



Report on shipping accidents in the Baltic Sea area for the year 2007

Introduction

Data on shipping accidents in the Baltic Sea area has been collected since 2000. In 2004 a new reporting format was developed and used for the reporting of accidents starting 2004. **For that reason the data for 2003 and the subsequent years are not fully comparable. The changed reporting is interpreted as a reason for the increased number of accidents in 2004 and subsequent years, when compared to 2003.**

All Contracting States have provided data on shipping accidents for 2007.

According to the agreed procedure all accidents (including but not limited to grounding, collision with other vessel or contact with fixed structures (offshore installations, wrecks, etc.), disabled vessel (e.g. machinery and/or structure failure), fire, explosions, etc.), which took place in territorial seas or EEZ of the Contracting Party and involved tankers over 150 GT and/or other ships over 400 GT irrespectively if there was pollution or not are reported.

Ship traffic in the Baltic

The IMO regulation requires Automatic Identification System transponders to be fitted aboard all ships of 300 gross tonnage and upwards engaged on international voyages, cargo ships of 500 gross tonnage and upwards not engaged on international voyages and all passenger ships irrespectively of size. The AIS enables the identification of the name, position, course, speed, draught and cargo of ships and displays all available data over a common background map.

The traffic statistics presented below has been generated by the HELCOM AIS database.

To get a full picture of the shipping safety in the Baltic the basic information on the shipping intensity is of importance, which can be illustrated by the number of ships crossing the HELCOM AIS pre-defined lines as presented in **Figure 1** and **Figure 2** (ships according to the type of vessels and their draught, respectively). A snapshot illustrating the spatial distribution of shipping activities in the whole Baltic at a specific moment can be seen in **Figure 3** and images of the traffic on the Baltic Sea based on AIS signal within a time period of one week are shown in **Figures 4** and **5**. The numeric data used in developing the maps are presented in **Tables 1 and 2**.

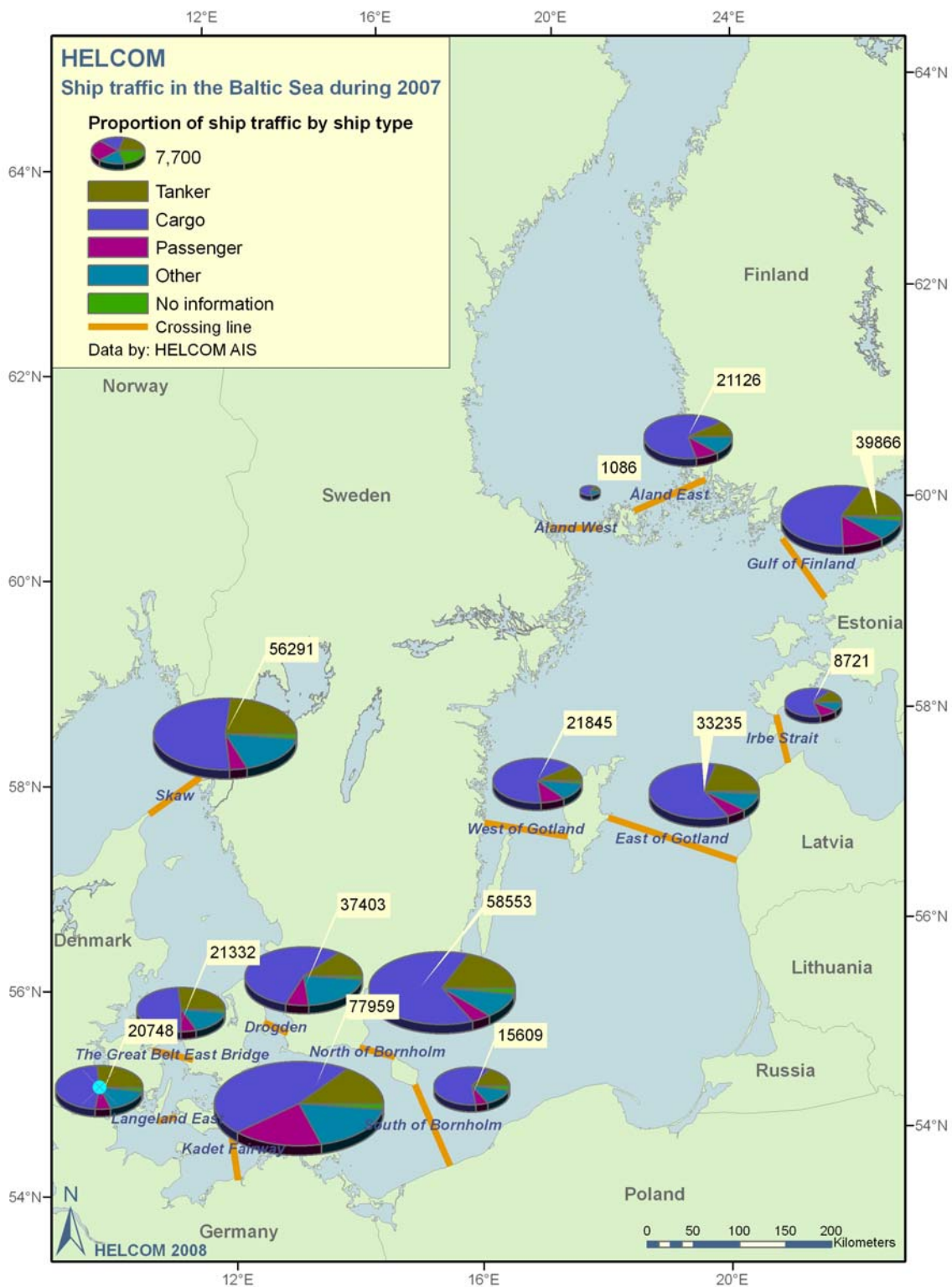


Figure 1. Number of ships crossing the AIS fixed lines in the Baltic Sea according to the type of the vessels, 2007.

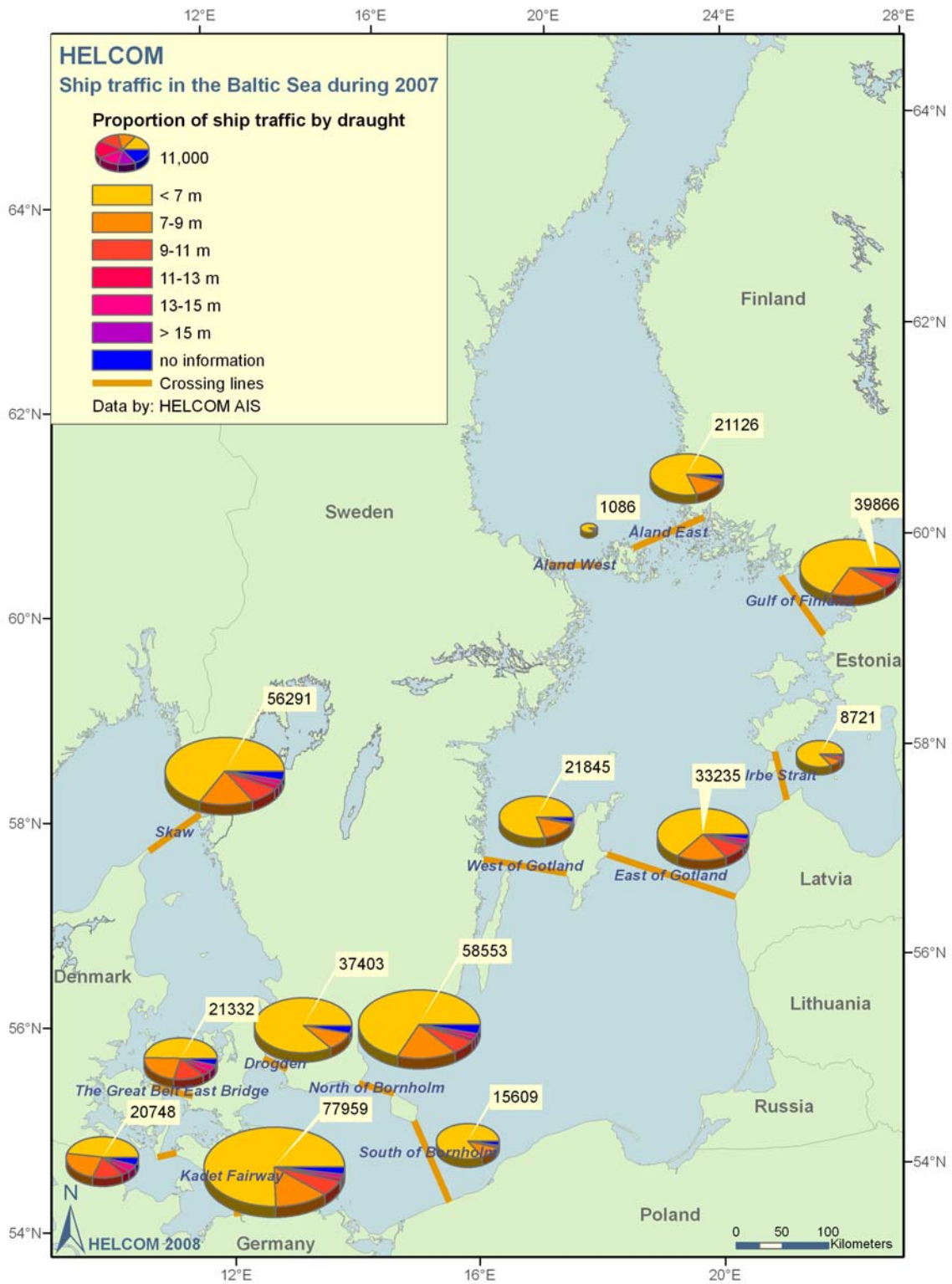


Figure 2. Number of ships crossing the AIS fixed lines in the Baltic Sea according to the draught, 2007.

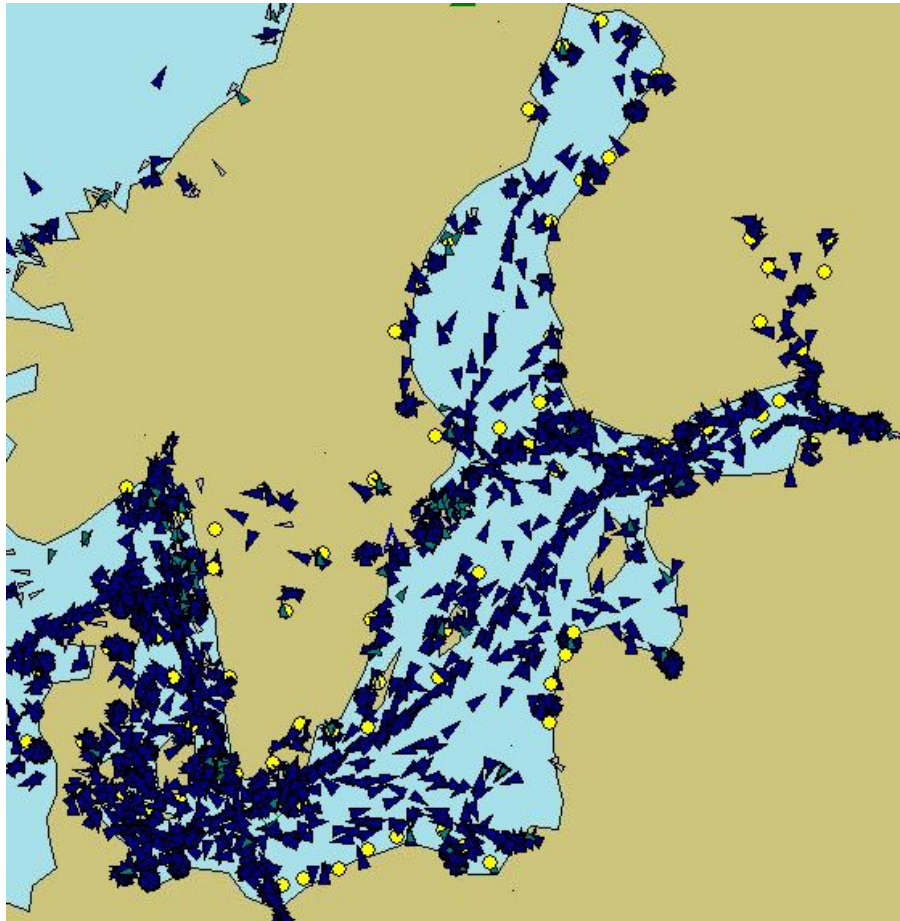


Figure 3. Snapshot from the HELCOM AIS (20 August 2008).

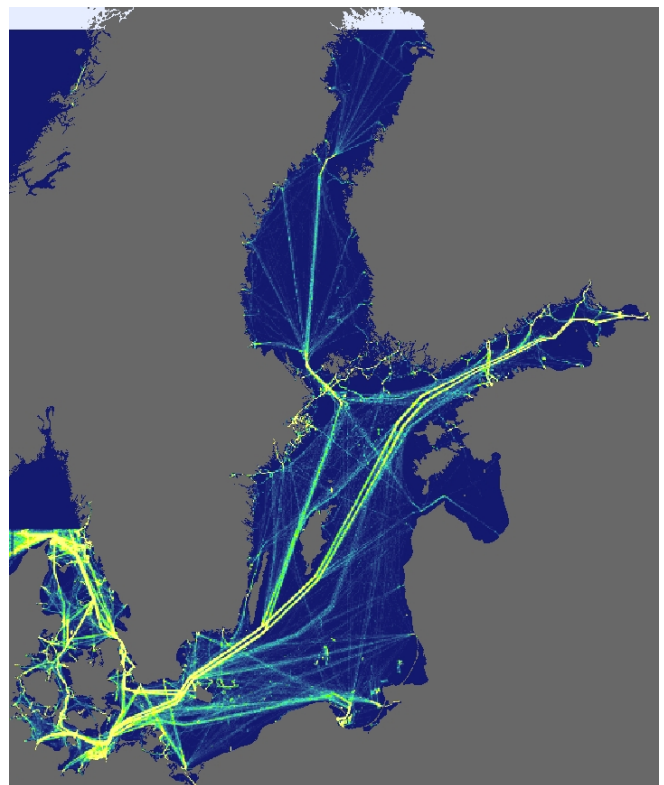
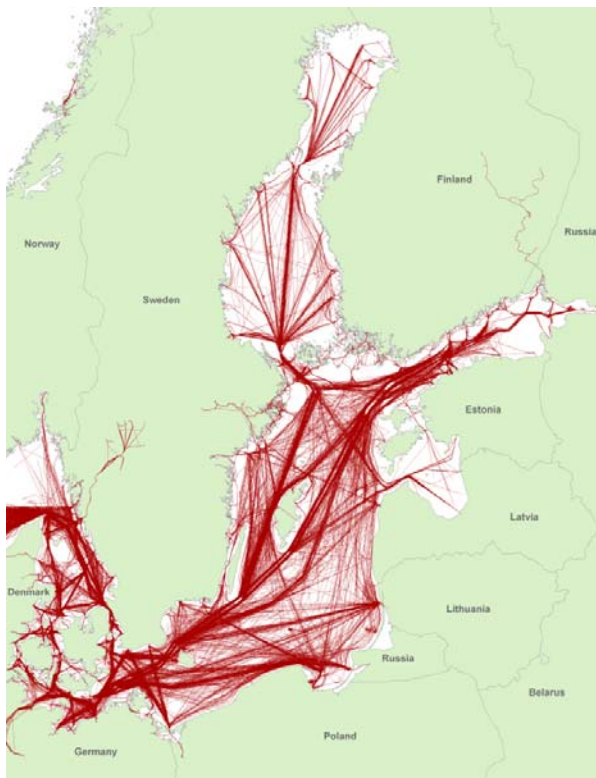


Figure 4 and 5. Images of the traffic on the Baltic Sea within a time period of one week; the sharp red lines are actual ship passages and the green-yellow lines on blue background represent data calculated on a grid, showing the areas of heavy traffic.

Location	Type of ship					
	Passenger	Cargo	Tanker	Other	No info	Total
The Skaw	3060	29864	13117	9365	885	56291
The Great Belt East Bridge	1632	10296	5689	3336	379	21332
Drogden	3244	21012	4498	8107	542	37403
Langeland East	1644	9633	5468	3549	454	20748
Kadet Fairway	16734	36414	9873	13636	1302	77959
Bornholm North	2780	39335	9940	5376	1122	58553
Bornholm South	1079	9810	2266	2003	451	15609
Gotland West	2409	14865	1902	2283	386	21845
Gotland East	1983	21341	6767	2722	422	33235
Åland West	2151	14779	1845	2217	134	21126
Åland East	9	707	134	230	6	1086
Gulf of Finland	5507	23323	6797	3472	767	39866
Irbe Strait	983	5963	1039	685	51	8721
Total	43215	237342	69335	56981	6901	413774
Percentage of tot.	10%	57%	17%	14%	2%	100%
<i>Total in 2006</i>	<i>42731</i>	<i>226855</i>	<i>67458</i>	<i>39627</i>		<i>376671</i>
<i>Percentage tot. 2006</i>	<i>18%</i>	<i>60%</i>	<i>11%</i>	<i>11%</i>	<i>-</i>	<i>100%</i>

Table 1. Number of ships crossing the AIS fixed lines in the Baltic Sea according to the type of the vessels, 2007 (for comparison total percentage for 2006 is also included).

Location	Draught							Total
	<7 m	7-9 m	9-11 m	11-13 m	13-15 m	>15 m	Unknown	
The Skaw	36990	10555	4517	1079	997	309	1844	56291
The Great Belt East Bridge	10460	4501	3668	821	941	156	785	21332
Drogden	32401	3556	42*	2*	0	102*	1300	37403
Langeland East	9850	4388	3638	810	928	148	986	20748
Kadet Fairway	58720	11464	4168	818	917	166	1706	77959
Bornholm North	39266	11812	3675	747	915	158	1980	58553
Bornholm South	13178	1668	276	26	14	8	439	15609
Gotland West	17357	3465	274	46	45	29	629	21845
Gotland East	20959	7444	2742	525	717	112	736	33235
Åland West	16997	3021	361	55	29	18	645	21126
Åland East	967	80	6	0	0	4	29	1086
Gulf of Finland	26304	8923	2372	367	672	123	1105	39866
Irbe Strait	7333	766	342	66	4	6	204	8721
Total	290782	71643	26081	5362	6179	1339	12388	413774
Percentage	70%	17%	6%	1%	1%	<1%	3%	100%

*) For ships passing the Drogden the maximum draught is 8 m; therefore these numbers are probably due to a reporting error.

Table 2. Number of ships crossing AIS fixed lines in the Baltic Sea according to the draught, 2007.

HELCOM AIS has been in operation since July 2005 providing additional information for the analysis of each individual accident case by respective Contracting States and the findings of such investigations are discussed during meetings of HELCOM groups with a view to identifying the possible need and possibilities of HELCOM actions in this area.

General information on accidents

According to the reports from the Contracting States there were 120 ship accidents in the HELCOM area in 2007 (**Figure 6**), which is 3 more than the year before. In two cases the reporting Contracting Party did not provide information about whether the accident resulted in pollution or not.

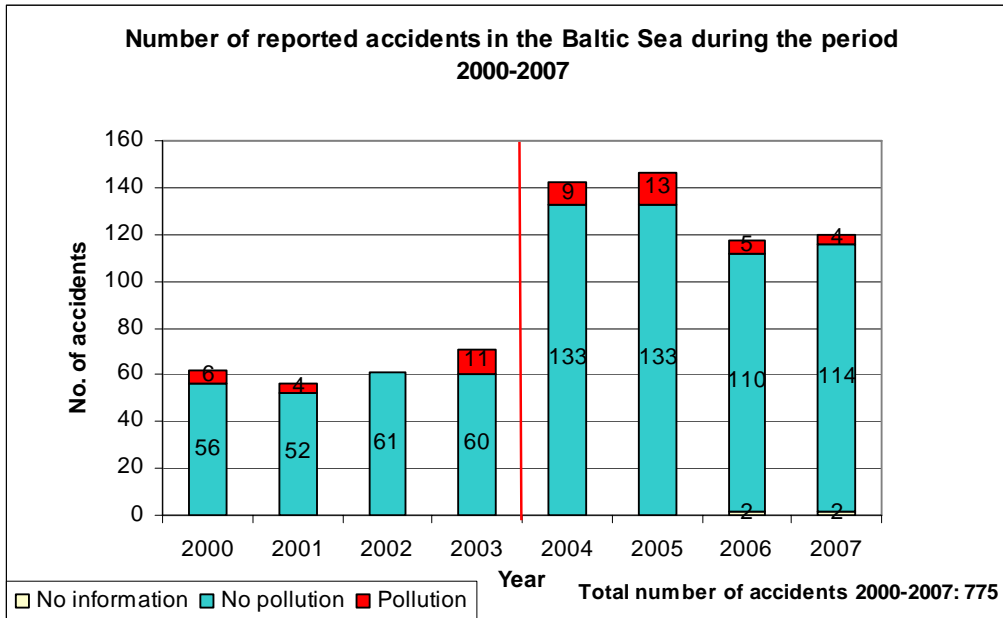


Figure 6

The spatial distribution of the reported accidents in 2007 is presented in **Figure 7**.

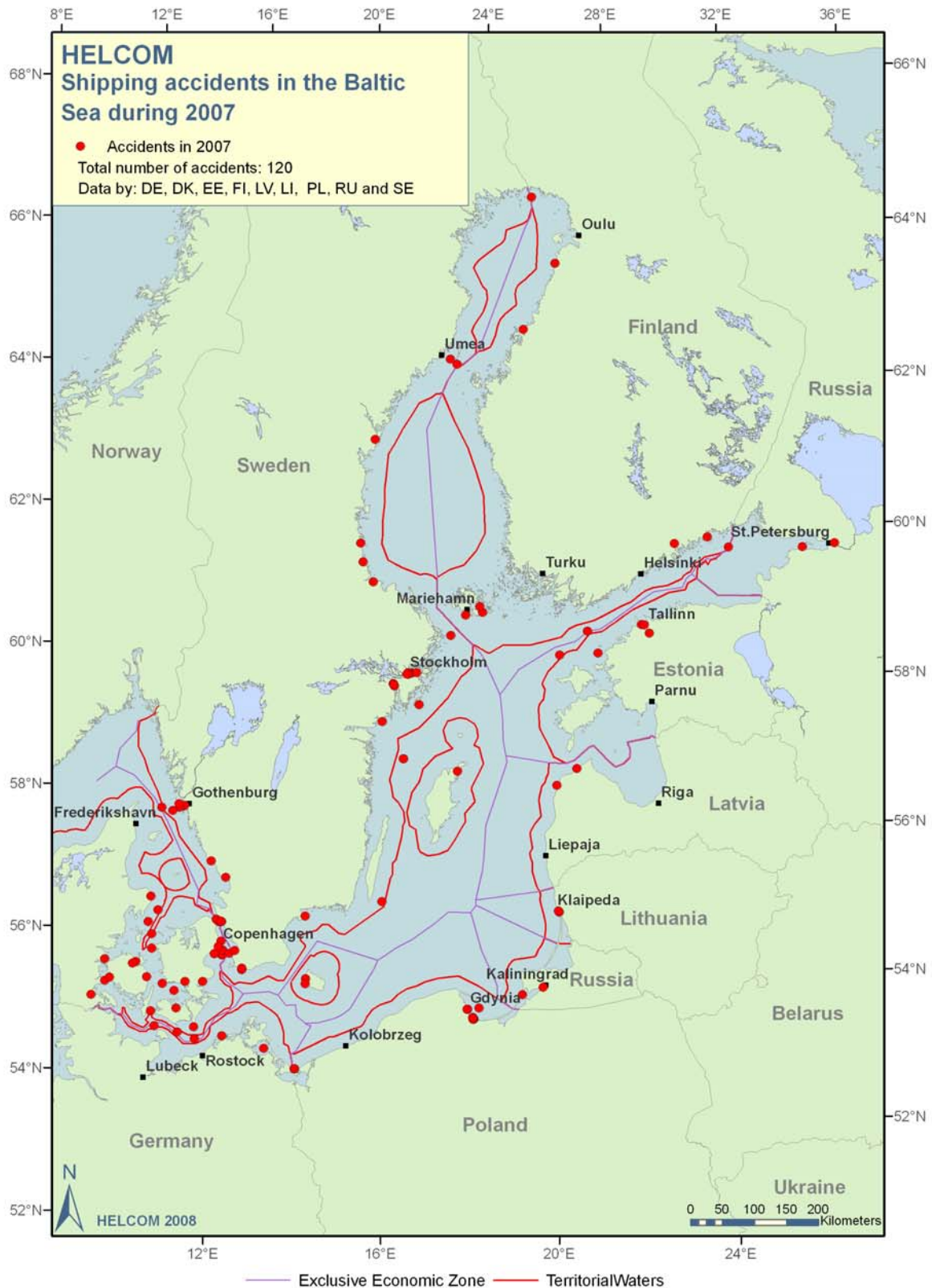


Figure 7

Groundings were the most common type of accidents in the Baltic accounting for almost a half of all reported cases (45%) surpassing the number of collisions (33%) (**Figure 8**). The share of groundings has increased (39% in 2006) and the share of collisions has decreased (46% in 2006).

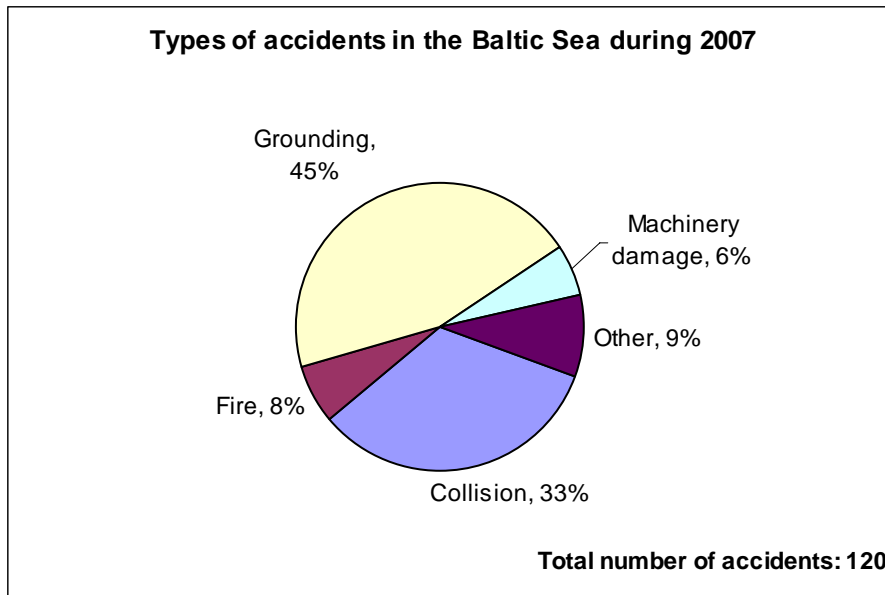


Figure 8

The share of groundings and collisions in accidents in 2007 (**Figure above**) is similar to their share in total number of accidents during 2000-2007 (**Figure 9**).

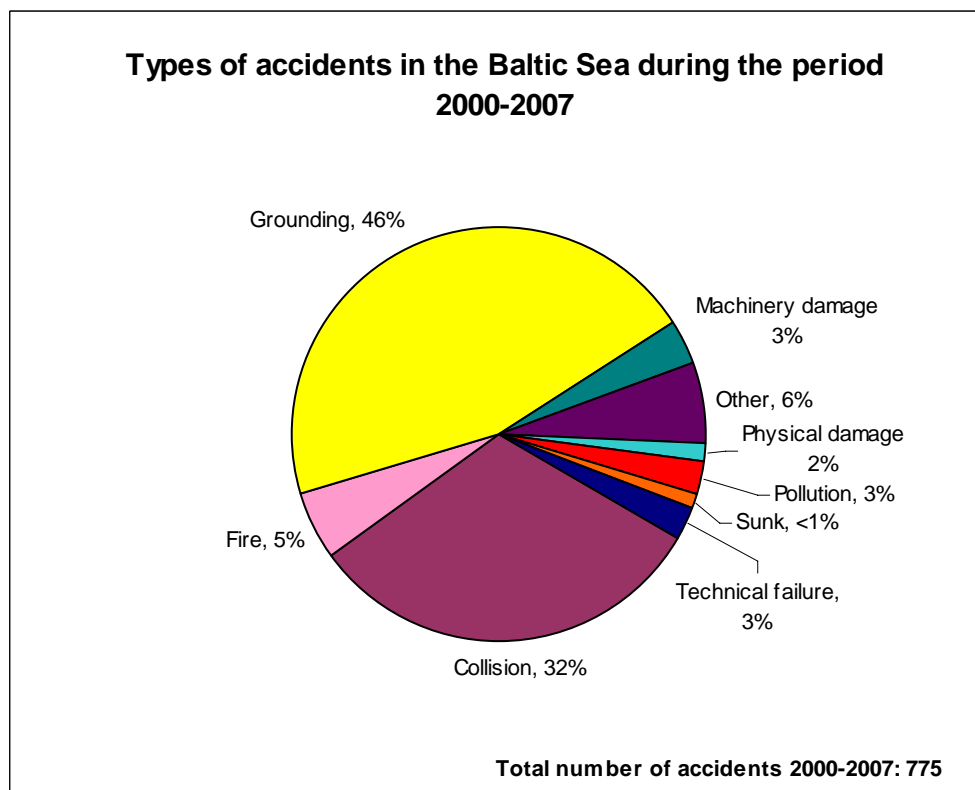


Figure 9

Spatial distribution of different types of reported accidents in the Baltic Sea in 2007 is presented in **Figure 10**.

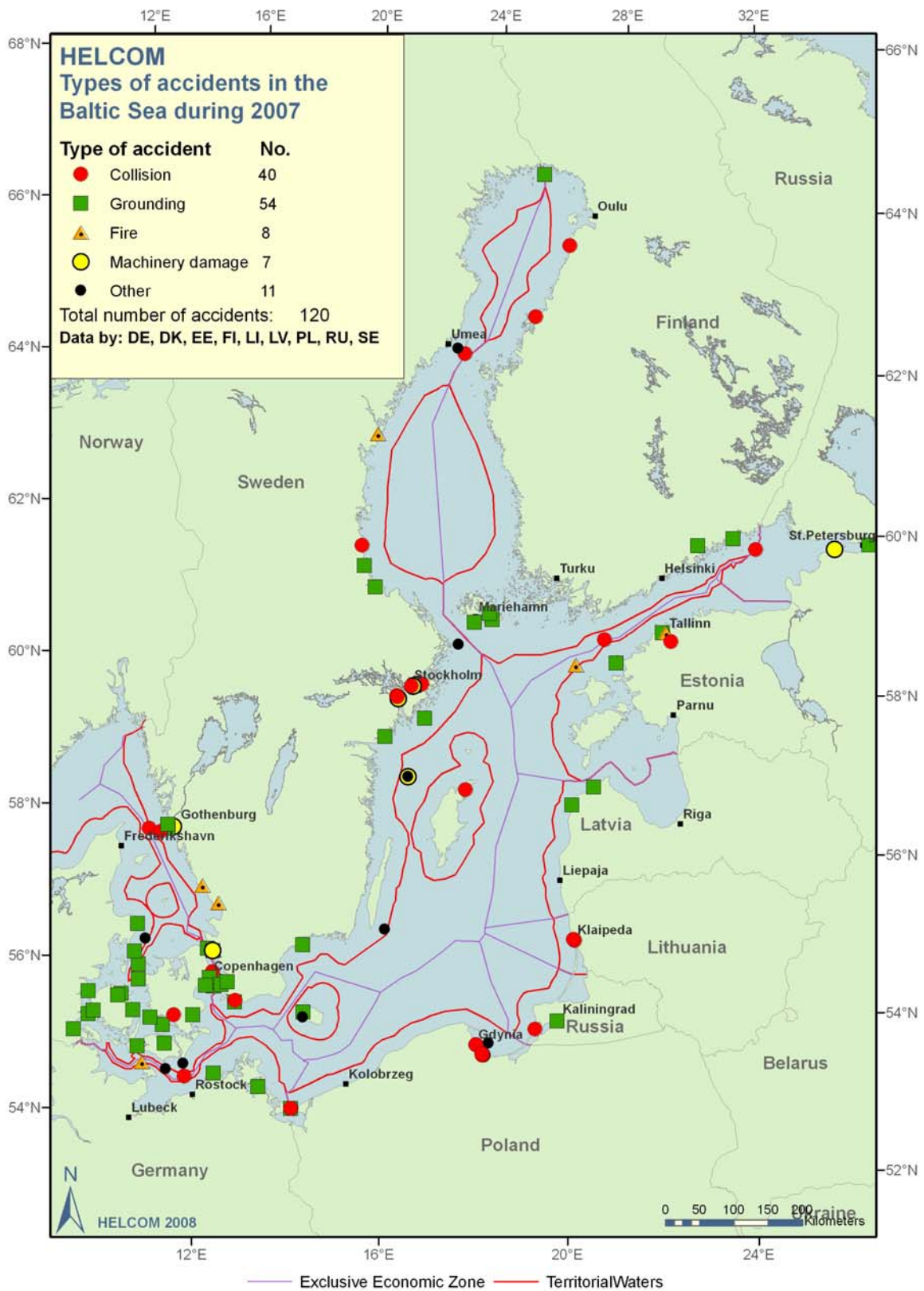


Figure 10

Types of vessels involved in the accidents

As can be seen from **Figure 11** cargo vessels are the main group of ships involved in accidents, followed by passenger vessels and tankers. This proportion more or less reflects the amount of different vessel types making up the Baltic Sea traffic in 2007 (crossings through the AIS lines, see Table 1). However the higher risk can be observed for passenger ships which made up 10% of the overall traffic while their share in accidents was as much as 20%.

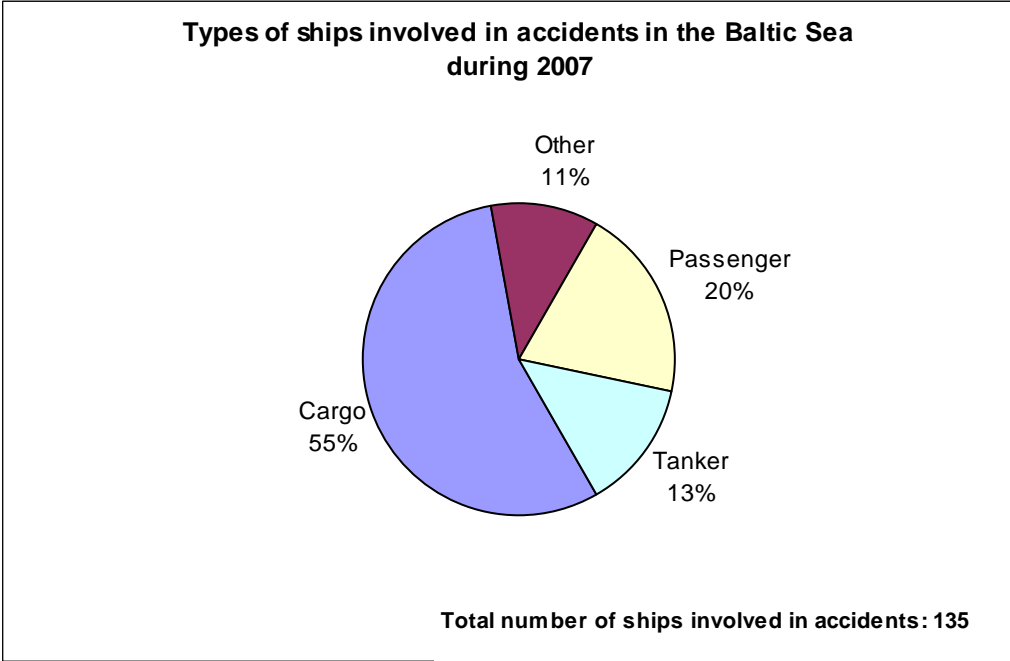


Figure 11

As tankers are often the issue of high concern, the map on tanker accidents in 2000-2007 (**Figure 12**) is also presented here.

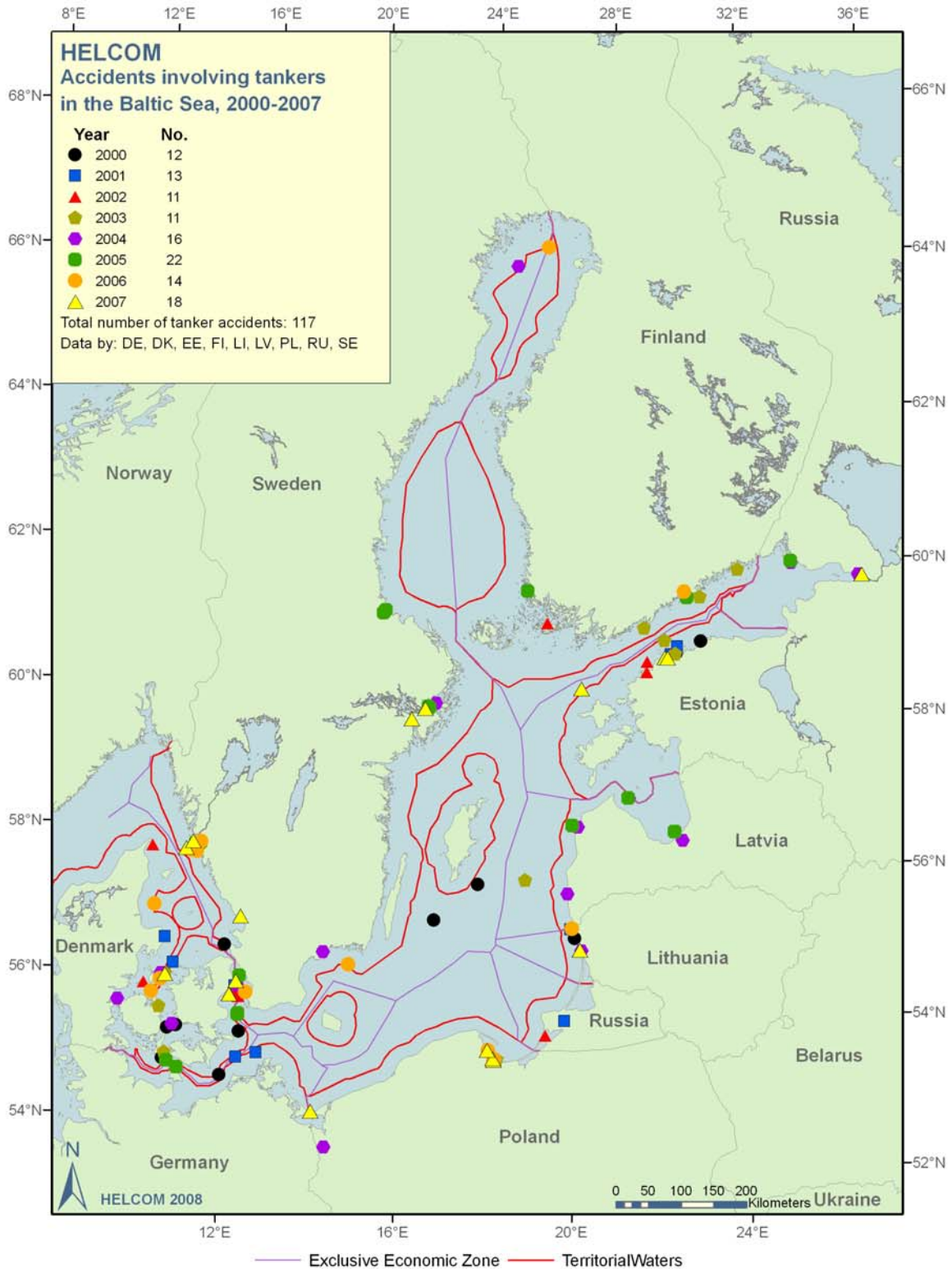


Figure 12

Causes of accidents

The main cause of accidents in 2007 is not so clear due to the lack of information for 32% of cases. However, human factor seems to continue to be the main reason for an accident to happen (32%), followed by technical factor (20%) (**Figure 13**).

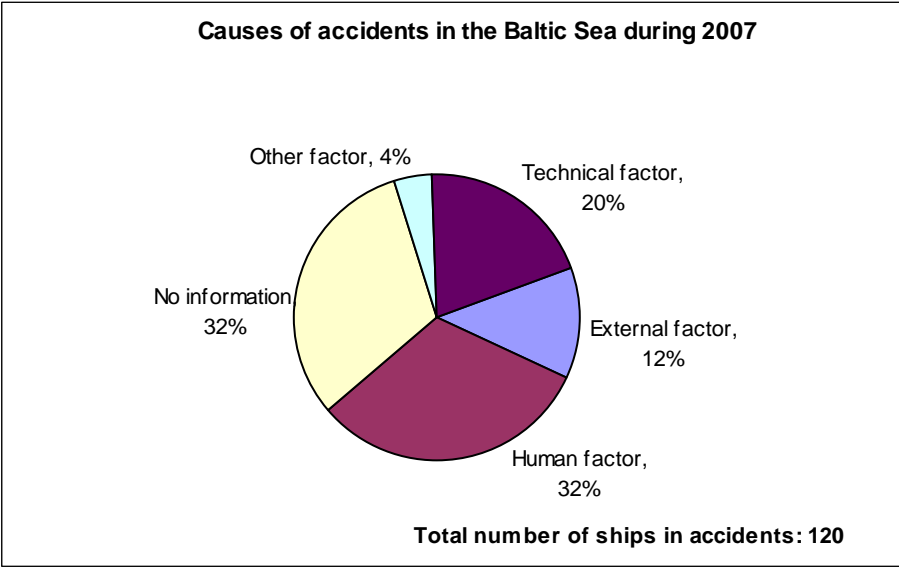


Figure 13

Three accidents that took place in ice conditions were reported in 2007 and their location is presented in **Figure 14**.

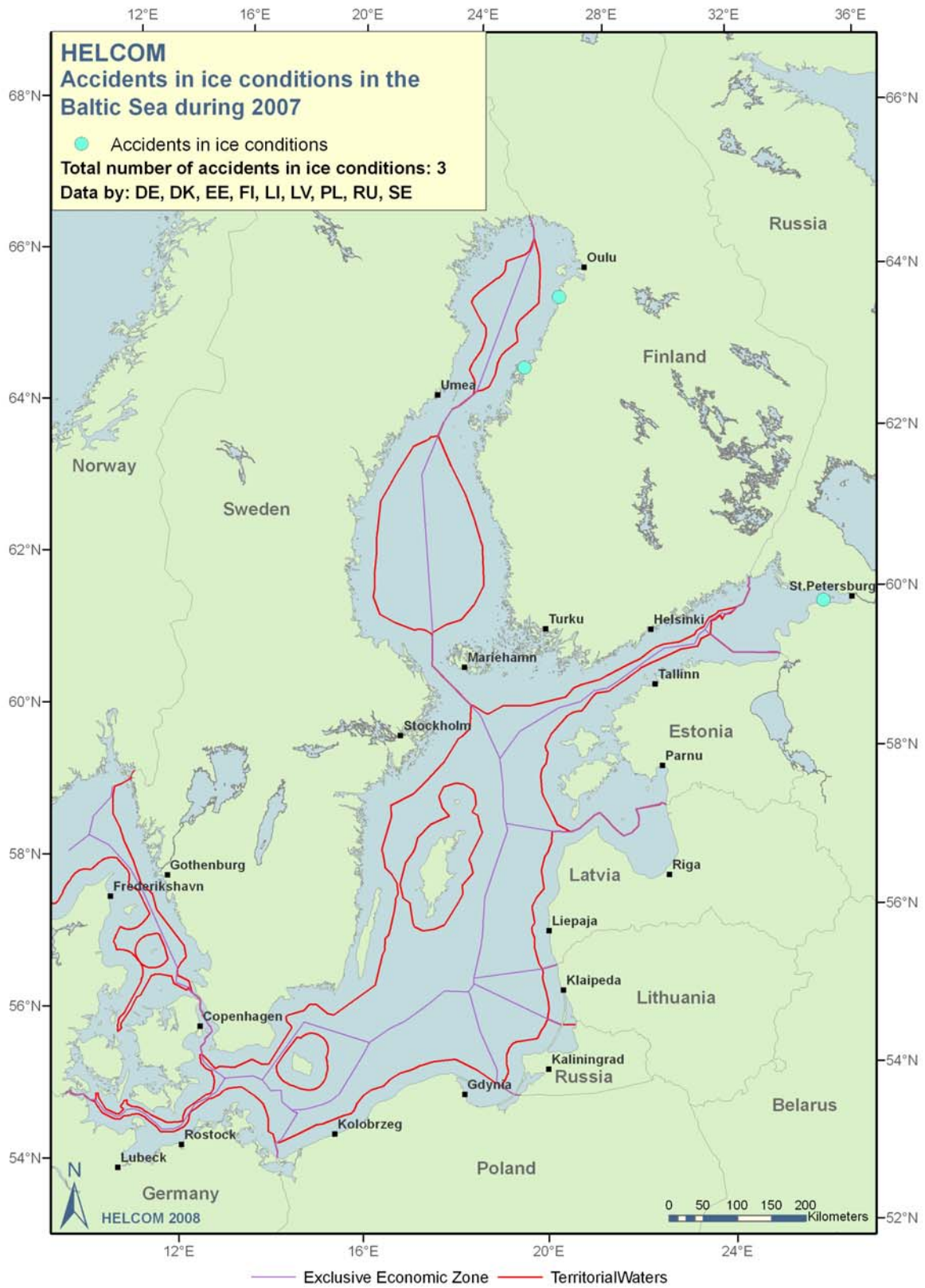


Figure 14

Spatial distribution of accidents with indication of the cause is presented in **Figure 15**.

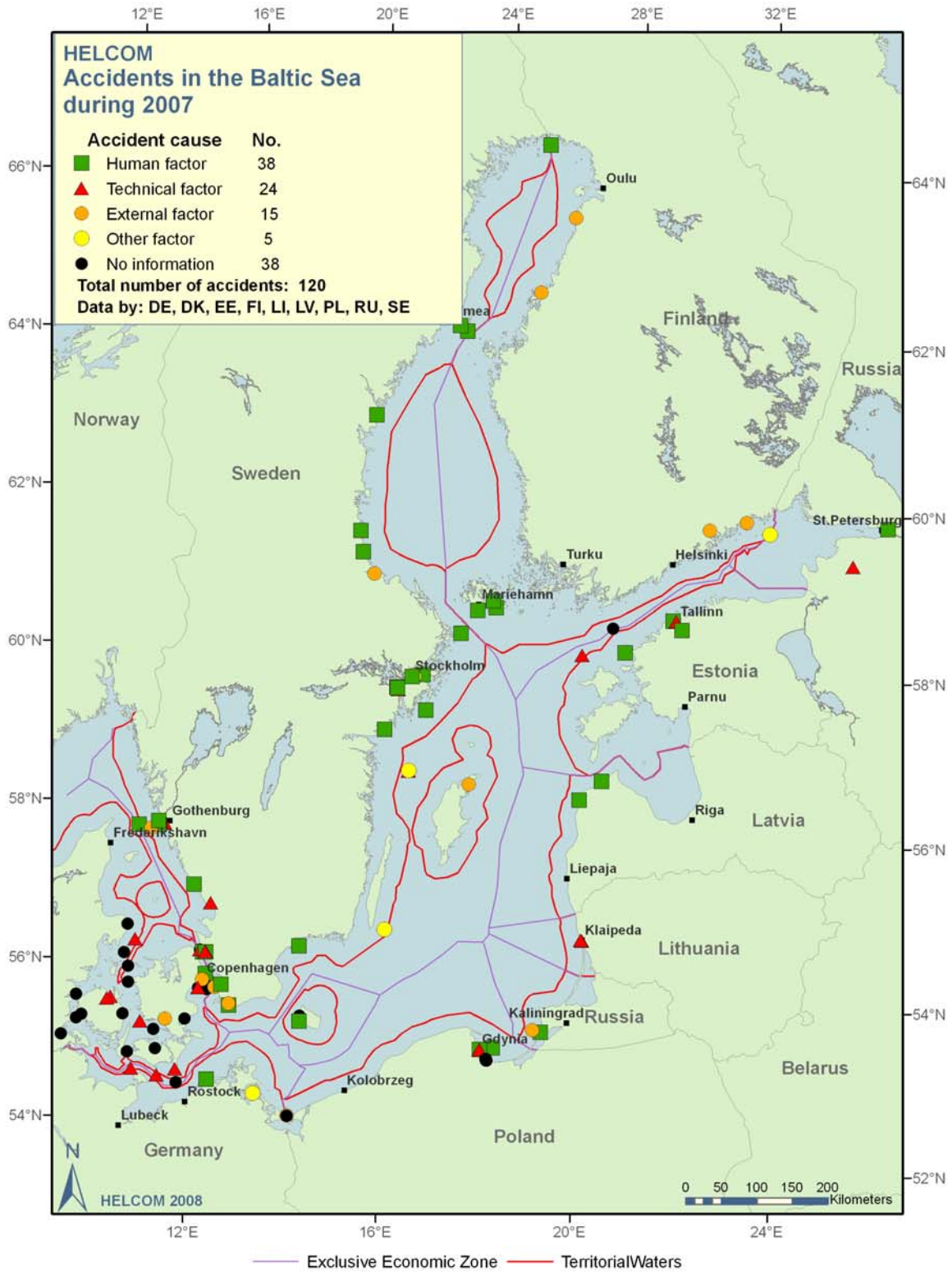


Figure 15

Groundings

Accounting for 45% of the total number of reported accidents in 2007, groundings are the most common type of accidents in the Baltic (**Figure 16**), in contrary to 2005 and 2006 when collisions were more common. No decreasing trend in the number of groundings in the Baltic can be observed over the years.

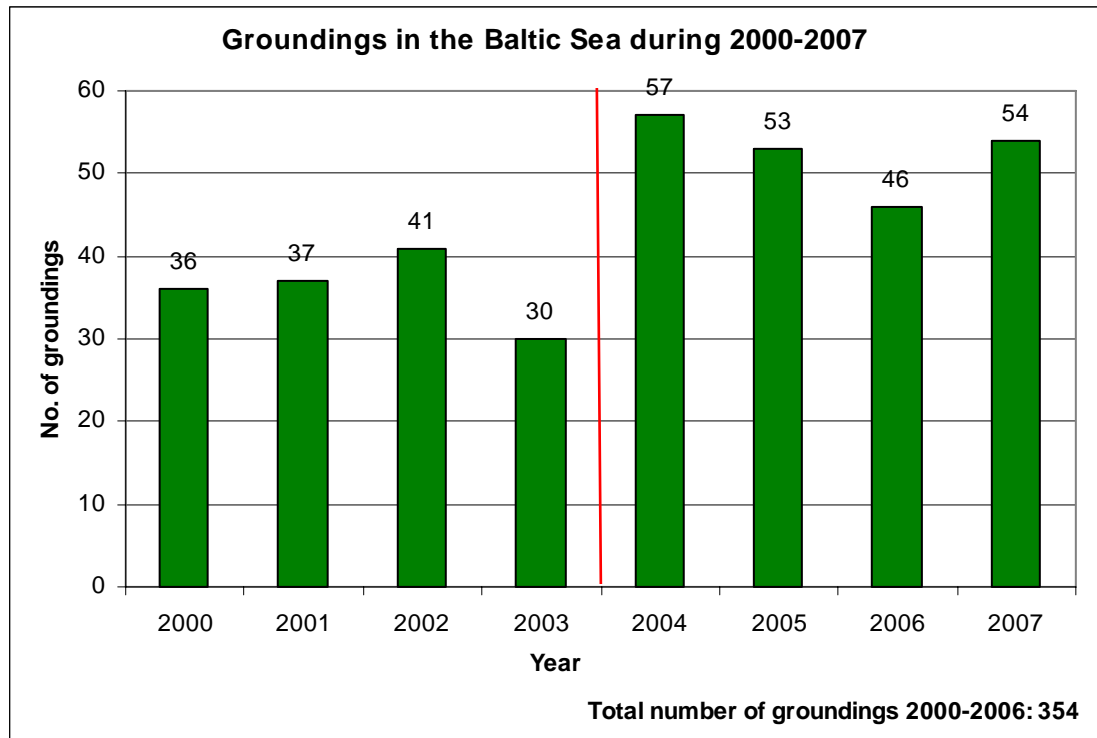


Figure 16

Figure 17 illustrates the pilot presence/absence on board in cases of grounding accidents in 2007.

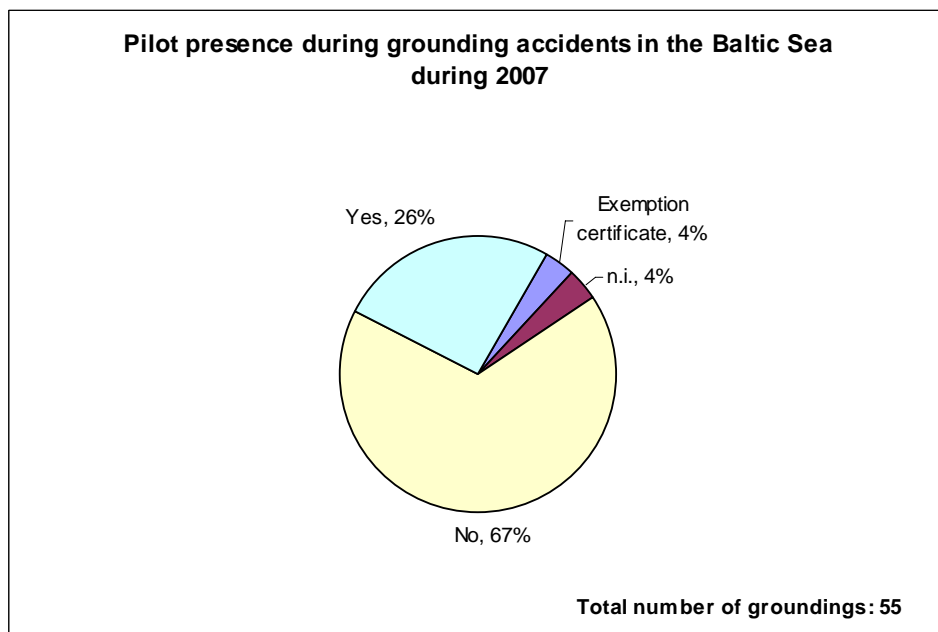


Figure 17

The map of the reported groundings in 2000-2007 (**Figure 18**) clearly indicates the areas of primary concern:

- Danish straits
- Gulf of Finland, especially the Estonian coast
- Åland archipelago area
- Swedish coast of the Baltic Proper
- Ports.

The other areas where groundings have occurred deserve the attention of the relevant states as well.

The map of groundings in 2007 (**Figure 19**) especially points to the Danish straits.

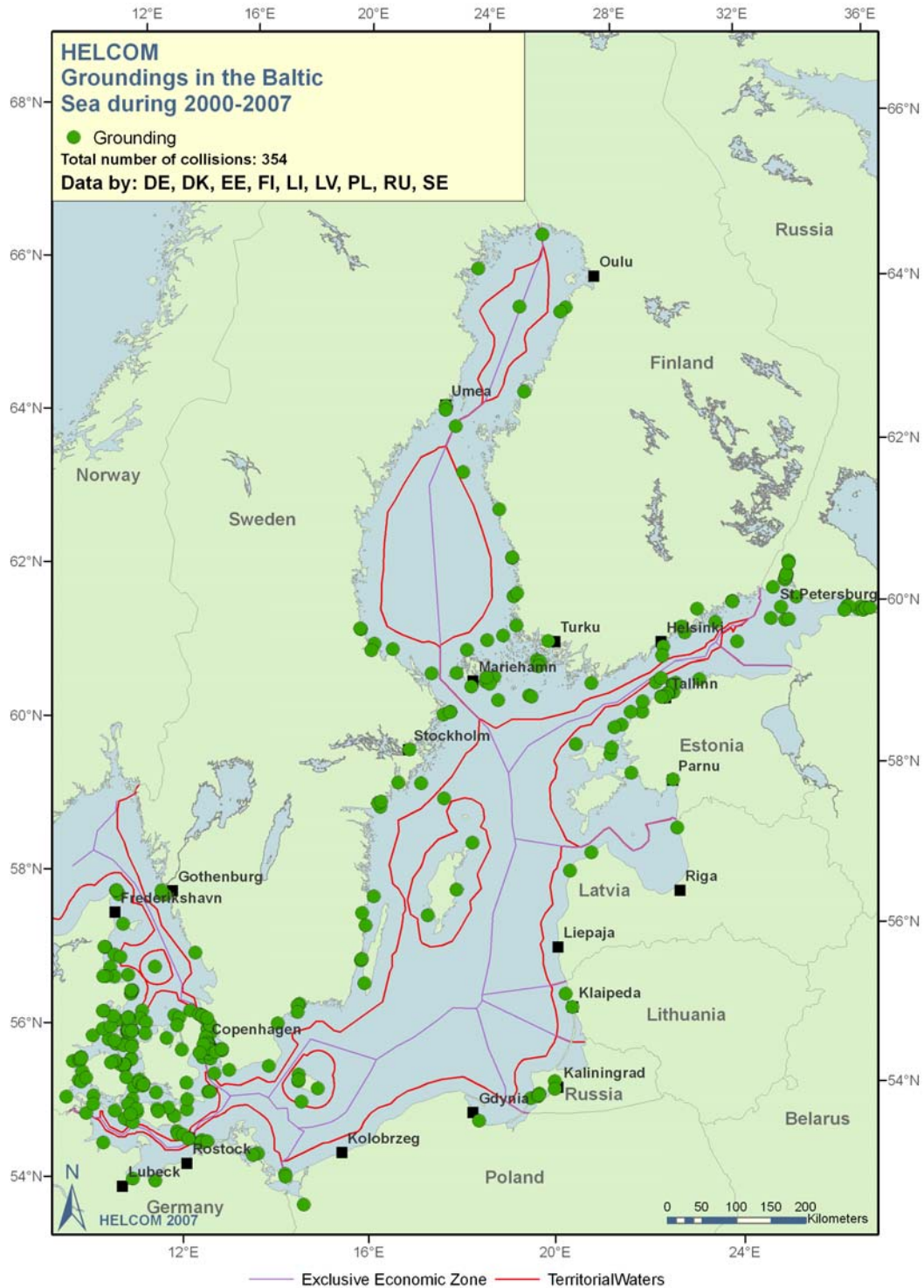


Figure 18

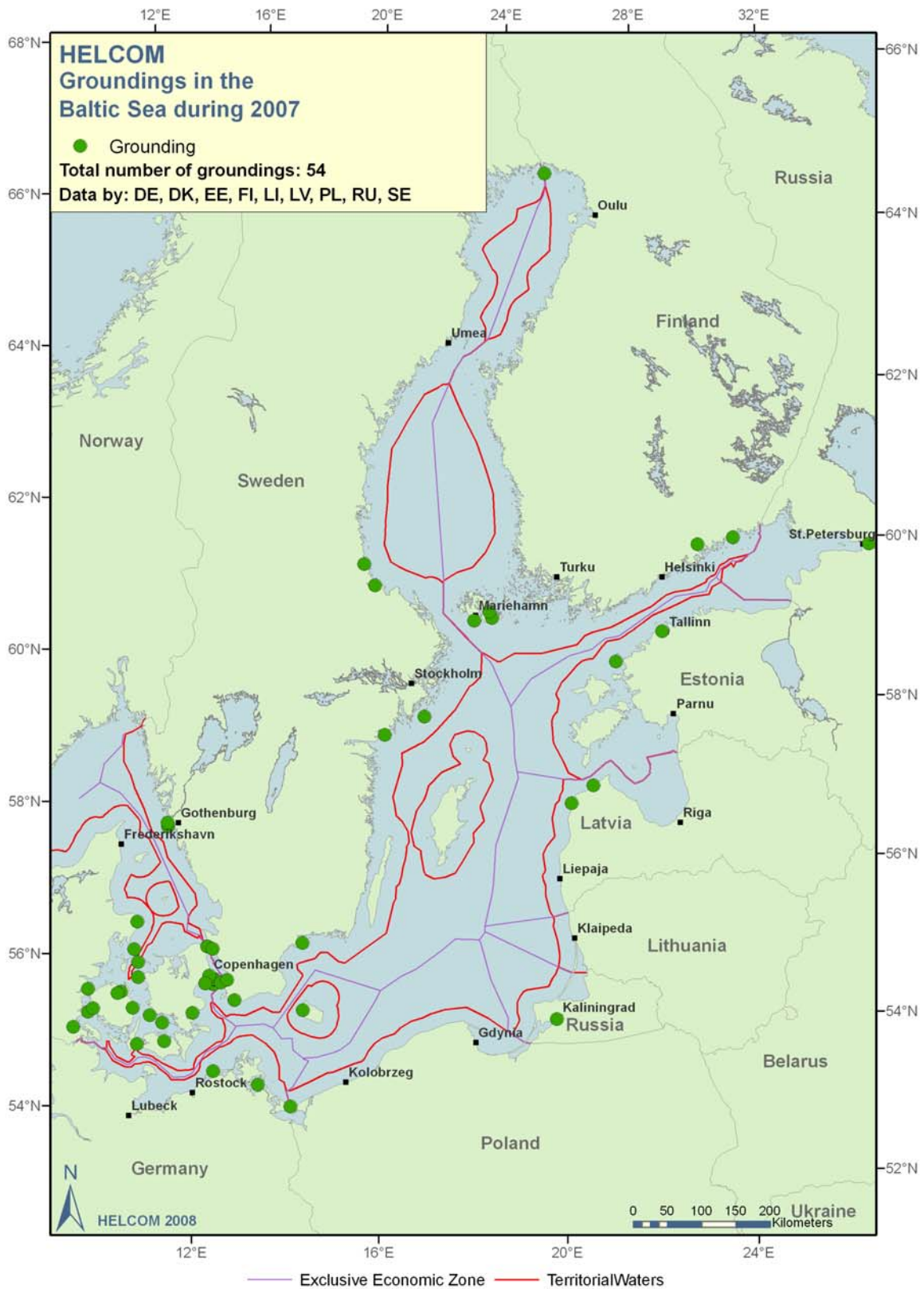


Figure 19

Vessels with the draught of less than 7 m had the biggest share in the number of groundings reported in 2007 (44%) (**Figure 20**). However, when compared to the composition of ship traffic in 2007 (crossings through the AIS lines, see Table 2), in which vessels with the smallest draught constitute around 73%, the accident risk for this type of vessels seem lower than e.g. for ships with draught of more than 15 m (less than 1% of the traffic). However, no clear conclusion could be drawn as information is missing for 46% of the groundings.

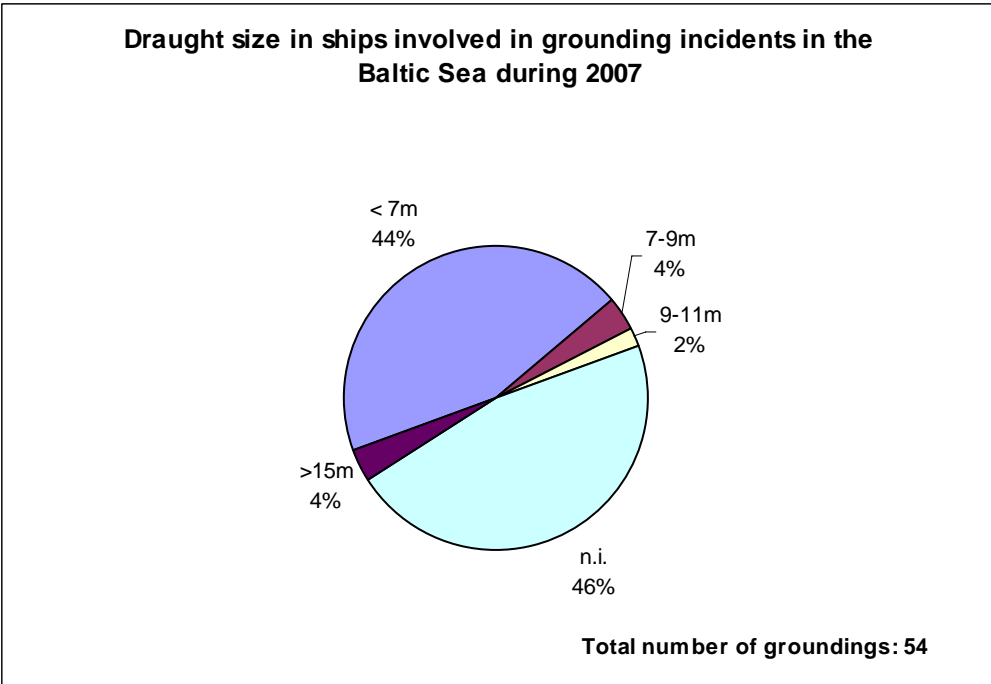


Figure 20

The statistics on groundings in southwestern Baltic Sea, including the Danish straits, shows an increase in recent years (**Figure 21, 22**) accounting for around 58% of all groundings registered in 2000-2007.

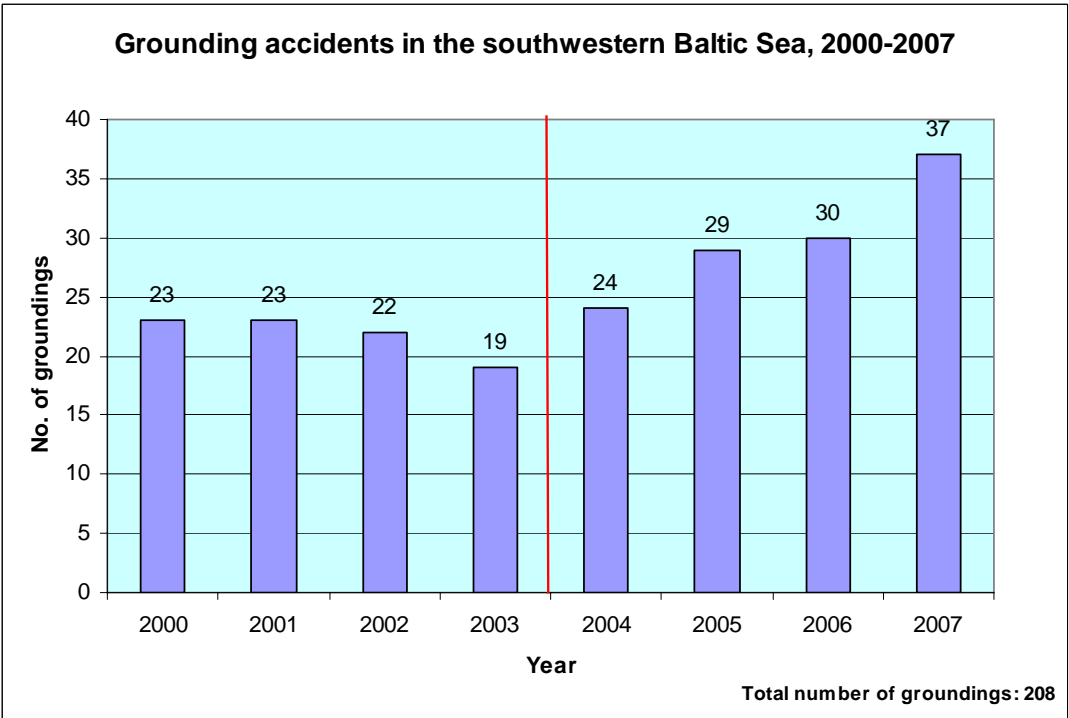


Figure 21

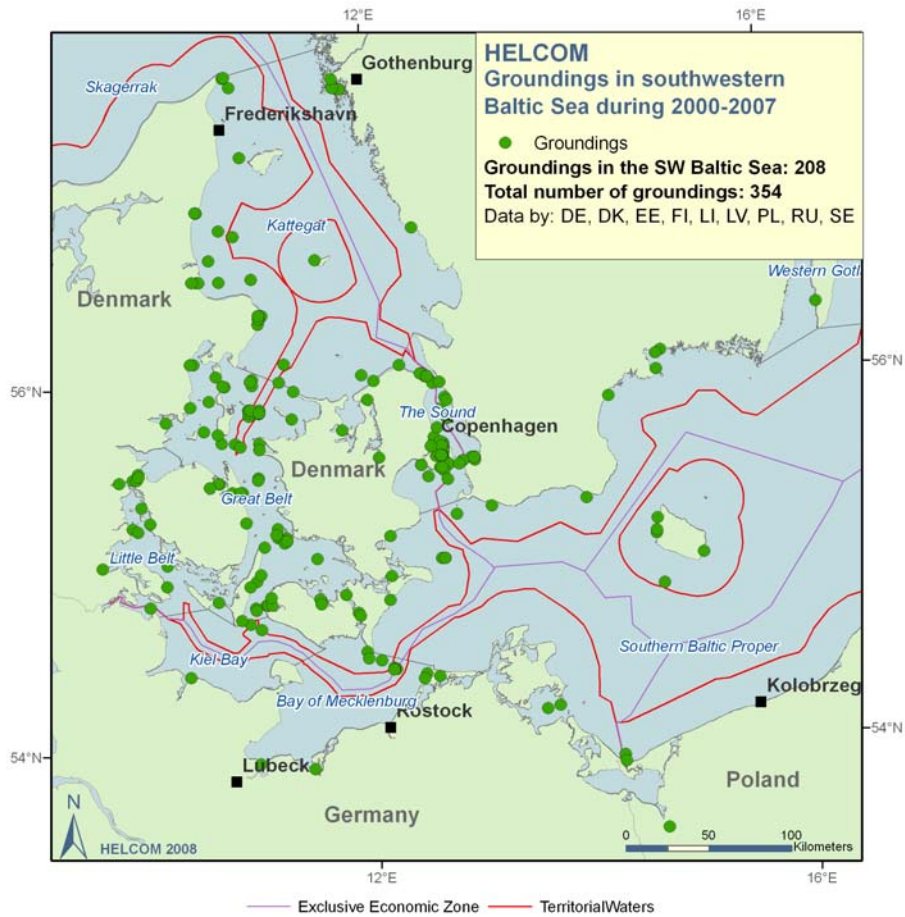


Figure 22

The number of the reported groundings in the Gulf of Finland in 2007 remained low (**Figure 23**).

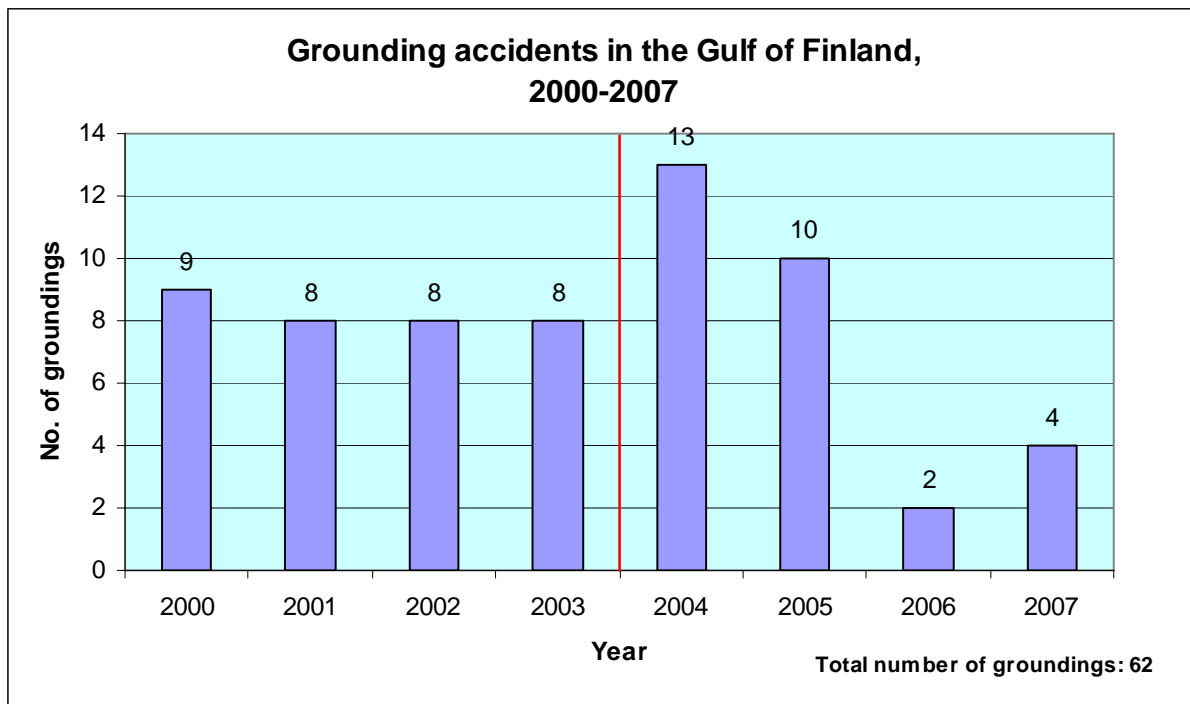


Figure 23

Collisions

Amounting to 40 cases (33%) of all accidents in 2007 and 247 cases (31%) in 2000-2007; collisions became the second most frequent type of shipping accident in the Baltic. The number of reported collisions in 2007 has decreased over the last years (**Figure 24**).



Figure 24

Ship to ship collisions accounted for 38% of all collision cases in 2007 and the rest of the cases were collisions with fixed and/or floating structures, e.g. peers, navigation signs etc. (**Figure 25**).

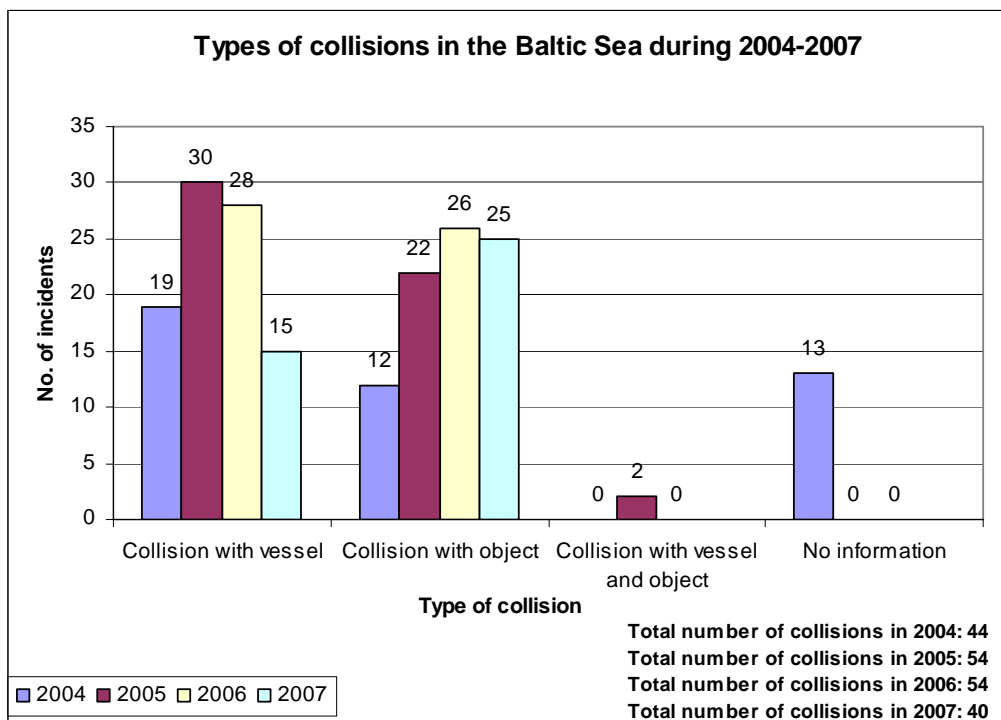


Figure 25

Spatially collisions are not clearly accumulated in few areas (**Figure 26**) but the map of collisions during 2000-2007 (**Figure 27**) is pointing to the approaches to ports and the Danish straits as the most risky areas for ships to collide. However, in 2007 some decrease in the number of collisions can be identified in the southwestern Baltic Sea, including the Danish straits (**Figures 28-29**). In the Gulf of Finland the number of collisions has decreased dramatically compared to previous years (**Figure 30-31**).

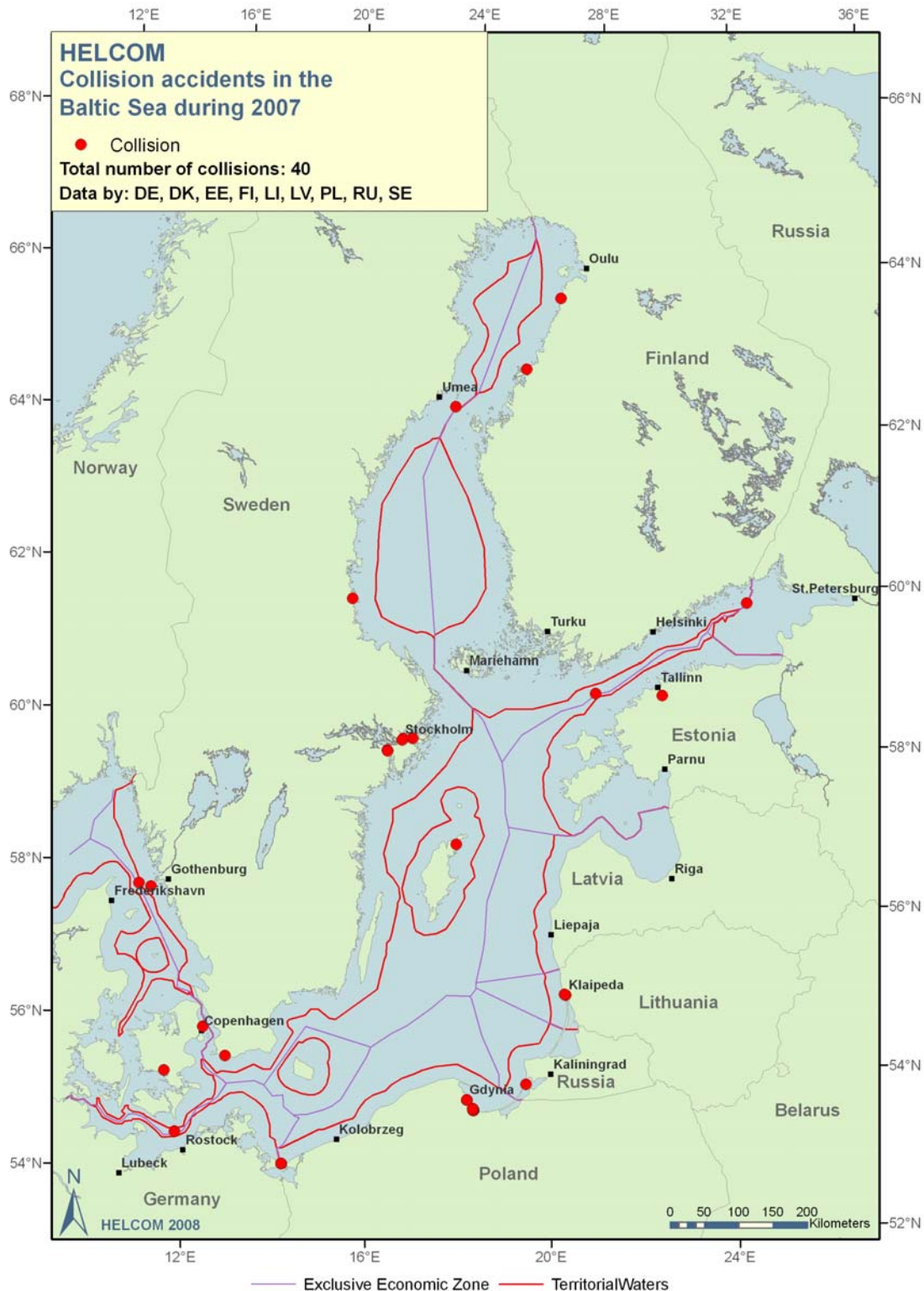


Figure 26¹

¹ Note: More than one collision took place e.g. in Szczecin, Gdansk, Gdynia, Klaipeda and Stockholm.

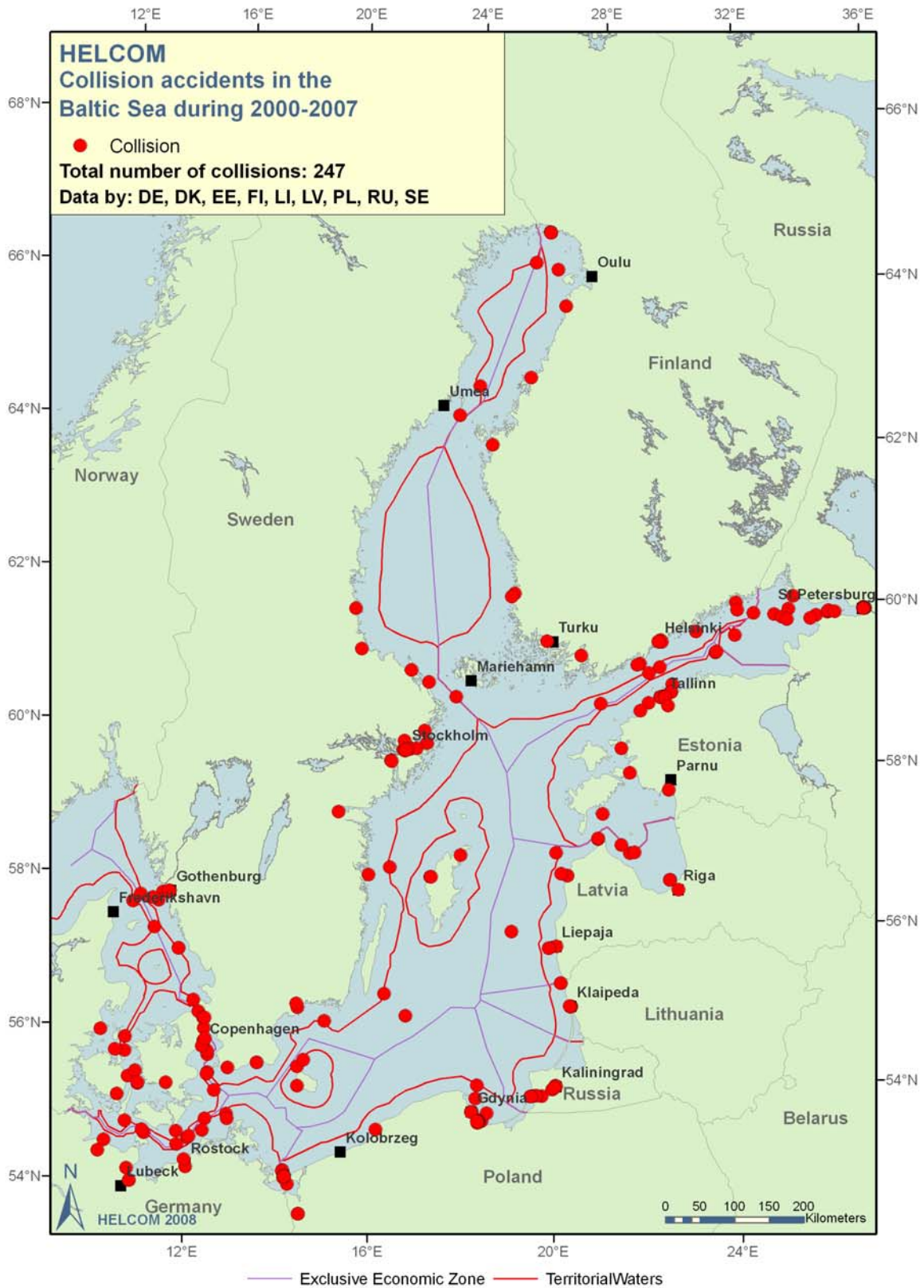


Figure 27

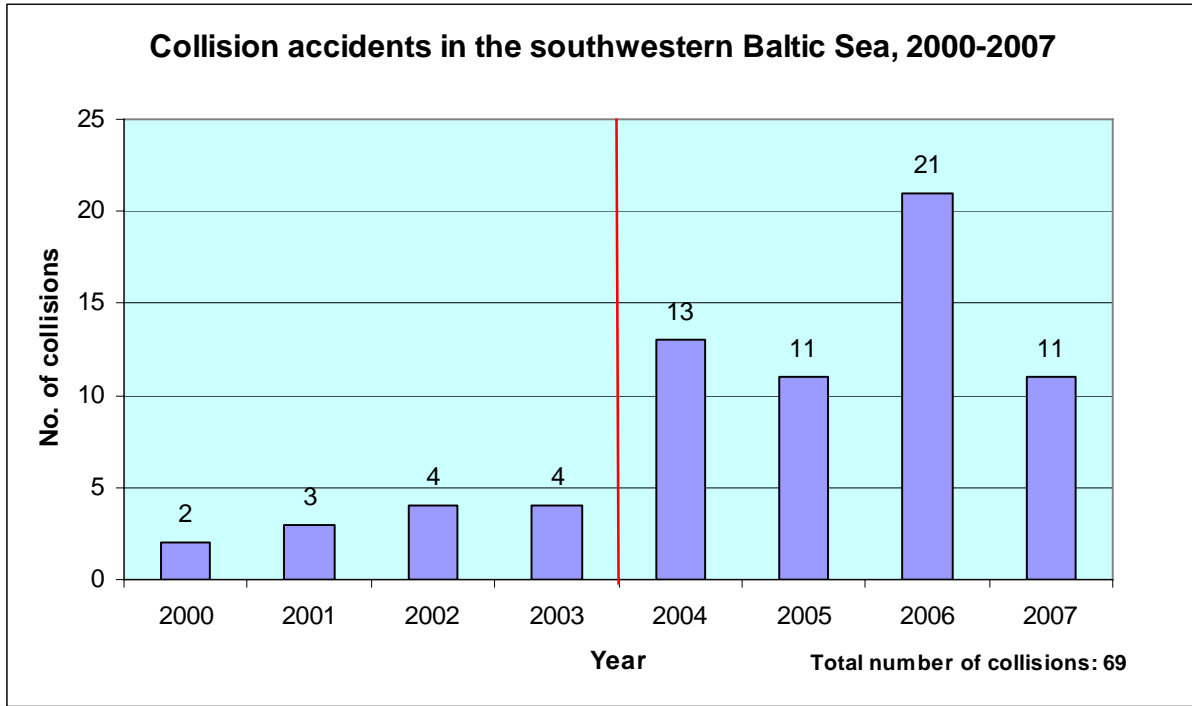


Figure 28

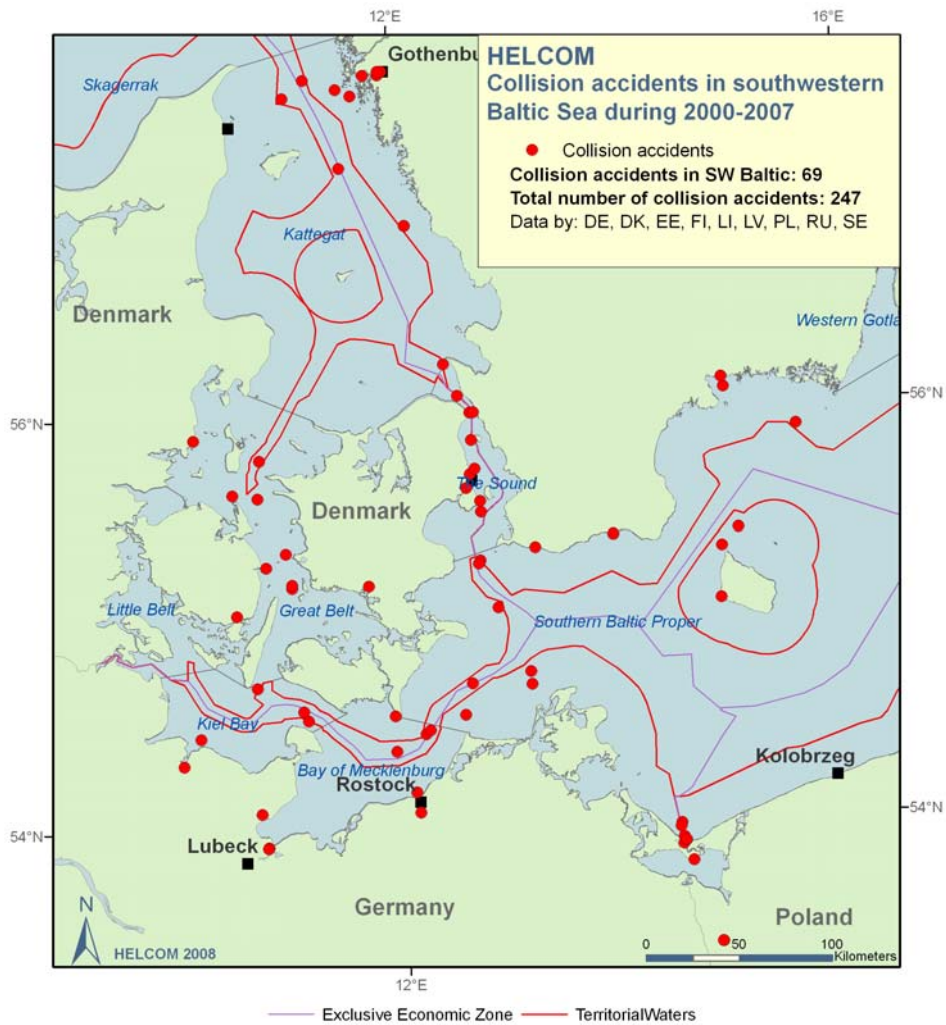


Figure 29



Figure 30

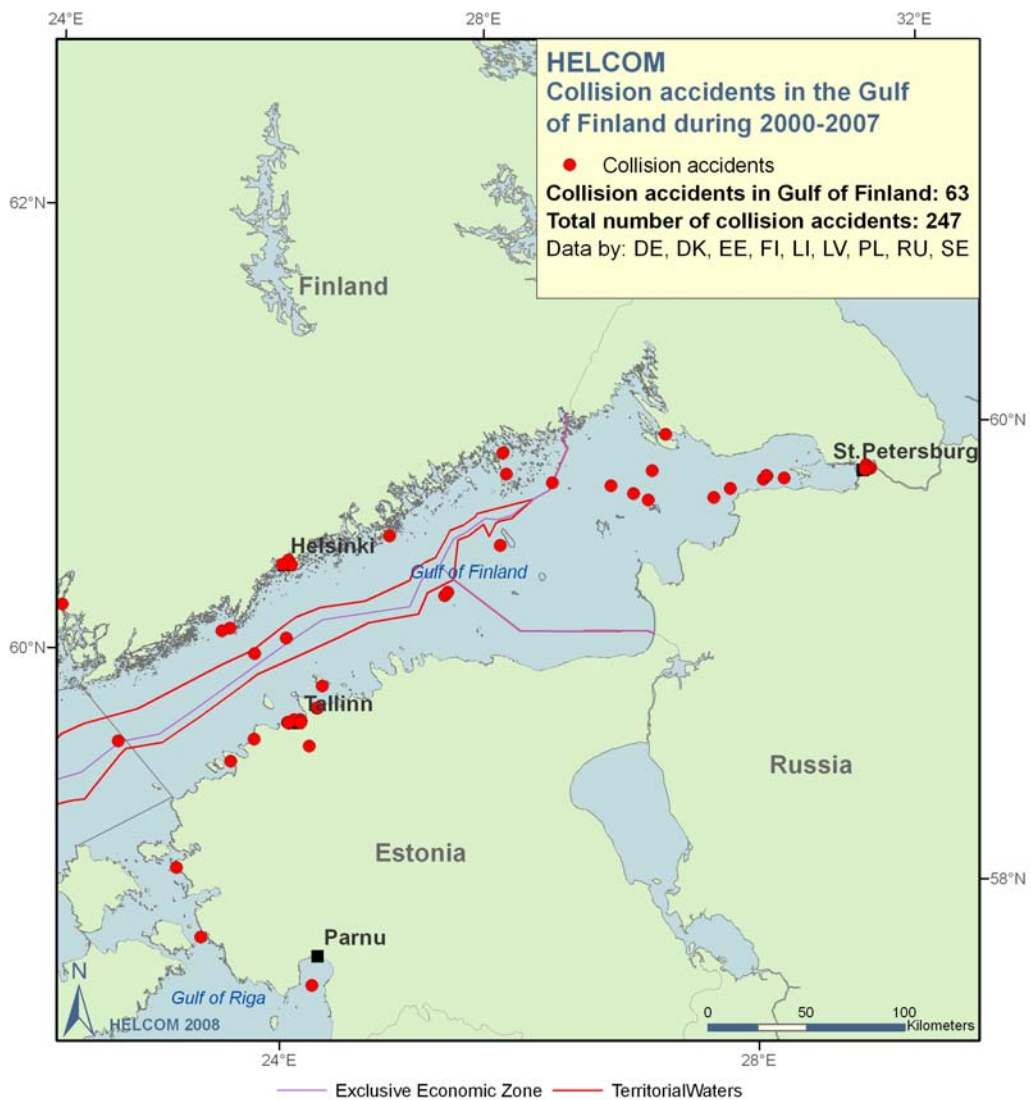


Figure 31

Accidents with pollution

As one may expect accidents with pollution get more attention of the competent authorities and media. According to the 2000-2007 data, 7% of the reported accidents ended up with some kind of pollution. In 2007 this percentage was lower (3%), with four accidents reported by the Contracting Parties. Two of the pollution accidents were caused by collision and one by grounding (**Figure 32**) and the most common type of ships involved were cargo vessels (**Figure 33**).

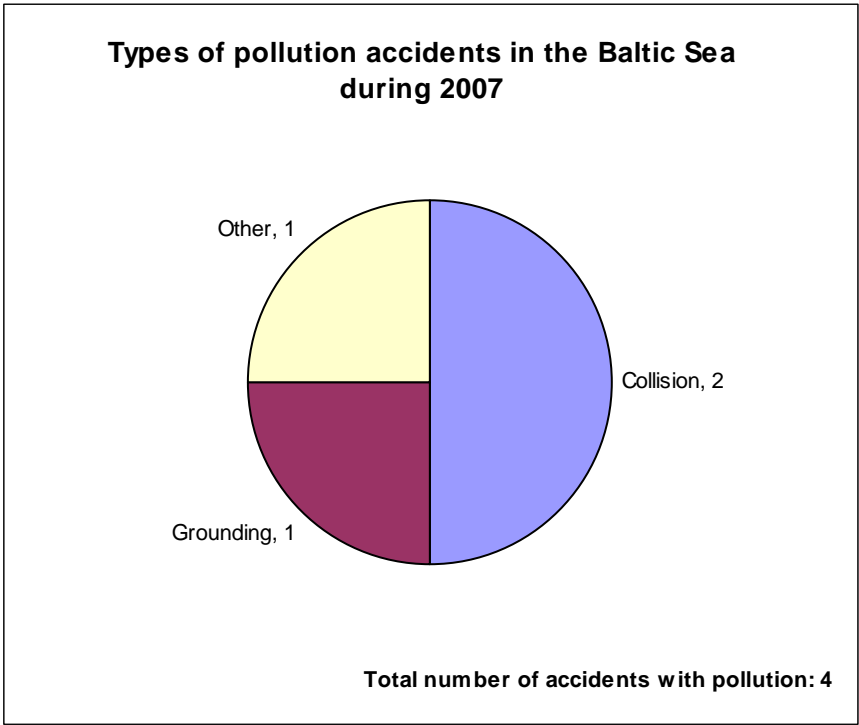


Figure 32

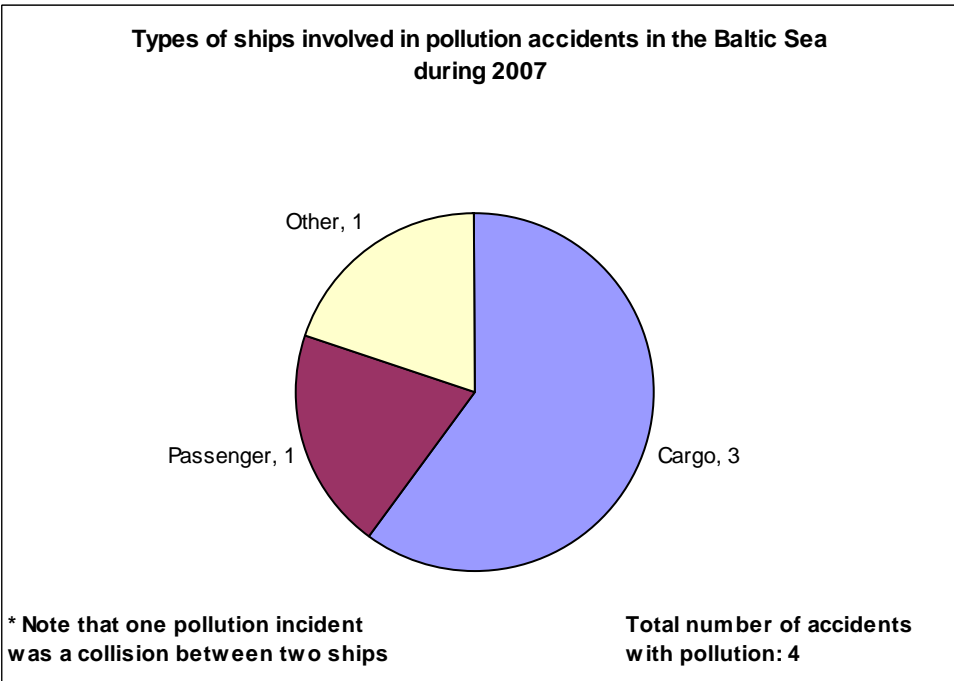


Figure 33

Human factor was also a dominating cause of accidents resulting in pollution, causing two out of four accident cases (**Figure 34**).

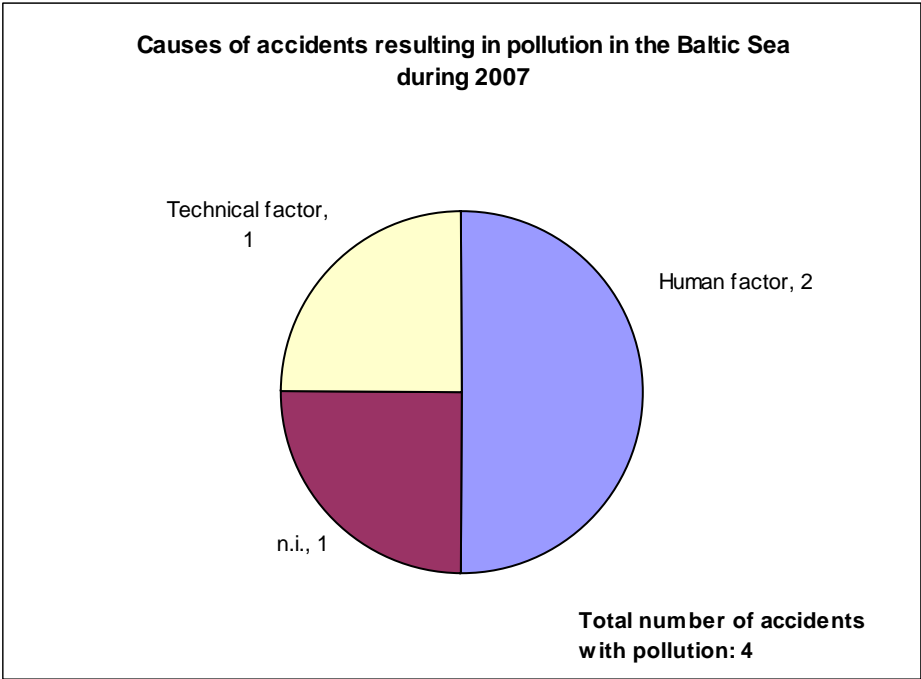


Figure 34

The spatial distribution of the accidents in 2007 causing pollution is presented in **Figure 35** and some additional details of pollution accidents are contained in **Table 3**.

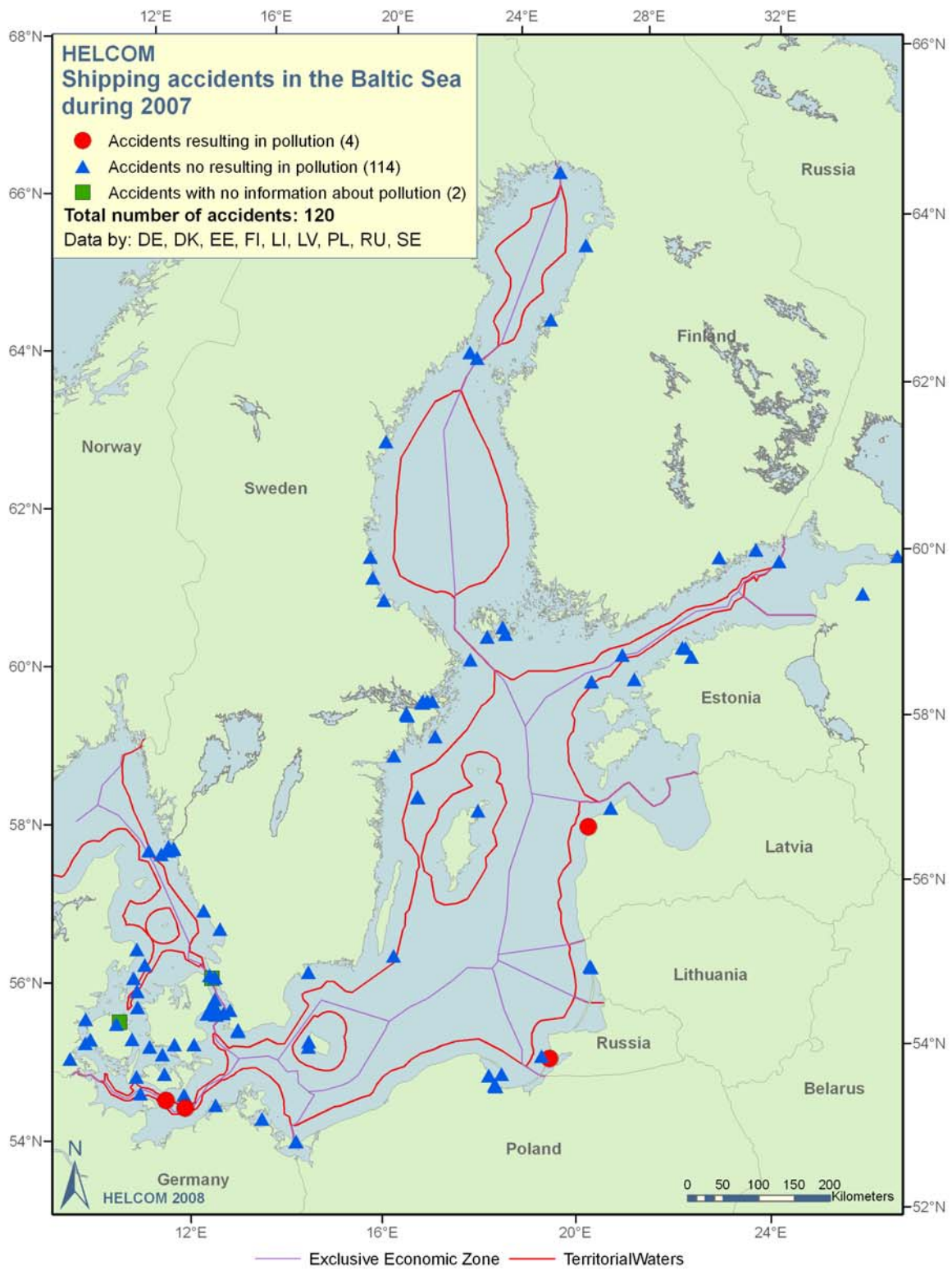


Figure 35

Country	Date	Latitude	Longitude	Ship name(s)	Ship type(s)	Ship size (gt)	Cargo	Type of accident	Cause of accident	Type of pollution
Denmark	28.10.2007	54.5000	11.5200	OMER N, IMO 8131154, Slovenia	Coaster	1510	Nitrate fertilizer in sacks	Other (ship capzised because of leak in hull)	Technical factor	Gasoil
Denmark	29.05.2007	54.4000	11.9333	KRISTINA REGINA, IMO 5048485, Finland and PIONEER, 6705250, Comoros	Ro-ro passenger-ship/ tug boat	4295	Passengers	Collision	n.i.	Lubricating oil
Latvia	15.01.2007	57.4680	21.5850	Golden Sky, IMO-8405373, Cyprus	Bulk Carrier	15786	Muriate of Potash 24983.370 mt	Grounding	Human error in heavy weather, with technical problems	12 tonnes oil, KCL
Russia	04.02.2007	54.6356	19.9210	MAERSK VIENNA, IMO 9202479, Cyprus		17167	Containers	Collision	Human factor and hard wind (in ice conditions)	0.2 tonnes HFO

Table 3. Data on accidents resulting in pollution in 2007.