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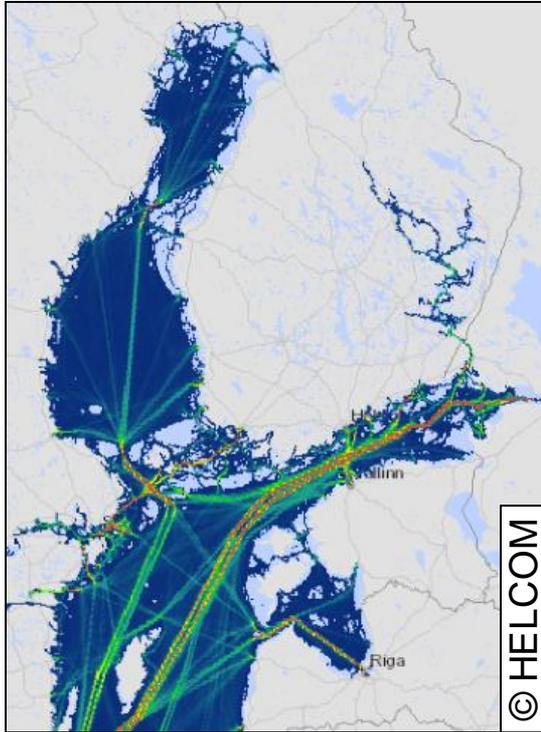
Strategic and operational risk management for wintertime maritime transportation system “STORMWINDS”

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How does STORMWINDS contributes to preparing for the risks of maritime transportation in the Baltic Sea, and why does it matter?

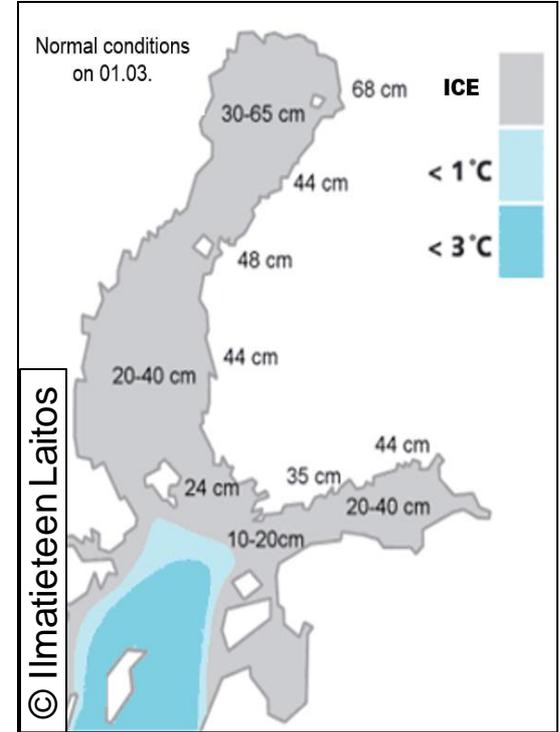
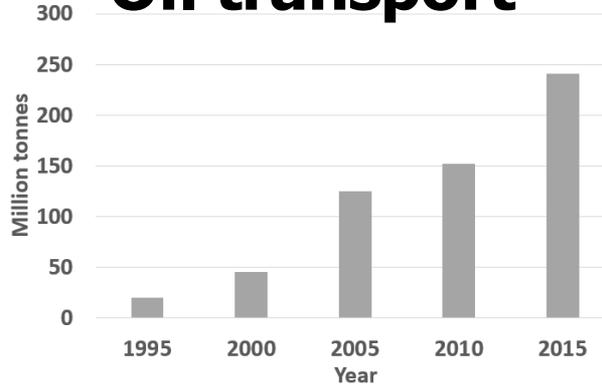
Wintertime maritime transportation context



Maritime traffic

Sea ice

Oil transport



Wintertime maritime transportation risks



Wintertime operations



Oil spill in ice

The STORMWINDS contribution

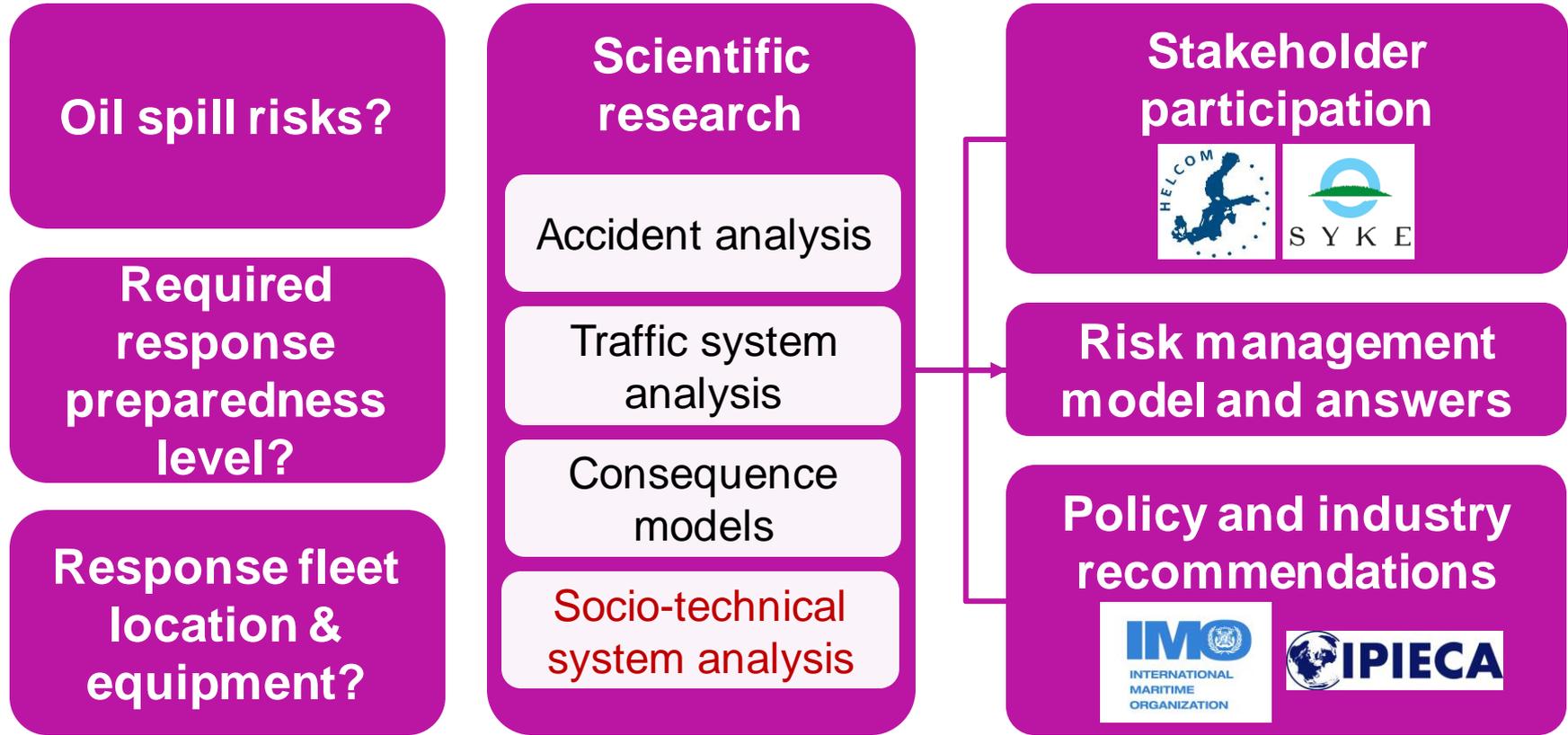
**Policy
support**

**Operational
support**

**Risk management
for oil spills in ice**

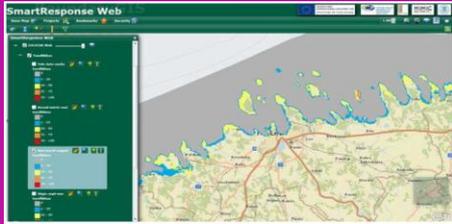
**Decision support
tools for oil spill
combating in ice**

Strategic risk management



Operational risk management

Existing tools



SmartResponse Web



SeaTrack Web

Scientific research

Oil dispersion
in ice

Sea ice dynamics
models and tests

Oil outflow models

Socio-technical
system KPIs

Improved
situational
awareness
tools during
oil spill
operations in ice
conditions

The STORMWINDS main objectives

- 1) Contribute to safe maritime traffic without accidental pollution
- 2) Enhance environmental emergency and response capabilities
- 3) Advance the state-of-art in e-Navigation technologies

The STORMWINDS objective

The detailed objectives related to the first main objective (*contribute to safe maritime traffic without accidental pollution*) are :

- 1) Provide recommendations to enhance cross-border, cross-sector vessel traffic control and emergency response using a novel framework
- 2) Propose a safety management model for Vessel Traffic Services (VTS) operations and training (focused in wintertime navigation).

The STORMWINDS objective

The detailed objectives related to the second main objective (*enhance environmental emergency and response capabilities*) are:

- 1) Develop novel and improved operational situational awareness tools, supporting emergency response
- 2) Develop a risk-informed pollution response fleet management model for wintertime conditions.

The STORMWINDS objective

The detailed objectives related to the third main objective (*advance the state-of-art in e-Navigation technologies*) are:

- 1) Develop methods for ship routing in complex, dynamic ice, enhancing maritime safety and efficiency
- 2) Enhance situational awareness in ice navigation by developing a method to evaluate Synthetic Aperture Radar (SAR) images in terms of ship performance.

Link to previous research (needs detected)

- Safety management systems with a more efficient integration between safety regulatory and administrative demands and the correct understanding of the practical context of the operations
- Adequate training for executing the operations in order to have an efficient utilization of the different devices used for controlling the operations while keeping an appropriate situational awareness

Link to previous research (needs detected)

- Improvement of planning skills aiming at enhancing the quality and efficiency of the ship voyage plans.
- Better communication with other winter navigation members assisting in the development and control of the operations.
- New technological tools for enhancing situational awareness for supporting an efficient control of the operations.

Expected outcomes in STORMWINDS

- New models for collision and grounding damage and cargo outflow in ice, enhanced ocean and sea ice models including spill propagation, oil recovery, ship performance and ship routing in ice
- New models for operational safety management in the VTS domain
- New decision-support model for pollution response fleet organization
- New methods and test bed tools for e-Navigation in Baltic ice conditions

Expected outcomes in STORMWINDS

- New and improved operational tools for emergency response to shipping accidents
- Recommendations for improvements of cross-border and cross-sector operational vessel control and response system, in a framework of sustainable eco-services;
- Availability of enhanced situational awareness tools for post-accident emergency response;
- Further strengthening of the Baltic Sea area as a leading region in maritime safety and risk management.

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THANK YOU

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