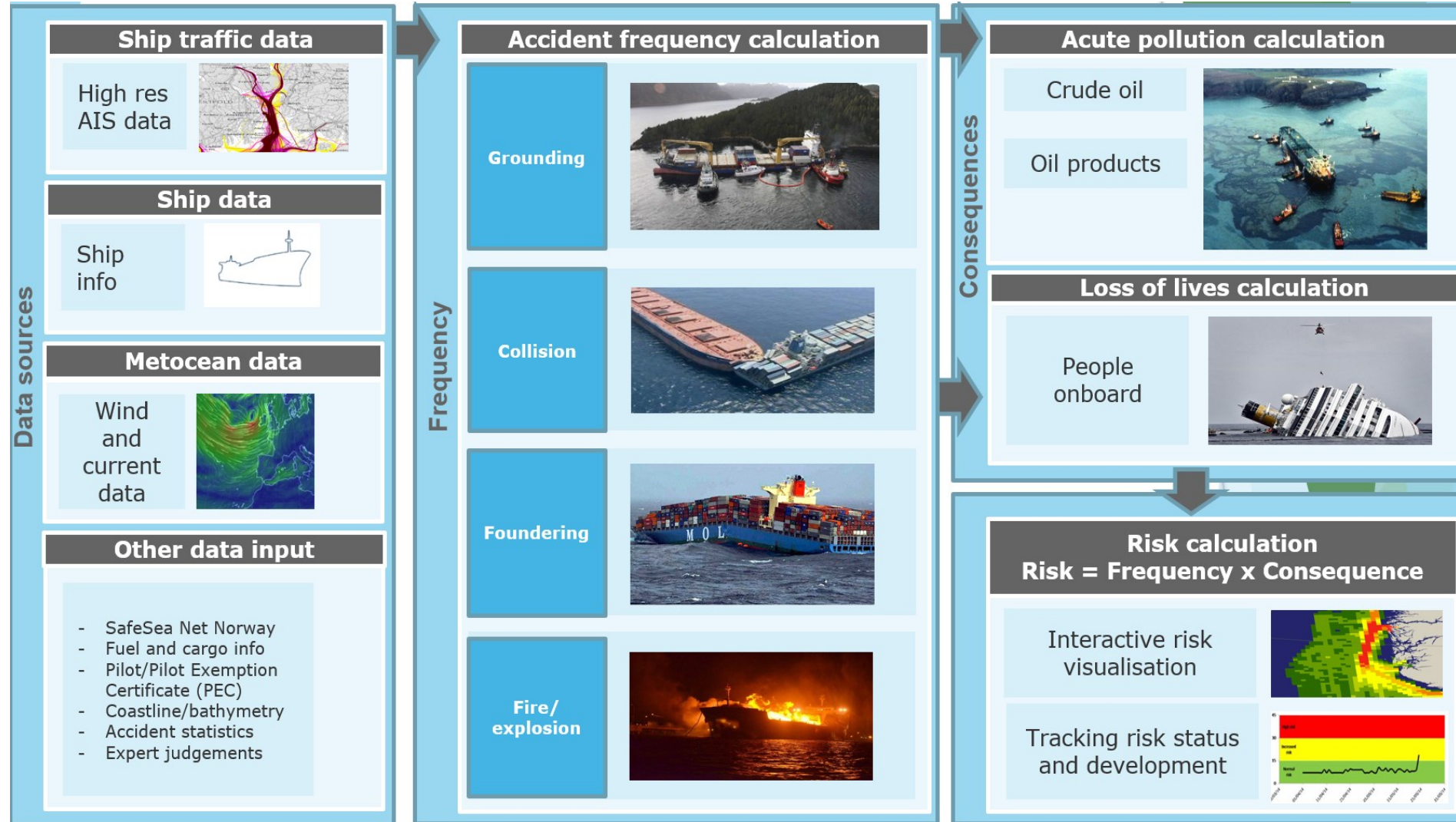
- **Objective:** The aim of the risk model is to assist the different users in their risk management activities related to maritime traffic.
 - Create an accurate and transparent system for monitoring trends related to frequency of accidents, including identifying high risk areas
 - Enable the users to regularly deliver information about risk level trends etc. for use in transport planning and risk planning processes, including risk planning processes on local and regional level



Risk assessment with traditional manual processing and models

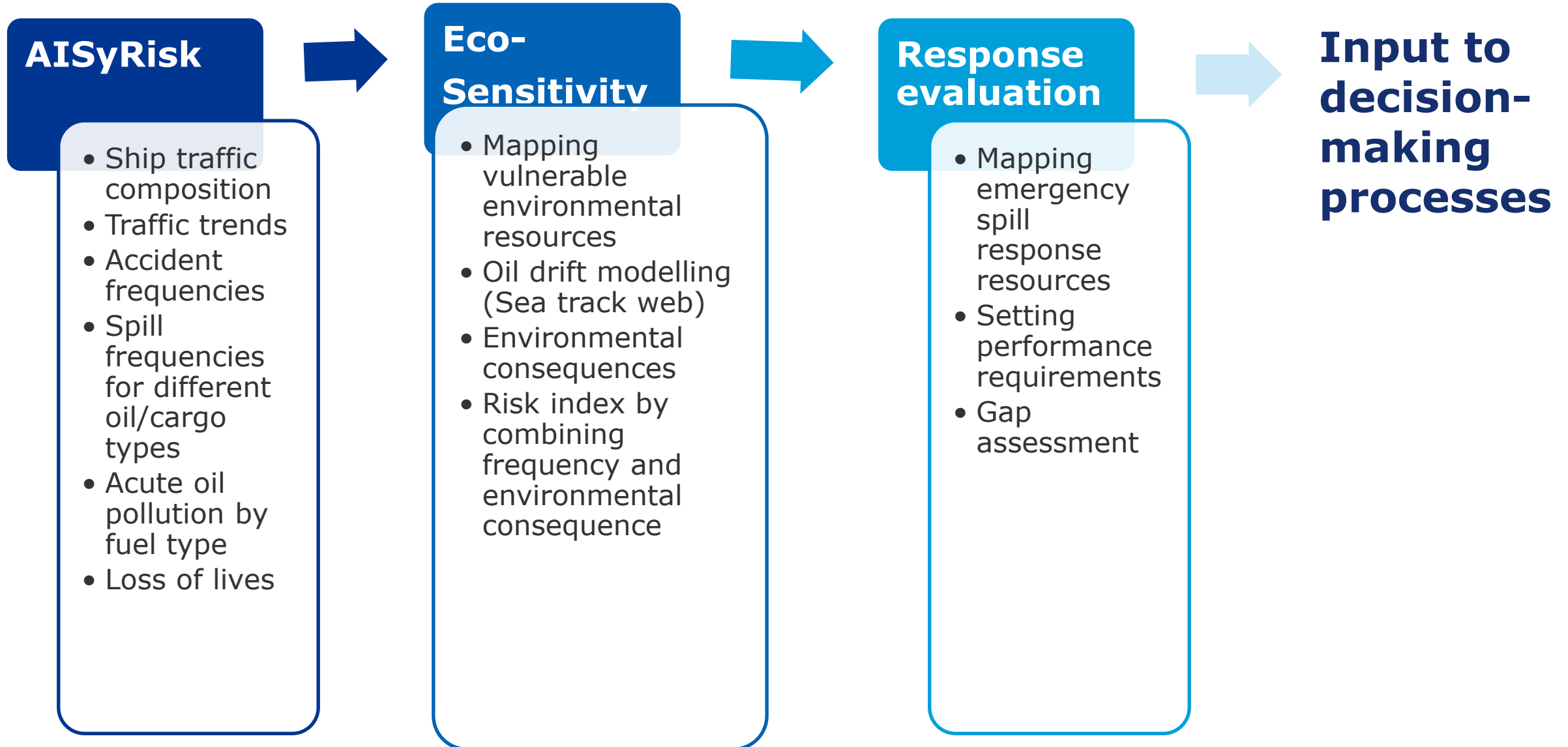


AISyRISK input data at present



Existing framework developed for Norwegian Coastal Administration

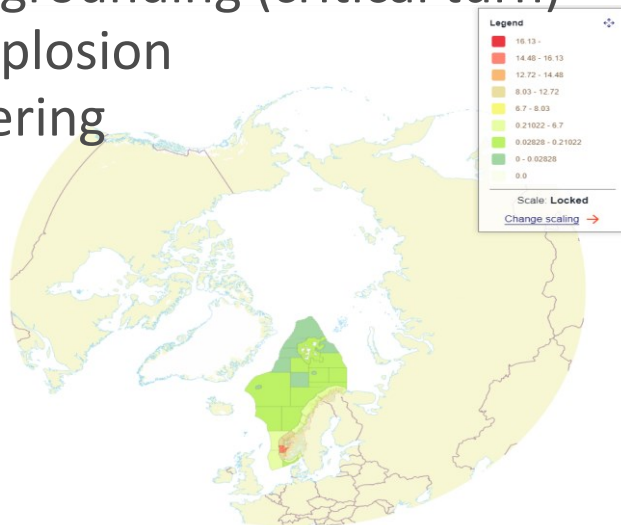
3 integrated modules



Ice module development

AlSyRISK

Collision (crossing)
Collision (head on)
Collision (overtaking)
Drift grounding
Power grounding (close to shore)
Power grounding (critical turn)
Fire/explosion
Foundering



AlSyRISK Ice module

Collision (crossing)
Collision (head on)
Collision (overtaking)
Drift grounding
Power grounding (close to shore)
Power grounding (critical turn)
Fire/explosion
Foundering

Collision under assistance

Ice damage

Besetting in ice

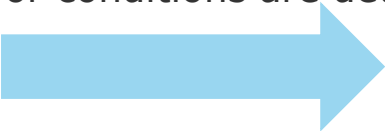


What shall we calculate?

Accident Types in Ice	
Collision - Over taking	
Collision - Crossing	
Collision - Head on	
Drift Grounding	
Powered Grounding (close to shore)	
Powered Grounding (missed turn)	
Foundering due to ice	
Fire / explosion	
Besetting in ice	
Ice damage	
Collision under assistance	
	= Existing accident type
	= New accident type

The frequency / probability of an accident occurring is dependant on the operation mode of the ship and the ice conditions the ship operates in.

I.e. the frequency needs to change if certain operations modes or conditions are detected.



Consequences
Expected Fuel Spill Volume
Expected Cargo Spill Volume
Expected Fatalities
Cost? No
Time lost? No

Operation modes (TRUE/FALSE)
1. Operating in ice
2. Independent operation in ice
3. Vessel following icebreaker
4. Vessel under tow
5. Vessel getting cut loose by icebreaker
6. Vessel sailing in convoy
7. Vessel sailing in an ice lead
8. Pressure ridges in ice regime
9. Glacier ice in ice regime
10. Vessel operating with positive Risk index
11. Vessel operating in remote areas
12. Operating in "light"/"harsh" ice conditions <i>Something representing the risk if ice navigation better then POLARIS. Representing the speed of the vessel through ice might be an option?</i>

**Ice
accidents
database**

```
graph LR; A[Ice accidents database] --> B[Dependency modelling using machine learning tools: - Ice conditions - Ship ice class - Ship age - Ship flag - Total power of engine - Icebreaker type of assistance - Ship inspection history - And more...]; B --> C[Ice accident risk indicator];
```

**Dependency modelling
using machine learning
tools:**

- Ice conditions
- Ship ice class
- Ship age
- Ship flag
- Total power of engine
- Icebreaker type of assistance
- Ship inspection history
- And more...

**Ice accident
risk indicator**

We are always one step ahead of the curve

Analysing risk associated with ship traffic

With our many years of experience in the marine industry and our expert staff, we have developed AISyRISK to do advanced analysis of risks associated with ship traffic.

AISyRISK is a method for automated calculation of risk in Norwegian waters, and presents the risk in graphs that you can interact with.

[Open AISyRISK](#)

20+

Types of vessels

120 m

Nautical miles calculated

6

Risk type calculations



Traffic Accident Fatalities Fuel spills Oil cargo spills

Period 1 Weather 1 Section 1 Trend 1 Scaling Locked

Lowest value 690.91 Years between each accident
Highest value 15.26 Accidents per year
Total value 690.91 Accidents per year

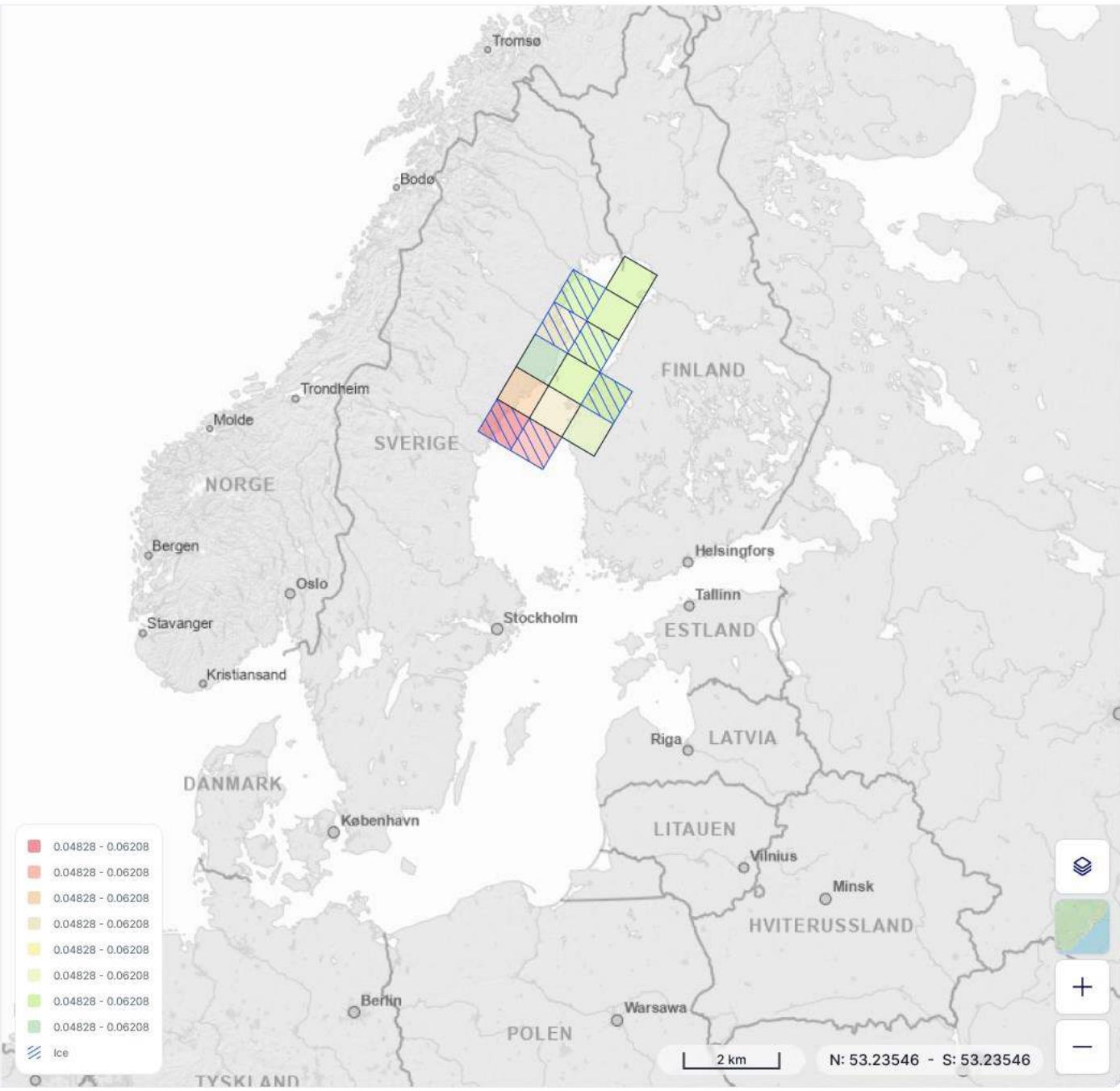
Distance sailed

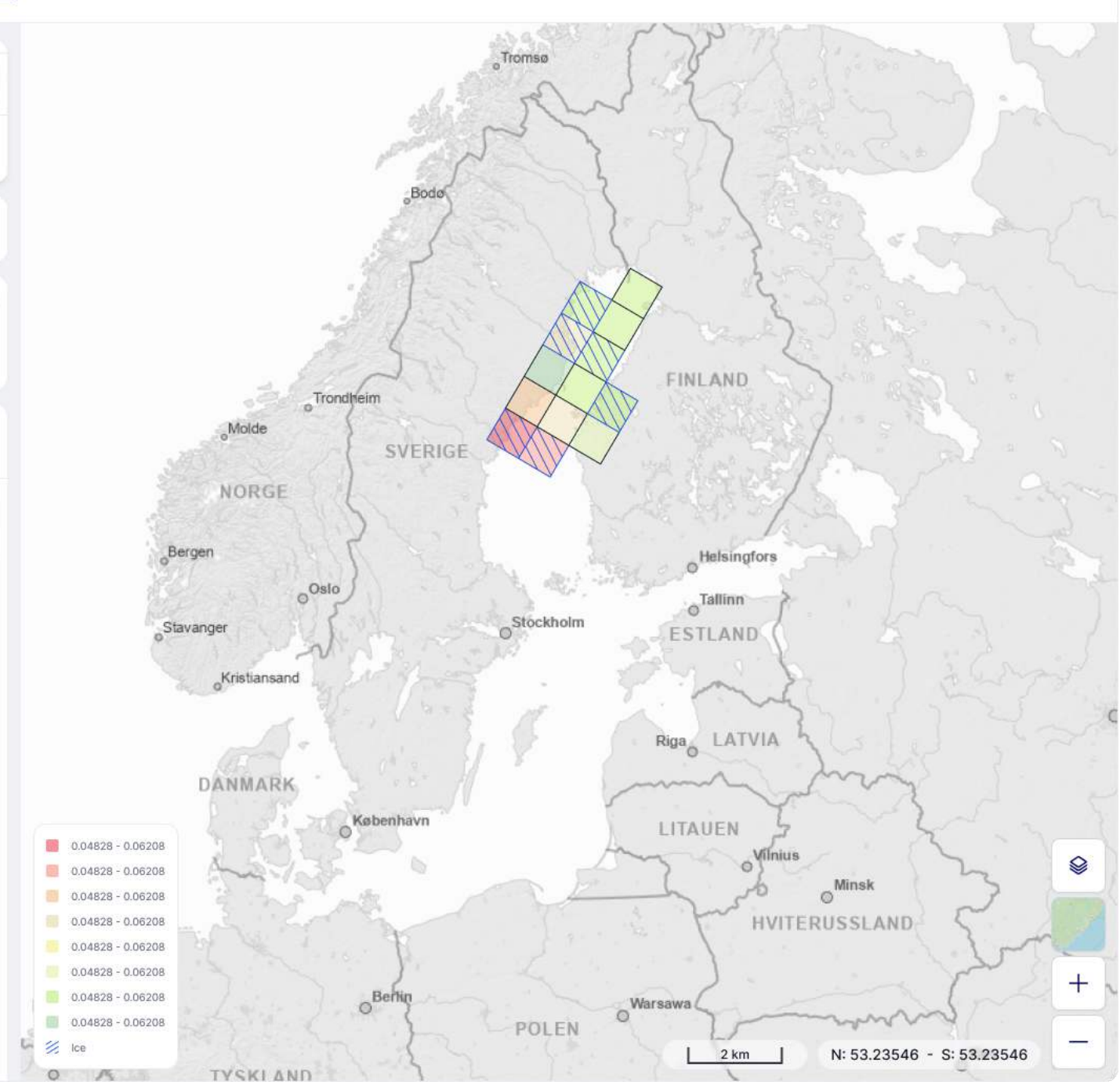
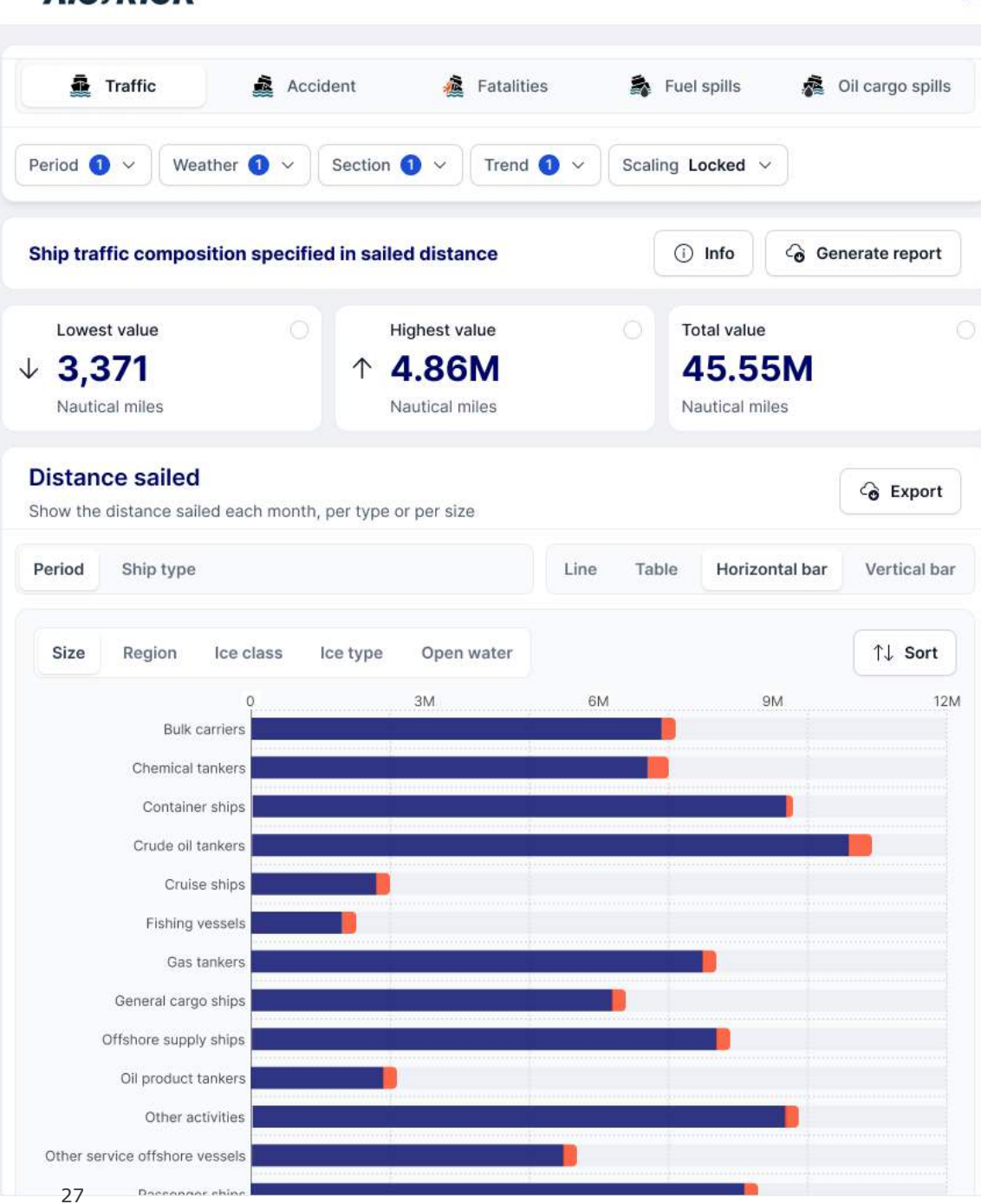
Show the distance sailed each month, per type or per size

Export

Period Ship type Line Table Horizontal bar Vertical bar

Size Region Ice class Ice type Open water Sort





Traffic
 Accident
 Fatalities
 Fuel spills
 Oil cargo spills

Period 1
Weather 1
Section 1
Trend 1
Scaling Locked

Ship traffic composition specified in sailed distance

Info

Generate report

Lowest value

↓ **3,371**

Nautical miles

Highest value

↑ **4.86M**

Nautical miles

Total value

45.55M

Nautical miles

Distance sailed

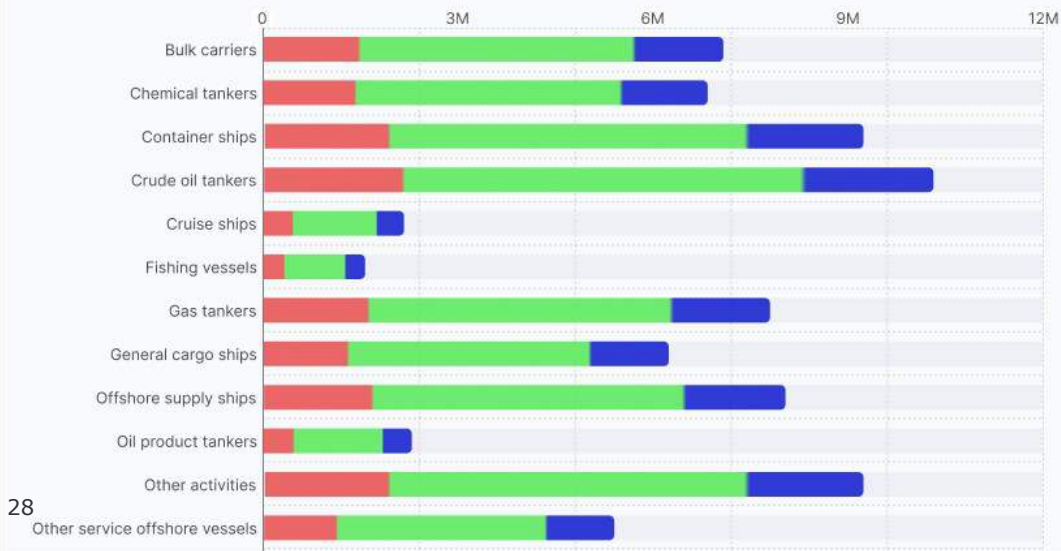
Show the distance sailed each month, per type or per size

Export

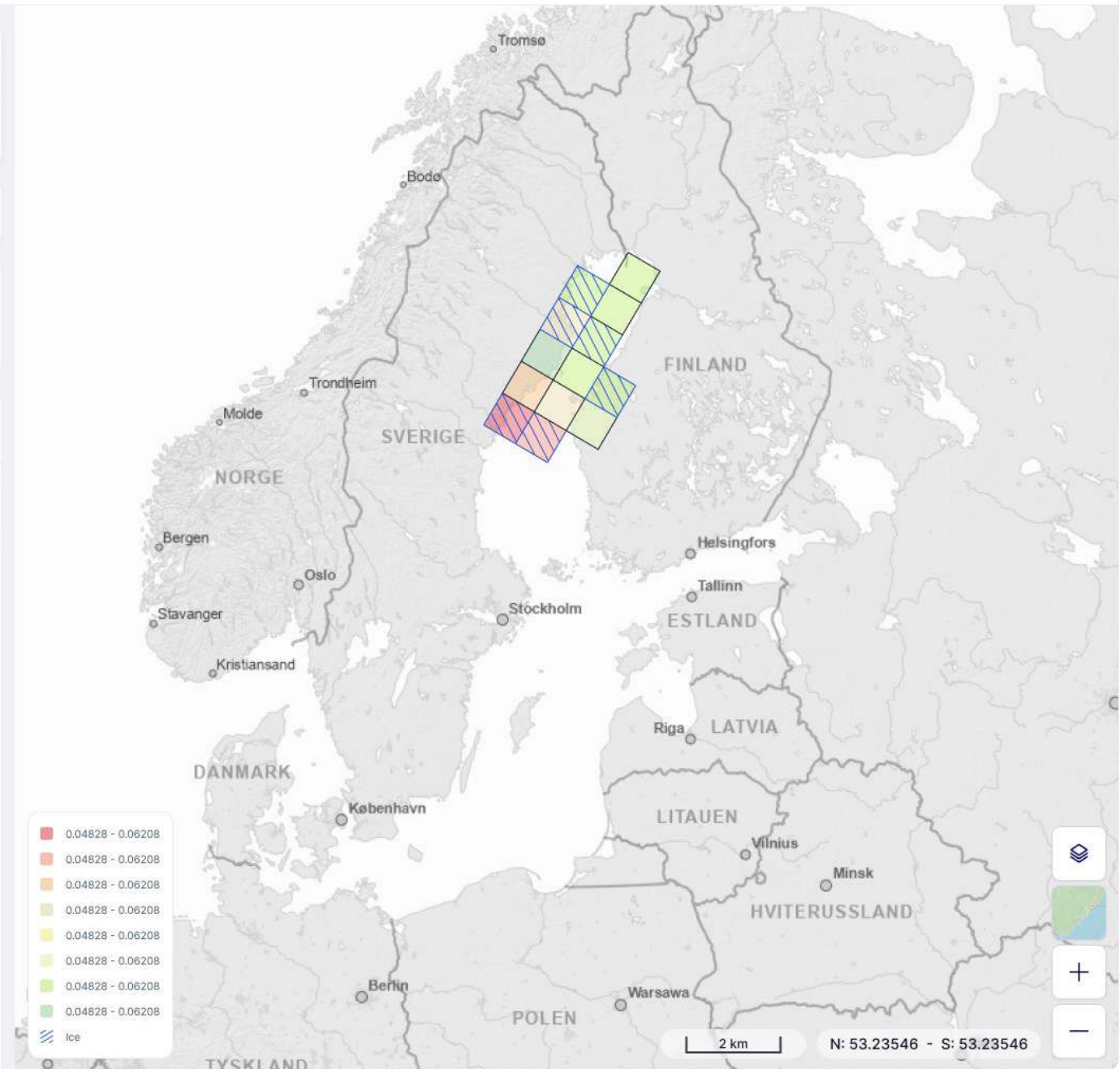
Period
 Ship type
 Line
 Table
 Horizontal bar
 Vertical bar

Size
 Region
 Ice class
 Ice type
 Open water

↑↓ Sort



28



Environmental sensitivity decision support tool

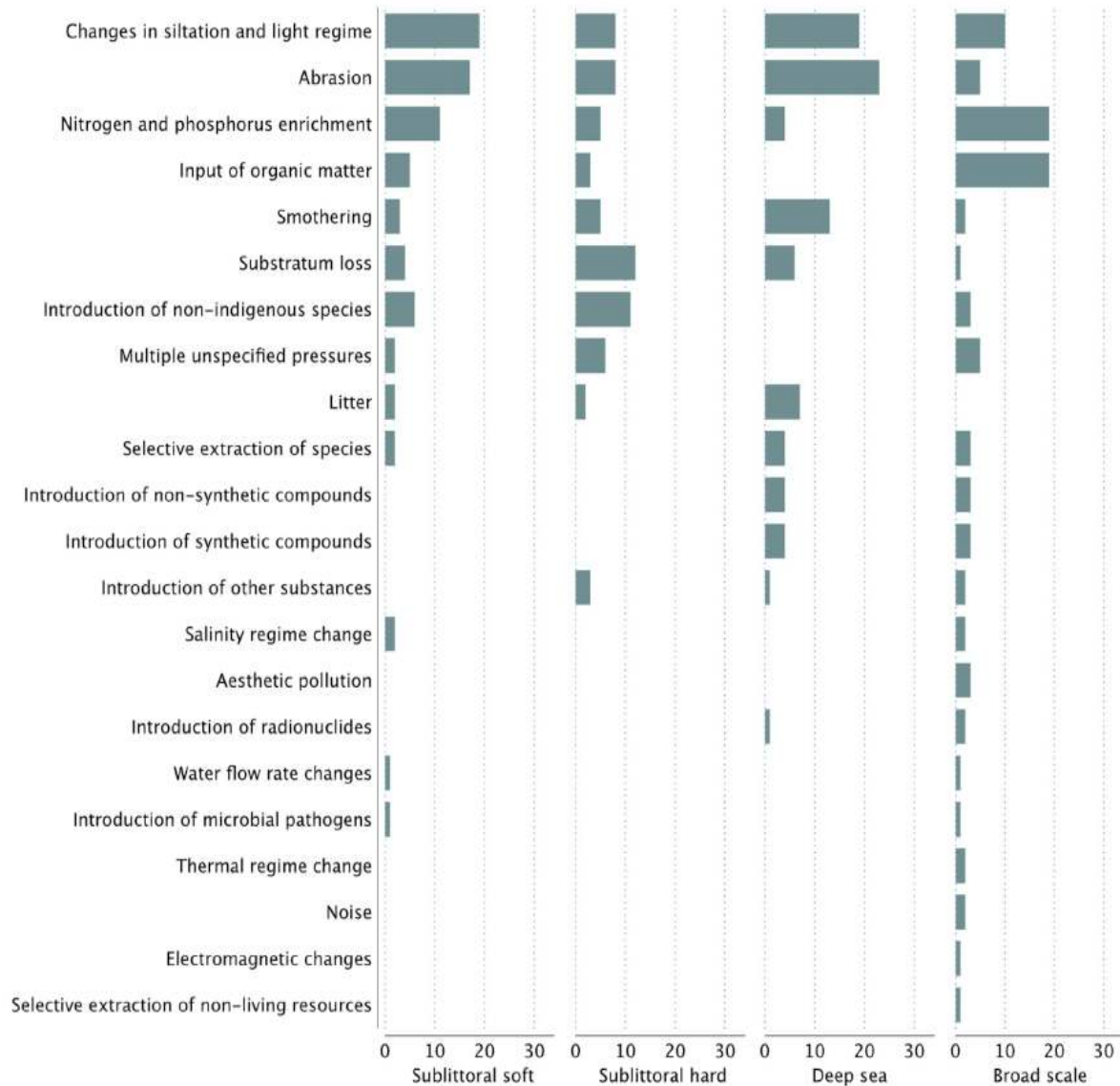
Jonne Kotta, University of Tartu

OpenRisk II Mid-Term Conference on Maritime Risk Management and Piloting in the
Baltic Sea Region - 26-27.3.2025 Tallinn, Estonia

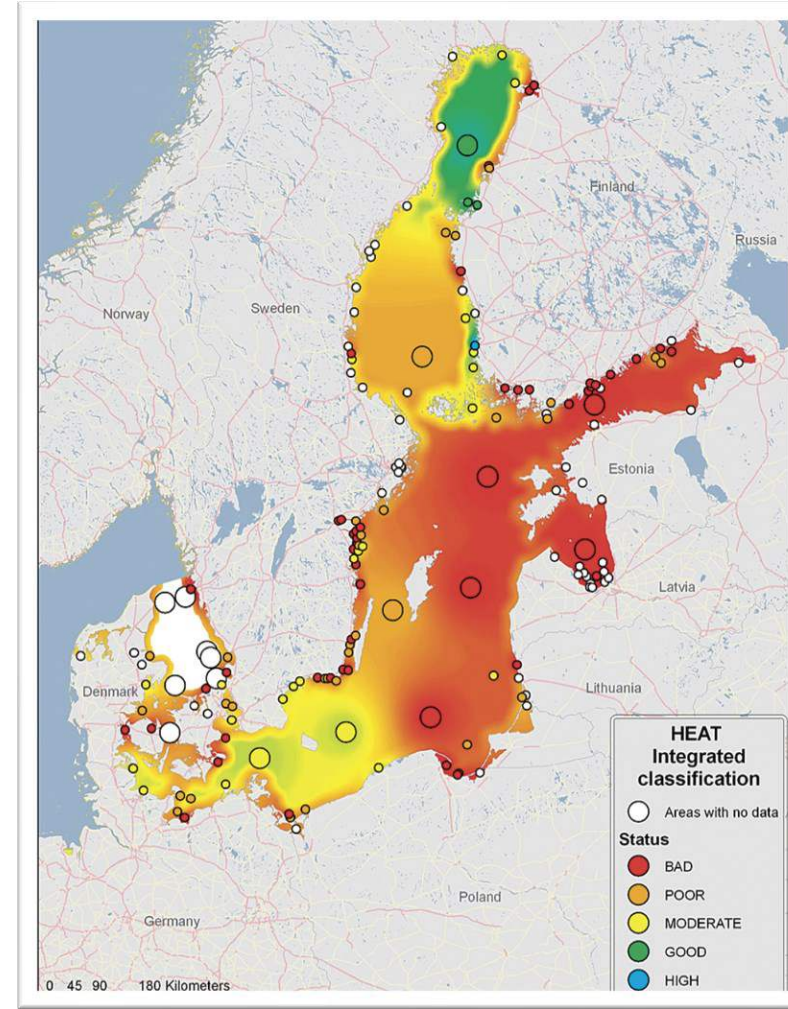
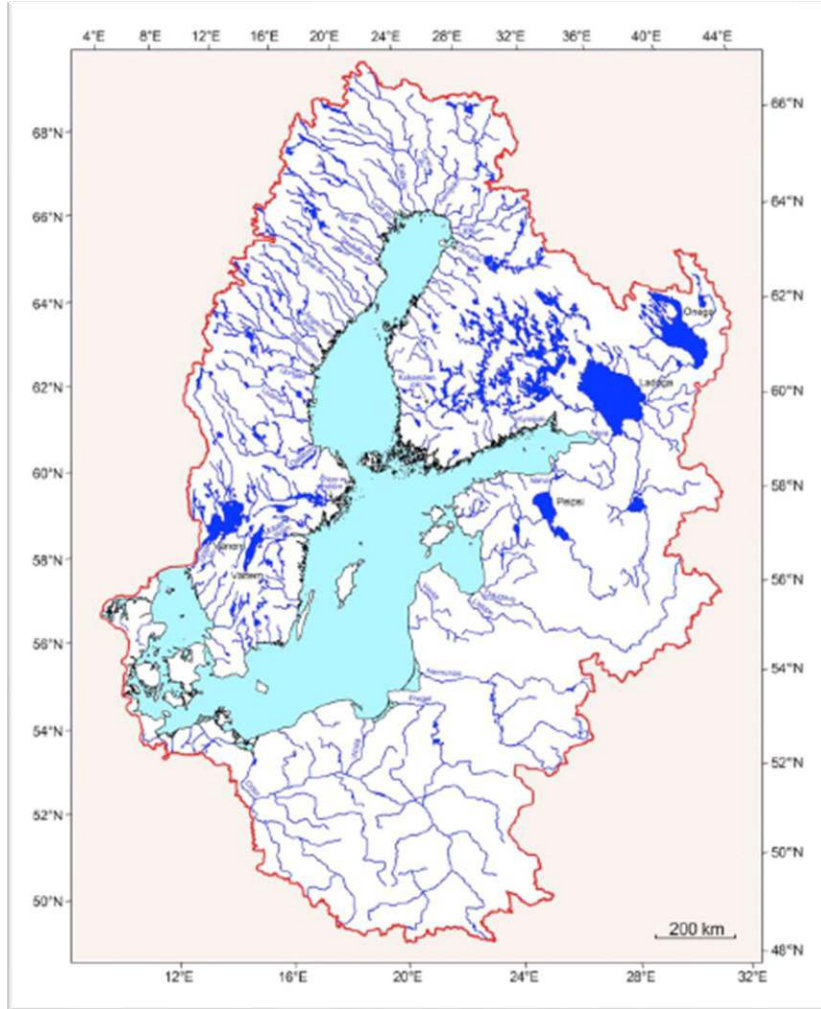


HUMAN ACTIVITIES HAVE IMPACTS

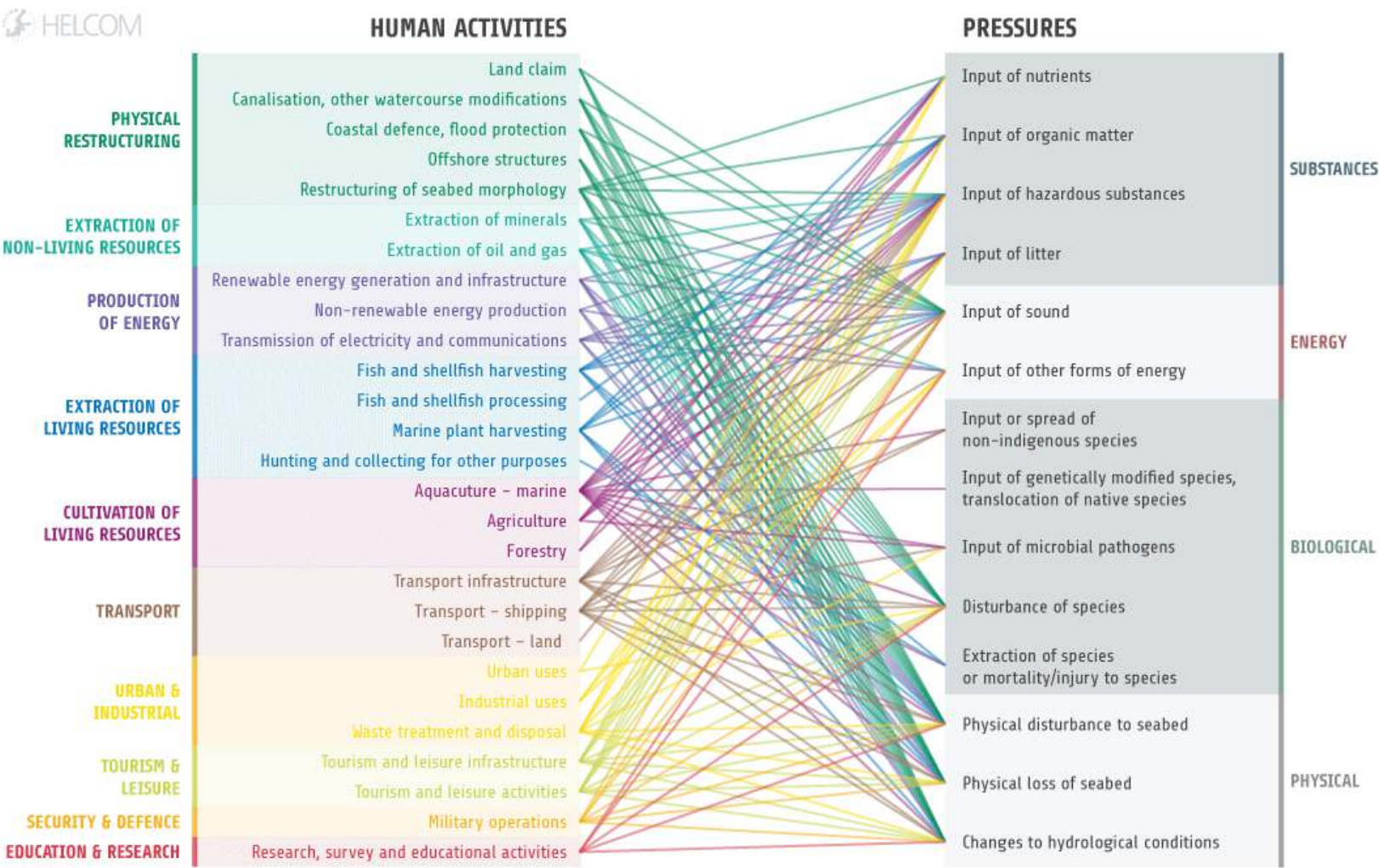
Human induced pressures become more intense and diverse and result in the loss of habitats



Baltic Sea is a transboundary ecosystem with large watershed area

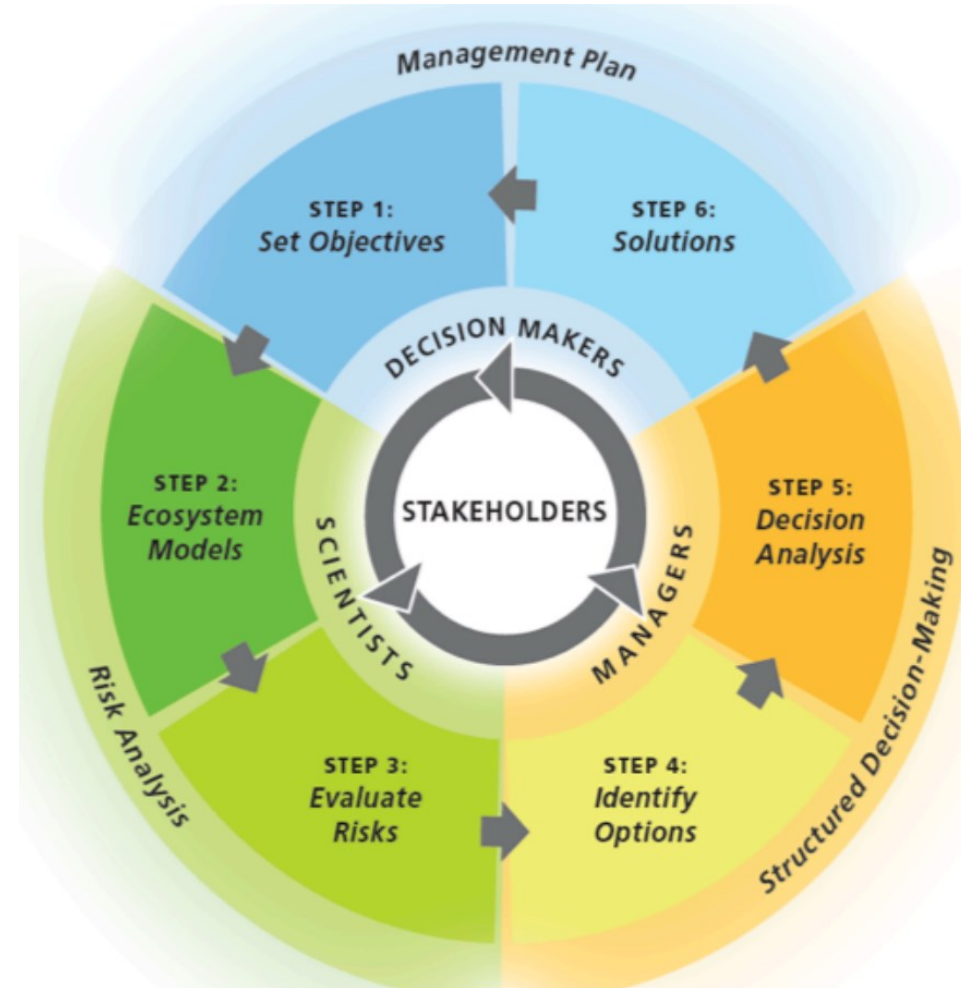


Complex system: human activities and related pressures in the Baltic Sea



Assessing cumulative impacts → informing management →
→ data and knowledge driven environmental decisions

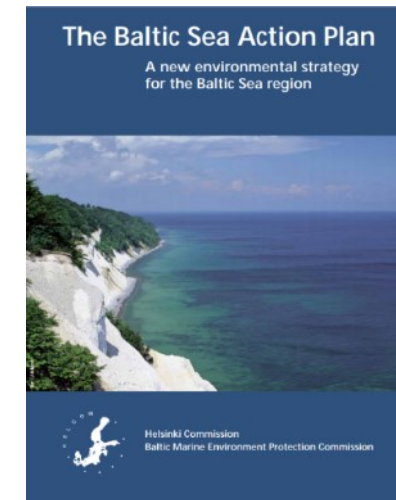
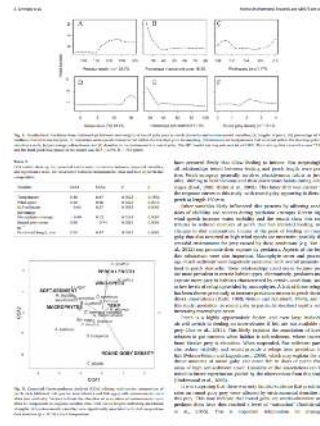
Cumulative impacts: Impacts on the environment that result from pressures of several human activities acting together, as caused by past, present or any possible foreseeable future actions



ANALYSIS AND COMMUNICATION CHALLENGE

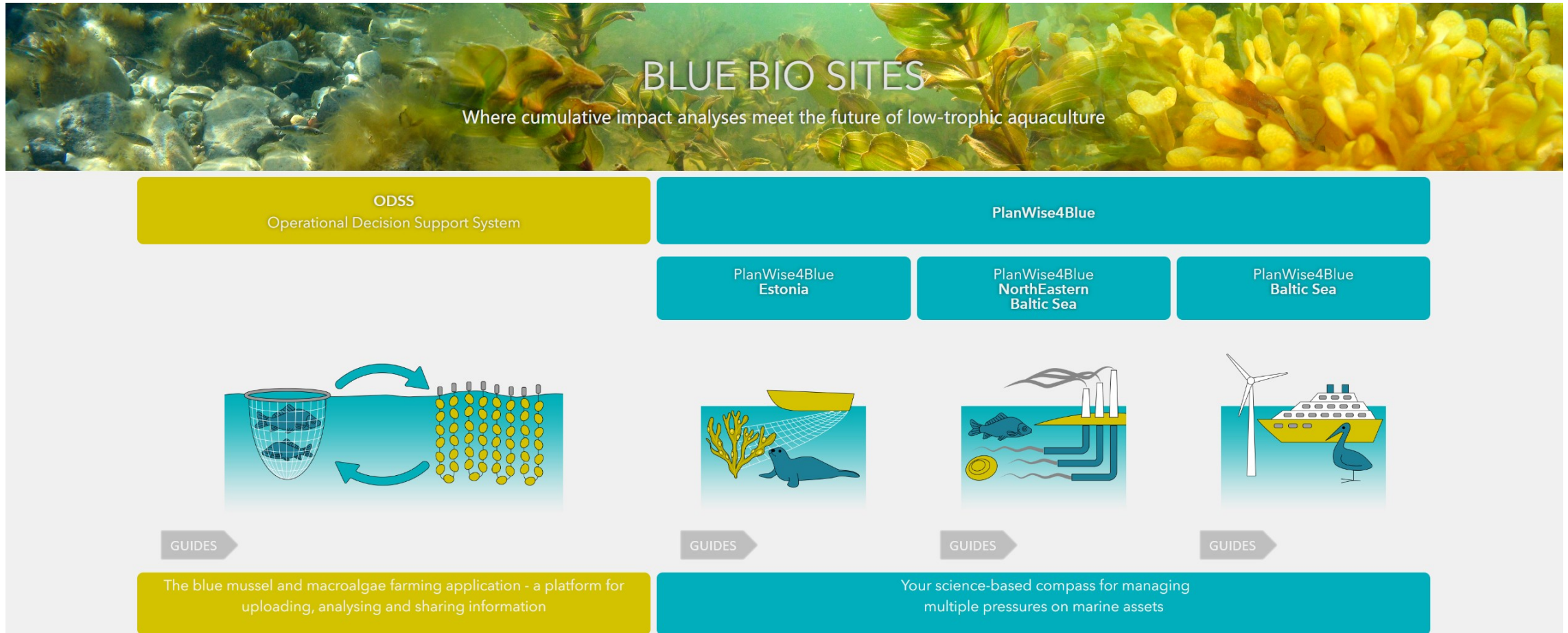
Need for **data and analysis** demanding assessment schemes

There are **disconnections of flow from science** (too specific) to **policy** (too large scale).



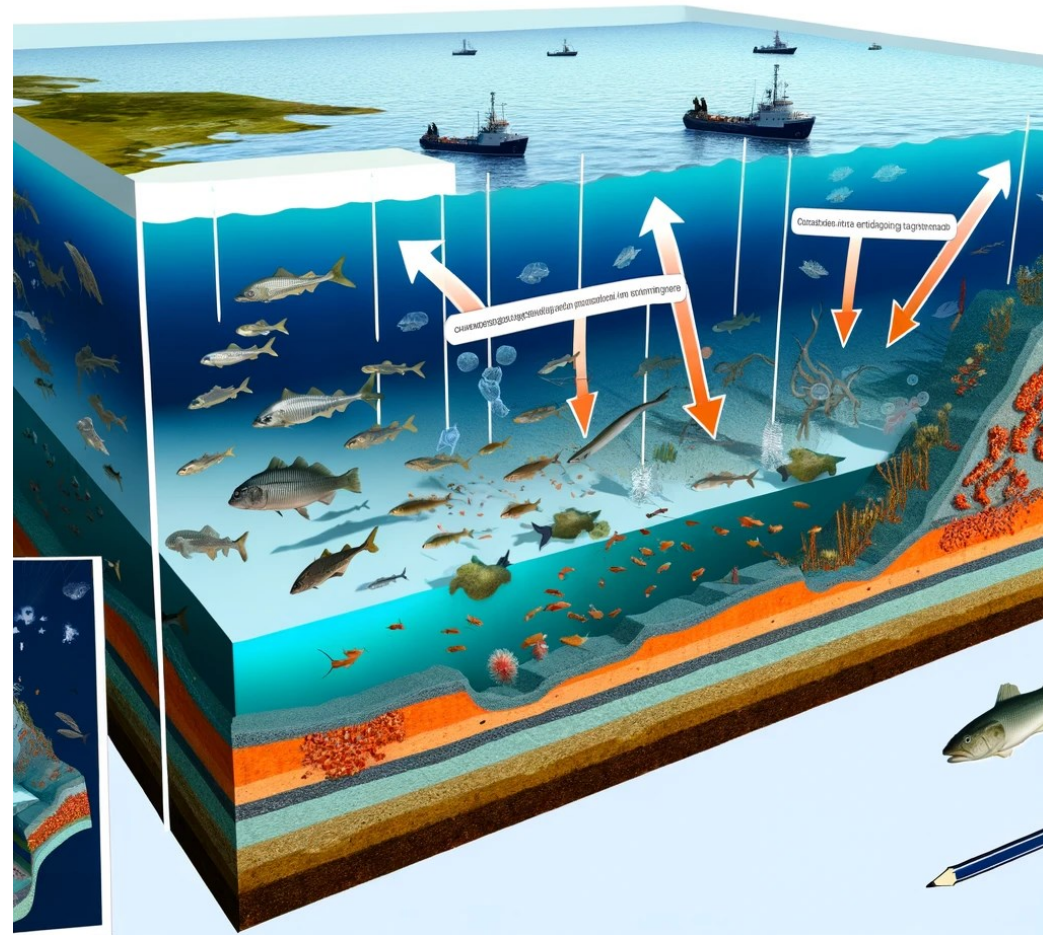
PW4B: Simple-to-use web tool

The PlanWise4Blue tool quantifies cumulative human impacts on key ecosystem elements at 1 km² spatial scale.

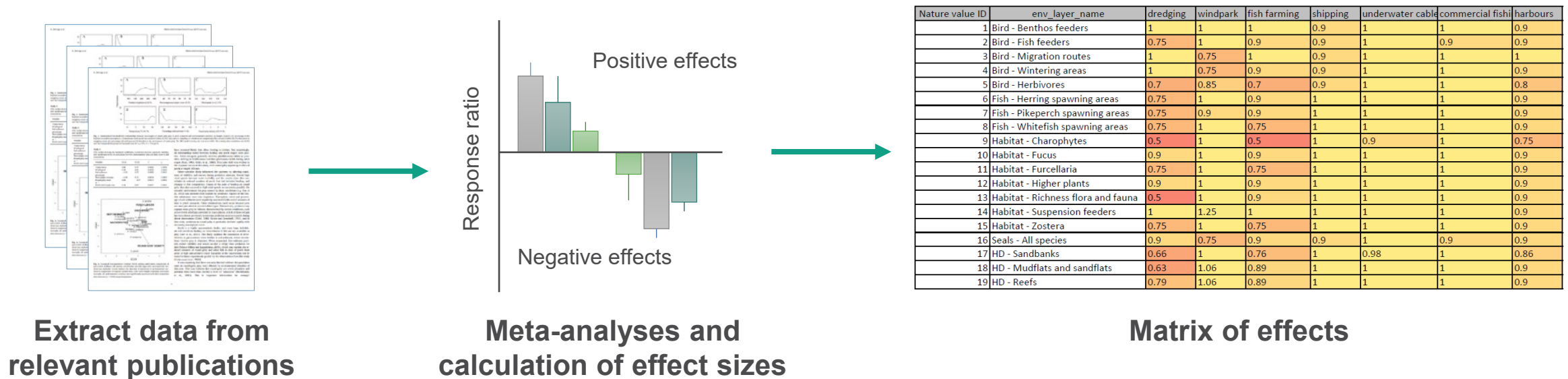


Key building blocks of the tool

- Updated maps of nature assets
- Any scenario involving a combination of human activities
- Innovative algorithm predicting environmental impacts

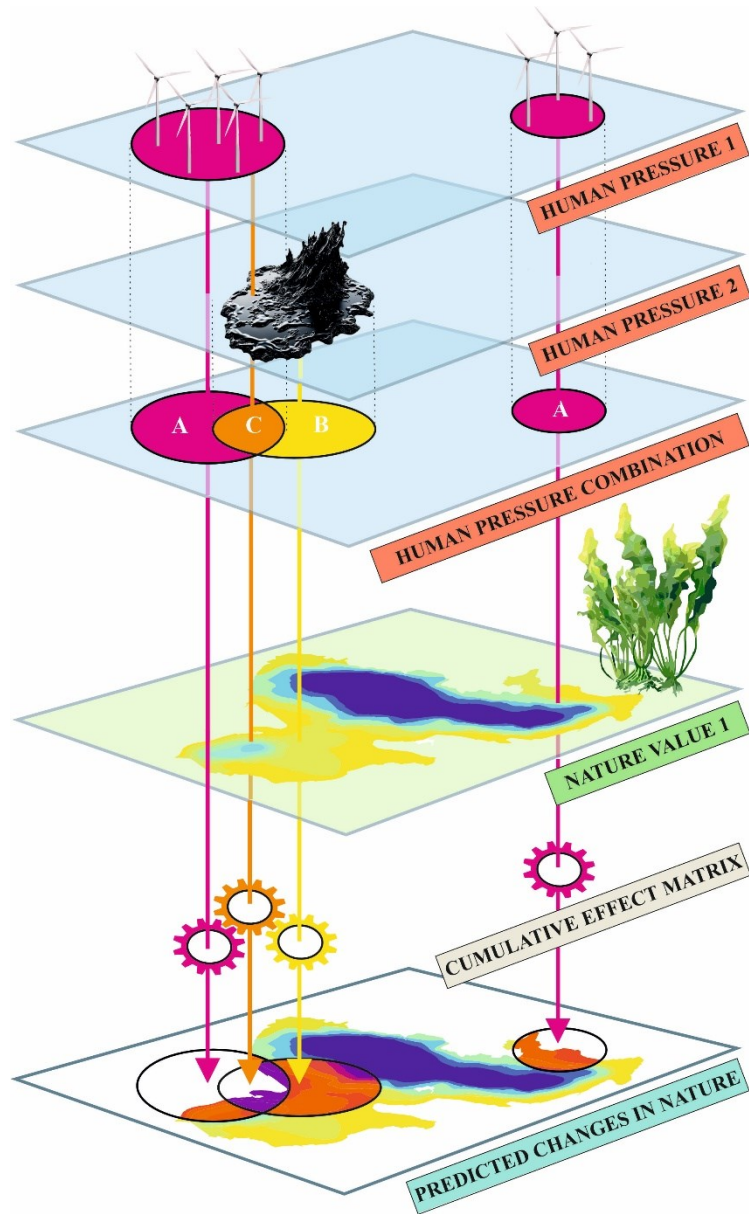


Knowledge inventory: solid data and expert assessment



The tool integrates current empirical evidence through meta-analysis to quantify the effects of human pressures on nature assets.

Innovative algorithm: GIS perspective



Reading scenario (spatial distribution of pressures)



Reading nature values



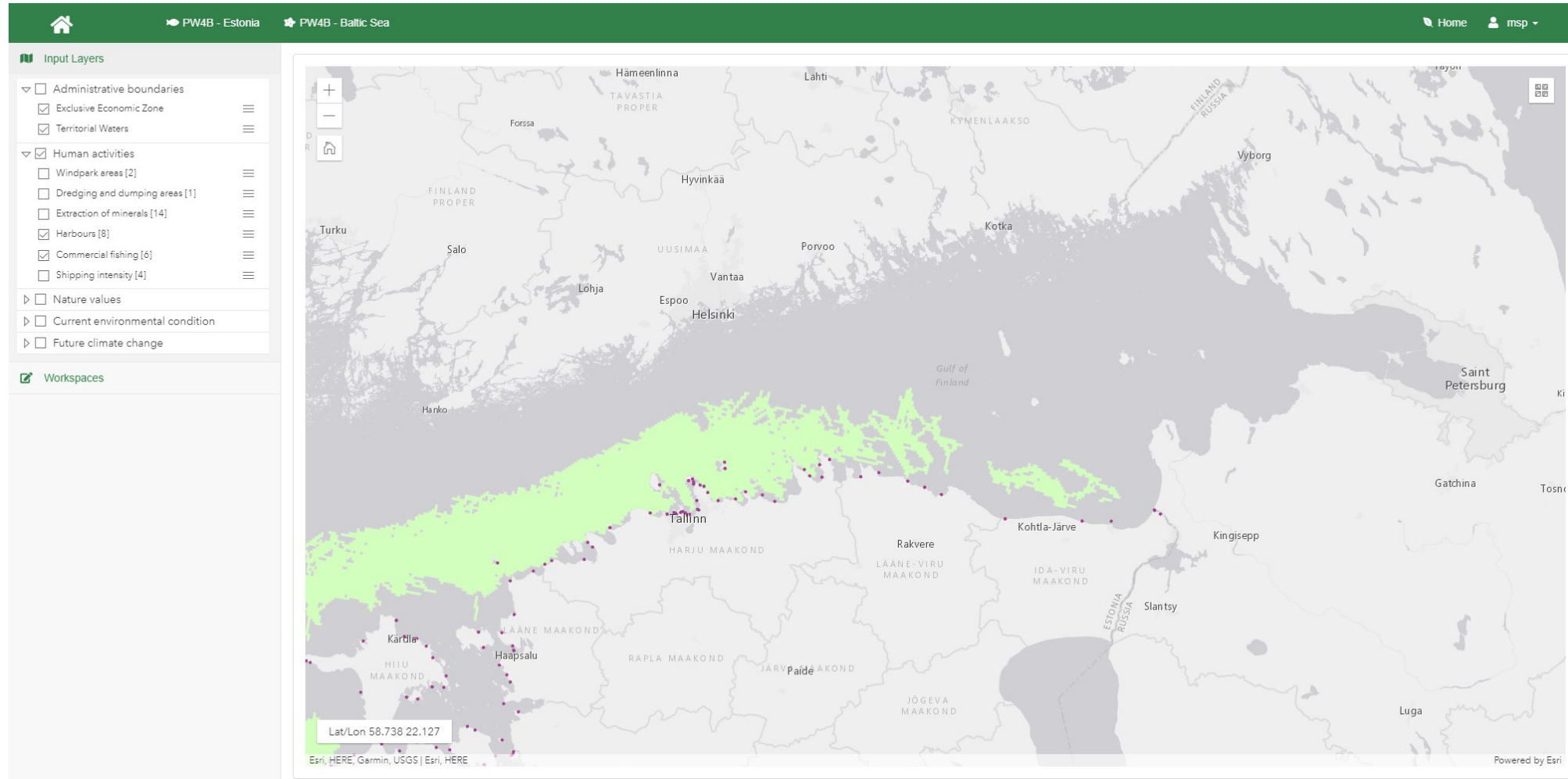
Running GIS modelling



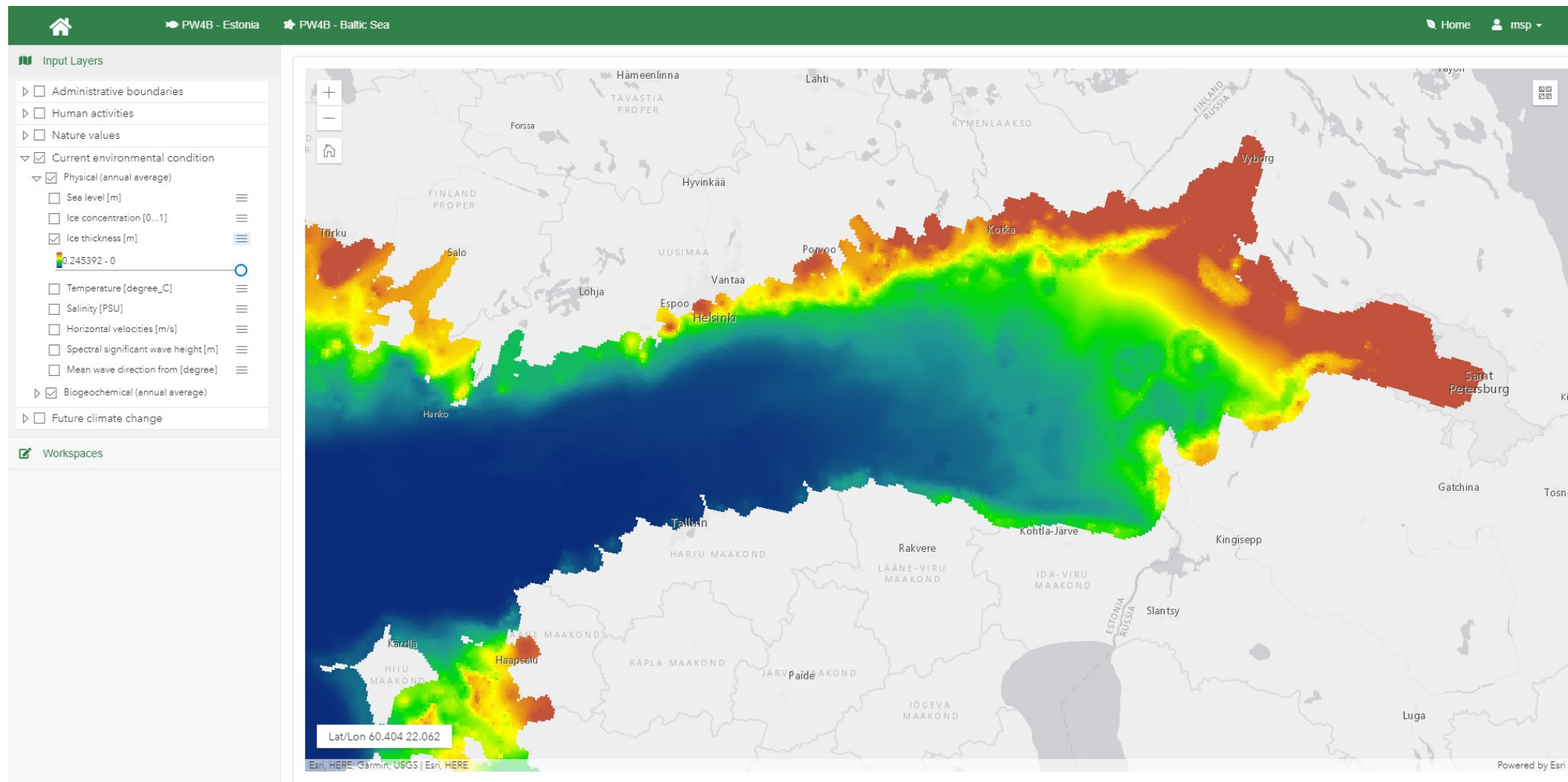
Publishing maps on impacts

Map layers: human pressures

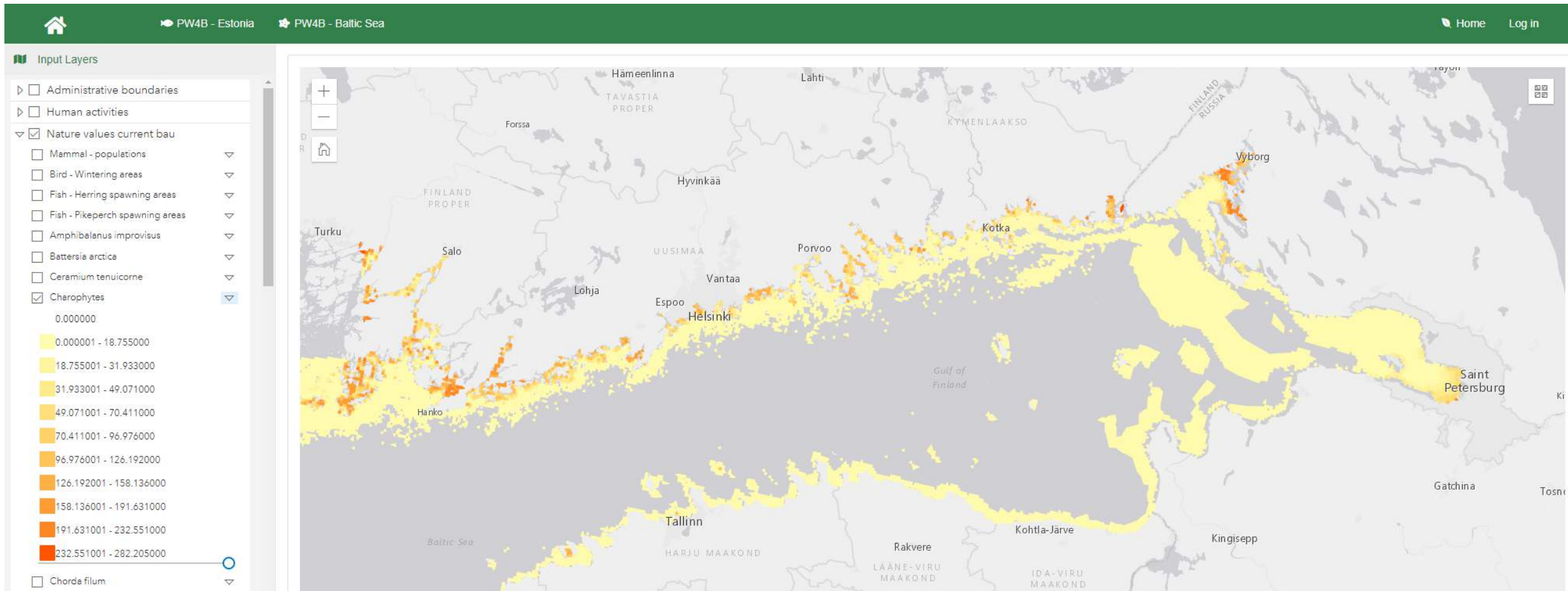
Develop your own scenario



Map layers: abiotic environment



Map layers: nature assets



Workspace view (defining workspace)

 PW4B - Estonia

 PW4B - Baltic Sea

Home

msp

Input Layers

Workspaces

Scenario 4

Workspace	Timestamp
Scenario 1	20.04.2021 12:40:50
Scenario 2	25.05.2021 08:07:47
Scenario 3	25.05.2021 11:05:19
Scenario 4	26.09.2021 16:41:51

Current workspace's layers

Scenario 4

Overview

Human pressures

Nature assets

Model results

How to prepare and run model

One can prepare and run several human impact scenarios. Scenario consists of lists of human pressures and nature assets. To prepare a new scenario user can create a new workspace on the left side pane. With selected workspace user can start preparing the lists of human pressures and nature assets on the corresponding tab page.

Please select existing workspace from the left side pane or create a new one.

Workspace name

Scenario 4

Timestamp

26.09.2021 16:41:51

Description

Submit

Model inputs for current scenario

Human pressures

Nature assets

Human impact calculation

Run model

Workspace view (results)

PW4B - Estonia PW4B - Baltic Sea

Home msp

Input Layers

Workspaces

Enter new workspace name...

+

Workspace	Timestamp
Scenario 1	20.04.2021 12:40:50
Scenario 2	25.05.2021 08:07:47
Scenario 3	25.05.2021 11:05:19
Scenario 4	26.09.2021 16:41:51

Current workspace's layers

Left side map

☒ Nature assets initial

☐ Bird - Benthos feeders

☒ Bird - Fish feeders

☐ Bird - Migration routes

☐ Bird - Wintering areas

☐ Fish - Herring spawning areas

☐ Fish - Pikeperch spawning areas

☐ Fish - Whitefish spawning areas

Right side map

☒ Nature assets negative change

☒ Nature assets positive change

☒ Nature assets end value

☒ Nature assets maximum end value

☒ Nature assets minimum end value

☐ Bird - Benthos feeders [2]

☒ Bird - Fish feeders [3]

☐ Bird - Migration routes [5]

☐ Birds - Wintering areas [6]

☐ Fish - Herring spawning areas [7]

☐ Fish - Pikeperch spawning areas [8]

Scenario 3

SUCCESS

SUCCESS

SUCCESS

Overview

Human pressures

Nature assets

Model results

Initial nature values

Model result values

Lat/Lon 61.012 28.587

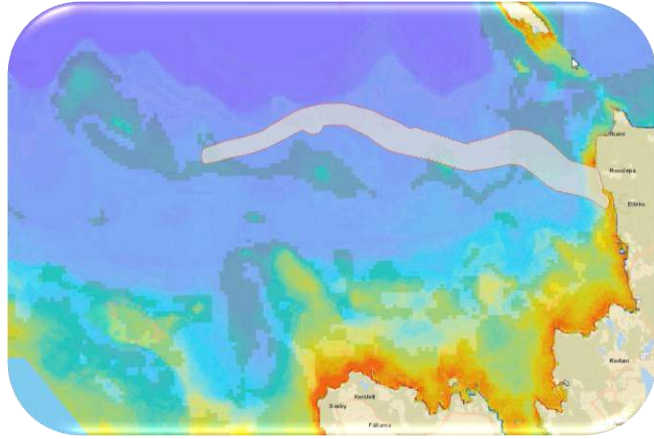
Lat/Lon 61.108 20.106

| 43

Addressing the Complexity of Oil Spill Impacts

- Oil Spills Are Highly Specific Events:
 - Vary by location, oil type, spill volume, and environmental conditions.
 - Require real-time response to minimize immediate damage.
 - Have long-term cumulative effects on marine ecosystems.
- Need for Integrated Response & Impact Assessment:
 - Existing models often lack real-time specificity and cumulative impact analysis.
 - Decision-makers need fast, data-driven tools for effective spill management.
- EcoSensitivity – A New Web Tool:
 - Combines oil spill dynamics with cumulative impact assessments.
 - Integrates real-time spill data, drift modeling, and ecosystem vulnerability.
 - Helps authorities prioritize response actions and long-term restoration.

Seatrack Web



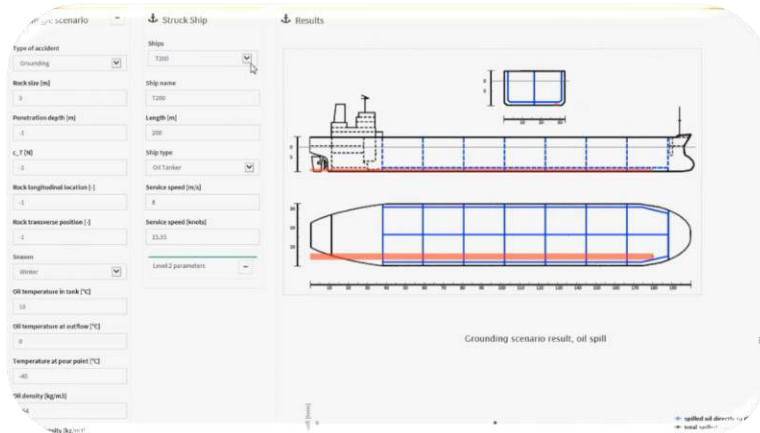
PlanWise4Blue: human pressures (oil spill)



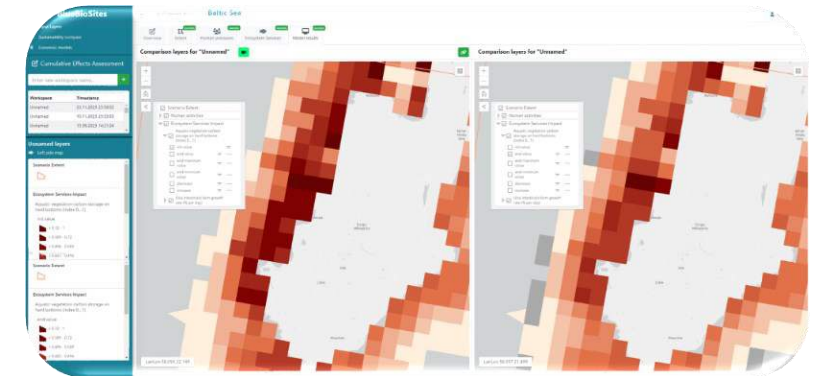
Selection of nature assets



ADSAM module



PW4B: Calculating impacts (Environmental Sensitivity Index)



Menu

Vessels

Scenario

All input fields in Single scenario must be filled. If input value is not known then -1 should be entered (for temperatures it is -1000).

Accident type	Grounding
Rock size [m]	3
Penetration depth [m]	4.5
c.T [N]	-1
Rock longitudinal location [-]	-1
Rock transverse location [-]	-1
Struck Ship length [m]	274
Struck Ship velocity [m/s]	8
Struck Ship breadth [m]	48
Struck Ship draft [m]	9.6
Season [-]	Winter
Oil temperature in tank [°C]	10
Oil (seawater temp.)temperature at outflow [°C]	0
Temperature at pour point [°C]	-40
Oil density at tank temperature [kg/m ³]	764
Seawater density [kg/m ³]	1005
Ice cover thickness [m]	0.1
Relative actual contact length [-]	-1
Reference contact length in [m]	-1
Smallest load width [mm]	-1
Flexural strength of ice [kPa]	-1
Elastic modulus of ice [GPa]	-1
Ice-hull friction [-]	-1
Ice density [kg/m ³]	-1
Scale factor [-]	-1

Shared Tools ▾ Accidental Damage and Spill Assessment Model (ADSAM)



Scenario settings



Ice conditions



Struck ship

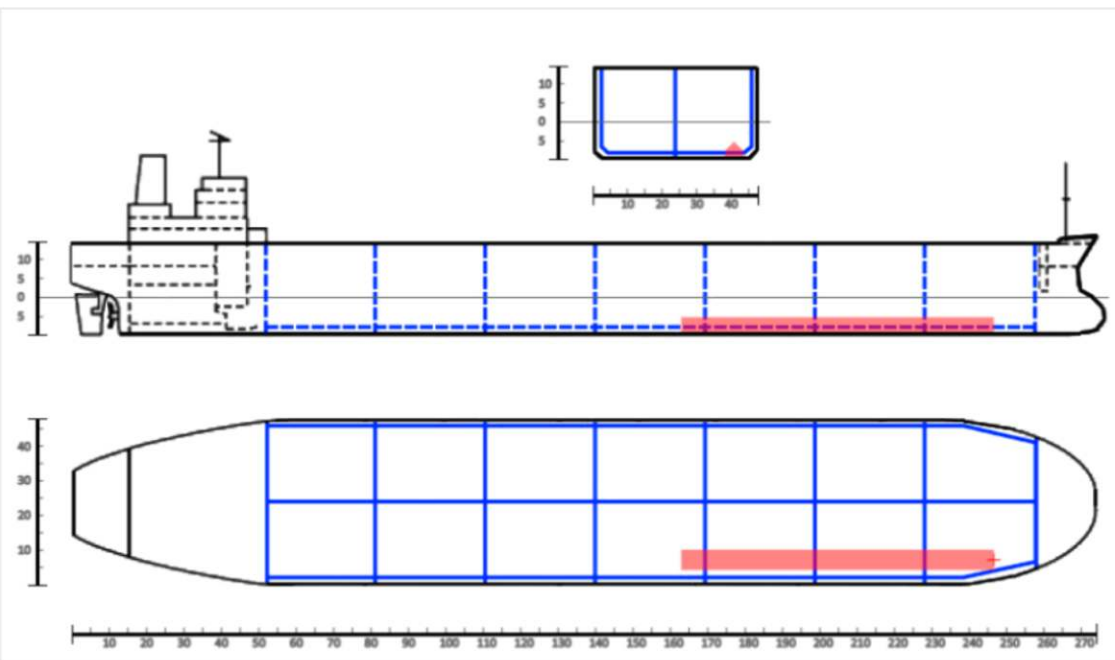
Vessels

Oil Tanker 2 ▾

Ship name	Depth	Total number of tanks
Oil Tanker 2	24.22	14
Ship type	Deadweight [t]	Hull type
Choose... ▾	150842	double hull ▾
Service speed [m/s]	Block coefficient [-]	Double-bottom height [m]
8	0.83	2
Service speed [knots]	Mass (displacement) [t]	Double side thickness [m]
15.55	104795	9.65
Length [m]	Number of tanks in longitudinal direction	Ship slope angle [deg]
274		-1
Breadth [m]	Number of tanks in transverse direction	Cargo type
48	2	Oil ▾
Draft (fully loaded) [m]		
9.6		

Run model

Results



Damage length [m]

83.72

Oil spilled directly to the sea [tons]

19413

Damage width in inner hull [m]

4.8

Oil spilled through the double bottom [tons]

1920

Damage width in outer hull [m]

5.88

Total oil spilled [tons]

21333

Grounding force [N]

1401073

Time

Seatrack Web calculation parameters



Select current scene

new scene...



Time and position

☒ Forward

☐ Backward

Date and time range



2024-10-16 11:05:56 - 2024-10-16 11:05:56

Outlet depth (m)

0

Calculation options

☐ Add uncertainty which depends on uncertainty in the weather forecast, hindcast

Calculation mode

☐ Fast

☒ Normal

☐ Detailed

Buffer size (saving settings)

0.0005

Save to GIS Server

Substance

Calculation type

Oil classes



Substance

Medium oils (100-1)



State of oil

Fresh



Discharge

☒ Instantaneous

☐ Continuous

Amount / Rate

100

m3



Duration

24

hours



Simulation process status

Creating workarea:

Adding to a run queue:

Starting up model:

Process steps:

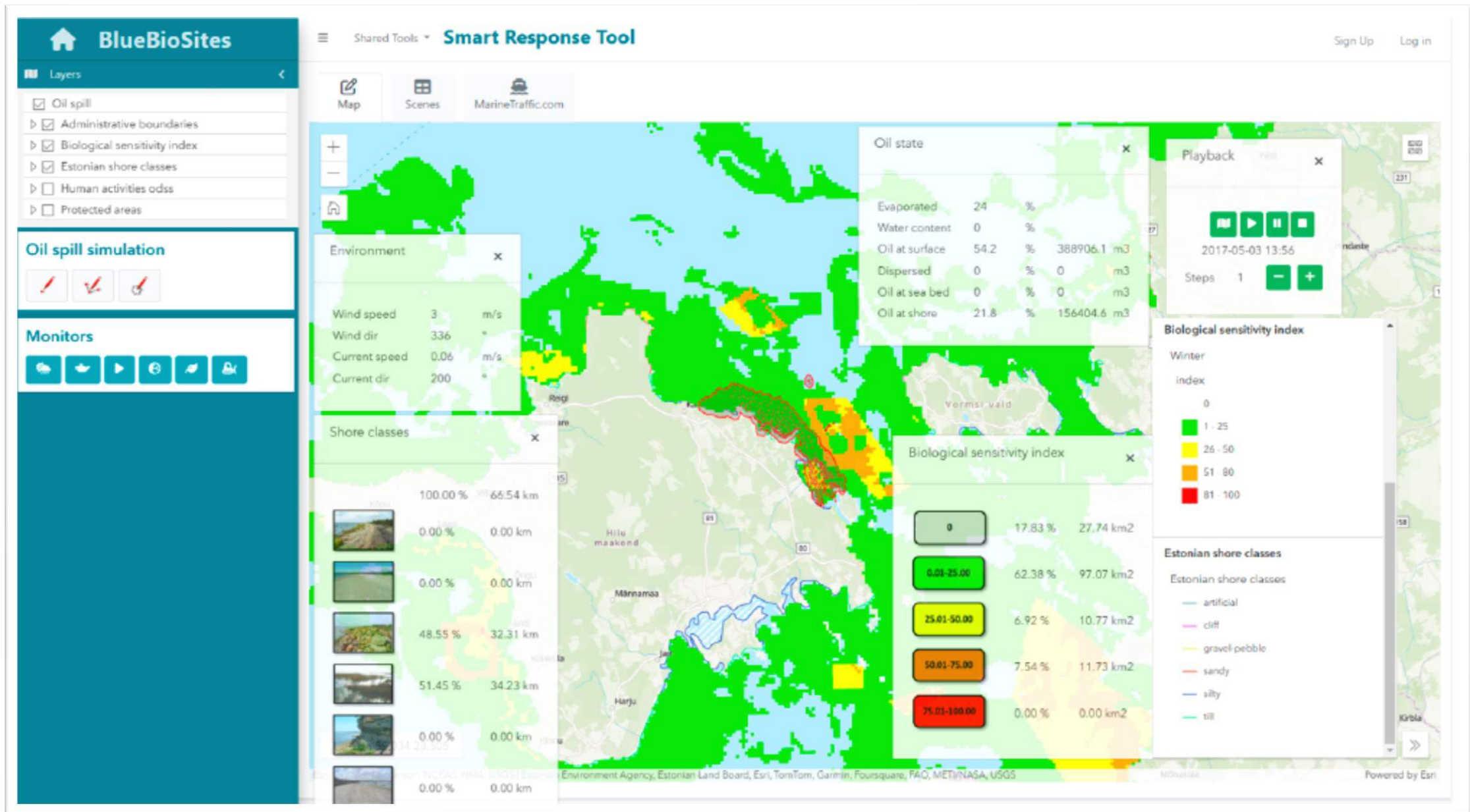
Final status:

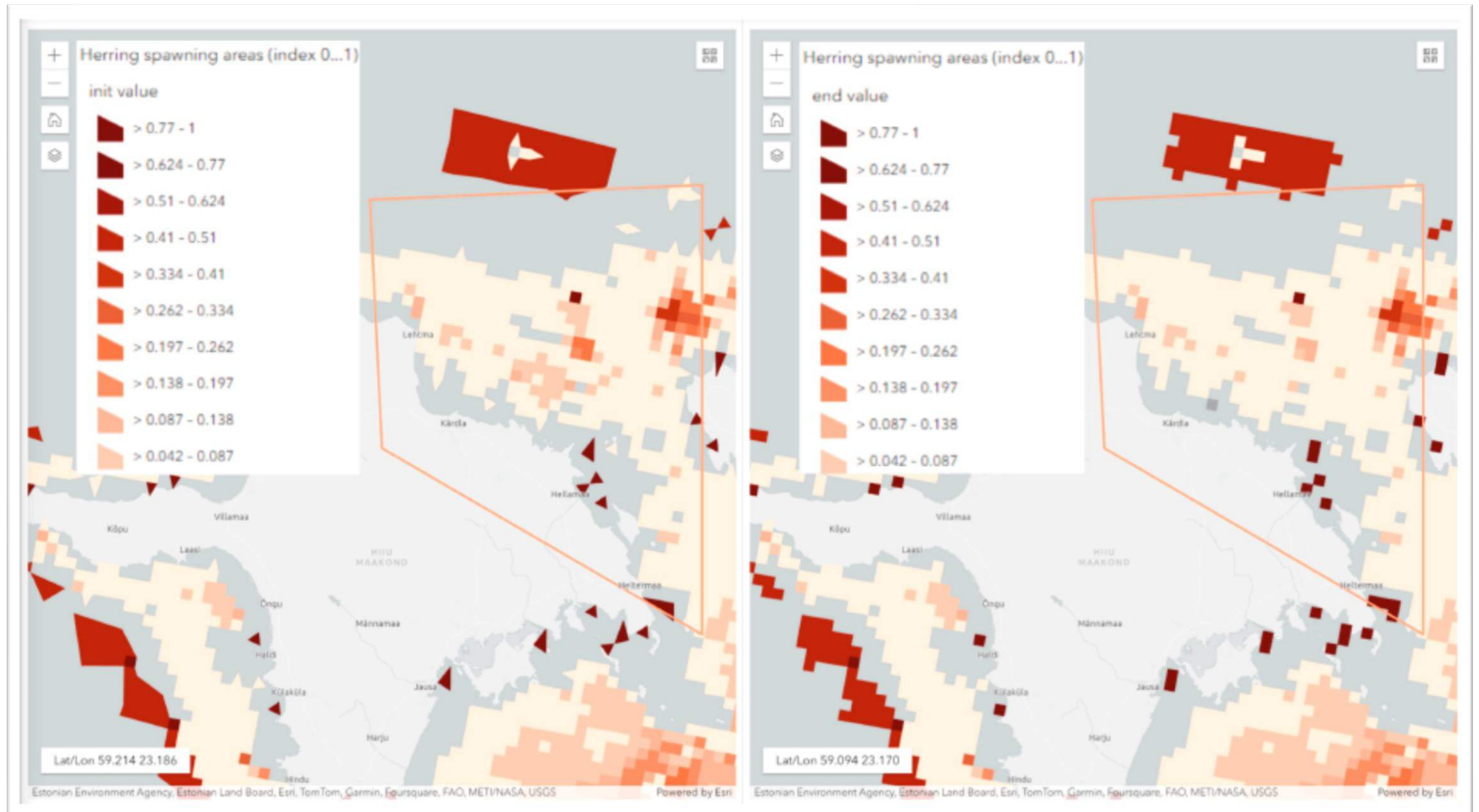
Saving to GIS Server

Error:

WORKAREA

Run the model





Future actions

- Advancing knowledge on new fuel types (Ultra Low Sulfur Fuel Oil, ULSFO) and their environmental behavior.
 - Developing predictive models for fuel dispersal and impact assessment.
- Other elements critical to response actions should be incorporated.
 - Engaging stakeholders to identify specific requirements (tomorrow's workshop).

R-Mare & Risk quality method for tendering process

Valtteri Laine, Traficom

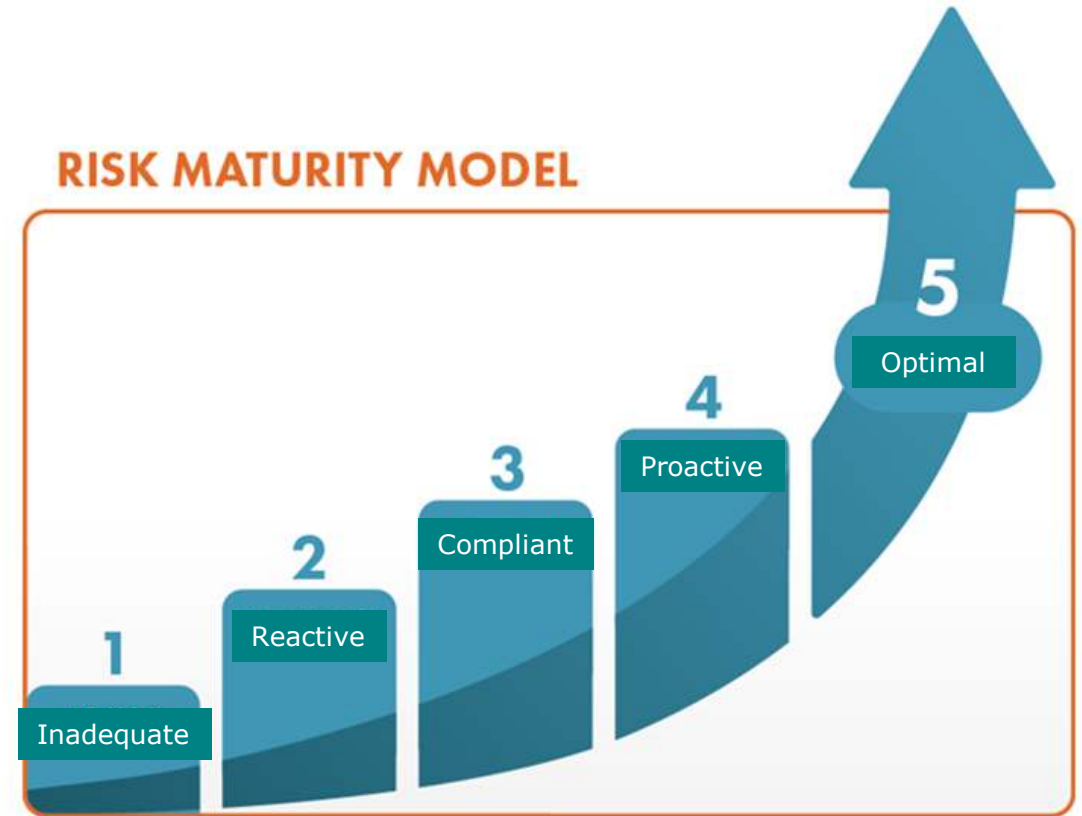
Hermann Backer Johnsen, NDPTL

OpenRisk II Mid-Term Conference on Maritime Risk Management and Piloting in the Baltic Sea Region - 26-27.3.2025 Tallinn, Estonia



Risk maturity models

- Risk maturity models are conceptual models that an organization can use to evaluate and improve its ability to manage risks.
- The models have proven to be useful to evaluate organization's current level of maturity, identify realistic targets for improvement, and produce action plans for developing or enhancing its risk capacity.



Description of model elements

Attributes	Maturity levels				
	L-1. Inadequate	L-2. Reactive	L-3. Compliant	L-4. Proactive	L-5. Optimal
1. Ethics and integrity	L1/A1	L2/A1	L3/A1	L4/A1	L5/A1
2. Leadership and commitment	L1/A2	L2/A2	L3/A2	L4/A2	L5/A2
3. Design	L1/A3	L2/A3	L3/A3	L4/A3	L5/A3
4. Integration	L1/A4	L2/A4	L3/A4	L4/A4	L5/A4
5. Resources	L1/A5	L2/A5	L3/A5	L4/A5	L5/A5
6. Communication and consultation	L1/A6	L2/A6	L3/A6	L4/A6	L5/A6
7. Continuous improvement	L1/A7	L2/A7	L3/A7	L4/A7	L5/A7
8. Risk terminology	L1/A8	L2/A8	L3/A8	L4/A8	L5/A8
9. Definition of context	L1/A9	L2/A9	L3/A9	L4/A9	L5/A9
10. Data and information	L1/A10	L2/A10	L3/A10	L4/A10	L5/A10
11. Tools and techniques	L1/A11	L2/A11	L3/A11	L4/A11	L5/A11
12. Hazard identification	L1/A12	L2/A12	L3/A12	L4/A12	L5/A12
13. Risk analysis and evaluation	L1/A13	L2/A13	L3/A13	L4/A13	L5/A13
14. Risk control measures	L1/A14	L2/A14	L3/A14	L4/A14	L5/A14
15. Cost-benefit assessment	L1/A15	L2/A15	L3/A15	L4/A15	L5/A15
16. Recommendations	L1/A16	L2/A16	L3/A16	L4/A16	L5/A16
17. Decision-making	L1/A17	L2/A17	L3/A17	L4/A17	L5/A17
Score	1	2	3	4	5

A-2. Leadership and commitment

- Top management should ensure that risk management is integrated into all activities of the maritime administration, while considering also the ethical, national, and economic aspects of shipping
- They should allocate adequate resources for this purpose and establish robust communication channels with internal stakeholders (e.g., ministry and sister organizations) and external stakeholders (e.g., private sector and intergovernmental bodies)
- They should focus on creating safe working conditions and an environment of trust for the administration and its stakeholders
- They should demonstrate willingness and commitment to continuously improve the risk management performance of the administration in both the short and long term

Level-3: Compliant

The risk management of the maritime administration is *compliant*.

There is a basic risk management framework in place, and risk assessments are conducted in accordance with the legislative requirements, using the IMO FSA guidelines or corresponding procedures. There is still room for improvements in the quality of risk-related information, processes for continuous improvement, and risk and crisis communication. The Flag State is on the White list or a corresponding rank in the international Port State Control system. The general performance of the administration is compliant with all legal requirements.

A-3/L-1

Leadership and commitment - inadequate

Top management is not showing interest in risk management and has only a limited knowledge of this area.

They are not trusted among the staff and stakeholders, and set a bad example for everyone.

A-3/L-2

Leadership and commitment - reactive

Top management is showing interest in risk management after an undesirable event such as a maritime accident leading to acute environmental damage.

They react to the identified problems rather than trying to prevent them.

A-3/L-3

Leadership and commitment - compliant

Top management aims to ensure that the risk management considers and meets all legal requirements.

They supervise that all mandatory tasks are conducted and aim to provide necessary resources for this purpose.

A-3/L-4

Leadership and commitment - proactive

Top management aims to ensure that the risk management is integrated across the administration and considers its internal changes.

They supervise that standard procedures are in place for e.g. continuous improvement and risk acceptability.

A-3/L-5

Leadership and commitment - optimal

Top management aims to ensure that in the risk management, the ethical and financial aspects are balanced in optimal way.

They motivate staff through visible endorsement, create an environment of trust and set a good example for everyone.

Use of model

Attributes	Maturity levels				
	L-1. Inadequate	L-2. Reactive	L-3. Compliant	L-4. Proactive	L-5. Optimal
1. Ethics and integrity	L1/A1	L2/A1	L3/A1	L4/A1	L5/A1
2. Leadership and commitment	L1/A2	L2/A2	L3/A2	L4/A2	L5/A2
3. Design	L1/A3	L2/A3	L3/A3	L4/A3	L5/A3
4. Integration	L1/A4	L2/A4	L3/A4	L4/A4	L5/A4
5. Resources	L1/A5	L2/A5	L3/A5	L4/A5	L5/A5
6. Communication and consultation	L1/A6	L2/A6	L3/A6	L4/A6	L5/A6
7. Continuous improvement	L1/A7	L2/A7	L3/A7	L4/A7	L5/A7
8. Risk terminology	L1/A8	L2/A8	L3/A8	L4/A8	L5/A8
9. Definition of context	L1/A9	L2/A9	L3/A9	L4/A9	L5/A9
10. Data and information	L1/A10	L2/A10	L3/A10	L4/A10	L5/A10
11. Tools and techniques	L1/A11	L2/A11	L3/A11	L4/A11	L5/A11
12. Hazard identification	L1/A12	L2/A12	L3/A12	L4/A12	L5/A12
13. Risk analysis and evaluation	L1/A13	L2/A13	L3/A13	L4/A13	L5/A13
14. Risk control measures	L1/A14	L2/A14	L3/A14	L4/A14	L5/A14
15. Cost-benefit assessment	L1/A15	L2/A15	L3/A15	L4/A15	L5/A15
16. Recommendations	L1/A16	L2/A16	L3/A16	L4/A16	L5/A16
17. Decision-making	L1/A17	L2/A17	L3/A17	L4/A17	L5/A17
Score	1	2	3	4	5

Reliability of the model

Internal consistency reliability test results

Round	α value	Ω value	Interpretation
1	0.93	0.92	<i>Almost perfect</i>
95% CI	0.85 - 0.97	0.87 - 0.98	
2	0.96	0.96	<i>Almost perfect</i>
95% CI	0.92 - 0.98	0.93 - 0.96	

Inter-rater reliability test results

Round	ICC (3, k)	Interpretation
1	0.73	<i>Moderate</i>
95% CI	0.51 - 0.89	
2	0.75	<i>Moderate/Good</i>
95% CI	0.53 - 0.89	

R-Mare matrix application

BLUEBIOSITES

Menu

Welcome page

R-Mare matrix model

Export data

R-Mare matrix

Sign up

Sign in

1. Risk Management Attributes

2. R-Mare matrix - model

3. Personal and Community Risk Analysis

SPECIFY RISK MATURITY LEVEL FOR EACH RISK MANAGEMENT ATTRIBUTE

Risk Management Attribute	Risk Maturity Level
Design	proactive
Integration	compliant
Resources	compliant
Communication and consultation	reactive
Continuous improvement	proactive
Risk terminology	compliant
Definition of context	proactive
Data and information	reactive
Tools and techniques	proactive
Hazard identification	compliant
Risk analysis and evaluation	proactive
Risk control measures	compliant
Cost-benefit assessment	compliant
Recommendations	proactive
Decision-making	compliant

inadequate

reactive

compliant

proactive

optimal

not selected

There is a basic process for risk-based decision-making, but the means for validation and continuous improvement are missing. Top management decisionmaking on risk control measures focuses on compliance with legal requirements.

Comment

Here you can write comments and notes concerning your expert judgement.

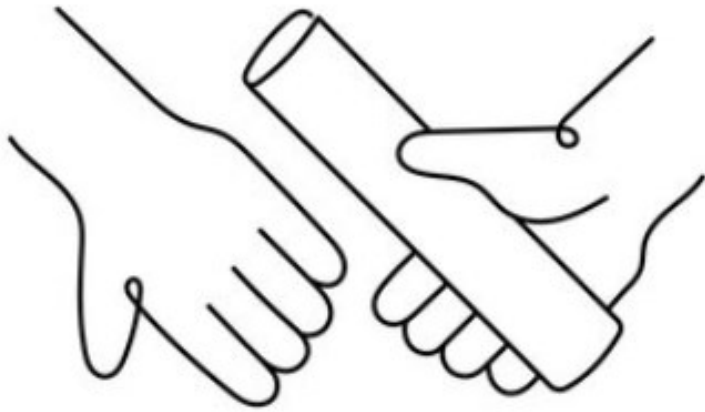
Export To PDF

Export To Word

Output of model

Previous

Next



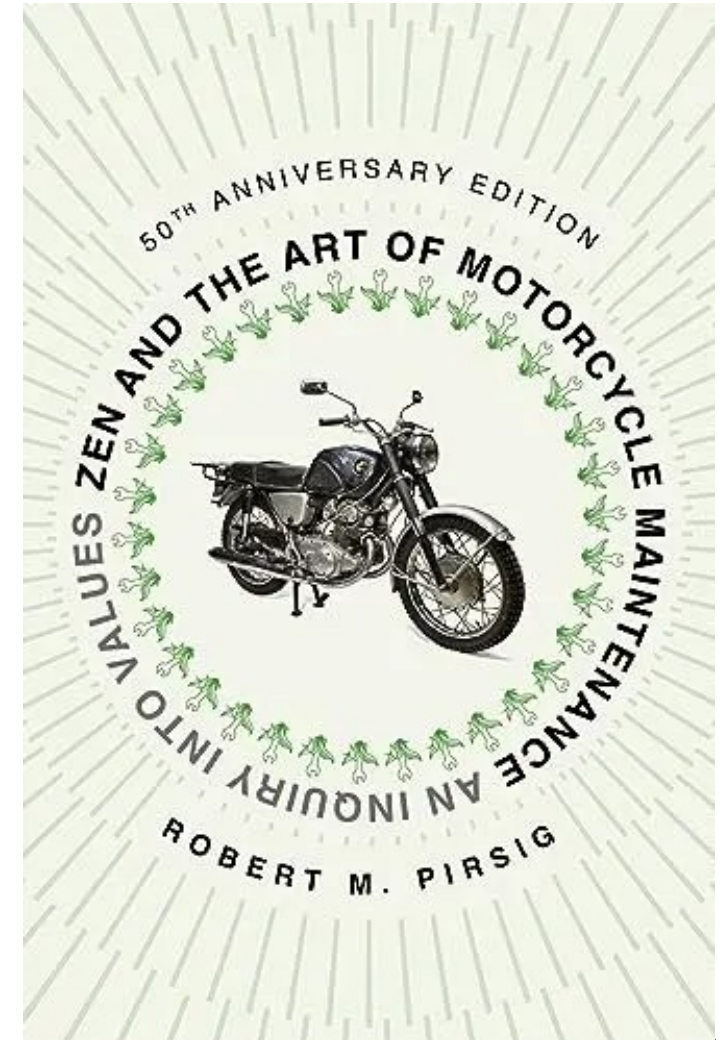
Dr Backer, can you help us?



Valtteri Laine
valtteri.laine@traficom.fi

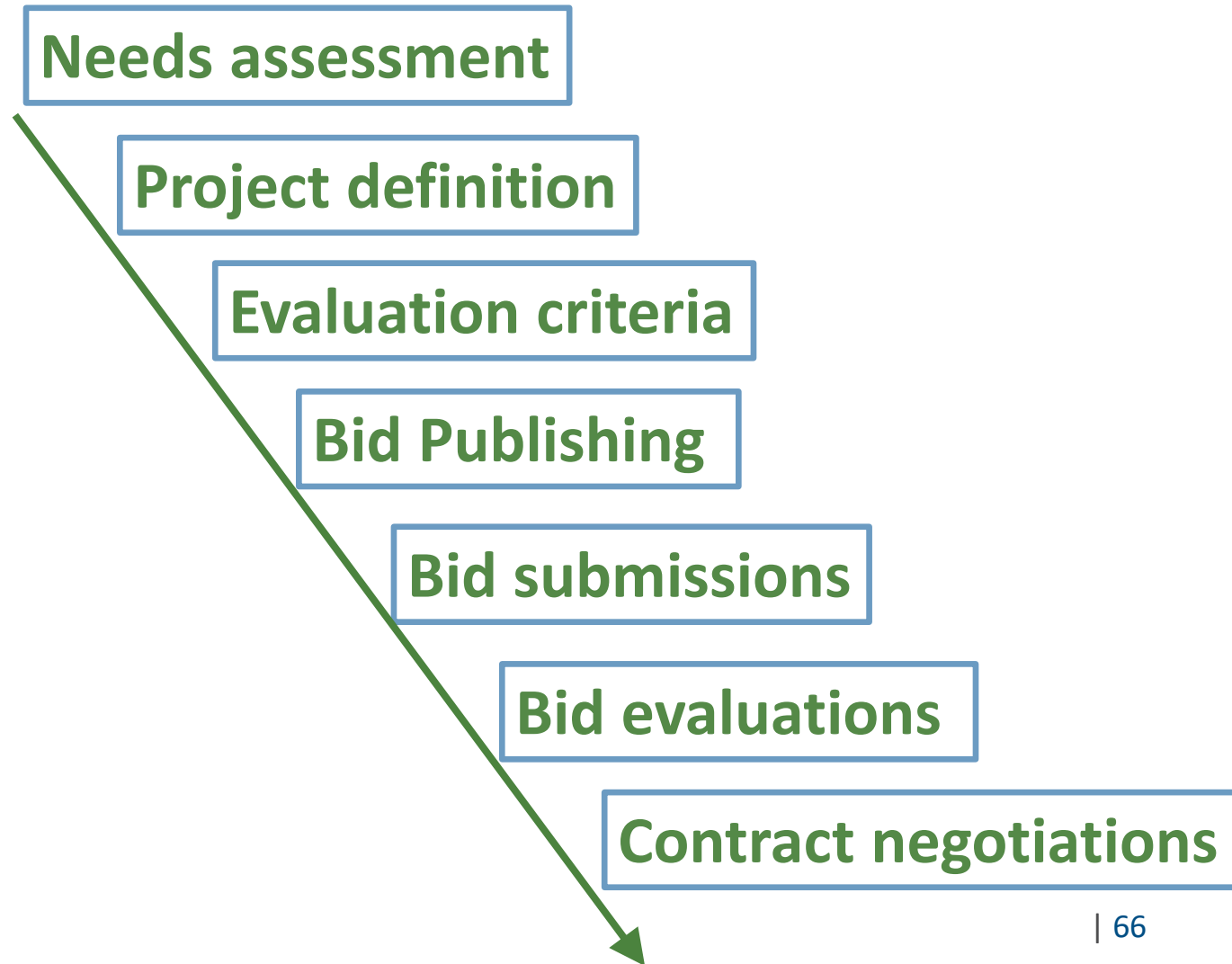
What is Quality of Maritime Risk Assessments?

- “Quality” is typically highlighted as important –e.g. when commissioning or using risk assessments
- But what is quality in a maritime risk assessment (RA) context?
- Explicit definitions/conceptions of RA quality are needed if it is used as a criterion for selecting a service provider -or assessing the validity of a completed study in the framework of Goal Based Standards (GBS).



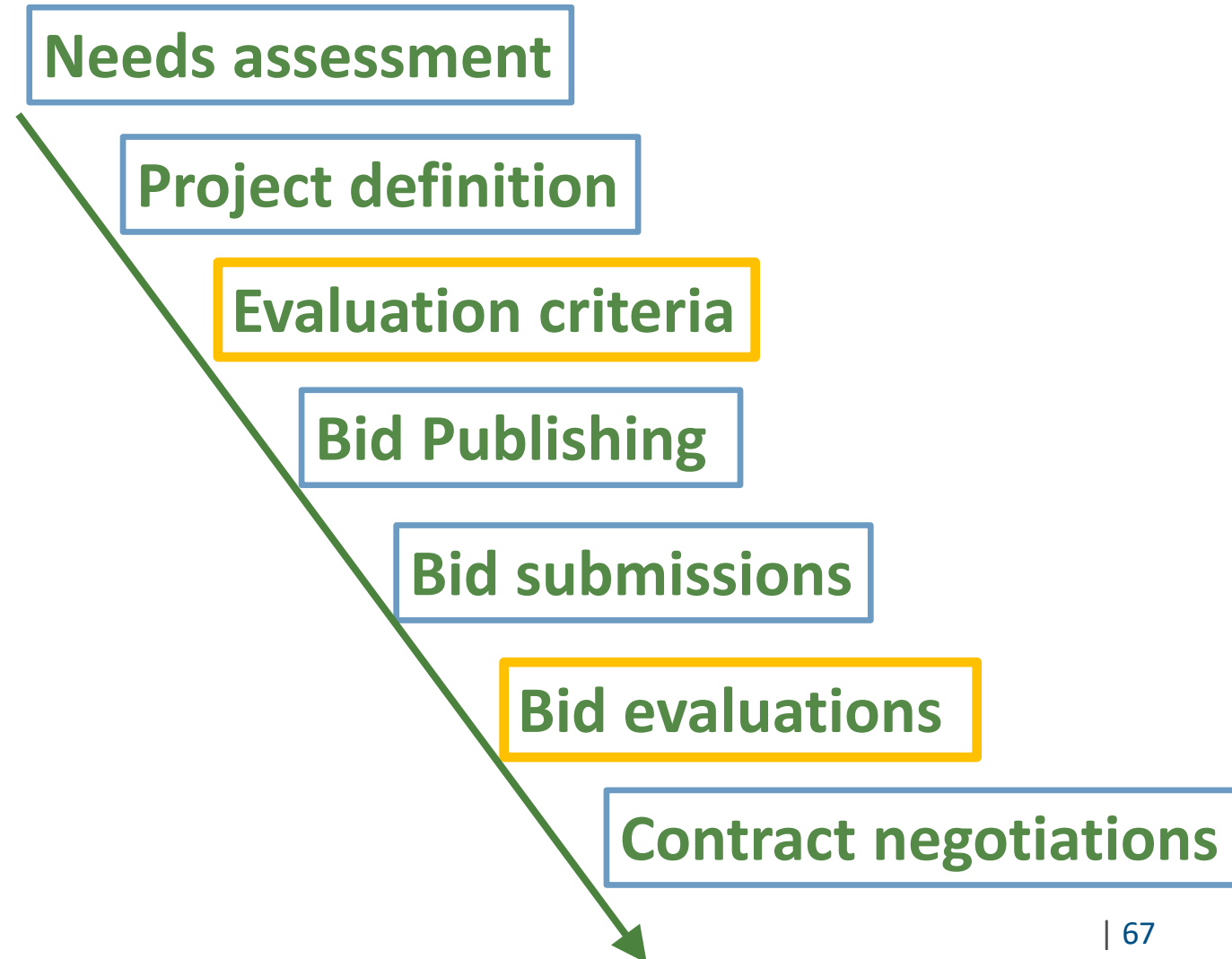
Public procurement (of risk studies)

- Procurement = structured purchasing of goods or services (such as the delivery of risk analyses) from suppliers
- a core activity of both public and private organizations
- *public* procurement need to follow specific rules to ensure good use of public funds upholding principles of quality, transparency, fairness, and cost-effectiveness



Quality in Procurement Processes

- Quality is typically highlighted as a key award criterion in procurement processes of risk analyses.
- as there are little definitions, quality aspects might be down prioritized in procurement processes, or attributed quality may be based on the general reputation, brand, or perceived expertise of the provider
- a missed opportunity to ensure best value for money and raise the standard of commissioned risk studies?



SRA -Risk Analysis Quality Test (RAQT)

- Society for Risk Analysis RAQT report (Lathrop et al. 2024)
- a battery of 76 questions/tests, divided to 15 categories, to comprehensively evaluate/define the quality of risk analyses supporting risk management decisions.
- A comprehensive, general framework.
- Could it be made more operational and “maritime”?

“Q-MARE”?

Draft Criteria for quality of RAs

- two sets of quality criteria procurement processes of maritime risk studies derived from SRA’s RAQT as an exploratory study:
 - one for the purpose of drafting calls for risk analysis proposals
 - another for evaluating them.
- created by mapping a selection of RAQT tests to the steps of the IMO Formal Safety Assessment (FSA) framework (IMO 2018) and ISO 31000
- first version of the criteria available in January 2025 (submitted to ESREL Stavanger July 2025)
- we aim to create a group of interested institutions/persons to develop the draft lists further during Autumn 2025-Spring 2026

General discussion about OpenRisk II tools

OpenRisk II Mid-Term Conference on Maritime Risk Management and Piloting in the
Baltic Sea Region - 26-27.3.2025 Tallinn, Estonia



Wrap-up of the day

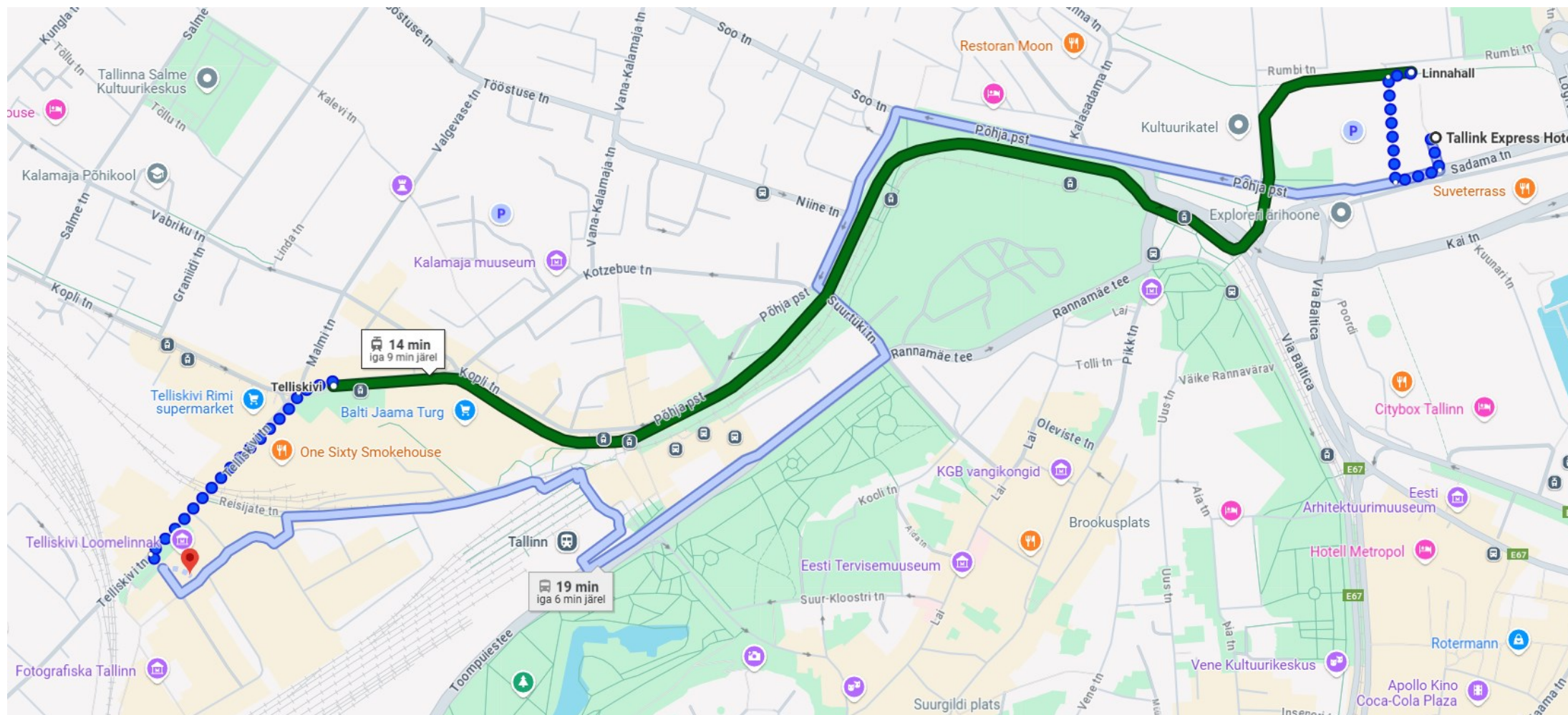
Anneliis Kõivupuu, University of Tartu

OpenRisk II Mid-Term Conference on Maritime Risk Management and Piloting in the
Baltic Sea Region - 26-27.3.2025 Tallinn, Estonia



17:05 – 18:30 Free time

18:30 – ca. 20:30 Dinner at F-Hoone ([Telliskivi street 60a, 10412 Tallinn](#); covered by the project)



Day 2 agenda

09:00 – 9:30 Registration

09:30 – 09:35 Welcome words

09:35 – 09:50 Setting the scene for Day 2 and key points from Day 1

- **Mirka Laurila-Pant**, Finnish Transport and Communications Agency Traficom

09:50 – 10:00 Introduction to piloting workshops

- **Anneliis Kõivupuu**, University of Tartu

10:00 – 11:45 Piloting workshops

Groups (~1.5h sessions, people are asked to join one of the groups indicated in registration form):

1. AlSyRISK Baltic & Ice module
2. Environmental sensitivity decision support tool
3. Tools for organizational risk management maturity & Evaluation of quality of risk assessments

11:45 – 12:45 Lunch break buffet in the venue *(covered by the project)*

12:45 – 14:15 Piloting workshops (continued, 2nd preferred workshop group)

14:15 – 14:35 Short break

14:35 – 15:15 Wrap-up of the piloting workshops

15:15 – 15:30 Final Discussion and closure of the conference

- **Anneliis Kõivupuu**, University of Tartu

Interreg
Baltic Sea Region



Co-funded by
the European Union

SUSTAINABLE WATERS



OpenRisk II

TRAFICOM
Finnish Transport and Communications Agency



UNIVERSITY
OF TARTU



UNIVERSITY OF HELSINKI



KYSTVERKET
NORWEGIAN COASTAL ADMINISTRATION



A''
Aalto University

[Interreg-baltic.eu/project/openrisk-ii/](https://interreg-baltic.eu/project/openrisk-ii/)

OpenRisk II project (2023-2026) is co-funded by the EU Interreg BSR programme 2021-27

Contacts



Project manager Mirka Laurila-Pant
mirka.laurila-pant@traficom.fi

[Interreg-baltic.eu/project/openrisk-ii/](https://interreg-baltic.eu/project/openrisk-ii/)



@OpenRiskII

OpenRisk II Mid-Term Conference on Maritime Risk Management and Piloting in the Baltic Sea Region

Day 2, 26-27.3.2025 Tallinn, Estonia



Day 2 agenda

09:00 – 9:30 Registration

09:30 – 09:35 Welcome words (Galaxy 2)

09:35 – 09:50 Setting the scene for Day 2 and key points from Day 1

- **Mirka Laurila-Pant**, Finnish Transport and Communications Agency Traficom

09:50 – 10:00 Introduction to piloting workshops

- **Anneliis Kõivupuu**, University of Tartu

10:00 – 11:45 Piloting workshops

Groups (~1.5h sessions, people are asked to join one of the groups indicated in registration form):

1. AlSyRISK Baltic & Ice module
2. Environmental sensitivity decision support tool
3. Tools for organizational risk management maturity & Evaluation of quality of risk assessments

11:45 – 12:45 Lunch break buffet in the venue (*covered by the project*)

12:45 – 14:15 Piloting workshops (continued, 2nd preferred workshop group)

14:15 – 14:35 Short break

14:35 – 15:15 Wrap-up of the piloting workshops

15:15 – 15:30 Final Discussion and closure of the conference

- **Anneliis Kõivupuu**, University of Tartu

Setting the scene for Day 2 and key points from Day 1

Mirka Laurila-Pant, Traficom

OpenRisk II Mid-Term Conference on Maritime Risk Management and Piloting in the
Baltic Sea Region - 26-27.3.2025 Tallinn, Estonia



Key Takeaways from Day 1

- Keynote presentations and discussions focused on comprehensive risk analysis and accident prevention at global, EU, regional, and national levels.
- Development of new and existing tools to address various use cases and new challenges.
- Adapting to emerging threats and new challenges:
 - Concerns were raised about the capacity to respond to low-sulfur oils, as response technologies are not yet available and current response methods may not be suitable.
 - There is a need to refine existing simulation models to account for these new fuels, as well as their effects and behaviour.
 - Vessel gathering areas in the Gulf of Finland and the broader issue of the shadow fleet in the Baltic Sea pose significant risks.
- Fostering collaborative approaches to tackle evolving risk environments.

Key Takeaways from Day 1

- Collaboration is essential, including sharing expertise and best practices. However, data availability and data sharing were highlighted as ongoing challenges that may require further discussion.
- A clear need was identified for joint risk assessment and risk management tools, as not all countries have a standardized methodology for risk analysis.
- The OpenRisk II project presentations showcased a strategic risk management toolbox, covering ice conditions, oil spill impact modelling, and risk analysis evaluation. The tools were met with interest, though some questions remain unanswered.



Aim of the Mid-Term Conference

The conference engages stakeholders and target groups to gather valuable feedback, refine, and validate risk assessment and management tools.

Piloting workshops will serve as a key platform for testing and validating the tools.

Tools for shared & dynamic maritime risk picture of the Baltic Sea

AI SyRisk Baltic with a risk assessment module on ice navigation

AI SyRisk Baltic visualizes Baltic Sea risks through interactive online maps and graphs, with a new ice navigation risk assessment module.

EcoSensitivity tool

EcoSensitivity is a web-based decision support system designed to evaluate the consequences of oil spills on marine environments.

R-Mare & Risk quality method for tendering process

R-Mare helps maritime administrations assess risk management performance and improve maturity.

Risk quality method ensures high-quality maritime risk studies in the tendering process.



Current Phase: Piloting and Evaluating Solutions

Technology Testing and Validation

- The first versions of the tools are now ready for testing and validation.
- Piloting workshops offer a crucial opportunity to test the tools and collect feedback, ensuring they are user-friendly, practical, and optimized for real-world application.
- Feedback—both general and user-specific—will help shape and enhance the development of the tools.

Next Phase: Transferring solutions

Tools Complete and Qualified

- Next, feedback gathered from piloting workshops and additional testing will be used to refine and finalize the tools.
- **The finalized solutions will then be communicated and transferred to the target groups and end-users.**
- During the final conference in June 2026 and other stakeholder events, the tools will be demonstrated in real-world settings, highlighting their practical applications.

The goal is to support joint risk assessments for the region, ultimately enhancing safety and spill response.



09:00 – 9:30 Registration

09:30 – 09:35 Welcome words

09:35 – 09:50 Setting the scene for Day 2 and key points from Day 1

- **Mirka Laurila-Pant**, Finnish Transport and Communications Agency Traficom

09:50 – 10:00 Introduction to piloting workshops

- **Anneliis Kõivupuu**, University of Tartu

10:00 – 11:45 Piloting workshops

Groups (~1.5h sessions, people are asked to join one of the groups indicated in registration form):

1. AlSyRISK Baltic & Ice module
2. Environmental sensitivity decision support tool
3. Tools for organizational risk management maturity & Evaluation of quality of risk assessments

11:45 – 12:45 Lunch break buffet in the venue (*covered by the project*)

12:45 – 14:15 Piloting workshops (continued, 2nd preferred workshop group)

14:15 – 14:35 Short break

14:35 – 15:15 Wrap-up of the piloting workshops

15:15 – 15:30 Final Discussion and closure of the conference

- **Anneliis Kõivupuu**, University of Tartu

Introduction to piloting workshops

Anneliis Kõivupuu, University of Tartu

OpenRisk II Mid-Term Conference on Maritime Risk Management and Piloting in the
Baltic Sea Region - 26-27.3.2025 Tallinn, Estonia



Sessions and Workshops Plans

[illegible]

Wrap-up of the piloting workshops

OpenRisk II Mid-Term Conference on Maritime Risk Management and Piloting in the
Baltic Sea Region - 26-27.3.2025 Tallinn, Estonia



Final Discussion and closure of the conference

Anneliis Kõivupuu, University of Tartu

OpenRisk II Mid-Term Conference on Maritime Risk Management and Piloting in the
Baltic Sea Region - 26-27.3.2025 Tallinn, Estonia



Save the date!

OpenRisk II Final Conference 2026, Kristiansand Norway



Interreg
Baltic Sea Region



Co-funded by
the European Union

SUSTAINABLE WATERS



OpenRisk II

TRAFICOM
Finnish Transport and Communications Agency



UNIVERSITY
OF TARTU



UNIVERSITY OF HELSINKI



KYSTVERKET
NORWEGIAN COASTAL ADMINISTRATION



A''
Aalto University

[Interreg-baltic.eu/project/openrisk-ii/](https://interreg-baltic.eu/project/openrisk-ii/)

OpenRisk II project (2023-2026) is co-funded by the EU Interreg BSR programme 2021-27

Contacts



Project manager Mirka Laurila-Pant
mirka.laurila-pant@traficom.fi

[Interreg-baltic.eu/project/openrisk-ii/](https://interreg-baltic.eu/project/openrisk-ii/)



@OpenRiskII