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Deliverable D.T3.8.1 Map visualizing final MSP options and synthesis

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ABSTRACT

Title: Map visualisations of Plan4Blue MSP case studies

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Abstract:

This output contains collection of maps visualising selected two Plan4Blue MSP options: Natura 200 and shipping. The set of maps and used data represent examples of a spatial data utilisation in a cross-border MSP.

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CONTENTS

BACKGROUND

Plan4Blue maritime spatial planning cases aim to outline and map the marine space contemporary and potential requirements related to expected developments of sea area use. Maps are presenting case related human sea use pressures to environment and interaction analysis examples.

To account for the impact of current human activities and the potential changes in those activities on the Natura 2000 conservation objectives, MSP would benefit from spatial analysis methodology A preliminary examination of spatial data of the Plan4Blue project area (parts of Gulf of Finland and Archipelago Sea in Finland and Estonia) indicated that existing data may be insufficient for explicitly analysing the spatial interactions of human activities and the nature. Moreover, the final analyses should be carefully coordinated by spatial planning authorities to meet the particular needs of the national MSP process. However, the methodological principles and illustrative results are reported here. The analysis should consider following principles:

- Consider each Natura 2000 site as a unique unit with different conservation objectives and different forms of interactions with human activities
- Be based on appropriate spatial data and analysis methods, evaluated according to scientific standards
- Consider the impacts of human activities on Natura 2000 conservation objectives not only inside the Natura 2000 sites but also from outside

We propose that the analysis consists of following steps:

1. Identifying the key conservation objectives (protected species and natural habitat types) of each Natura 2000 site
2. Identifying the critical human activities that have important interactions with the key conservation objectives (step 1) and the interaction processes
3. Identifying appropriate spatial data of the key conservation objectives (step 1) and the critical human activities (step 2)
4. Identifying appropriate geospatial analysis methods for quantifying the interaction processes (step 2)
5. Performing, documenting and reporting the analysis and visualising the results on maps
6. "Weighting" the spatial results of human-nature-interactions based on different criteria, e.g. rareness of a species or natural habitat type
7. Combining the analyses of individual Natura 2000 sites into a cumulative impact surface
8. Transforming the analysis results into spatial recommendations: "implications of the interaction between human activities and conservation objectives in the Natura 2000 site"

When evaluating the influence of a human activity on Natura 2000, MSP should consider the entire site network. In other words, steps 1–6 should be repeated individually for all marine Natura 2000 sites and the results combined to produce a cumulative impact surface (step 7). This procedure ensures that both the individual characteristics of the Natura 2000 sites and the entire site network are taken into account.

Illustrative results of human-nature-interaction analyses are given in section 4.3 (for three example sites to illustrate the methodology more clearly). For each of the three exemplary Natura 2000 sites, one key natural habitat type and one critical human activity (shipping in all examples) were selected. In each case, the propagation of ship-induced disturbance was analysed using simple visibility analysis. The analysis identified the source areas of ship-induced waves and other disturbances for the Natura 2000 site. Moreover, the analyses weighted the impact of different parts of the source area based on the shipping density (based on AIS data from 2016 available via HELCOM data portal) and distance to the Natura 2000 site. The weighted impact was translated into spatial recommendations by subjectively classifying the marine area into three classes: 1. no conflicts regarding the examined Natura 2000 site (outside way source area), 2. increased shipping not recommended (distant parts of the wave source area and/or areas with low shipping density) and 3. shipping requires special attention (wave source areas close or inside the Natura 2000 site and with high shipping density) (Lusenius et al. 2019).

The Gulf of Finland sea area is characterized by sensitive environment, heavy maritime traffic and the multi-use of marine space. According to IMO, the Baltic Sea Area has some of the densest maritime traffic in the world.

This set of maps for shipping case is intended to present maritime transport case (Haanpää et al. 2019) core activities on the sea and related pressures. Accordingly, following example layout themes are selected to present current maritime transport status of the Plan4Blue project area in 2019:

- oil spills, shipping routes, economic zone and territorial water (Figure 2)
- oil spills, shipping routes and environmental damage unit (Figure 3)
- beach litter, shipping routes and nature protection areas (Figure 4)
- maritime traffic (commercial shipping and recreational boating) and environmental vulnerability profile (Figure 5)
- noise pollution and shipping routes (Figure 6)
- commercial shipping and fishing routes (Figure 7)
- commercial shipping and fishing routes overlap areas and accidents (Figure 8)

NATURA 2000 CASE

This chapter reviews the limitations set for human activities by the Natura 2000 designation in three Natura 2000 sites located in Estonia and Finland.

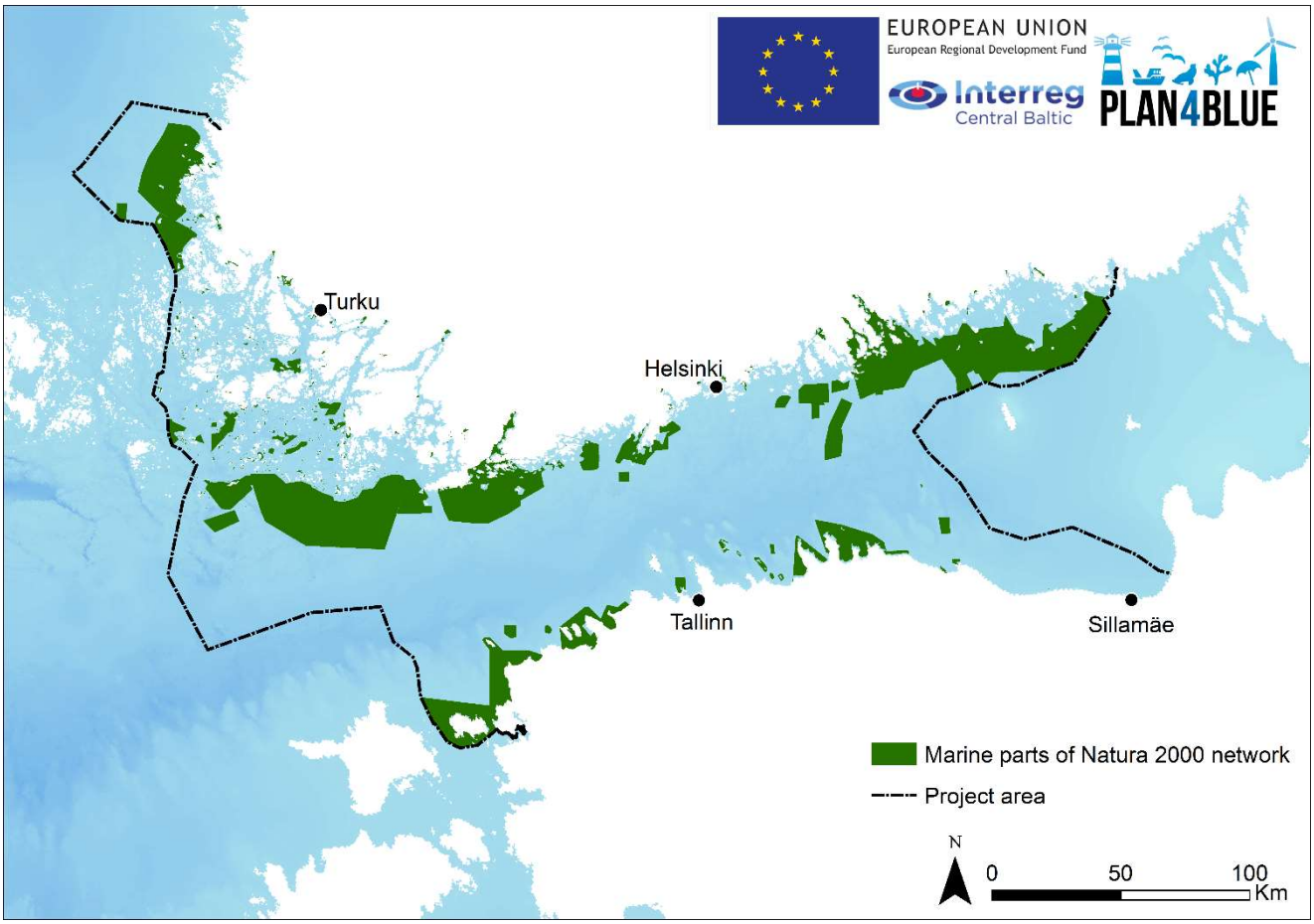

Figure 1. Marine parts of the Natura 2000 network within the Plan4Blue project area, in parts of the Gulf of Finland and the Archipelago Sea. Natura 2000 sites cover 20 % of the marine project area.

Pakri, Estonia

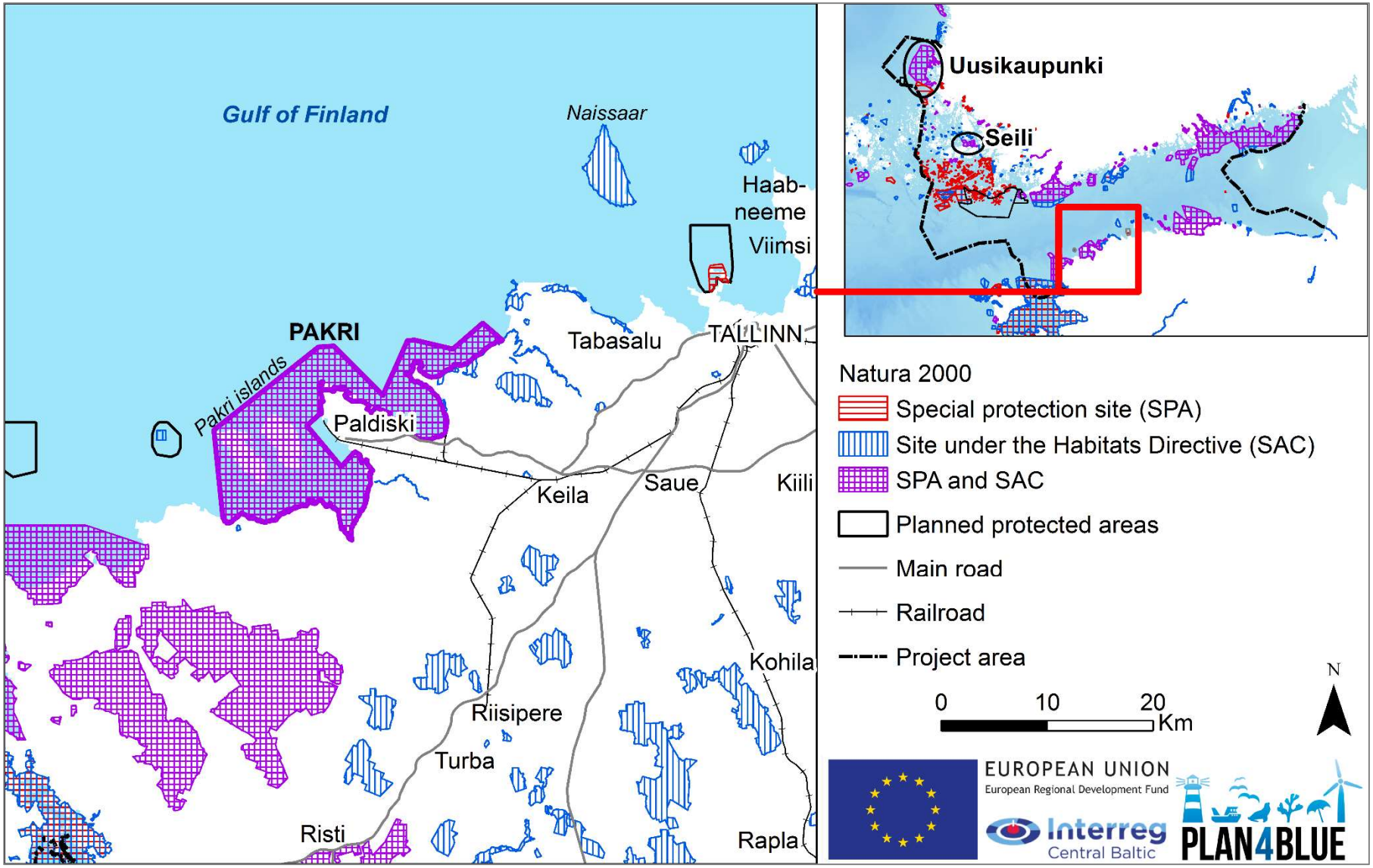

Figure 2. The "Pakri" Natura 2000 site at the coast of Paldiski, Estonia (Data: European Environment Agency 2017, Estonian Environment Agency 2018, Estonian Environment Agency 2018 and Estonian Land Board 2018)

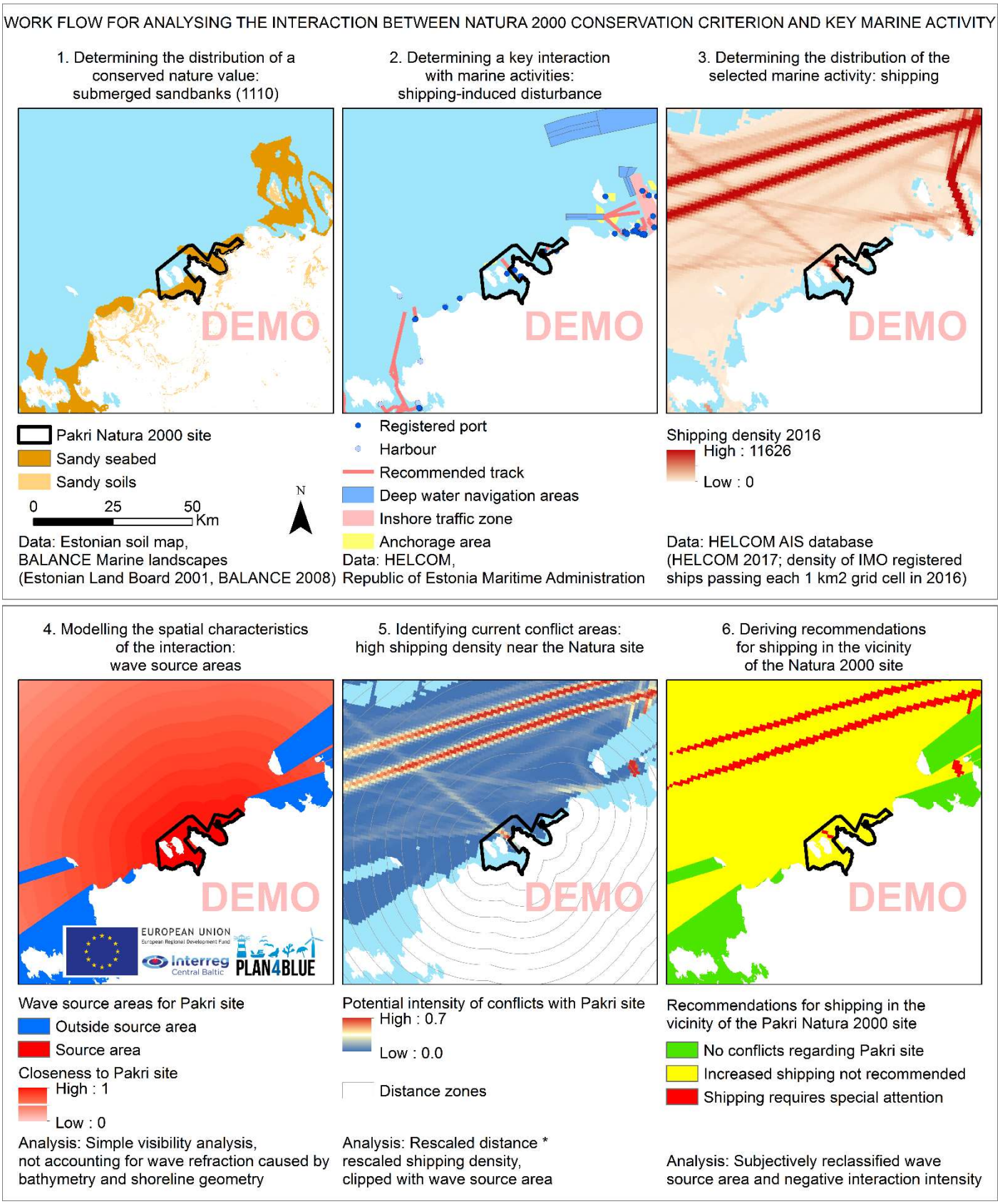

Figure 3. Exemplary work flow for analysing the interaction between a key conservation objective in the Pakri Natura 2000 site and a critical human activity. Data and analysis methods are indicated in the figure.

Archipelago of Uusikaupunki, Finland

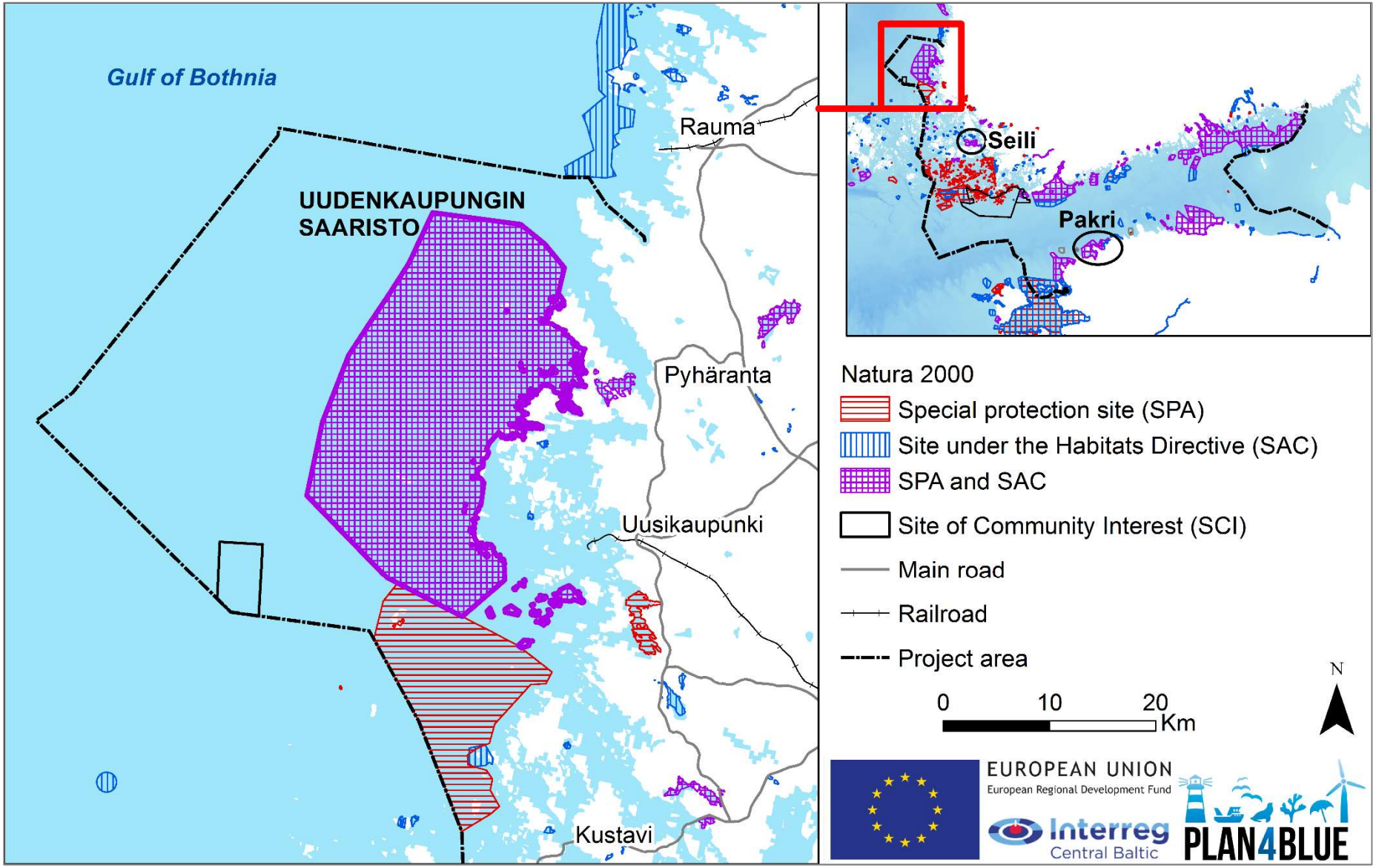

Figure 4. The Uudenkaupungin saaristo (Archipelago of Uusikaupunki) Natura 2000 site at the coast of Uusikaupunki and Pyhäranta, Finland (Data: European Environment Agency 2017, Estonian Environment Agency 2018, Finnish Environment Institute 2018 and National Land Survey of Finland 2018)

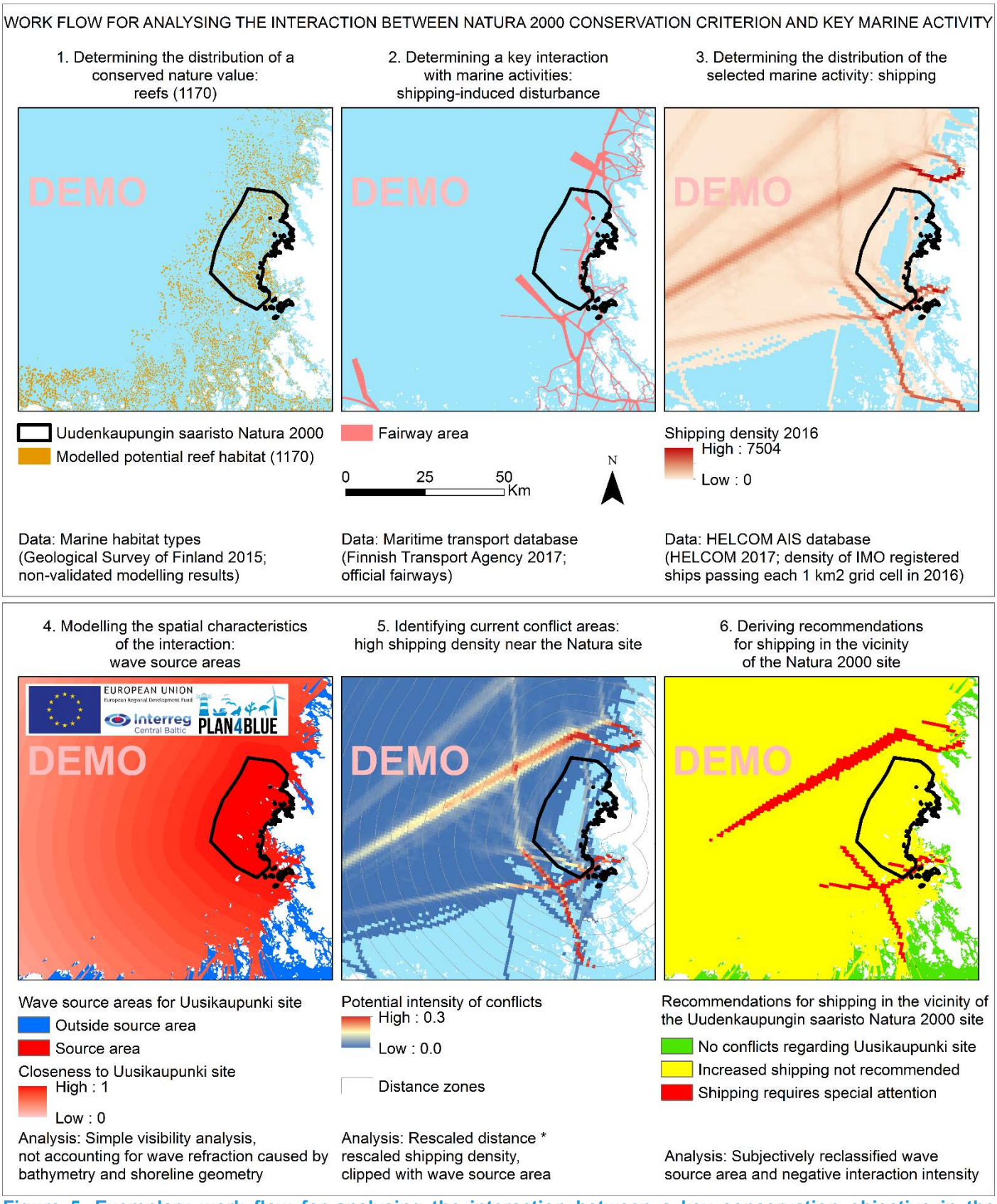

Figure 5. Exemplary work flow for analysing the interaction between a key conservation objective in the Uudenkaupungin saaristo Natura 2000 site and a critical human activity. Data and analysis methods are indicated in the figure.

Seilin saaristo (Archipelago of Seili), Finland

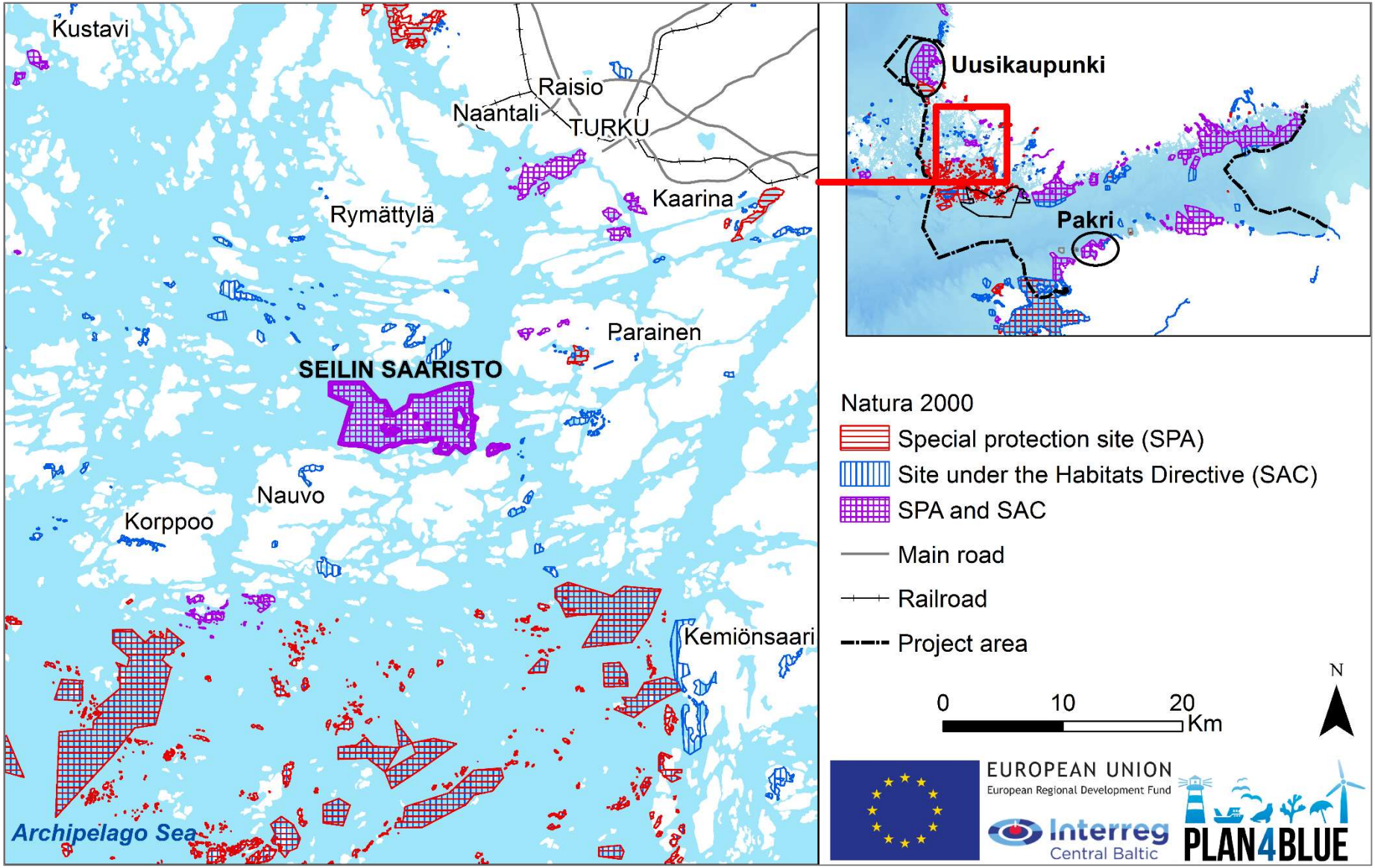

Figure 6. The Seilin saaristo (Archipelago of Seili) Natura 2000 site at the coast of Turku, Finland (Data: Euro-pean Environment Agency 2017, Estonian Environment Agency 2018, Finnish Environment Institute 2018 and National Land Survey of Finland 2018).

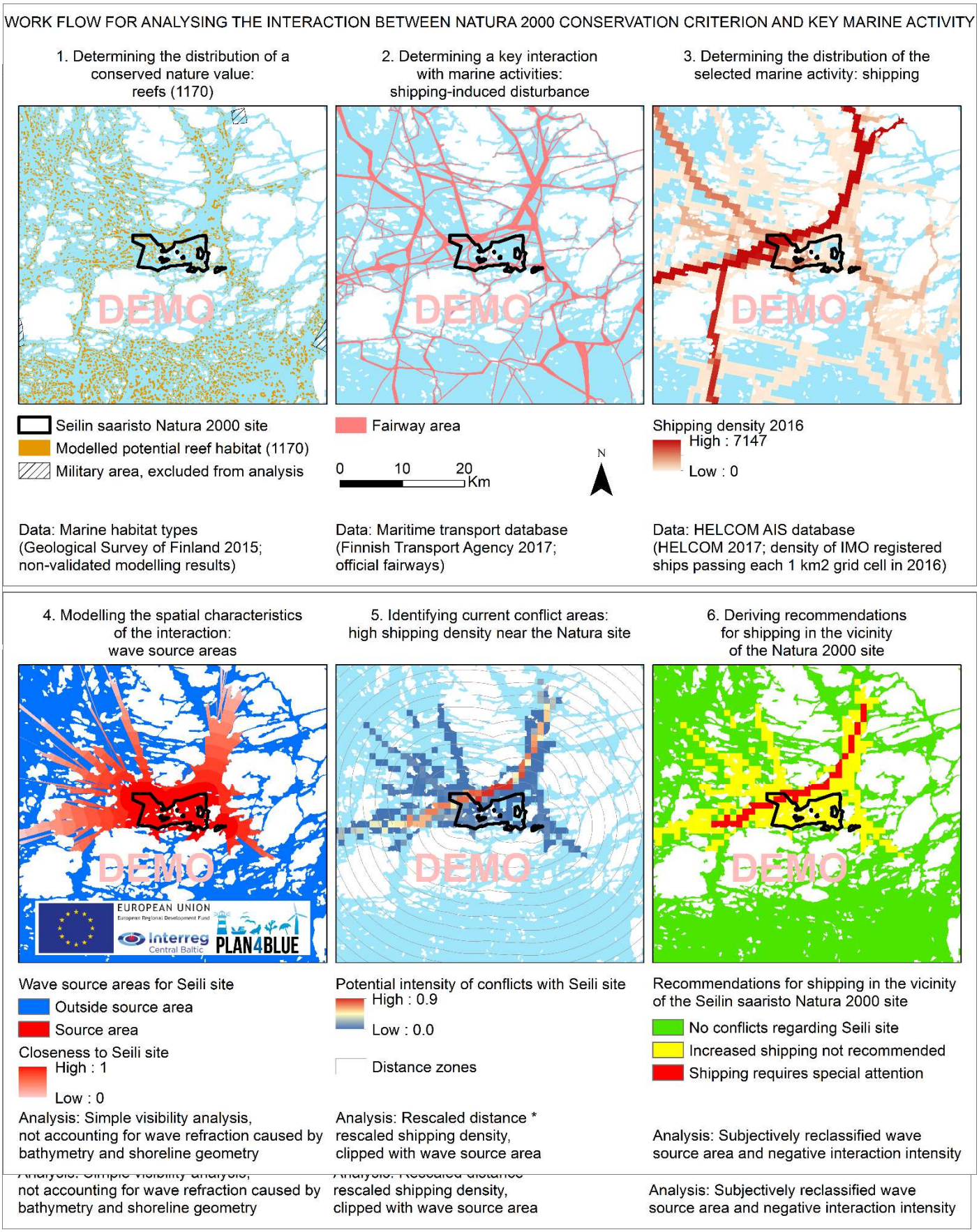

Figure 7. Exemplary work flow for analysing the interaction between a key conservation objective in the Seilin saaristo Natura 2000 site and a critical human activity. Data and analysis methods are indicated in the figure

SHIPPING CASE

Oil spills

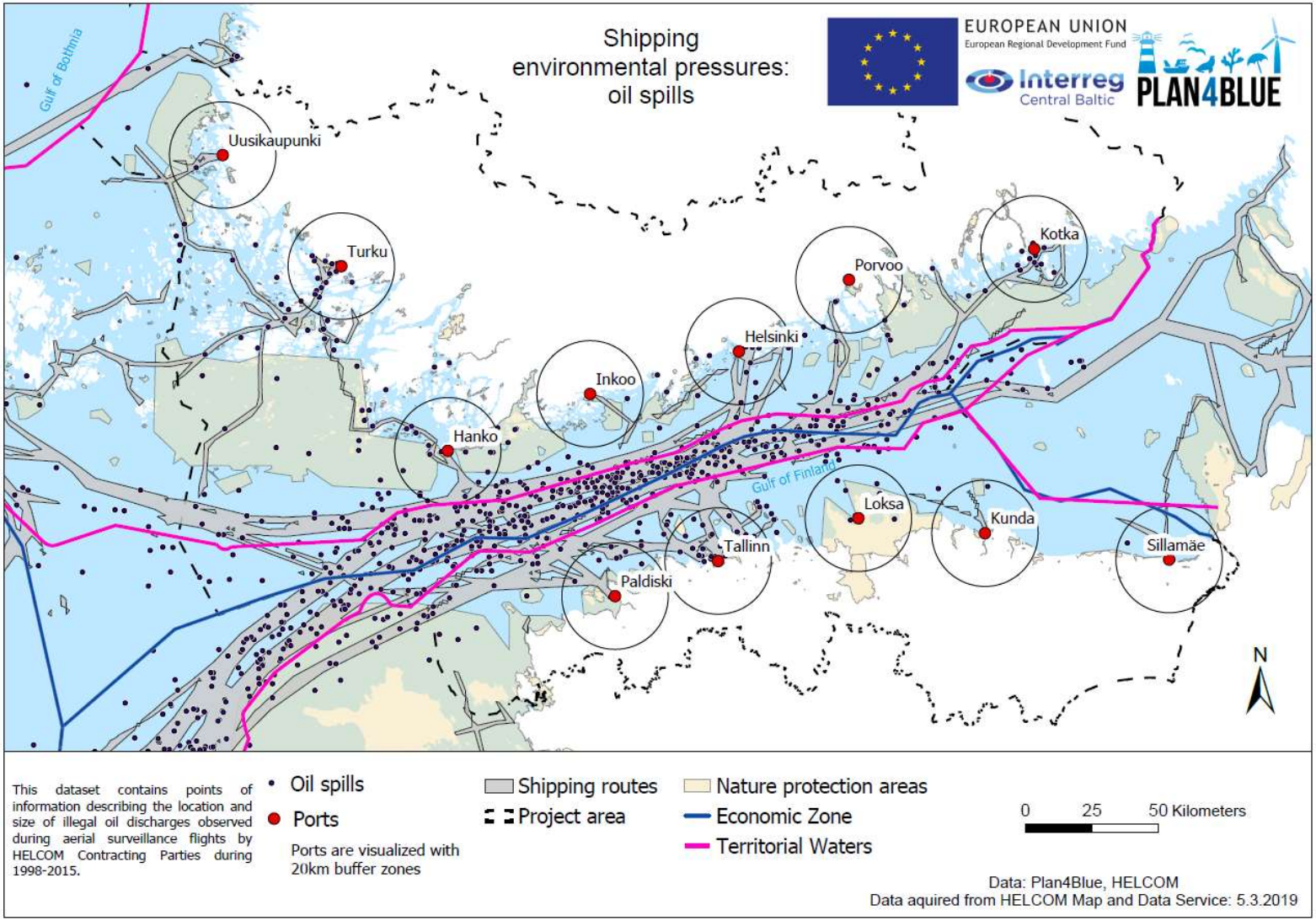

Figure 8. Map presentation of oil spills, main shipping routes, economic zone and territorial water.

Oil spills/ damage value

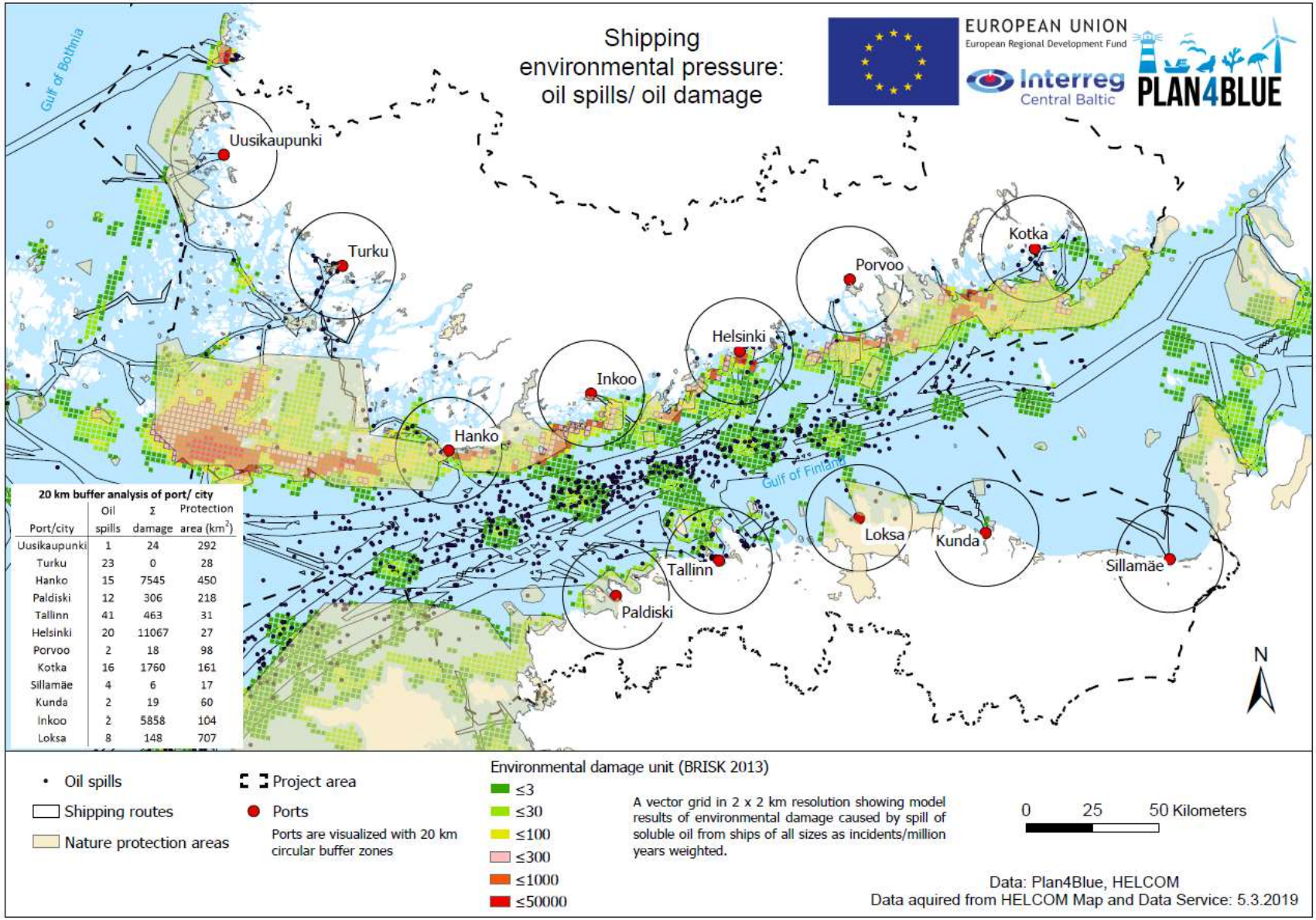

Figure 9. Map presentation of oil spills, damage value, protection areas.

Beach litter

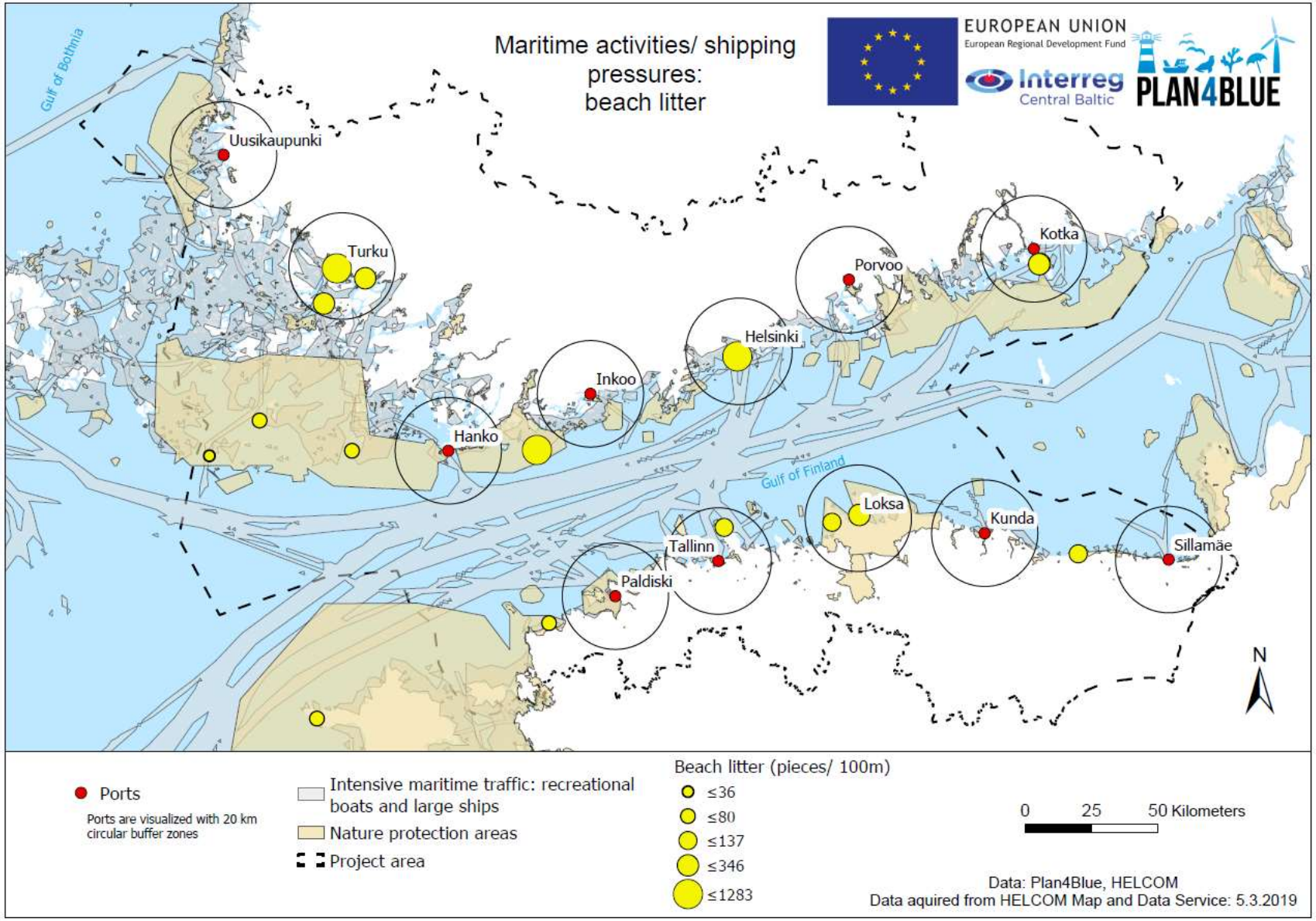

Figure 10. Map presentation of beach litter in the study area.

Marine traffic/ vulnerability

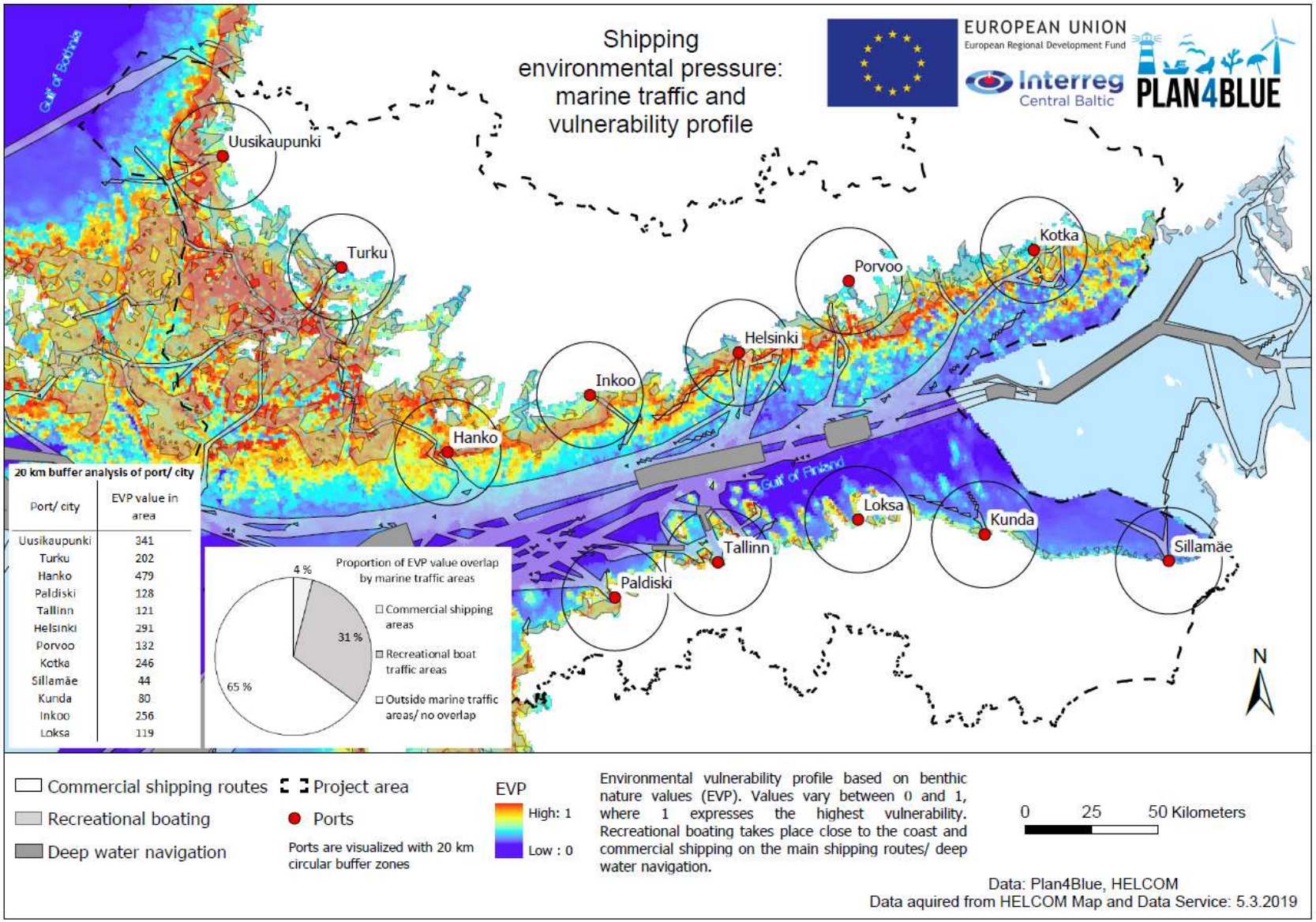

Figure 11. Map presentation of environmental vulnerability profile and marine transport pathways.

Noise pollution

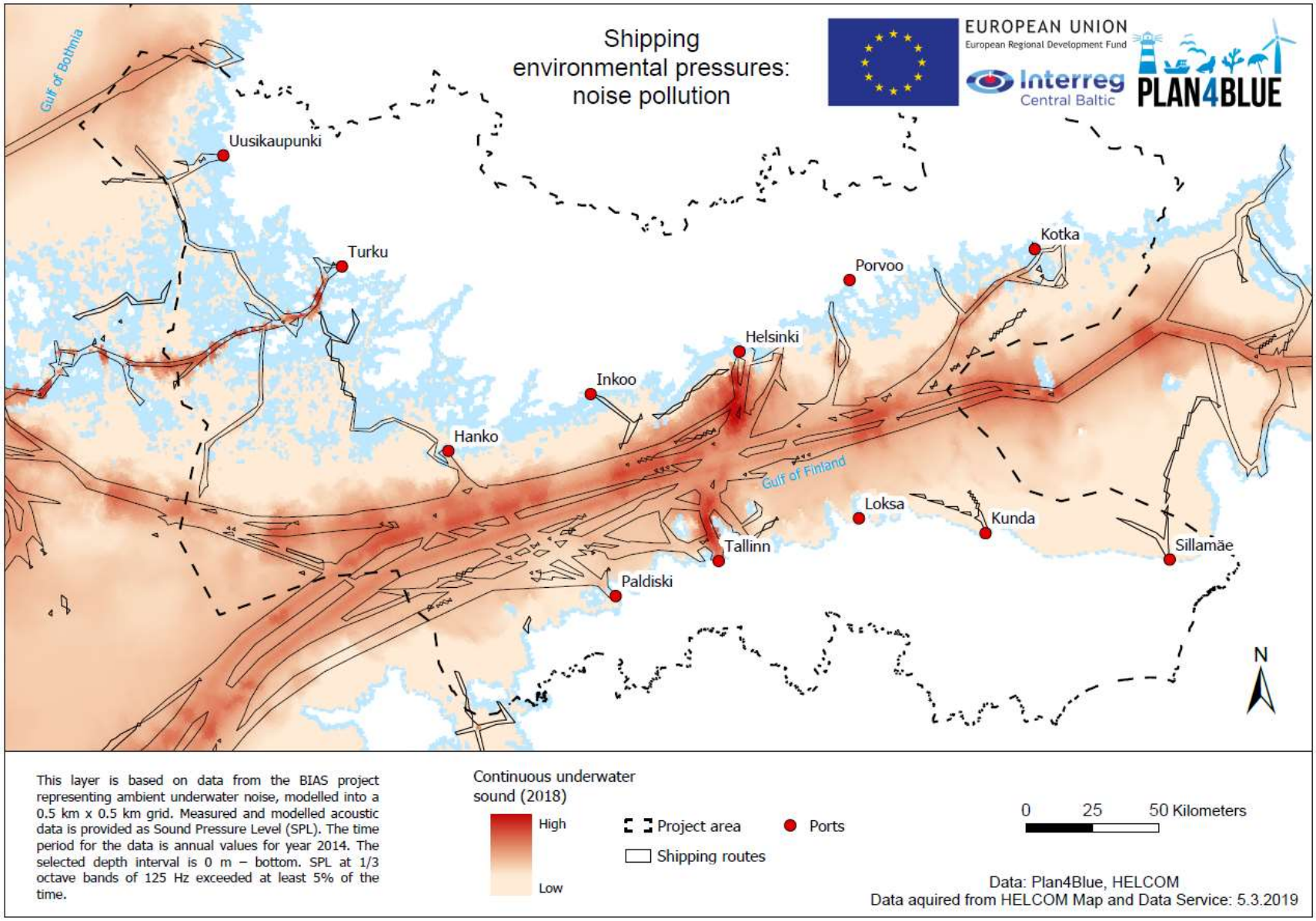

Figure 12. Noise pollution and shipping routes.

Ship routes overlaps

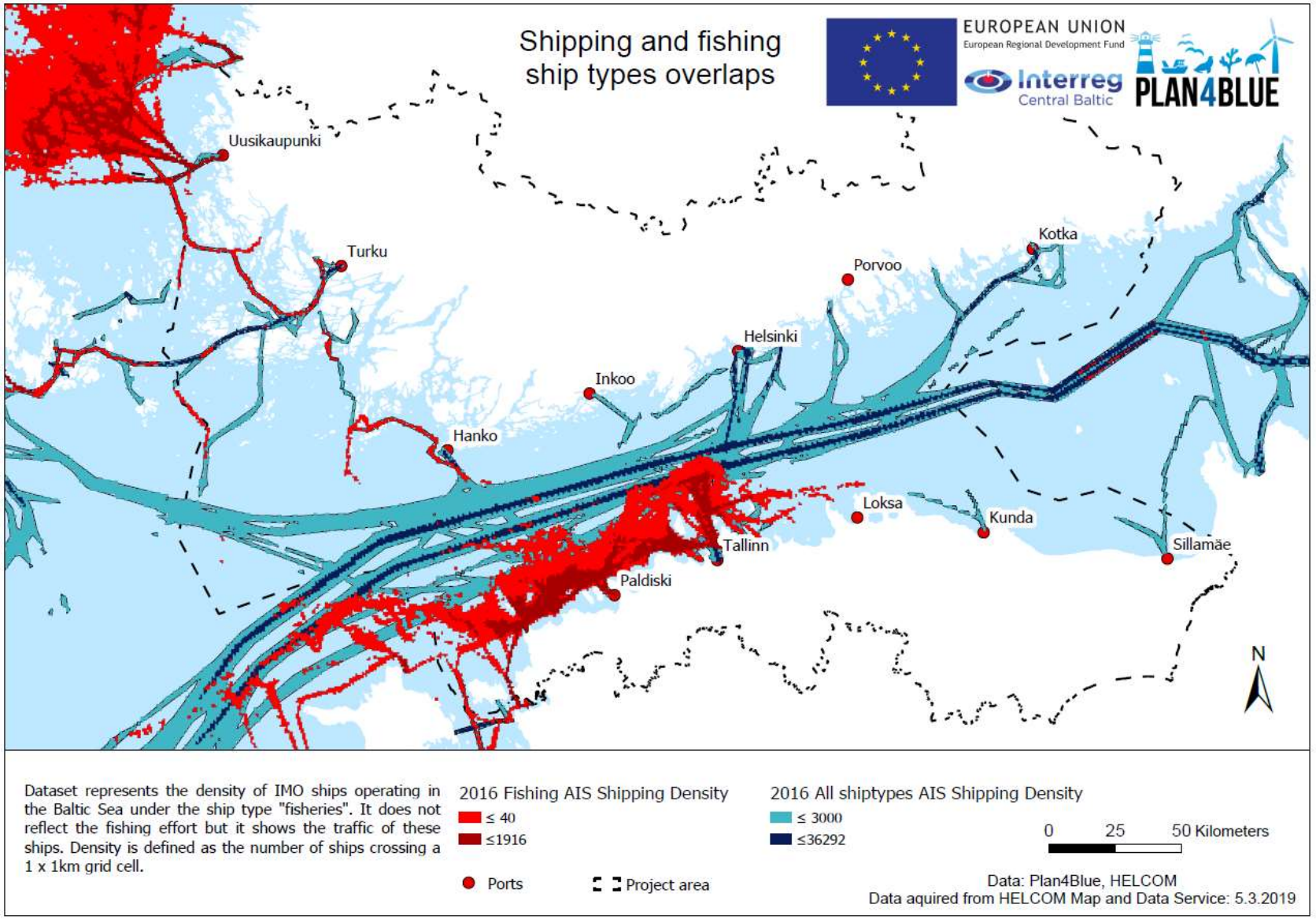

Figure 13. Commercial shipping and fishing routes.

Shipping accidents

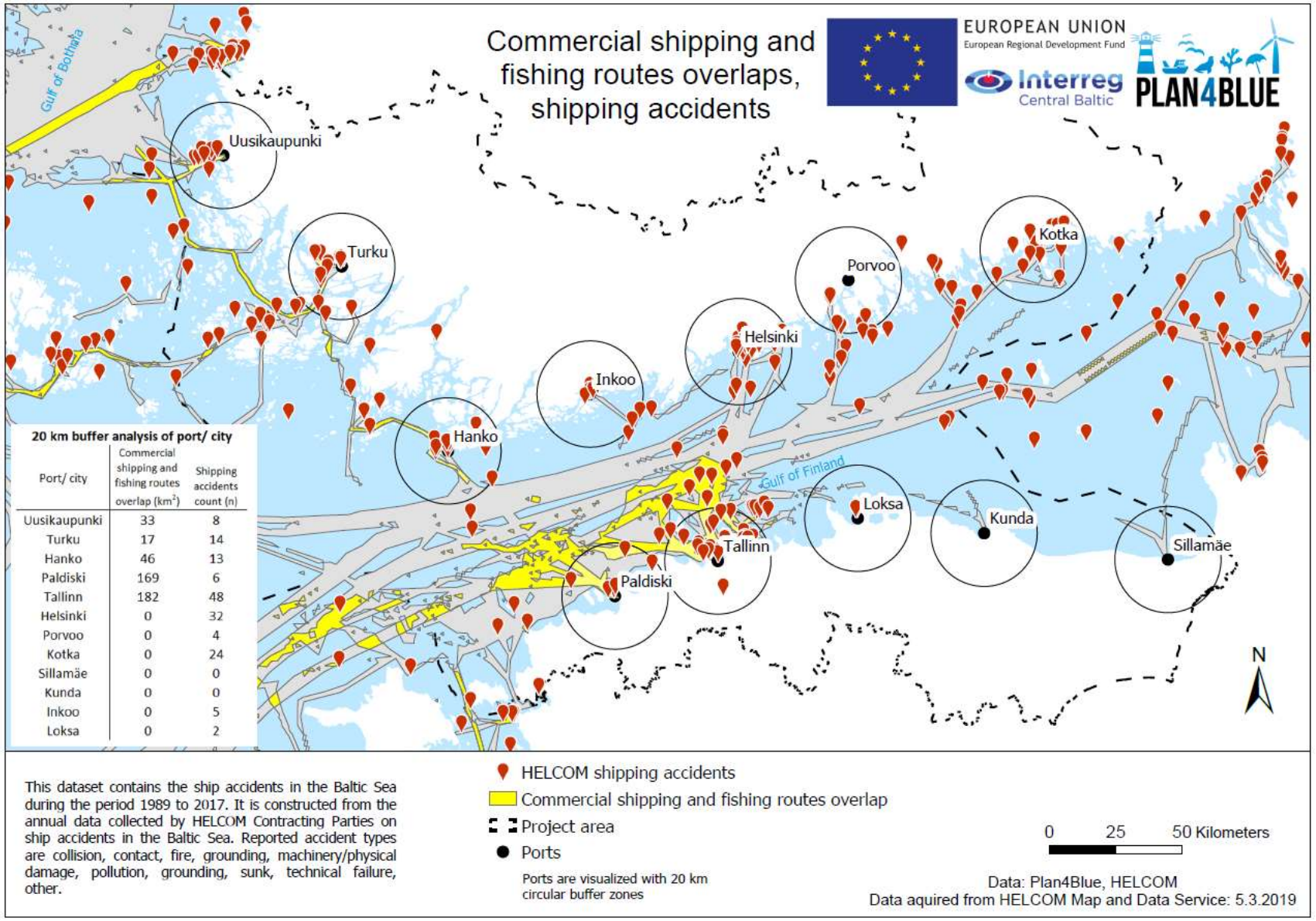

Figure 14. Commercial shipping and fishing routes overlap areas and accidents.

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Haanpää, S., Lees, L., Roose, M., Vuorsalo, A. (2019). *Maritime transport and Maritime Spatial Planning.* Plan4Blue report

The maps presented in this report have been produced for illustration purposes only. They are partly hypothetical and do not represent the real situation or established view of the researchers, planners or stakeholders involved in the Plan4Blue project.

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