

# Nostra Project – Baseline study

## Gulf of Finland



Source: Nostra website



Source: Helsinki-Uusimaa Region website

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The views expressed in this report are purely those of the authors and may not necessarily reflect the views or policies of the partners of the NOSTRA network. The methodological approach that was applied during the baseline study is presented in the final report of the study. The analysis that is provided in this report is based on the data collected and reported by the Nostra partners, a complementary literature review conducted by the consultants, and the results provided by the methodological toolkit developed in the framework of the baseline study.

**Acknowledgement:**

This report has received support from the County of Helsinki-Uusimaa, and the county of Tallinn-Harju, Estonia. The authors would like to thank them for providing information requested for completing this study.

**Limitations of the analysis:**

The consultants faced a limited amount of data. In general, on both sides of the strait, involved partners are facing difficulties in collecting social-economic and biodiversity related data. Moreover, the analytical results provided in this report represent mainly the perspective of the Finnish side of the strait, as the Estonian side does not have the research capacity to provide required data.

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# 1 General presentation of the strait



## 1.1 Geographical area

The Gulf of Finland is the Easternmost arm of the Baltic Sea that extends between Finland (to the North) and Estonia (to the South) to Saint Petersburg in Russia. Major cities around the Gulf include Helsinki and Tallinn. The Gulf of Finland is a crucial sea route and maritime area to the regions of Harju (Estonia) and Uusimaa (Finland) from an economic, environmental and social perspective<sup>1</sup>.



The Gulf of Finland is a very shallow bay of 29,500 km<sup>2</sup>, with a length of 428km and width up to 120km. The narrowest distance across the Gulf is 52km from Porkkala to Rohuneeme outside Tallinn. The deepest parts of the Gulf are at a depth of only 80-100m at its mouth. There are depths of over 100m on the Southern coast, while the Northern side never exceeds 60m. About 5% of the water mass in the Baltic Sea is located in the Gulf of Finland<sup>1</sup>.

The geographical data available for the strait Gulf of Finland is summarised in the table below:

Table 1: Key geographical data

Key geographical data	Unit	Finland, Uusimaa Region <sup>(1)</sup>	Estonia, Harju <sup>(2)</sup>
<b>Landscape area</b>	ha	966,000 (including islands, scale 1:1 000 000)	433,313
<b>Seascape area</b>	ha	640,000	n/a
<b>Length of coastline</b>	km	1,178 (scale 1:1 000 000, straight line 200 km)	155.5
<b>Maximal depth of the strait</b>	M	95 (within municipal boundaries)	
<b>Width of the strait</b>	Km	80 (Helsinki-Tallinn)	
<b>Urbanized areas</b>	km <sup>2</sup>	1,240	159.2 <sup>(3)</sup>

Source: (1) Questionnaire-Uusimaa county; (2) toolkit collected from Harju County Government; (3) Wikipedia

<sup>1</sup> NOSTRA website: <http://www.nostraproject.eu/>

### 1.1.1 Population

The Helsinki-Uusimaa Region (also called Helsinki Region or Uusimaa Region), is situated on the South coast of Finland. It has around 1.5 million inhabitants, which is 29 percent of the country's total population. The region is a growing centre for new European business and politics, because of its location on the Baltic Sea, its cultural climate and its green landscapes<sup>2</sup>.

Harju County, situated on Estonia's North West coast facing Finland, includes the coastal capital Tallinn. The regional population counts a little over 500 thousand, accounting for approximately 40% of the nation's total.

## 1.2 Level of urbanisation

### 1.2.1 Cities

Helsinki and Tallinn are the major cities in the strait Gulf of Finland.

- **Helsinki-Uusimaa, Finland**

The region contains 26 municipalities, including the Finnish capital city Helsinki. Helsinki-Uusimaa as a whole is characterised by a strong historical and social identity and is being developed as one integrated area. Rich and unpolluted nature lays a backdrop to modern infrastructure and high living standards, which offer excellent opportunities for business development in the region, as well as for recreation and leisure<sup>3</sup>.



Source: Helsinki-Uusimaa Region website

- **Tallinn-Harju, Estonia**

Tallinn occupies an area of 159.2 km<sup>2</sup> and has a population of 430,184 as of 2013<sup>4</sup>. It is situated on the Northern coast of the country, on the shore of the Gulf of Finland, 80 km (50 mi) South of Helsinki, East of Stockholm and West of Saint Petersburg. For local government purposes, Tallinn is subdivided into 8 administrative districts, including Haabersti, Kesklinn, Kristiine, Lasnamäe, Mustamäe, Nõmme, Piritä and Põhja-Tallinn. The district governments are city institutions that fulfill, in the territory of their district, the functions assigned to them by Tallinn legislation and statutes.

Both regions are clearly smaller than the largest metropolises in Europe. Still, both regions are leading urban agglomerations in their countries: Tallin-Harju's share in Estonia is 60% of GDP and 40% of population; the respective figures for Helsinki-Uusimaa are 38% of GDP and 28% of population (Laakso et al, 2013). Other characteristics that prove Tallin-Harju and Helsinki-Uusimaa are urban agglomerations in relative comparison to the rest of their countries: specialization in services and high

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<sup>2</sup> Uusimaa Regional Council's Information Services website: [http://tietopalvelu.uudenmaanliitto.fi/yla/fi\\_FI/facts\\_in\\_english/](http://tietopalvelu.uudenmaanliitto.fi/yla/fi_FI/facts_in_english/)

<sup>3</sup> idem

<sup>4</sup> <http://en.wikipedia.org/wiki/Tallinn>

productivity industries, higher levels of education for the adult population than the national average, and higher income levels. Consequently, the regions can be deemed national growth poles.

The socio-economic information for the strait Gulf of Finland is summarised in the table below:

Table 2 : Key socio-economic data

Key population data	Unit	Finland, Uusimaa Region <sup>5</sup>	Estonia, Harju <sup>6</sup>
<b>Number of inhabitants in the landscape area</b>	(x 1000)	1,536 (31.12.2012)	430,184 (2013) <sup>7</sup>
<b>GDP per capita in the region</b>	€/capita/year	45,476 € (2010)	N/A
<b>Employed</b>	%	32 % of Finland (total 744,820 in 2010)	72.9%
<b>Unemployment rate in the region</b>	%	7	8%
<b>Unemployment rate in the country</b>	%	9.4	8.6%

### 1.3 Infrastructure

Different types of existing or planned infrastructure for the Gulf of Finland are ports, shipping channels, gas pipelines and wind power sites<sup>8</sup>.

#### 1.3.1 Ports

The Port of Helsinki and the Port of Tallinn (including ports of Muuga and Paldiski) are some of the busiest ports on the Baltic Sea. The eastern parts of the Gulf of Finland belong to Russia, and some of Russia's most important harbours are located near St. Petersburg<sup>9</sup>.

**In Finland**, 17 ports had sea traffic in 2007 and, in addition, the traffic of Saimaa Canal goes along the Gulf of Finland. 86% of the cargo tonnes in Finnish ports were attributable to the five biggest ports in the Gulf of Finland: Hanko, Helsinki, Sköldvik, Kotka and Hamina (Kuronen et al., 2008).

The largest ports in **Estonia** can be found on the shores of the Gulf of Finland. Tallinn port dominates the cargo volumes, with a share of 83%. Other Estonian ports in the Gulf of Finland include: Sillamäe, Kunda, Miiduranna, Vene Balti, Bekker and Paldiski Northern (Kuronen et al., 2008).

#### 1.3.2 Gas pipeline

The offshore pipelines transporting gas from Russia to Germany are one of the main existing infrastructures in the strait. These pipelines are the most direct connection between the wide gas reserves in Russia and energy markets in the European Union. Nord Stream is an international

<sup>5</sup> Data from Questionnaire-Uusimaa region and Uusimaa Regional Council's Information

<sup>6</sup> Data provided by Harju County Government

<sup>7</sup> <http://en.wikipedia.org/wiki/Tallinn> é.Services website

<sup>8</sup> Questionnaire-Uusimaa region

<sup>9</sup> NOSTRA website: <http://www.nostraproject.eu/>

consortium of five major companies established in 2005 for the planning, construction and subsequent operation of the **two 1,224 km natural gas pipelines through the Baltic Sea**. Line 1 was finished in June 2011 and transportation of gas began in November 2011. Line 2 was completed in April 2012 and the transportation of gas began in October 2012<sup>10</sup>.

### 1.3.3 Transportation

The Helsinki-Tallinn Transport and Planning Scenarios (HTTransPlan Project, 2012) is an important project for infrastructure under development in the strait, which is looking for solutions to connect Finland with Central Europe, mainly through the Rail Baltic railway.

## 1.4 Main economic activities

The Gulf of Finland is said to be one of the densest operated sea areas in the world. More than seven million trips per year (mainly two-way trips) are made between Tallinn and Helsinki (HTTransPlan Project, 2012). The growing transport volumes are connected with increasing interaction between the regions in terms of tourism, business activities, migration, cross-border work, studying and all kinds of social interaction.

Several factors eased the interaction and moved the regions closer to each other, among others: faster and more frequent transport connections, relaxed border control due to common EU-membership (Finland 1995, Estonia 2004), and since 2011, use of the Euro as common currency.

**Cross-regional economic interaction between the Tallinn-Harju and Helsinki-Uusimaa regions is increasing.** Mainly falling in the following sectors: trade of goods and services, cross-border activities of enterprises, transport, tourism and cross-region work (Laakso et al, 2013).

Cross-border work increased considerably over the last 10 years, especially via participation of Estonian workers in Helsinki-Uusimaa labour markets. Laakso *et al.* (2013) estimated that the part of earnings from Helsinki-Uusimaa shifted to Estonia caused a net increase of 200 – 300 million euros of the value added in Estonia via direct and indirect effects.

Cross-border trade and production have also increased rapidly during the last 10 years, mainly influenced by Finnish manufacturing enterprises that have relocated plants to Estonia. In 2010, about 440 Finnish subsidiaries were operating in Estonia, and were providing a turnover of 3,900 million euros. The number of personnel employed by Finnish firms represents about 5 % of total employment in Estonia<sup>11</sup>.

Concerning tourism, the estimated effect of the Finnish tourists' expenditure on the value added of Tallinn-Harju is 240 million euros. Between 2.5 and 4% of the total employment in the region Tallinn-Harju is in the tourism sector providing services to Finnish tourists. On the other hand, there is an increasing number of Estonian tourists visiting Helsinki-Uusimaa region as well, even if the number and total expenditure are not as high as for Finnish tourists. In 2011, the total expenditure of Estonian tourists spent in Uusimaa was estimated to have grown to 54 million euros<sup>12</sup>, although it is not well known that visits of Estonian tourist to Helsinki-Uusimaa increased during the last 10 years.

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<sup>10</sup> NordStream website: <http://www.nord-stream.com/>

<sup>11</sup> (Laakso et al, 2013)

<sup>12</sup> Laakso et al. (2013)



The main estimated indicators for tourism in 2011 are summarised in the table below:

Table 3: Estimated indicators of tourism in 2011

Estimated indicators of tourism from Estonia to Helsinki-Uusimaa and from Finland to Tallinn-Harju in 2011 Indicator	Tourists from Estonia to Helsinki-Uusimaa	Tourists from Finland to Tallinn-Harju
<b>Number of tourist visits, 1000</b>	345.9	1,639.4
<b>Total expenditure, M€</b>	66.4	289.1
<b>Share of all foreign tourists, %</b>	11.7	57.6
<b>Share of total expenditure of all foreign tourists, %</b>	7.3	59.8

Source: data from Laakso et al. (2013)

The growth is in part, to the increased migration from Estonia to Finland, which has led to increasing demand for Estonians to visit their relatives and friends in Finland.

Maritime traffic in the Gulf of Finland has grown remarkably during the 2000's, which is mainly due to strong economic growth and the increasing oil production and transportation activities of Russia. It is widely believed that the growth of maritime traffic will

continue in the Gulf of Finland also in the future<sup>13</sup>.

In Finland, the total traffic in the ports of the Gulf of Finland was 61.2 million tonnes with about 22,000 ship calls in 2007.

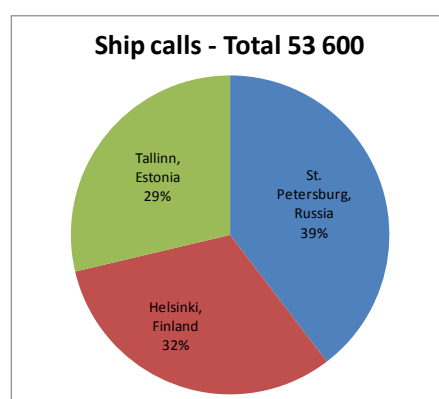


Figure 1: Share of ship calls in 2007

Source: data from Kuronen et al. (2008)

Source: data from Questionnaire-Uusimaa

The maritime traffic of Estonia is characterised by a large amount of Russian transit traffic: in 2007, 73% of all goods transported through the Estonian ports were transit goods and of them, 76 % were petroleum products. The share of petroleum products in all cargoes in the Estonian ports in the Gulf of Finland was 58 % in 2007. In Estonia's own traffic, the most important cargoes in export included raw wood and goods in trailers, while, in import, crude, manufactured minerals and goods on trailers were the mainstay.<sup>14</sup>

Russia has five seaports on the shores of the Gulf of Finland: Vyborg, Vysotsk, Primorsk, St. Petersburg and Ust-Luga. These ports handled a total of 158.4 million tonnes of cargo in 2007 of which about 101 million tonnes consisted of petroleum products. The share of the Gulf of Finland added up to approximately 35 % of all cargo handled in Russian ports in 2007.<sup>14</sup>

The maritime transportation in the Gulf of Finland is characterised by a domination of petroleum products. The key factors in the future development are how the global economy will develop considering the current instability and how Russia will develop.<sup>14</sup>

<sup>13</sup> Kuronen et al. (2008)

<sup>14</sup> Kuronen et al. (2008)

## 2 Significance and sensitivity of biodiversity and natural environment in the strait

### 2.1 Remarkable landscapes

The Baltic Sea is one of the largest bodies of brackish water in the world, which is reflected in the relatively narrow but unique biota that includes both sea and fresh water species. The northern shores of the Gulf of Finland are rich in small islands. Estonia's shores do not have any archipelago.<sup>14</sup>

The shoreline on the northern side of the Gulf of Finland is very fragmented, thus three characteristic zones have been identified on the coast. These correspond to large scale seascapes: coastal/terrestrial, inshore and offshore. These areas have already been given different guidelines in the regional land use plan. This fragmented landscape of water and islands is also very typical of Finland in the lake areas, but the seaside has its own particular and much appreciated value.

In addition, there are designated areas for nature protection and for cultural values. Because of the fragmented geology of the coastline and the seabed, biodiversity on the coast is relatively high and several subtypes of coastal waters can be identified according to different sub-ecosystems. In the Helsinki-Uusimaa region there are several river estuaries, which could form a subtype as well. The Gulf and the coast is an important passing route for many migrating birds<sup>15</sup>.

- **Helsinki-Uusimaa , Finland**

#### **Ekenäs Archipelago National Park**

Uusimaa has one coastal/archipelago national park, the Ekenäs Archipelago National Park, which is a beautiful part of Nyland archipelago. The National Park includes three out of the four archipelago zones: inner and outer archipelago, and the open sea. Almost 90% of the park consists of water areas, and it has no other land areas but islands<sup>16</sup>.



Source: Outdoor FI website

The Ekenäs Archipelago National Park protects a unique sample of the islands and coastal waters of the Baltic Sea. It is especially important because it covers an entire cross-section of the archipelago from the inner zone to the edge of the open sea. The region belongs to the Project Aqua and has been intensively studied

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<sup>15</sup> Questionnaire-Uusimaa region

<sup>16</sup> Outdoor FI website: <http://www.outdoors.fi/destinations/nationalparks/Pages/Default.aspx>

and monitored since the beginning of this century. The park is also included in the Baltic Coastal Area Reserves Program under the provisions of the Helsinki Convention<sup>17</sup>.

### **Gulf of Finland National Park**

Gulf of Finland National Park is known for its **diversity of bird species**. The best way to explore the park is by boat. To Ulko-Tammio Island there is also a regular passenger boat service during the summer.



Source: Outdoor FI website

The National Park includes the outer archipelago of the easternmost coastal municipalities. The hundred islands and islets of the park are scattered onto a large open sea area, which is 60 km wide, and far from the mainland or the inhabited islands. Gulf of Finland National Park is included in the network of the most important protected areas in the Convention on the Protection of the Marine Environment of the Baltic Sea Area. On the Russian side of the border, Gulf of Finland National Park is being planned, which will add to this complex<sup>18</sup>.

- **Tallinn-Harju, Estonia**

### **Pakri Landscape Reserve**

The Landscape Reserve was established in 1998 in order to protect wildlife and rare geological objects of scientific value. The Reserve with its 1,451 ha is located on the territory of the City of Paldiski as three separate parcels on Pakri Peninsula and on the islands of Suur-Pakri and Väike-Pakri. The limestone banks of Pakri Peninsula and the islands of Pakri are of international protection value as due to the outcrop of its early Paleozoic layers the klint is a unique one in Europe.



Source:  
<http://www.visitestonia.com/en/pakri-landscape-reserve>

### **Lahemaa National Park**

Lahemaa National Park is a park located on Northern Estonia, 70 kilometers east from capital Tallinn. The Gulf of Finland is to the North of the Park and the Tallinn-Narva highway (E20) is to the South. Its area covers 725 km<sup>2</sup> (including 250.9 km<sup>2</sup> of sea). It was the first area to be designated a national park of the former Soviet Union. Given its size it is the largest park in Estonia and one of Europe's biggest national parks. Its charter calls for the preservation, research and promotion of North-Estonian landscapes, ecosystems, biodiversity and national heritage.



Source: Wikipedia

<sup>17</sup> Council of Europe website: [http://www.coe.int/t/dg4/cultureheritage/nature/Diploma/Areas/Finland\\_en.asp](http://www.coe.int/t/dg4/cultureheritage/nature/Diploma/Areas/Finland_en.asp)

<sup>18</sup> Outdoor FI website: <http://www.outdoors.fi/destinations/nationalparks/Pages/Default.aspx>

## 2.2 Biodiversity and natural environment in the strait

The Gulf of Finland is a part of the **world's largest area of brackish water**, the Baltic Sea. This influences its biota and creates **unique ecosystems, because it includes both saltwater and freshwater species**. Subsequently the ecosystem of the Gulf of Finland is vulnerable to biodiversity loss, as there may not be substituting species for ones that diminish or disappear<sup>19</sup>.

Due to variations in salinity and in summer also in temperature, the Baltic waters are highly stratified. The ecosystems found in different water layers at different depths may vary greatly. Baltic's northerly location and the consequent pronounced seasonal changes give Baltic marine ecosystems distinct rhythmic cycles<sup>20</sup>.

The Gulf of Finland is mostly surrounded by **Sarmatic mixed forests**, which are distributed over a large area of northern Europe and the Ural area of Russia. This ecoregion is situated in between boreal forests/taiga in the north and the broadleaf belt in the south<sup>21</sup>.

Table 4: Main land covers of the strait

Land cover (CORINE Land cover Nomenclature)		Finland, Uusimaa Region <sup>22</sup>	Estonia, Harju <sup>23</sup>
<b>Artificial surfaces</b>	Urban fabric	√	√
	Industrial, commercial and transport units	√	√
	Mine, dump and construction sites	√	√
	Artificial non-agricultural vegetated areas	√	√
<b>Agricultural areas</b>	Arable land	√	√
	Permanent crops	√	√
	Pastures	√	√
	Heterogeneous agricultural areas	√	√
<b>Forest and semi-natural areas</b>	Forests	√	√
	Shrub and/ or herbaceous vegetation association	√	√
	Open spaces with little or no vegetation	√	√
<b>Wetlands</b>	Inland wetlands	√	√
	Coastal wetlands	√	√

<sup>19</sup> NOSTRA website: <http://www.nostraproject.eu/>

<sup>20</sup> The Baltic Sea Portal website: [http://www.itameriportaali.fi/en\\_GB/](http://www.itameriportaali.fi/en_GB/)

<sup>21</sup> Hogan, 2013

<sup>22</sup> Data from Questionnaire-Uusimaa region

<sup>23</sup> Data from the toolkit-Harju county

## 2.2.1 Remarkable ecosystem or habitat types

Freshwater species live in Baltic Sea's brackish waters alongside truly marine species, associated with saltwater conditions. All of the species have adapted to cope with cold winter temperatures. Even though few species may be present, this species can be abundant in population<sup>24</sup>. There are about 50 fish species within the Gulf of Finland. **Two endemic fish species common to the Baltic Sea and Gulf of Finland are the Baltic cod and the Baltic herring.** The most abundant fish species are herring (*Clupea harengus*), and sprat (*Sprattus sprattus*). Marine species are less evident in many coastal areas as well as in the eastern Gulf, which have strong freshwater influx<sup>25</sup>.

The **sarmatic mixed forests are comprised of a mixed conifer broadleaf plant association**, dominated by Norway Spruce (*Picea abies*) and Scots Pine (*Pinus sylvestris*). In the northern areas some other broadleaf admixtures can be found, especially oak species such as *Quercus robur*. On the low lying Estonian coastal zone, there are innumerable **bogs and fens**, which are rich in feather moss understory, sundews and other bog species<sup>25</sup>.

## 2.2.2 Protected areas

There are many national nature conservation areas in the Gulf of Finland most of which are part of the European Natura 2000 network. All the conservation areas in the Gulf are part of the Baltic Sea Protected Areas network<sup>26</sup>.

- **Helsinki-Uusimaa, Finland**

Uusimaa region hosts **98 Natura 2000 areas with a surface area of 169,306 hectares of which over a half are marine based**<sup>27</sup>. An abundance of Finnish cultural heritage is part of Uusimaa, including eight nationally valuable landscape conservation areas. **The fortified islands of Suomenlinna, in Helsinki, have been designated as a World Heritage Site.** Uusimaa's national heritage landscapes also include maritime Helsinki, Tapiola, Snappertuna – Fagervik, and the old ironworks of Pohja. These areas also strongly symbolise the local history of the Uusimaa region<sup>28</sup>.

- **Tallinn-Harju, Estonia**

In Estonia, over 18% of Estonia's land and 30% of the Sea territory is designated a protected areas which includes five national parks, nature reserves, landscape reserves and smaller areas. The Tallinn-Harju region contains **48 protected areas**, in addition to the Natura 2000 network<sup>29</sup>. Figure 2 below shows the locations of all protected areas, including also Natura 2000 sites and natural parks.

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<sup>24</sup> The Baltic Sea Portal website: [http://www.itameriportaali.fi/en\\_GB/](http://www.itameriportaali.fi/en_GB/)

<sup>25</sup> Hogan (2013)

<sup>26</sup> NOSTRA website: <http://www.nostraproject.eu/>

<sup>27</sup> Questionnaire-Uusimaa region

<sup>28</sup> Uusimaa Regional Land Use Plan, 2006

<sup>29</sup> [http://entsyklopeedia.ee/artikkel/harjumaa\\_kaitsealad1](http://entsyklopeedia.ee/artikkel/harjumaa_kaitsealad1)



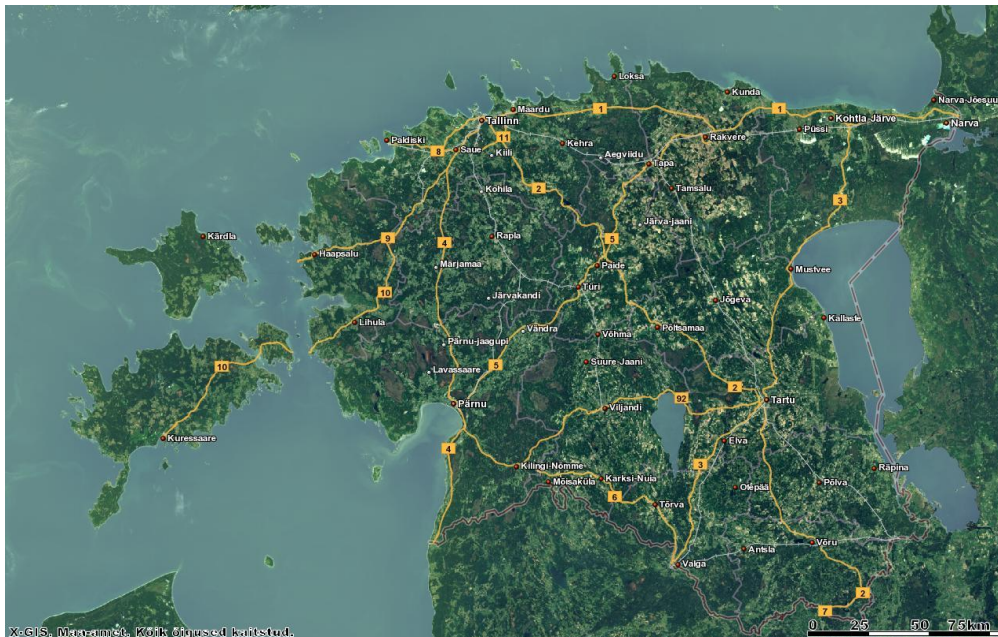


Figure 2. A map of all protected areas in Tallinn-Harju region

Source: <http://xgis.maaamet.ee>

### 2.2.3 Migratory routes

**Gulf of Finland lies along the main migration route of arctic birds.** The Baltic is an important migratory route especially for waterfowl, geese and waders nesting in the arctic tundra. These birds which rest in the coastal areas of the southern Baltic proper, North Sea and western Europe move every spring northwards en masse along Baltic coasts to their nesting grounds. This spring migration, or **arktika**, takes place during a few weeks in May-June. **Hundreds of thousands migrating birds can be spotted during one day, in a relatively narrow channel in the Gulf of Finland area where the migration of several species is concentrated.** The *Baltic Sea Portal* website states that this route is followed by: 1.5 million waterfowl (long-tailed ducks, white-winged scoters and black scoters), over 300,000 brant geese (*Branta bernicla*) and barnacle geese (*Branta leucopsis*) as well as half a million wading birds such as bar-tailed godwit (*Limosa lapponica*), dunlin, red knot (*Calidris canutus*) and black-bellied plover (*Pluvialis squatarola*).

### 2.2.4 Rare and threatened species

In the Baltic Sea there are no unique species. **Baltic Sea is a young sea in geological terms, thus there was not enough time for species differentiation.** The brackish water also sets limits on species adaptation: it is too salty for freshwater species, and not salty enough for saltwater species. There are only few species specifically adapted to brackish water<sup>30</sup>.

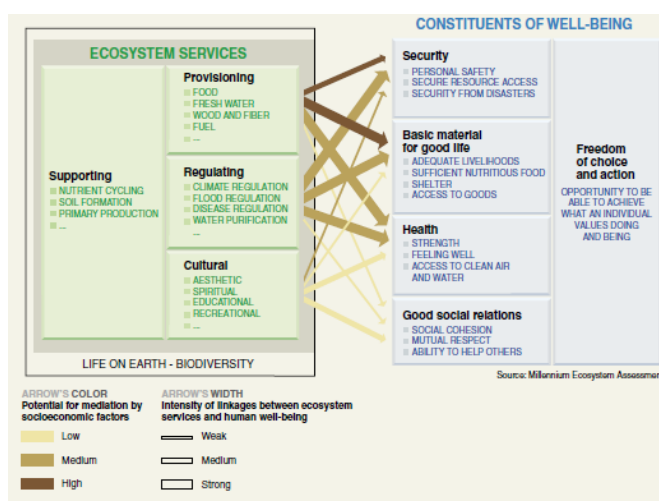
Unfortunately, due to overfishing Cod fishery is exhausted throughout the entire Baltic Sea (Hogan, 2013).

<sup>30</sup> The Baltic Sea Portal website: [http://www.itameriportaali.fi/en\\_GB/](http://www.itameriportaali.fi/en_GB/)

## 2.3 Significance of ecosystem services to the local livelihood

An ecosystem is a dynamic complex of plant, animal, and microorganism communities and the nonliving environment interacting as a functional unit. Ecosystem services are the benefits people obtain from ecosystems. These include *provisioning services* such as food, water, timber, and fiber; *regulating services* that affect climate, floods, disease, wastes, and water quality; cultural services that provide recreational, aesthetic, and spiritual

benefits; and *supporting services* such as soil formation, photosynthesis, and nutrient cycling<sup>31</sup>. The figure is taken from the MEA synthesis report, which depicts the strength of linkages between categories of ecosystem services and components of human well-being that are commonly encountered, and includes indications of the extent to which it is possible for socioeconomic factors to mediate the linkage (for example, if it is possible to purchase a substitute for a degraded ecosystem service, then there is a high potential for mediation). The strength of the linkages and the potential for mediation differ in different ecosystems and regions. In addition to the influence of ecosystem services on human well-being depicted here, other factors—including other environmental factors as well as economic, social, technological, and cultural factors—influence human well-being, and ecosystems are in turn affected by changes in human well-being.



Linkages between Ecosystem Services and Human Well-being Source: MEA, 2005: pp vi

### 2.3.1 Significance to the local economy

It is well known that the **Gulf of Finland is one of the most operated sea areas in the world** (7 million round trips per year between Tallinn and Helsinki). As previously mentioned, the growing transport volumes are connected with increasing interaction between the regions in terms of tourism, business activities, migration, cross-border work, studying and all kinds of social interaction. Most significant types of activities to the local economy are: **maritime traffic, cross-border work and tourism**. More economical data on the main activities in the Gulf of Finland can be found in the chapter 1.1.4: *Main economic activities*. In addition, **commercial fisheries** also contribute essentially to the local economy. In the Baltic sea, commercial catches of 17 species are reported on a regular basis, and individuals of other species are caught now and then. Most of the species are fished only in the coastal waters, but the biggest volumes are caught in the offshore fisheries. In the Baltic Sea the most important commercially exploited stocks are Baltic herring, salmon and whitefish (*Coregonus Lavaretus*). By volume, sprat is the second important species after Baltic herring but its value is low because it is almost solely used for fodder.

<sup>31</sup> MEA, 2005

## 2.3.2 Social significance

As previously stated, both regions are leading urban agglomerations in their countries: **Tallin-Harju share of GDP in Estonia is 60% while Helsinki-Uusimaa share of GDP in Finland is 38%** (Laakso et al, 2013).

For instance, the **Uusimaa region is a growing centre for new European business and politics**, because of its location in the Gulf of Finland, its cultural climate and its green landscapes. The region hosts 29 % of the country's total population. **32% of Finland employment is focused in this area, and the unemployment rate is 7%**<sup>32</sup>.

## 2.3.3 Cultural significance

Our study shows that cultural significance through **outdoor activities and recreation, values in education, and significance of heritage is ranked highest to the livelihoods of the Finnish people in the region**. All of these together with the unique Baltic landscape bring along **psychological well-being**.

Many of the protected areas in Uusimaa region are significant tourist attractions for outdoor activities and recreation. Regarding educational value, protected areas are also used for scientific research and amateur nature studies<sup>33</sup>.

More information about Gulf of Finland's national and world heritage landscapes can be found in the chapter 1.2.2 *Type of Biodiversity in the strait*, under 1.2.2.4 *Protected areas*.

## 2.4 Main biodiversity pressures and related impacts

### 2.4.1 Drivers of pressures on biodiversity in the strait

**Eutrophication is considered the worst threat for the Gulf of Finland now**. Other threats include **noxious chemicals, oil spills, accidents**<sup>34</sup> and **fishery overexploitation**.<sup>35</sup>

Uusimaa Region highlighted **how difficult would be to protect the long shoreline from oil spills**. Other pressures pointed out are the **already polluted seawater and limited resilience of ecosystems**.

#### 2.4.1.1 Human activities

The Baltic Sea is among the most polluted seas in the world. **The main reasons why this sea is very vulnerable are its shallowness, small volume of water and poor exchange of water**. Only occasionally, depending on the weather, salty water flows into the Baltic Sea through the Danish Straits in the form of salt pulses. Several rivers bring fresh water into the Baltic Sea. Many nutrients, such as nitrogen and phosphorus are contained in the river water. Furthermore, **human activities**

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<sup>32</sup>Uusimaa Regional Council's Information Services website: [http://tietopalvelu.uudenmaanliitto.fi/yla/fi\\_FI/facts\\_in\\_english/](http://tietopalvelu.uudenmaanliitto.fi/yla/fi_FI/facts_in_english/)

<sup>33</sup> Metsähallitus website - Guidelines for sustainable natural tourism in protected areas:

<http://www.metsa.fi/sivustot/metsa/en/NaturalHeritage/ProtectedAreas/SustainableNatureTourism/Sivut/SustainableNatureTourismInProtectedAreas.aspx>

<sup>34</sup> The Baltic Sea Portal website: [http://www.itameriportaali.fi/en\\_GB/](http://www.itameriportaali.fi/en_GB/)

<sup>35</sup> Hogan (2013)



such as domestic sewage, farming, industry, traffic, and energy production add to the load of the Baltic Sea<sup>36</sup>.

As the maritime transportation of both people and goods increases in the Gulf of Finland, so does the risk of collision, because the Gulf of Finland is a shallow and ecologically vulnerable sea area with dense passenger and cargo traffic, out of which petroleum transports have a share of over 50 % (Kuronen et al., 2008). The Gulf of Finland is very shallow: the maximum depth is 60 metres and the average depth 37 metres (the average depth of the Mediterranean Sea is 1550 metres). **Due to its narrowness and shallowness, the Gulf of Finland can be considered a high-level risk zone** (Kuronen et al., 2008). The majority of passenger traffic moves on the north-south axis and the majority of freight shipping on the east-west axis of the Gulf. Additionally, the transportation of oil through the Gulf of Finland is estimated to rise from 155 million tons a year to about 200-230 million tons a year by 2015, depending on Russia's progress in port development<sup>37 38</sup>.

Due to human activities within the Gulf of Finland a significant amount of chemicals were released in the marine water. **The presence of chemical contaminants, such as PCBs, DDTs, dioxins, organotins and highly toxic trace metals have resulted into chronic exposure conditions for marine organisms.** Apart from this load, a large number of "emerging" compounds are entering the environment, some of them persistent by chemical structure (e.g. brominated flame retardants and perfluorinated compounds) and some due to constant release (e.g. pharmaceuticals and hormone-like compounds). **Chemical contamination of the environment endangers the health and viability of organisms and even the whole marine ecosystem,** which is directly linked to human health and wellbeing<sup>39</sup>.

#### **2.4.1.2 Natural pressures**

The winter conditions bring additional difficulties for shipping, thus increasing risks for the safety of the maritime traffic. Approximately, from December to April the Gulf of Finland is partly ice-covered. In the Russian side of the gulf, the ice-cover is the heaviest.<sup>40</sup>

Invasive species are a major threat to local ecosystems and biodiversity in general. It is well known that in the Gulf of Finland many invasive species were introduced either by accident, through the ballast of the ships, or intentionally.

Some alien species from Lake Baikal, Siberia were introduced intentionally into nearby Gulf of Finland lakes, including the fish species, such as Amur sleeper, *Percottis glenii*, and the amphipod *Gmelinoides fasciatus*. This invading amphipod has displaced the native amphipod *Gammarus lacustris*, both in Neva Estuary and widely throughout the Gulf of Finland (Hogan, 2013).

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<sup>36</sup> The Baltic Sea Portal website: [http://www.itameriportaali.fi/en\\_GB/](http://www.itameriportaali.fi/en_GB/)

<sup>37</sup> NOSTRA website: <http://www.nostraproject.eu/>

<sup>38</sup> NOSTRA website: <http://www.nostraproject.eu/>

<sup>39</sup> Gulf of Finland Year 2014 website: <http://www.gof2014.fi/en/>

<sup>40</sup> Kuronen et al. (2008)

## 2.4.2 Main impacts and changes in the state of environment

The marine ecosystem of the Gulf of Finland has been degraded by invasion from a number of alien species. This shallow Gulf functions much like an estuary, being therefore strongly influenced by the quantity of freshwater influx, by high primary productivity and seasonal algae blooms. The ecological imbalances have been also deteriorated by heavy water pollution loading, especially from the Communist era of the USSR, which generated intense organic and heavy metal loads (Hogan, 2013).



Source:  
CLEANSHIP  
website

**Eutrophication is regarded as the most severe threat to the Baltic Sea.** This affects the structure and functioning of the marine ecosystem resulting in: algal blooms, in turn reduced water transparency and oxygen depletion. Shipping

contributes significantly to the eutrophication through nitrogen air emissions, sewage and waste pollution.

The Baltic Sea is one of the most polluted seas in the world. Its **eutrophication is caused by farming, municipal and industrial wastewater, transportation and other industrial pollutants** and it manifests most obviously in the summer as algal blooms cover large areas. In many places the sea floor waters hold little oxygen and there is no fauna to be found in these areas. However, according to recent research by the Finnish environmental administration, eutrophication in the Gulf of Finland seems to have peaked in the 2000s, and the quality of water is slowly improving thanks to efforts by the Gulf's coastal regions and national authorities<sup>41</sup>.

The eutrophication status of the Baltic Sea is based on average data for 2003-2007 at 110 assessment units. The assessments are based on an integration of the results from core set indicators on nutrient (nitrogen and phosphorus) concentrations, chlorophyll a concentrations, water transparency and zoobenthos communities using the HELCOM Eutrophication Assessment Tool (HEAT). The interpolated map has been produced in three steps: 1) the integrated status of coastal assessment units have been interpolated along the shores, 2) the integrated status of open sea basins have been interpolated and 3) the coastal and open interpolations have been combined using a smoothing function. The larger circles indicate the status of open sea assessment units and the smaller circles that of the coastal assessment units<sup>42</sup>.

**A serious threat to the local biodiversity is the decrease in the number of Baltic birds.** This issue is caused by suitable biotopes decreasing (especially coastal meadows) due to human activity, increased disturbance due to boating and other recreation, decrease in the extent of macroscopic shallow- water vegetation due to eutrophication and increased predation by fox (*Vulpes vulpes*), mink

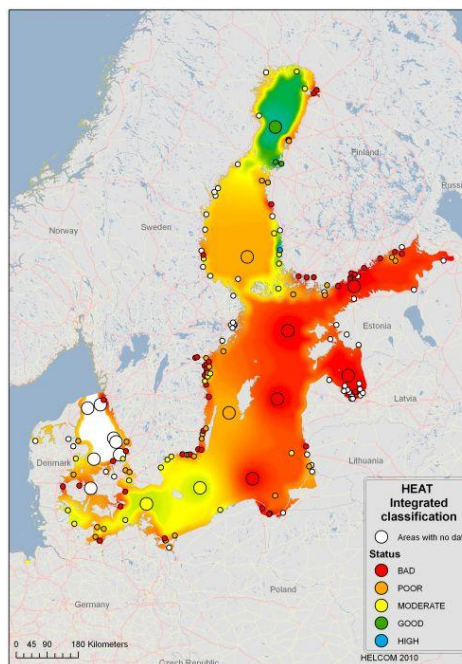


Figure 3: Eutrophication Map

Source: CLEANSHIP website

<sup>41</sup> NOSTRA website: <http://www.nostraproject.eu/>

<sup>42</sup> CLEANSHIP website: <http://www.clean-baltic-sea-shipping.com/>

(*Mustela vison*), raccoon dog (*Nyctereutes procyonoides*), great black-backed gull and herring gull<sup>43</sup>. Baltic birds' reproduction and survival was also affected by the concentrations of several toxic compounds. Transportation of large volumes of crude oil poses another important threat to Baltic birdlife.

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<sup>43</sup> The Baltic Sea Portal website: [http://www.itameriportaali.fi/en\\_GB/](http://www.itameriportaali.fi/en_GB/)

# 3 Responses to pressures and impacts

## 3.1 Policies

In Finland *land use planning* has regulations regarding the conservation of biodiversity and in the case of particular protected areas it's also governed by the *Environmental Protection Act (2000)*.

In Finland, the legislation states that an **Environmental Impact Assessment (EIA)** must be undertaken prior to any major development project. The EIA is beneficial in order to ensure that the effects of any development project with significant environmental impacts are adequately examined, and to provide opportunities for interest groups and individual citizens to participate in and influence the planning of such projects.

## 3.2 Initiatives and actions

### 3.2.1 Cross-border initiatives

- **Convention on Environmental Impact Assessment in a Transboundary context**

For transboundary projects, the *Convention on Environmental Impact Assessment in a Transboundary Context* (Espoo Convention) is taken into account. Finland, Estonia and the European Union are all parties in this Convention<sup>44</sup>.

- **Cross-border projects for sustainable ports and shipping**

The ports of Helsinki and Tallinn are partners in several projects working towards more environmental maritime practices, and enhancing the economic competitiveness and social standing of the region, such as Clean Baltic Sea Shipping and PENTA<sup>45</sup>.

#### **Clean Baltic Sea Shipping (CLEANSHIP)**

CLEANSHIP is a joint development of a **clean shipping strategy, harmonisation of environmental differentiated port dues, and the development of concerted technical pilot systems regarding infrastructure for shoreside electricity, gas and LNG supply, and sewage reception in ports**. CLEANSHIP has the aim to reduce ship borne air pollution both in the Baltic Sea as well as in ports and port cities of the Baltic Sea Region<sup>46</sup>.

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<sup>44</sup> UNECE website - Convention on Environmental Impact Assessment in a Transboundary Context: <http://www.unece.org/env/eia/>

<sup>45</sup> NOSTRA website: <http://www.nostraproject.eu/>

<sup>46</sup> CLEANSHIP website: <http://www.clean-baltic-sea-shipping.com/>

CLEANSHIP it is part of the EU Strategy Action Plan for the Baltic Sea Region's priority area 4 "To become a model region for clean shipping". On policy level CLEANSHIP is considered a part of EU Baltic Sea Strategy flagship project "Promote measures to reduce emissions from ships and enhance the development" (under priority area 4), and it will seek to anchor the Clean Shipping Strategy in EU policies (ENV, MAR, TR, EN, REGIO).

In cooperation with the EU Maritime Transport Strategy 2018, CLEANSHIP attempts to facilitate the steps towards the long-term ZERO-WASTE, ZERO EMISSIONS strategy for European shipping<sup>47</sup>.

## PENTA

The **PENTA** project explored the alternatives of how the five Central Baltic ports together can face and better comprehend the today and future challenges. The ports of Stockholm, Tallinn, Helsinki, Naantali and Turku play a key role in the accessibility of the Central Baltic Region. Effective, competitive, eco-friendly, safe port procedures and sea transportation solutions between the five cities, all have a major importance on the trade between the port regions and between the three countries. On a wider scale, the connections between these ports serve a main gateway to international trade.

By developing cargo and passenger flows development scenarios, the partners created a shared vision about the likely development of cargo and passenger transportation. Finally, the ports exchanged information on current port practices and created harmonious future practices, specifically related to safety and security procedures, environmental practices and management, and other administrative procedures in ports<sup>48</sup>.

## Cross-Gulf transportation

Among other things, Helsinki, Tallinn and the surrounding areas are currently cooperating on the **Helsinki-Tallinn TransPlan project**. The project's purpose is to discover the best ways to improve cross-Gulf transportation through an analysis of potential scenarios from an economic and land use perspective on both sides of the Gulf. The results of the project were ready in the end of 2012. The Finnish and Estonian authorities and ports have also developed cooperation for many years<sup>49</sup>.

- **Developing knowledge on biodiversity and natural environment**

## TOPCONS

TOPCONS (Transboundary tool for spatial planning and conservation of the Gulf of Finland<sup>50</sup>) is a **Finnish-Russian co-operation** project that will develop **innovative spatial tools for the regional planning and long-term invocation of the sea areas**. These will help the society in striving for the marine values and the sustainable consolidation of human activities.

The aim of the project is to **create methodologies and tools to aid in forecasting and mapping the locations of the most diverse and sensitive under-water landscapes**, in order to execute planning of the ecosystem-based management.

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<sup>47</sup> CLEANSHIP website: <http://www.clean-baltic-sea-shipping.com/>

<sup>48</sup> PENTA website: <http://www.pentaproject.info/en>

<sup>49</sup> NOSTRA website: <http://www.nostraproject.eu/>

<sup>50</sup> TOPCONS website: <http://www.merikotka.fi/topcons/index.php/en/overview>

TOPCONS produces knowledge that can be directly used for the planning of sustainable use and conservation of the seas. During this project, the first version of the spatial planning tool, to be tested by the potential end-users, e.g. decision-makers, designers and researchers, will be created. In the future, this approach can be expanded to cover wider sea areas, by including data on local conditions.

### **Gulf of Finland Year 2014**

Gulf of Finland Year 2014 is a **common project of Estonian, Russian and Finnish experts**, which created the first opportunity to **analyse in detail the ecological status of the Gulf of Finland**. This is due to the intense co-operation among the three riparian countries as well as the modern observational techniques, active field studies and advanced modelling tools<sup>51</sup>.

The research themes were chosen to support the implementation of national and international legislation, and the international conservation commitments. The five key themes are: **fish and fishery, ecosystem health, diversity, marine traffic safety and maritime spatial planning**.

Estonia, Finland and Russia are also committed at a political level, thus after the end of the project all three countries will sign the **Gulf of Finland Declaration**. The fundamental measures to enhance the health of the Gulf of Finland will be outlined in this Declaration. In addition, will develop outlines for the protective work and sustainable use of the sea until the year 2021.

### **3.2.2 One-side level**

- **Helsinki-Uusimaa , Finland initiatives and actions**

#### **Regional Land Use Planning**

In Finland it is nationally determined that the regional councils, such as the Uusimaa Regional Council are responsible for preparing development plans for their own regions in cooperation with municipalities and other public and private actors. Careful planning of the use of land and the geographical location of communities and activities is an essential element in the provision of high standards of living, functionality of the physical environment and in sustainable development.

**A Regional Land Use Plan**, established for a period of 20-30 years, as defined in Finland's Land Use and Building Act, defines the use of areas needed for particular purposes and the principles of urban structure from the point of view of regional development. Uusimaa has a long coastline and the Regional land use plan may also determine marine areas for different uses, e.g. nature conservation, or wind power sites. Uusimaa's *land-use plan* confirmed by the Environment Ministry at the end of 2006 indicated naturally, culturally and recreationally significant areas, as well as transport routes and green corridors that were necessary to maintain.

Regional land use plans primarily define areas reserved for development, designated green areas, and vital infrastructures including transport routes and municipal services. They also specifically delimit and label certain areas of particular importance for various reasons, including areas within the Natura 2000 network, eskers and other areas with valuable groundwater reserves, landscape conservation areas and other important cultural landscapes. Regional land use plans aim to create and preserve favourable living environments, while also promoting ecologically, economically, socially and culturally sustainable development.

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<sup>51</sup> Gulf of Finland Year 2014 website: <http://www.gof2014.fi/en/>



Uusimaa's natural scenery is highly varied. The region's long coastlines feature hundreds of islands, and the forests are dotted with lakes, rivers, bogs, eskers and rocky hills. The natural scene is also enriched by cultural landscapes shaped by man, including farmlands, heritage landscapes, townscapes and parks.

The recreational areas, green corridors and hiking routes designated in the regional land use plan together form an extensive network of green spaces across the region. This network is complemented by local recreational areas and parks designated in municipal plans. Uusimaa's national parks and many other protected areas help to preserve the region's rich biodiversity<sup>52</sup>.

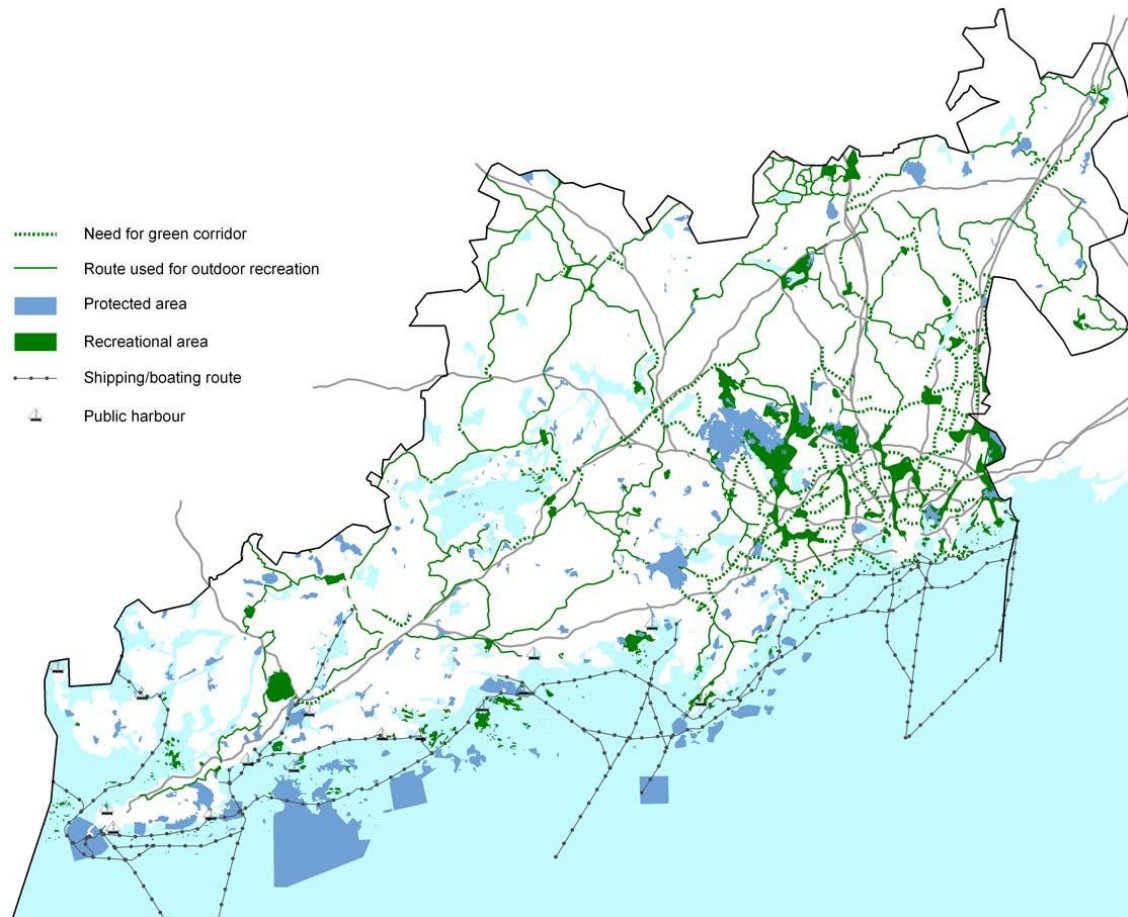


Figure 4: Nature, recreation and cultural landscapes in Uusimaa

Source: Uusimaa Regional Land Use Plan, 2006

- **Sustainable nature tourism**

### **Sustainable nature tourism guidelines**

Sustainable nature tourism guidelines for the Finnish protected areas were established by Metsähallitus. These set of principles are needed because many of the protected areas are significant tourist attractions. Although the main purpose of protected areas is to protect natural features, these areas are also used for scientific research, amateur nature studies and outdoor recreation<sup>53</sup>.

<sup>52</sup> Uusimaa Regional Land Use Plan (2006)

<sup>53</sup> Metsähallitus website - Guidelines for sustainable natural tourism in protected areas:

## National Board of Antiquities, Finland

In Finland, the National Board of Antiquities is responsible, together with other authorities and the museum field, for protecting environments with cultural history value, archaeological culture heritage and architectural heritage, and other cultural property. It operates under the Ministry of Education and Culture<sup>54</sup>.

### ▪ Nature Conservation Development Plan

In Estonia, the **Nature Conservation Development Plan (2012)** is a strategic basic document for the development of the fields related to the protection and use of nature until 2020. Its goal is to stop the decrease of biodiversity and damaging the nature by 2020, and to restore ecosystems as much as possible, while, at the same time, simultaneously increasing the contribution to the protection of global biodiversity. In addition, there is more legislation (the Forest Act, the Water Act, the Planning Act, the Waste Act and the Environmental Monitoring Act) that protects flora and fauna indirectly through restrictions established for another purpose (water protection, shore protection, etc.) (HELCOM, 2013).

### 3.2.3 Environmental initiatives from private - public companies

NordStream is complying with the highest international environmental standards during construction, testing and operation of the offshore pipelines for gas from Russia to Germany. In order to protect the environment during construction and operation of the pipeline, NordStream conducted the most comprehensive environmental studies of the Baltic Sea up to date. The studies helped to define the technical design and optimum route in order to minimize environmental impacts during construction. More than 40,000 km of geophysical surveys were conducted, and thousands of objects on the seabed were inspected. For environmental protection during and after construction, Environmental and Social Monitoring Programmes (ESMPs) were also established. For each country through whose waters the pipelines cross (Russia, Finland, Sweden, Denmark and Germany) an Environmental Impact Assessment (EIA) was performed<sup>55</sup>.

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<http://www.metsa.fi/sivustot/metsa/en/NaturalHeritage/ProtectedAreas/SustainableNatureTourism/Sivut/SustainableNatureTourism/ProtectedAreas.aspx>

<sup>54</sup> Questionnaire-Uusimaa region

<sup>55</sup> NordStream website: <http://www.nord-stream.com/>



# 4 Governance

## 4.1 Actors mapping

The two major actors involved in governing the strait Gulf of Finland are Uusimaa Regional Council in Finland and Harju County Council in Estonia.

- **Uusimaa Regional Council / Uudenmaan liitto, Finland**

Uusimaa Regional Council is the regional authority for Uusimaa Region. It operates according to the principles of local self-government, representing the municipalities of the region.

Uusimaa Regional Council is responsible for preparing regional development plans and implementing strategic activities in cooperation with municipalities and other public and private operators. Uusimaa Regional Council involves the social partners and the civil society in its activities and brings democratic governance to regional government activities<sup>56</sup>.

- **Harju County Council / Harju Maavalitsus, Estonia**

Harju County Government (HCG) is the Estonian local authority which borders the Gulf of Finland.

This is a state institution that realises executive power in the region. HCG is responsible for supervision over local municipalities' legal acts, regional planning, sustainable and balanced development and development cooperation on a regional level. HCG coordinates and implements project activities in Harju County<sup>57</sup>.

Regarding governance issues in the strait, Uusimaa region pointed out the lack of resources, in terms of human and finance. Another issue is the fact that some information has to be kept secret for defence reasons. The region would like to implement a proper decision making level in the strait Gulf of Finland, where Russia should be also involved to embrace the different functions of the Gulf as a whole.

## 4.2 Level of cross-border cooperation

Concerning cross-border cooperation in the strait Gulf of Finland, the political cross-border dialogue platform has been developed.

- **Political cross-border dialogue platform**

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<sup>56</sup> NOSTRA website: <http://www.nostraproject.eu/>

<sup>57</sup> NOSTRA website: <http://www.nostraproject.eu/>

The **Helsinki-Tallinn Euregio, a political cross-border dialogue platform**, was established in June 1999. The Euregio supports, plans and implements mutually appealing projects related to business, cross-Gulf transportation, vocational training, higher education collaboration and social work. Its aim is to increase awareness of the region and its cooperation in the areas surrounding it, as well as in Europe<sup>58</sup>.

Helsinki-Tallinn Euregio is an association of five partners: City of Helsinki, City of Tallinn, Uusimaa Regional Council, Union of Harju County Municipalities and Republic of Estonia, represented by Harju County Government<sup>59</sup>.

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<sup>58</sup> NOSTRA website: <http://www.nostraproject.eu/>

<sup>59</sup> Euregio website: <http://www.euregio-heltal.org/>

## 5 Conclusions of the analysis

The Gulf of Finland is a geographical area which mixes cities, large infrastructures (mainly ports), and remarkable natural areas.

### **Social-economic background of the Strait**

The Gulf of Finland is said to be one of the densest operated sea areas in the world. More than seven million trips per year (mainly two-way trips) are made between Tallinn and Helsinki (HTTransPlan Project, 2012). The growing transport volumes are connected with increasing interaction between the regions in terms of tourism, business activities, migration, cross-border work, studying and all kinds of social interaction. Cross-regional economic interaction between the Tallinn-Harju and Helsinki-Uusimaa regions is increasing, mainly falling in the following sectors: trade of goods and services, cross-border activities of enterprises, transport, tourism and cross-region work (Laakso et al, 2013). Cross-border work increased considerably over the last 10 years, especially via participation of Estonian workers in Helsinki-Uusimaa labour markets. Laakso et al. (2013) estimated that the part of earnings from Helsinki-Uusimaa shifted to Estonia caused a net increase of €200 – 300 million of the value added in Estonia via direct and indirect effects. Cross-border trade and production have also increased rapidly during the last 10 years, mainly influenced by Finnish manufacturing enterprises that have relocated plants to Estonia. In 2010, about 440 Finnish subsidiaries were operating in Estonia, and were providing a turnover of 3,900 million Euros. The number of personnel employed by Finnish firms represents about 5 % of total employment in Estonia.

### **Significance of biodiversity and natural environment in the Strait**

Baltic Sea is a young sea in geological terms, thus there was not enough time for species differentiation. The brackish water also sets limits on species adaptation: it is too salty for freshwater species, and not salty enough for saltwater species. There are only few species specifically adapted to brackish water. Gulf of Finland lies along the main migration route of arctic birds. There are many national nature conservation areas in the Gulf of Finland most of which are part of the European Natura 2000 network. All the conservation areas in the Gulf are part of the Baltic Sea Protected Areas network. In the region, invasive species introduced either by accident, through the ballast of the ships, or intentionally are a major threat to local ecosystems and biodiversity in general.

### **Human and natural pressures exerted on biodiversity and natural environment**

The Baltic Sea is among the most polluted seas in the world. This is partly explained by its shallowness, small volume of water and poor exchange of water. Moreover, human activities such as domestic sewage, farming, industry, traffic, and energy production also impose significant pressures on the already vulnerable marine ecosystem. In the Gulf of Finland, petroleum transports

account for over 50 % of the total maritime transport, which imposes pressures on the natural environment in terms of higher risk of oil spills, water pollution, and invasive species. In addition, other human activities causing chemical contaminants, such as PCBs, DDTs, dioxins, organotins and highly toxic trace metals have resulted into chronic exposure conditions for marine organisms.

### **Policies, actions and initiatives contributing to an integrated management of biodiversity**

In Finland it is nationally determined that the regional councils, such as the Uusimaa Regional Council are responsible for preparing development plans for their own regions in cooperation with municipalities and other public and private actors. Careful planning of the use of land and the geographical location of communities and activities is an essential element in the provision of high standards of living, functionality of the physical environment and in sustainable development. Regional land use plans primarily define areas reserved for development, designated green areas, and vital infrastructures including transport routes and municipal services. They also specifically delimit and label certain areas of particular importance for various reasons, including areas within the Natura 2000 network, eskers and other areas with valuable groundwater reserves, landscape conservation areas and other important cultural landscapes. Regional land use plans aim to create and preserve favourable living environments, while also promoting ecologically, economically, socially and culturally sustainable development.

In terms of best practices in the strait Gulf of Finland, there are several projects worthy to be mentioned, e.g. Gulf of Finland Year 2014, which is a **common project composed of Estonian, Russian and Finnish experts**, which created the first opportunity to **analyse in detail the ecological status of the Gulf of Finland**, and TOPCONS, which is a **Finnish-Russian co-operation** project that will develop **innovative spatial tools for the regional planning and long-term invocation of the sea areas**. These will help the society in striving for the marine values and the sustainable consolidation of human activities.

Finally, it is important to note that both sides of the Gulf of Finland are facing administrative body restructuring in the short run, which may also have significant impacts on the measures and actions to be taken for managing and protecting the regional biodiversity in the future.

### **5.1 How responses have addressed key pressures on biodiversity and natural environment**

The responses that have been implemented in the Strait are mapped on the following tables.

Table 5: Responses to address risks and pressures exerted on biodiversity and natural environment – Gulf of Finland Strait (1/2)

Activities that take place in the strait	Adding value to the local livelihood			Exerting risks and pressures, and impacting biodiversity and natural environment	Existing responses to address risks and pressures exerted on biodiversity and natural environment		
	Creating jobs	Creating revenues	Creating Identity & culture		Finish side	Estonian side	Cross-border
Maritime transportation	✓	✓		Boat collision and risk of release of hazardous substances transported by boats			• Cross-Gulf transportation
				Invasive species			
				Air / water pollution			• Clean Baltic Sea Shipping (CLEANSHIP)
				<i>All pressures/transversal</i>			• Clean Baltic Sea Shipping (CLEANSHIP) • PENTA • Cross-Gulf transportation • Gulf of Finland Year 2014
Terrestrial transportation				<i>All pressures/transversal</i>			
Fisheries	✓	✓		Fish stock depletion			• Gulf of Finland Year 2014
Agriculture				Reducing biodiversity			
Energy production	✓	✓		Air / water pollution			PRIVATE: • Compliance with the law of the Nordstream structure: gaz pipeline.
Terrestrial/ Coastal tourism	✓	✓	✓	Urban development, artificialisation of land, disturbance of natural balance, destruction of ground vegetation	• Regional Land Use Planning • Sustainable nature tourism guidelines • National Board of Antiquities, Finland		
Maritime tourism	✓	✓	✓	Disturbance of natural balance	• Regional Land Use Planning • Sustainable nature tourism guidelines • National Board of Antiquities, Finland		

Table 6: Responses to address risks and pressures exerted on biodiversity and natural environment – Gulf of Finland Strait (2/2)

	Exerting risks and pressures, and impacting biodiversity and natural environment	Existing responses to address risks and pressures exerted on biodiversity and natural environment		
		Finish side	Estonian side	Cross-border
Urban planning / territorial planning	Artificialisation of land Coastal development, coastal erosion, impact on marine ecosystems	<ul style="list-style-type: none"> <li>Regional Land Use Planning</li> </ul>		
Marine planning				<ul style="list-style-type: none"> <li>Clean Baltic Sea Shipping (CLEANSHIP)</li> <li>PENTA</li> <li>Cross-Gulf transportation</li> <li>TOPCONS</li> <li>Gulf of Finland Year 2014</li> </ul>
Improving governance between actors and joint strategies				<ul style="list-style-type: none"> <li>Convention on Environmental Impact Assessment in a Trans-boundary context</li> </ul>

# 6 Recommendations

## GOVERNANCE

- Although the various cross-border projects have been developed between Finland and Estonia, there is a clear need for improving the cross-border actions and initiatives at the level of governmental organisations in order to identify uniformed actions to react to the increasing environmental pressures on biodiversity and to deal with some common marine management issues. A possible solution to this might be the creation of a **European Grouping of Territorial Cooperation (EGTC)** between the two regional authorities on the two sides of the strait. In this regard, a EGTC convention needs to be created to define the name and registered office, the territory, and the objective and tasks of the EGTC. In the Gulf of Finland, the EGTC could dedicate to the management and implementation of territorial cooperation programs or projects co-financed by the Community through the European Regional Development Fund (ERDF), the European Social Fund (ESF) or/and the Cohesion Fund.
- The current governance structure of the regional council of Uusimaa in Finland is very decentralised, which has resulted in expertise and manpower very scattered for tackling some very technical and complex issues, such as integrated marine planning. The council may improve this aspect by creating some specific working groups in order to allow relevant experts to contribute in a more efficient manner.
- In Estonia, due to the small size of the country, many regional authorities do not have technical experts dealing with marine and environmental issues. However, since marine planning is rather a cross-border issue, the Tarju region may benefit strongly from developing more joint projects with the Uusimaa country that are targeting at spatial maritime planning. Again, the **EGTC** could be a best solution to this.

## KNOWLEDGE

- A lack of data in marine protected area in Estonia, is mainly due to the fact that Estonia is in the beginning of making maritime areas spatial planning, with only two ongoing pilots in Hiiu and Pärnu counties. In addition, many statistics and prognosis, such as the Natura 2000 sites are made only at national scale due to the fact that Estonia is too small. Therefore, more research work needs to be done from the Estonian side to improve their database.
- Encourage knowledge sharing between the two sides of the Gulf by developing, updating and sharing a common and cross-border knowledge on: marine biodiversity and environment. In addition, the two regional authorities may consider to co-fund a new webportal which can serve as a knowledge center for storing data collected from



both sides of the strait on a selected number of subjects, such as environmental and biodiversity inventories.

- Encourage knowledge sharing, not only between Estonia and Finland, but also with other countries around the Baltic Sea, e.g. the Kvarken strait. This will help building research capacities on biodiversity impact assessment in both Estonia and Finland and in generating knowledge to cope with the increasing human and natural pressures on the biodiversity and ecosystems in the region.

## **ACTION**

- Maritime management. The two regions, together with Russia, may consider to develop a common logistic corridor similar to the Nordic Logistic Corridor in the Kvarken strait that manage the transportation and logistics route between Finland, Estonia and Russia. This may help to improve the infrastructure in logistics areas and ports and result in shortened road transport routes, excellent access to intermodal transport (the use of multiple forms of transport for freight and passengers) and modern cargo handling solutions.
- Natural conservation. In terms of protecting the migratory birds, the Gulf of Finland may learn from the successful experience of Baltic Flyway project in the Fehmarn Belt, and engage more nature-oriented organisations from both sides of the Gulf to create better environmental conditions for migratory birds. In particular, the action area shall focus on: (1) cross-border cooperation between the stations and bird sanctuaries; (2) conservation initiatives to promote biological peculiarities here under special conditions of the migratory birds; (3) promotion of adventure opportunities with a focus on migratory birds.
- Transport infrastructure. Although there is a consideration of establishing a fix-link between Helsinki and Tallinn, it is not recommended for two main reasons: (1) extremely high costs to build the longest fixed connections across strait in the world; (2) high impacts as well as uncertainty on the marine and coastal environment.

## **6.1 Towards the implementation of good practices developed by other NOSTRA partners**

During the workshop that took place in Reggio Calabria in February 2014, the NOSTRA partners were asked to identify the best practices developed by other partners of the Network they would like to implement in order to achieve their ideal Strait. The partners of the Gulf of Finland chose four best practices.

### **Towards a “Seascape and Marine spatial planning”**

The pilot Seascape Character Assessment (SCA) that the Kent County Council undertook to inform marine spatial planning in the Dover Strait represents indeed an interesting initiative. Such initiative follows the principles of the European Landscape Convention (ELC), which confirms the importance of ‘seascape’. The aims of the ELC are to “*promote landscape protection, management and planning, and to organise European co-operation on landscape issues*”.

Among the many outcomes that a SCA provides, the SCA can be used as a Marine Planning tool. The SCA can contribute towards the requirements of the Marine Strategy Framework Directive (MSFD) (for instance achieving Good Environmental Status in Europe’s seas by 2020).

In the context of the Gulf of Finland, the SCA could help to achieve good environmental status of the area and could result in a spatial framework for decision-making, which will highly support coordination actions. Furthermore, the SCA will provide an assessment of sensitivity as a way of understanding how



vulnerable or resilient a seascape is to change. The information contained within a SCA can provide a comprehensive evidence base for assessing sensitivity to change. This will be useful for managing the area and for designing future projects, having in mind the ideal of building logistics roads,

#### **Towards “FLYWAY Project Securing Birds Migration Fehmarn”**

The partner of the Uusimaa region expressed an interest for the implementation of an initiative similar to the “FLYWAY Project Securing Birds Migration Fehmarn”. Since Gulf of Finland lies along the main migration route of arctic birds, it makes sense to implement such initiative. Such initiative could support the implementation of monitoring and observatory stations and raise awareness on the ecological status of the area. Moreover, it could promote natural tourism.

Such initiative would be even more successful in the case it would be supported as a cross-border cooperation action.

#### **Towards “Nordic Logistic Corridor Kvarken”**

The Nordic Logistic Corridor is a transport and logistics route connecting Norway, Sweden and Finland. It was designed to shorten road transport routes, to develop excellent access to intermodal transport (the use of multiple forms of transport for freight and passengers) and modern cargo handling solutions. In the context of a dense operated sea area, with increasing transport volumes of goods and increasing flows of passengers, and increasing cross-regional economic interaction between the Tallinn-Harju and Helsinki-Uusimaa regions (mainly falling in the following sectors: trade of goods and services, cross-border activities of enterprises), implementing a Logistic Corridor in the Gulf of Finland could be profitable in the socio-economic and environmental fields.

#### **Towards “Fehmarn Fixed Link tunnel”**

Since the traffic between the two sides of the strait is very dense, building an immersed tunnel, including both rail and road connections could represent an opportunity to decrease risks of maritime incidents, improve logistics and trade, and support the flows of workers. It would be a relevant alternative to boat and air transportation between the two sides. Implementing such initiative implies a strong cross-border cooperation and collaboration. It would be relevant to establish a formal governing structure at the level of the Strait (as mentioned previously, creating an EGTC) to support jointly such initiative.

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## **Interviews**

Questionnaire-Uusimaa region