HELSINKI COMMISSION
Baltic Marine Environment
Protection Commission

Report on shipping accidents in the Baltic Sea area during 2010

Photo by Maritime office in Gdynia

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1 Introduction

Reports on shipping accidents in the Baltic Sea area have been compiled 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 2010 except for Lithuania where no shipping accidents occurred in 2010.

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.

2 Ship traffic in the Baltic

IMO regulations require Automatic Identification System (AIS) 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 irrespective 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, basic information on the intensity of shipping is of importance. According to the HELCOM AIS, there are about 2,000 ships in the Baltic marine area at any given moment, and each month around 3,500–5,000 ships ply the waters of the Baltic. The intensity of traffic can also be illustrated by the number of ships crossing the pre-defined HELCOM AIS lines as presented in ***Figures 1*** and ***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 time periods of two days and one week are shown in ***Figures 4*** and ***5***. The numeric data behind maps in Figures 1 and 2 are presented in ***Tables 1 and 2***.

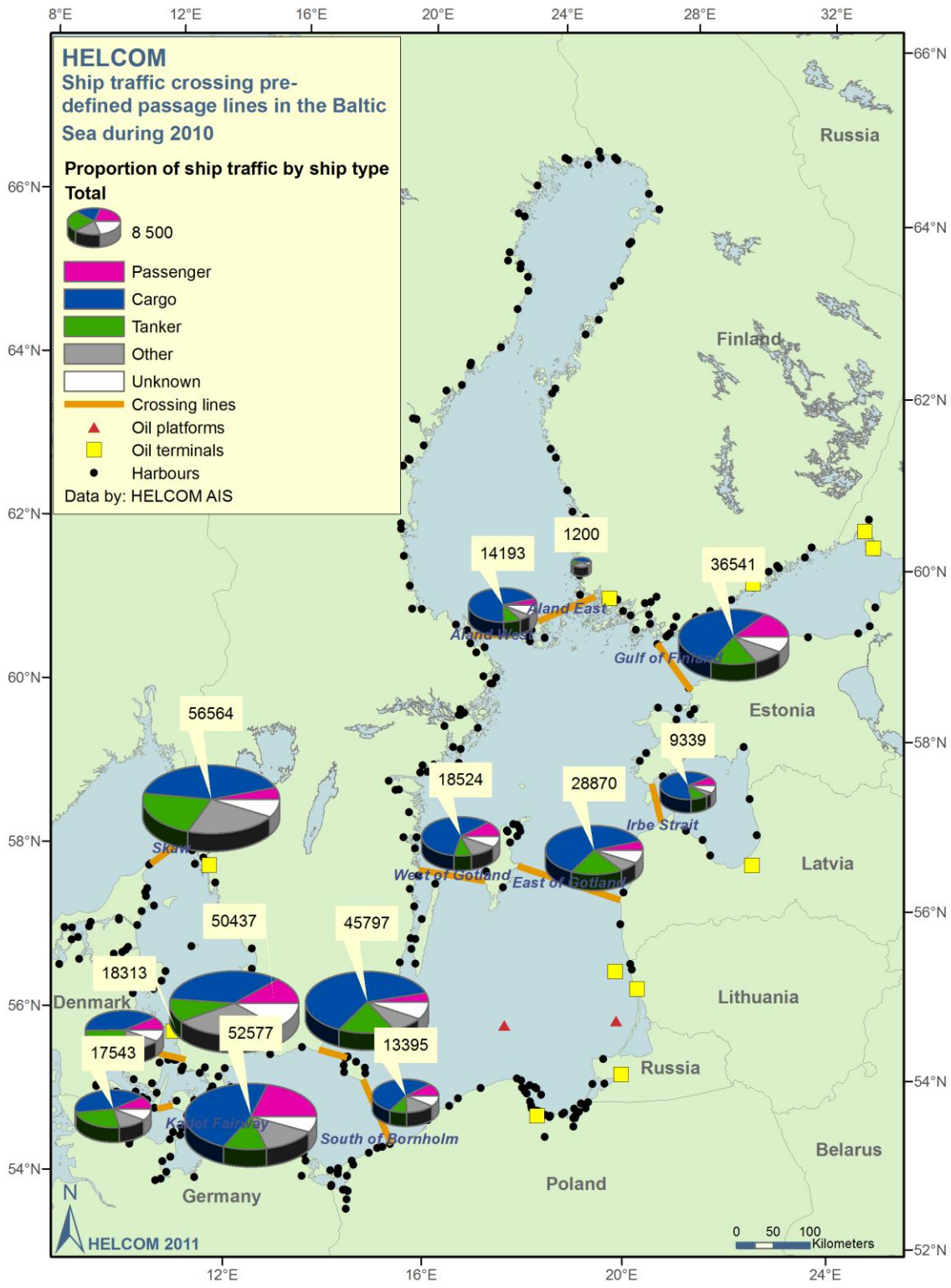


Figure 1. Number of ships crossing AIS fixed lines in the Baltic Sea according to the type of the vessels, 2010.

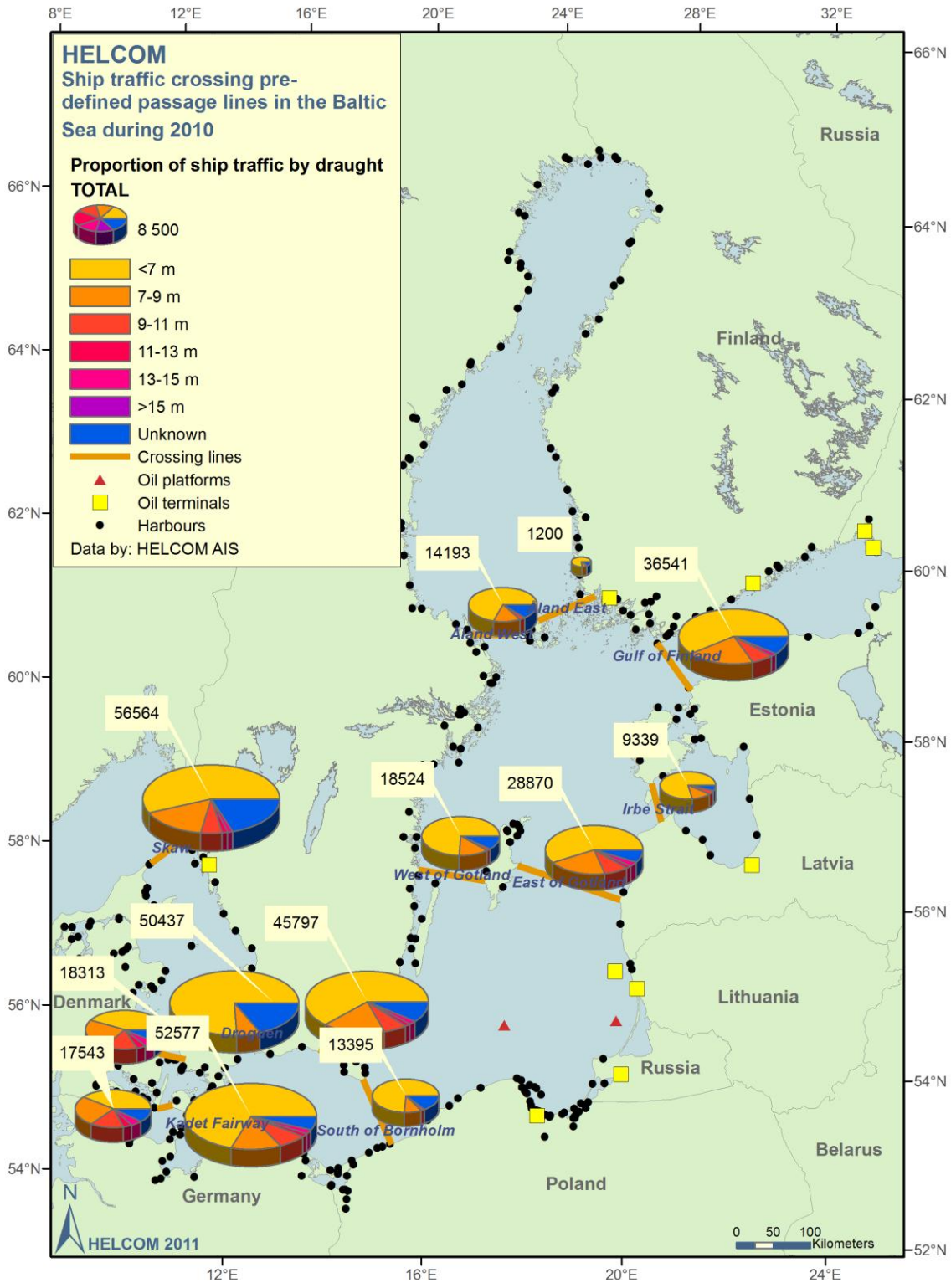
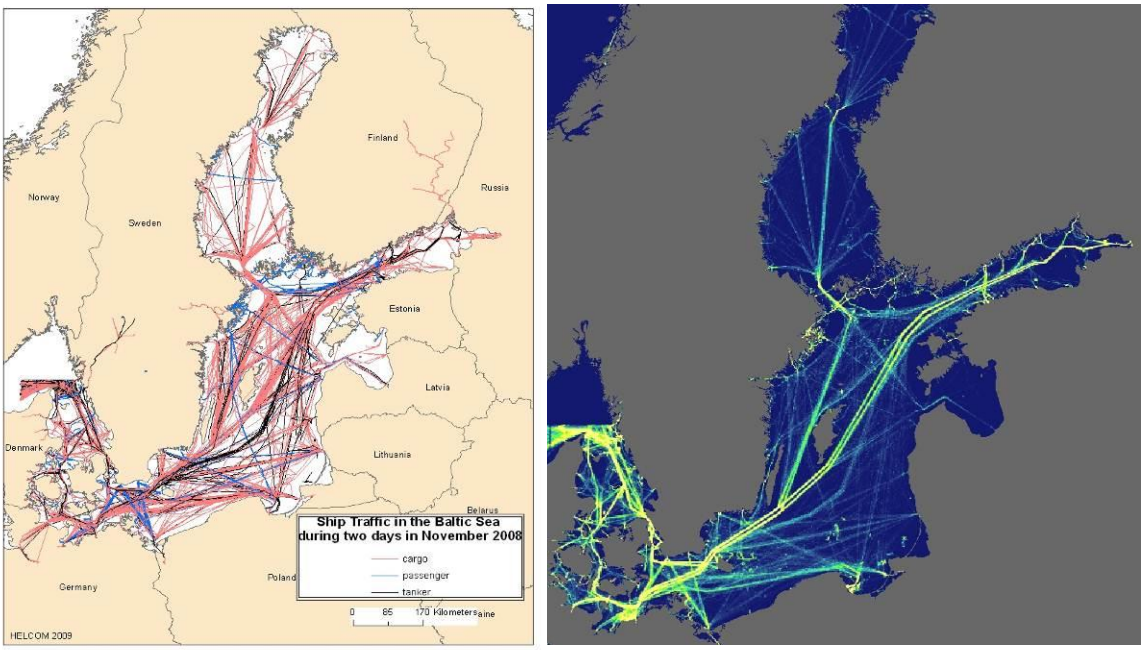


Figure 2. Number of ships crossing AIS fixed lines in the Baltic Sea according to the draught, 2010.

Figure 3. Snapshot of ship traffic in the Baltic Sea on 23 May 2011. Note: the yellow dots illustrate AIS stations and the arrowheads depict different types of ships and direction of travel.



Figures 4 and 5. The figure on the left illustrates cargo, tanker and passenger ship traffic on the Baltic Sea during two days in November 2008. The figure on the right shows the density of shipping traffic during one week in 2008, with the busiest routes highlight in yellow.

Location	Type of ship					
	Passenger	Cargo	Tanker	Other	Unknown	Total
Skaw	2307	24782	10934	14847	3599	56564
Great Belt East Bridge	1484	7736	4754	2911	1372	18313
Drogden	5345	19043	4428	16163	5341	50437
Langeland East	1480	7673	4608	2385	1345	17543
Kadet Fairway	10163	24277	7503	7277	3031	52577
North of Bornholm	1620	28082	8968	3885	3112	45797
South of Bornholm	1265	7383	1453	2208	1068	13395
West of Gotland	1857	11303	1830	2212	1293	18524
East of Gotland	1262	17371	6414	1863	1869	28870
Åland West	625	10087	1505	845	1126	14193
Åland East	6	562	132	394	106	1200
Gulf of Finland	4607	19398	6574	3346	2483	36541
Irbe Strait	758	6469	1097	348	638	9339
Total	**32779**	**184166**	**60200**	**58684**	**26383**	**363293**
Percentage of tot.	**9.0**	**50.7**	**16.6**	**16.2**	**7.3**	**100**

Table 1. Number of ships crossing AIS fixed lines in the Baltic Sea according to the type of the vessels. 2010.

Location	Draught							
	<7 m	7-9 m	9-11 m	11-13 m	13-15 m	> 15	Unknown	Total
Skaw	30931	9331	3920	1058	944	250	10130	56564
Great Belt East Bridge	8033	3622	3260	830	900	123	1545	18313
Drogden*	38106	3971	0	0	0	0	8360	50437
Langeland East	7324	3544	3214	819	892	121	1629	17543
Kadet Fairway	35818	8656	3760	768	872	123	2580	52577
North of Bornholm	27571	9526	3305	690	841	127	3737	45797
South of Bornholm	9823	1472	310	73	15	3	1699	13395
West of Gotland	13655	2822	328	37	43	8	1631	18524
East of Gotland	16232	6662	2734	496	771	168	1807	28870
Åland West	9697	2445	384	25	36	5	1601	14193
Åland East	909	131	11	0	0	0	149	1200
Gulf of Finland	21003	8824	2573	345	634	139	3023	36541
Irbe Strait	7227	1217	344	86	28	1	436	9339
Total	**226329**	**62223**	**24206**	**5235**	**5979**	**1121**	**38200**	**363293**
Percentage of tot.	**62.3**	**17.1**	**6.7**	**1.4**	**1.6**	**0.3**	**10.5**	**100**

*) The maximum draught in Drogden is 8 m.

Table 2. Number of ships crossing AIS fixed lines in the Baltic Sea according to the draught. 2010.

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.

The HELCOM AIS historical statistics on ship traffic allow for the assessment of annual changes in traffic intensity. Since 2006, HELCOM has been following the trends in vessel traffic crossing fixed AIS lines, which are shown in ***Figure 6*** and ***Table 3***. The overall ship traffic increased between 2006 and 2008, while in the following years a decreasing trend can be observed. The decrease in AIS registered ship crossings in 2009 and 2010 for passenger, cargo and other ship types is likely to be due to decreased shipping activity resulting from the economic recession.

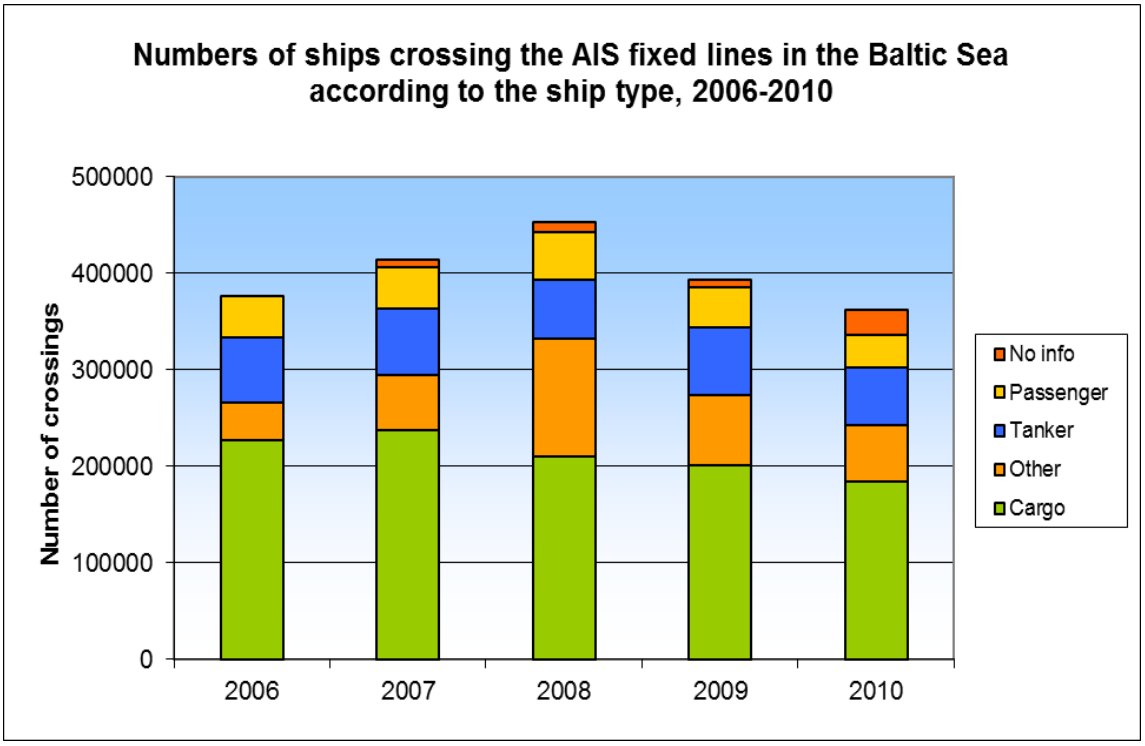


Figure 6. Number of ships crossing fixed AIS lines in the Baltic Sea during 2006-2010, shown here by ship type.

	Passenger	Cargo	Tanker	Other	No info	Total
2006	42731	226855	67458	39627	-	376671
%	11.3	60.2	17.9	10.5	-	100.0
2007	43215	237342	69335	56981	6901	413774
%	10.4	57.4	16.8	13.8	1.7	100.0
2008	49355	210021	61996	122029	10297	453698
%	10.9	46.3	13.7	26.9	2.3	100
2009	42408	200595	69021	73906	8096	394026
%	10.8	50.9	17.5	18.8	2.1	100.0
2010	32779	184166	60200	58684	26383	363293
%	9.0	50.7	16.6	16.2	7.3	100

Table 3. Number of ships crossing fixed AIS lines in the Baltic Sea during 2006-2010.

For more information about maritime traffic in the Baltic Sea region, see: http://www.helcom.fi/shipping/navigation/en_GB/navigation/.

3 Overview of accidents in the Baltic Sea

According to the reports from the Contracting States there were 124 ship accidents in the HELCOM area in 2010 (***Figure 7***), which is 19 more than the year before (increase of 18%) and 11 less than in 2008 (decrease of 8%).

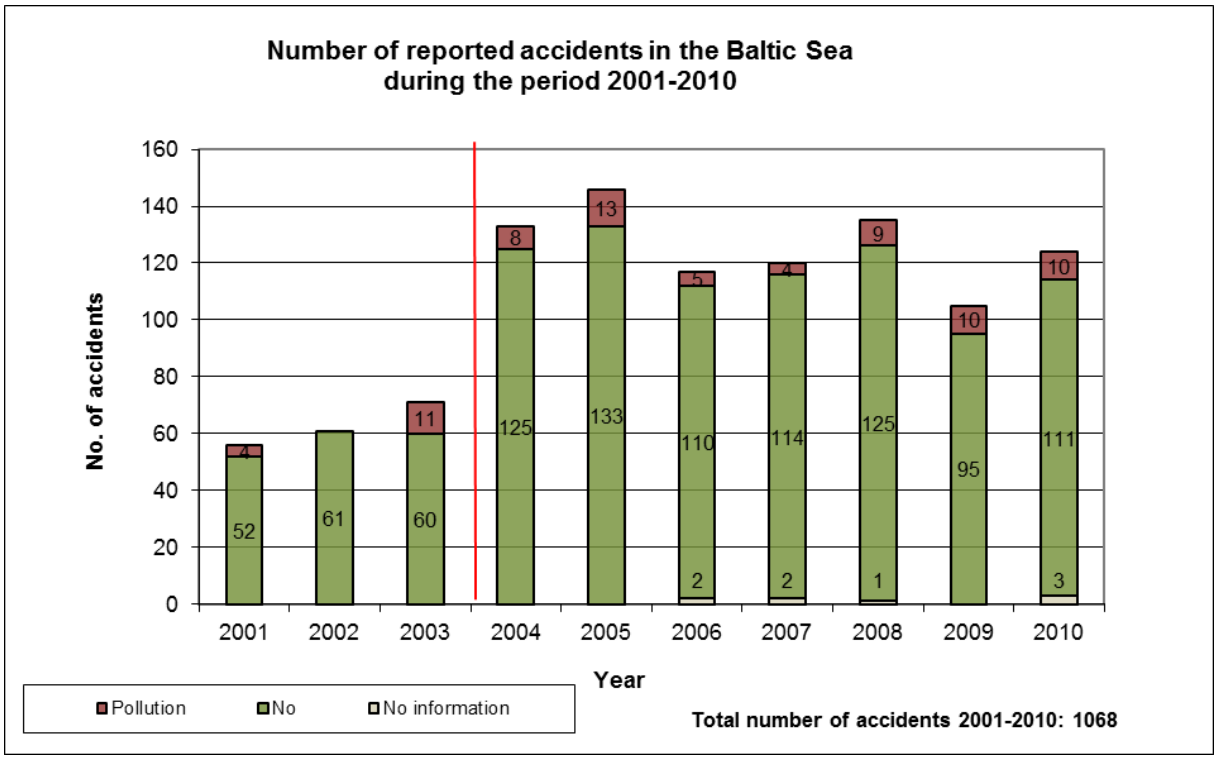


Figure 7

The spatial distribution of the reported accidents in 2010 is presented in ***Figure 8***. As can be noted, almost all accidents occurred very close to shore or in harbours.

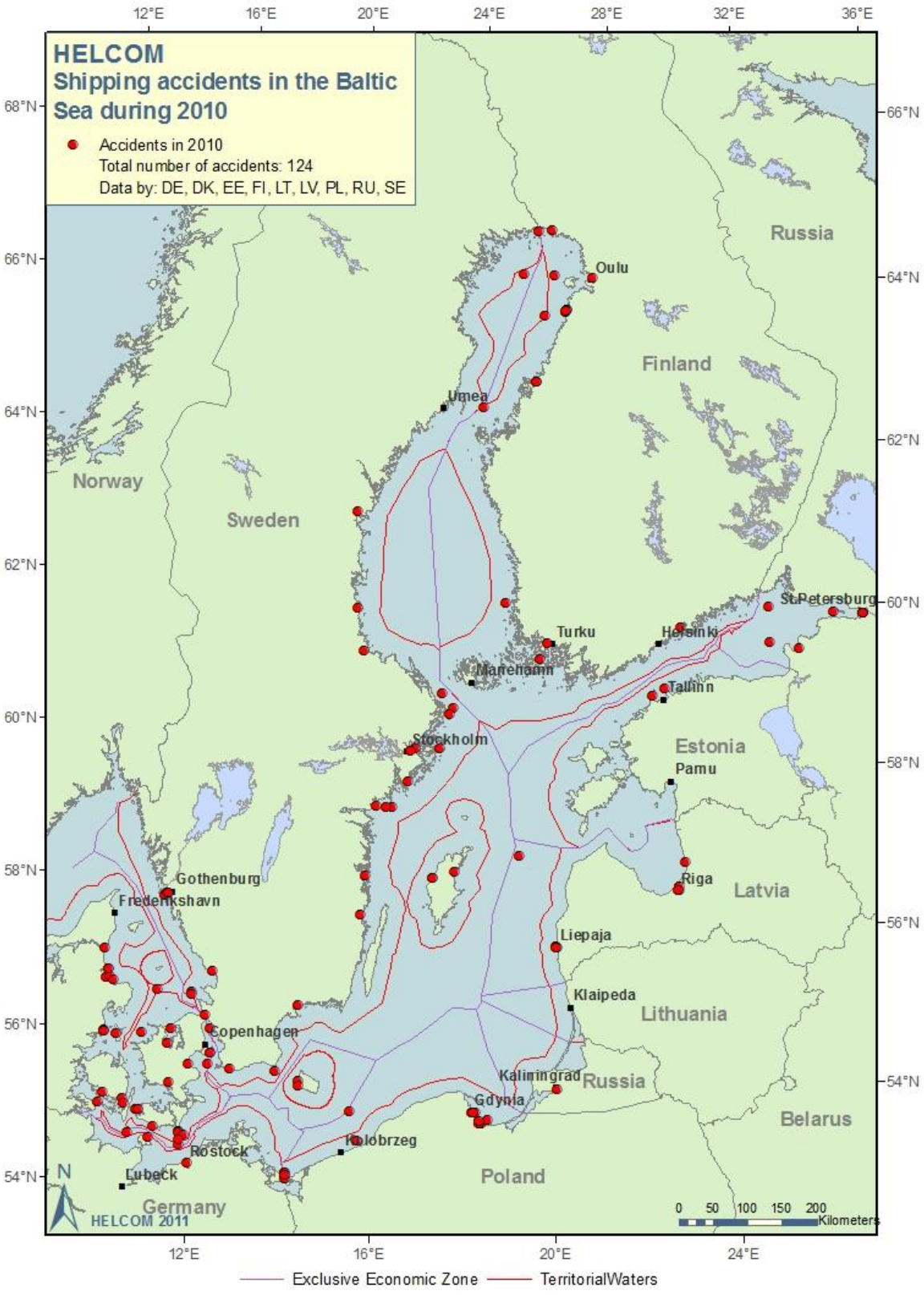

HELCOM
Shipping accidents in the Baltic Sea during 2010
Accidents in 2010
Total number of accidents: 124
Data by: DE, DK, EE, FI, LT, LV, PL, RU, SE
Russia
Finland
Norway
Sweden
Estonia
Latvia
Lithuania
Belarus
Poland
Germany
Oulu
Umea
Turku
Helsinki
Mariehamn
Tallinn
St.Petersburg
Stockholm
Pamu
Riga
Liepaja
Klaipeda
Gothenburg
Fredenkshavn
Copenhagen
Kaliningrad
Gdynia
Kolobrzeg
Rostock
Lubeck
HELCOM 2011
0 50 100 150 200 Kilometers
Exclusive Economic Zone
TerritorialWaters

Figure 8

4 Types of accidents

The main types of shipping accidents in 2010 were collisions and groundings, accounting for 32% and 29%, respectively (***Figure 9***). Fires made up 11% of the remaining shipping accidents while machinery damage and pollution caused 7% and 5% of the accidents, respectively. Other unspecified reasons accounted for 16% of the reported shipping accidents.

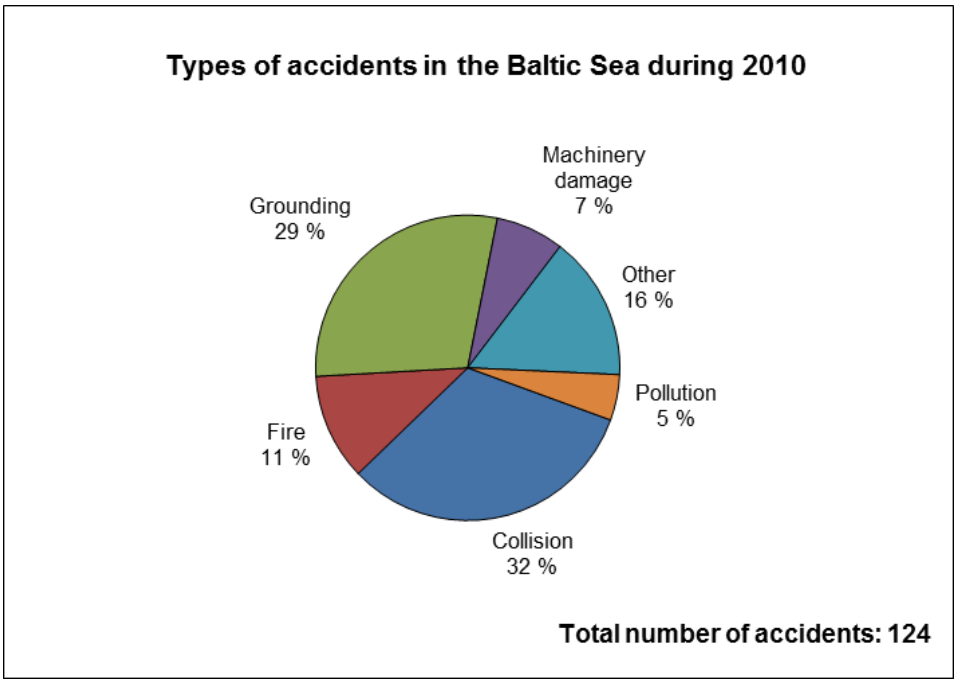


Figure 9

The share of collision accidents (32%) in 2010 (***Figure 9***) equals their share in the total number of accidents during 2001-2010 (***Figure 10***). The share of groundings (29%) was significantly lower in 2010 compared to their share of the past 10-year period (42%).

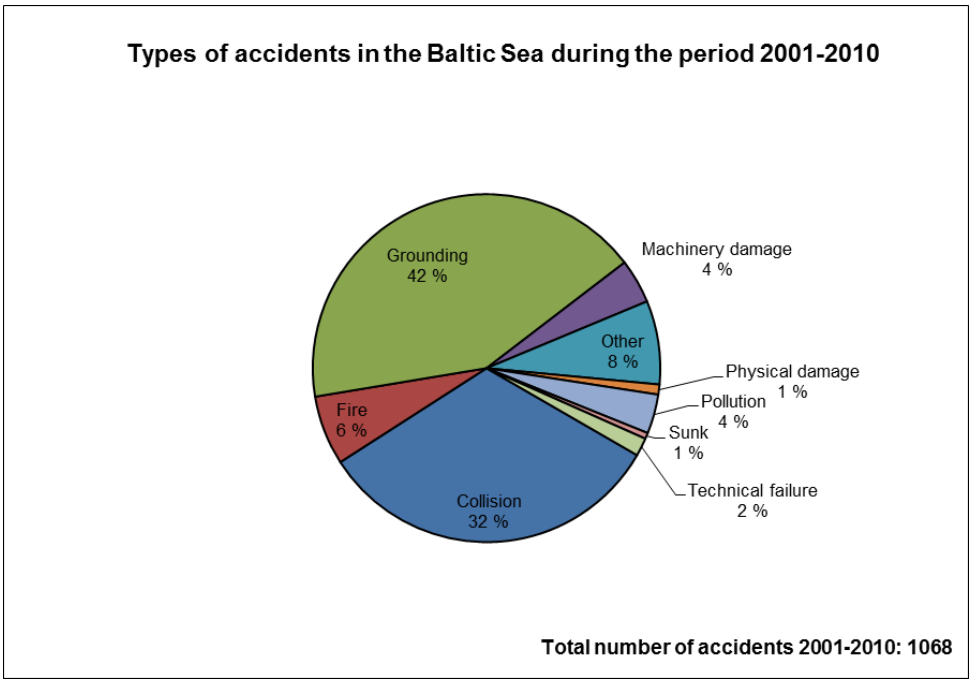


Figure 10

Spatial distribution of different types of reported accidents in the Baltic Sea in 2010 is presented in ***Figure 11.***

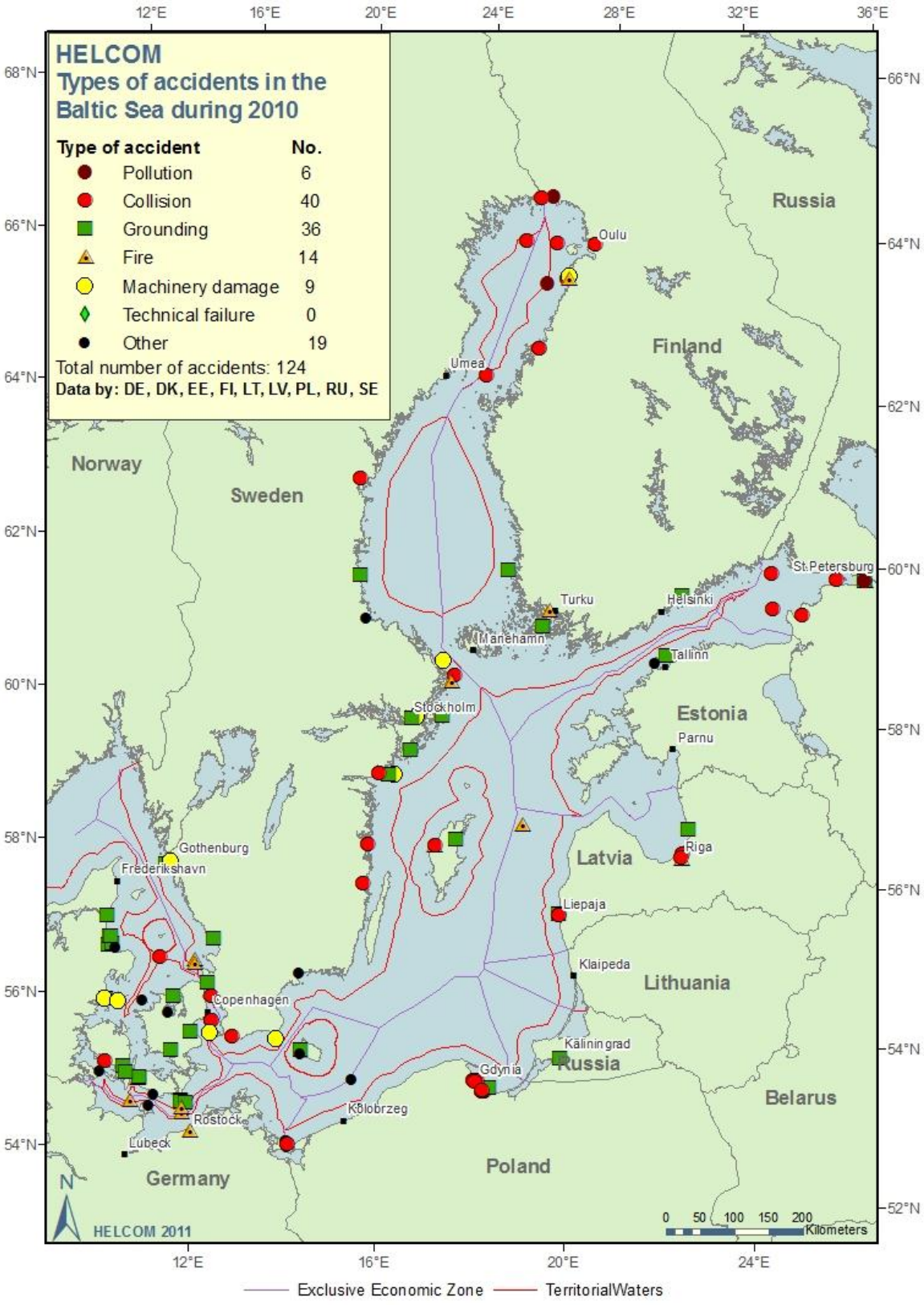


Figure 11

4.1 Collisions

Amounting to 40 cases (32%) of all accidents; collisions were the most frequent type of shipping accidents in the Baltic in 2010. This was the first time since 2006 that collisions were more common than groundings in the Baltic Sea. The number of reported collisions has been decreasing since 2005-2006 but increased by 18% in 2010 from the lowest reported number of collisions in 2009 (34 collisions), now equaling the number of collisions in 2007 (***Figure 12***).

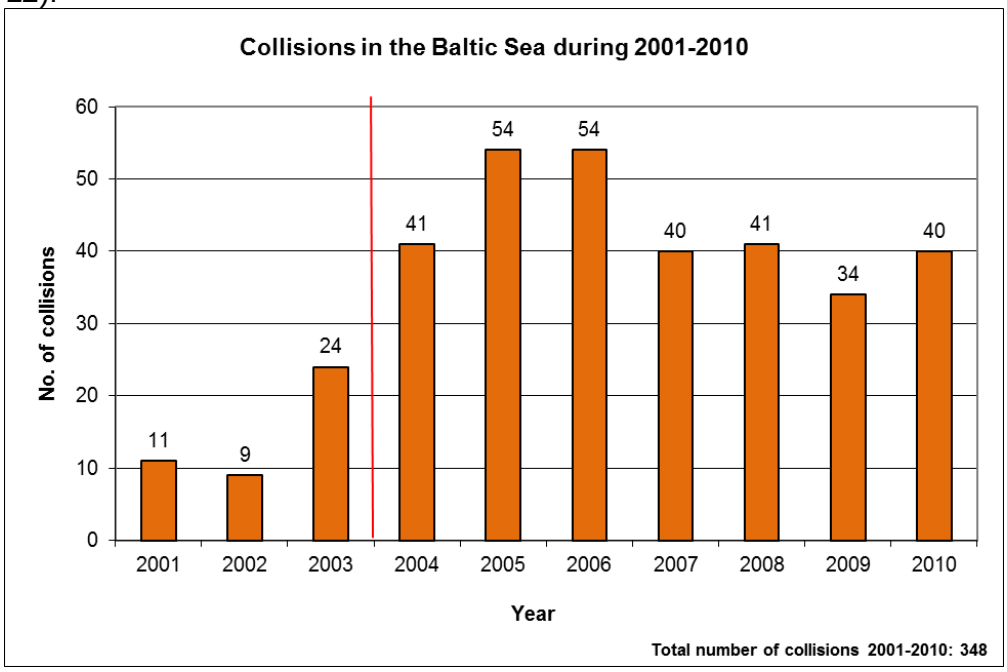


Figure 12

Ship to ship collisions accounted for 50% of all collision cases in 2010 and the rest of the cases were collisions with fixed and/or floating structures, e.g. peers, navigation signs etc. The number of ship to ship collisions in 2010 was higher than in the last three years but still 30% less than in 2005-2006. The number of collisions with objects has remained largely unchanged in previous years but decreased by roughly 20% in 2010 compared to 2005-2009 (***Figure 13***).

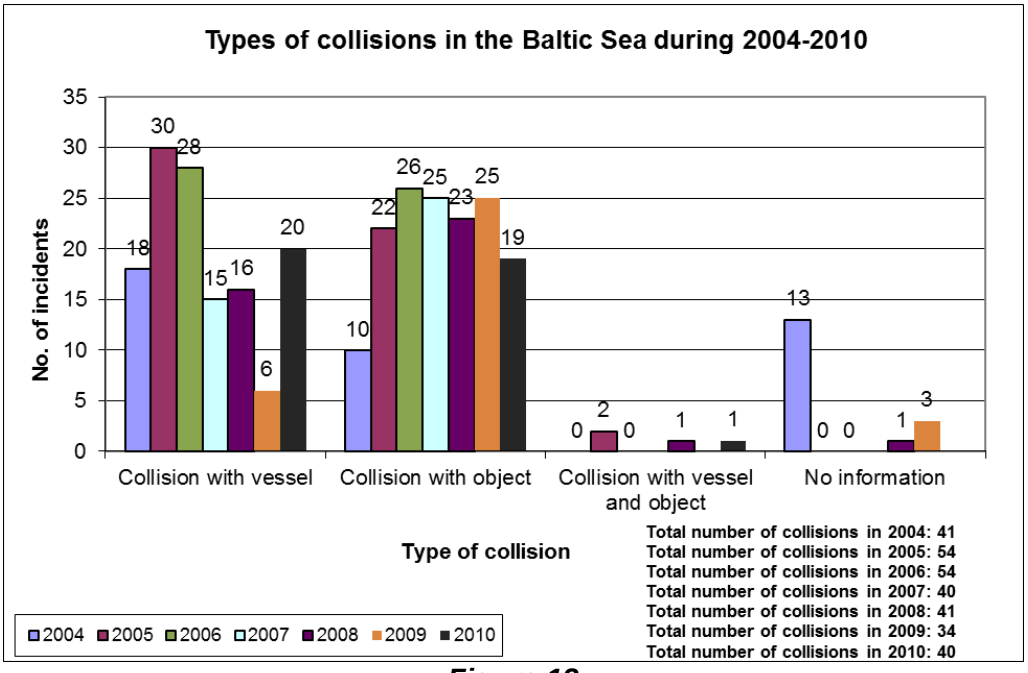


Figure 13

Spatially, collisions in 2010 occurred mostly in near shore areas (***Figure 14***). Also the map of collisions during 2001-2010 (***Figure 15***) points toward approaches to ports and the Danish straits as the most risky areas for ships to collide.

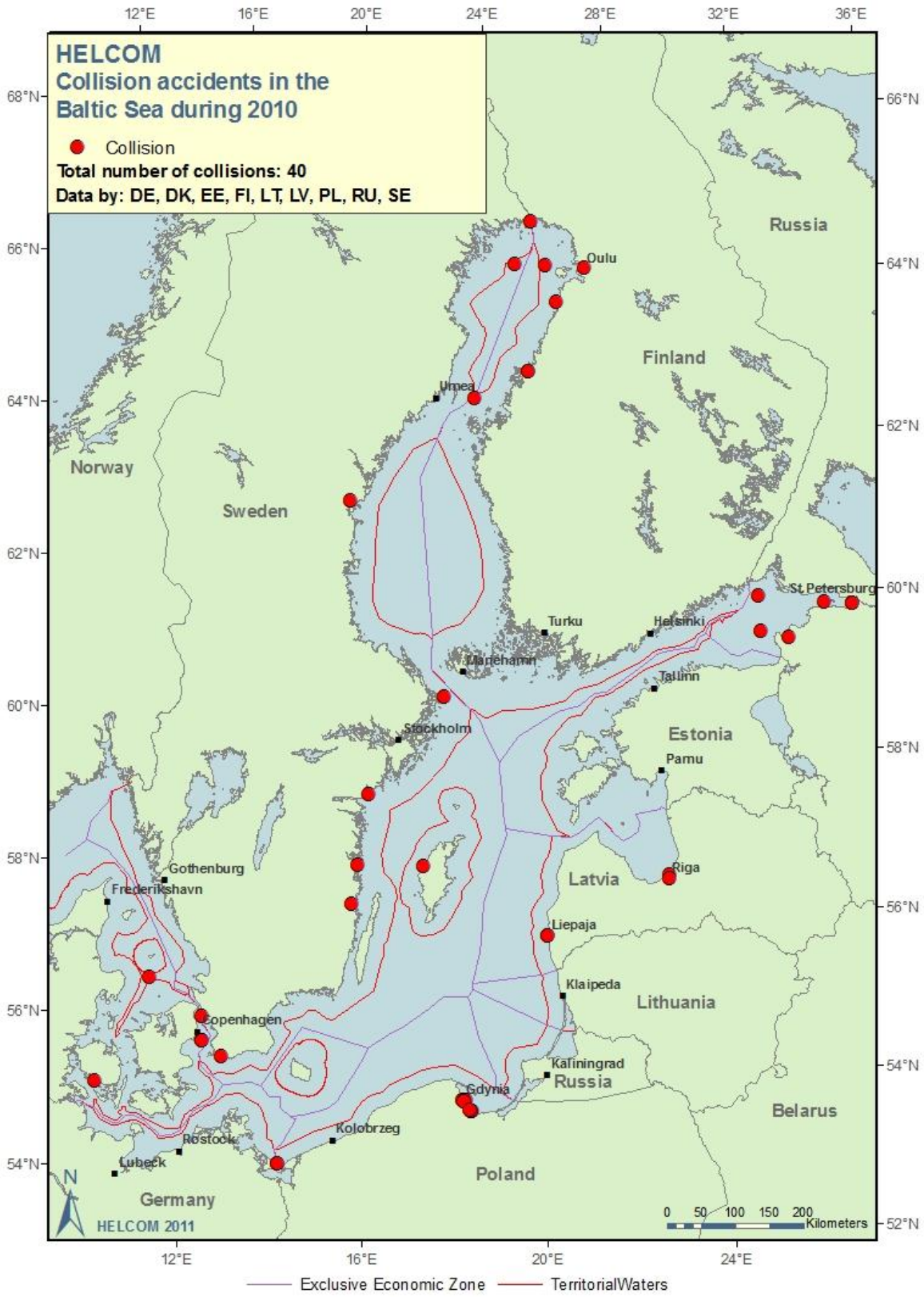


Figure 14

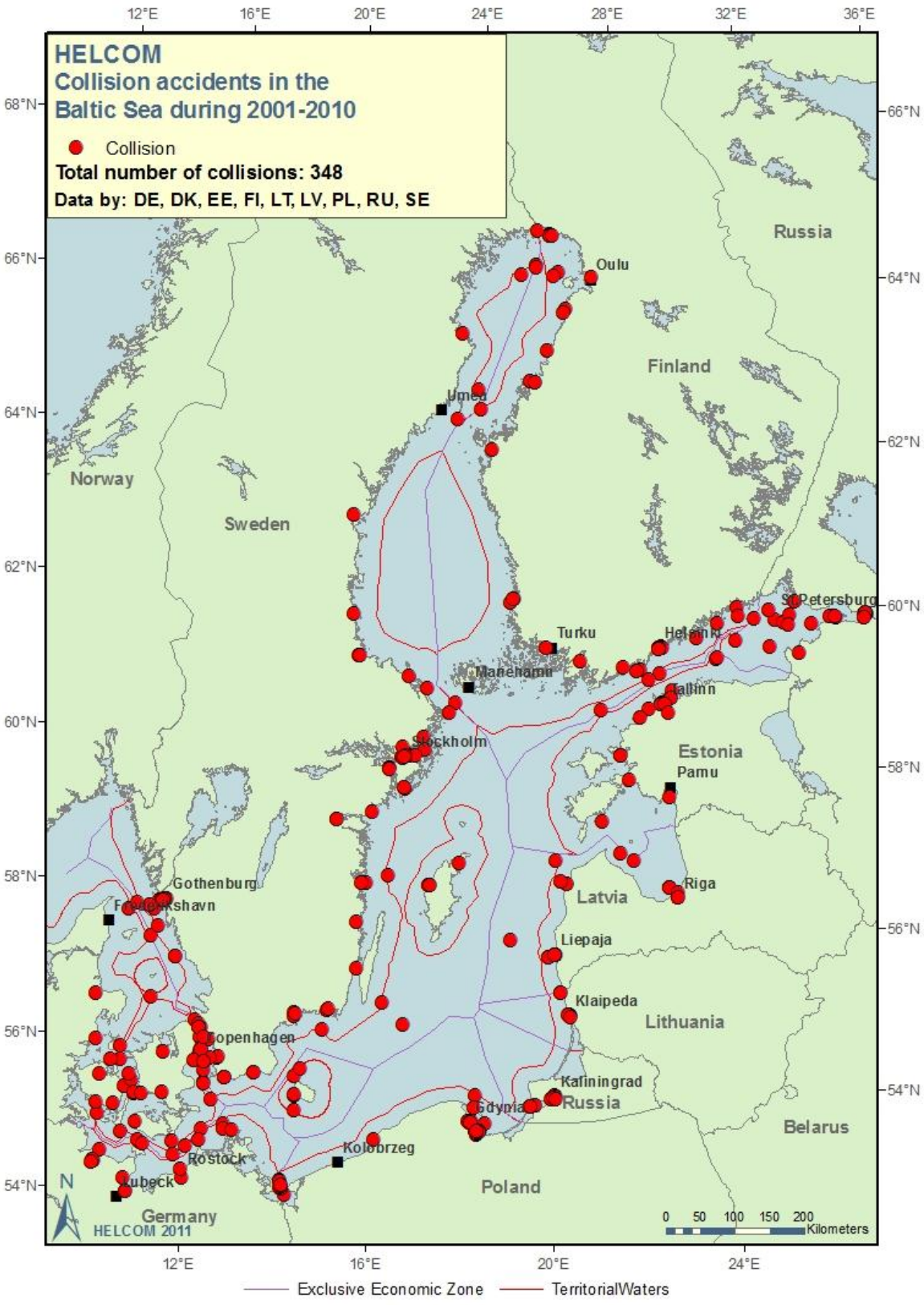

HELCOM
Collision accidents in the
Baltic Sea during 2001-2010
Collision
Total number of collisions: 348
Data by: DE, DK, EE, FI, LT, LV, PL, RU, SE
Russia
Finland
Norway
Sweden
Estonia
Latvia
Lithuania
Belarus
Poland
Germany
Oulu
Umea
Turku
Mariehamn
Helsinki
St Petersburg
Tallinn
Stockholm
Pamu
Riga
Liepaja
Klaipeda
Gothenburg
Copenhagen
Kaliningrad
Gdynia
Kolobrzeg
Rostock
Lubeck
N
HELCOM 2011
0 50 100 150 200
Kilometers
Exclusive Economic Zone
TerritorialWaters

Figure 15

TThe southwestern Baltic Sea, including the Danish straits has been one of the hot spots for collisions in the Baltic, with the number of collision accidents growing until 2009. In 2010, this trend has been reversed and only 8 collisions were reported in the southwestern Baltic, accounting for only 20% of all collisions in 2010, compared to 53% in 2009. For the time period 2001-2010 30% of all reported collisions took place in the southwestern Baltic (***Figures 16 and 17***).

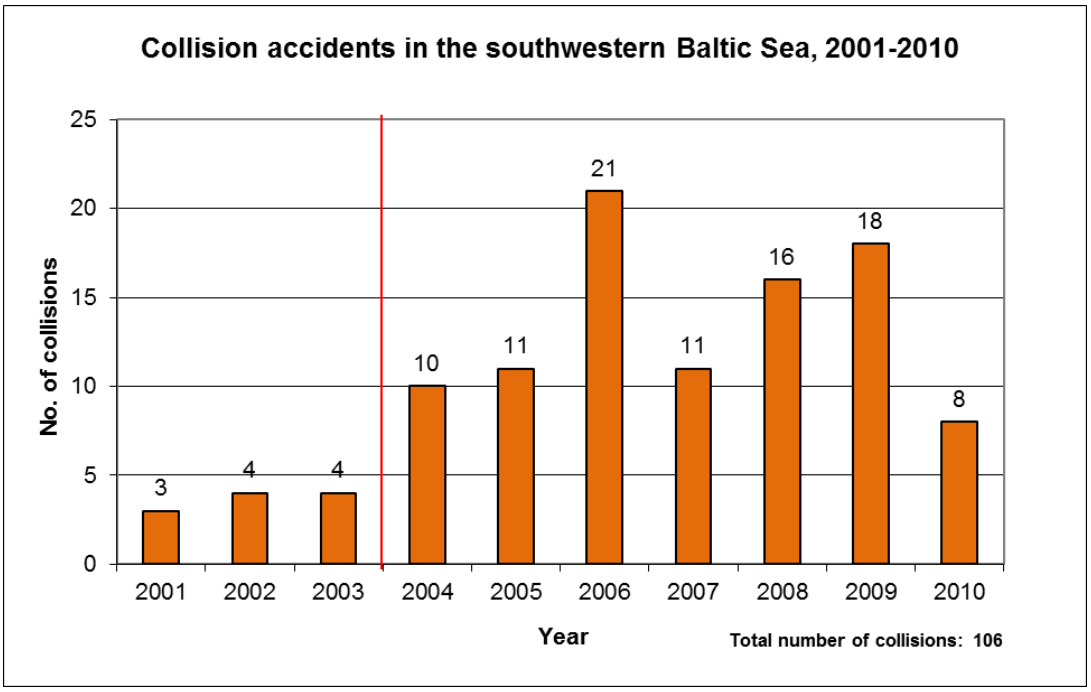


Figure 16

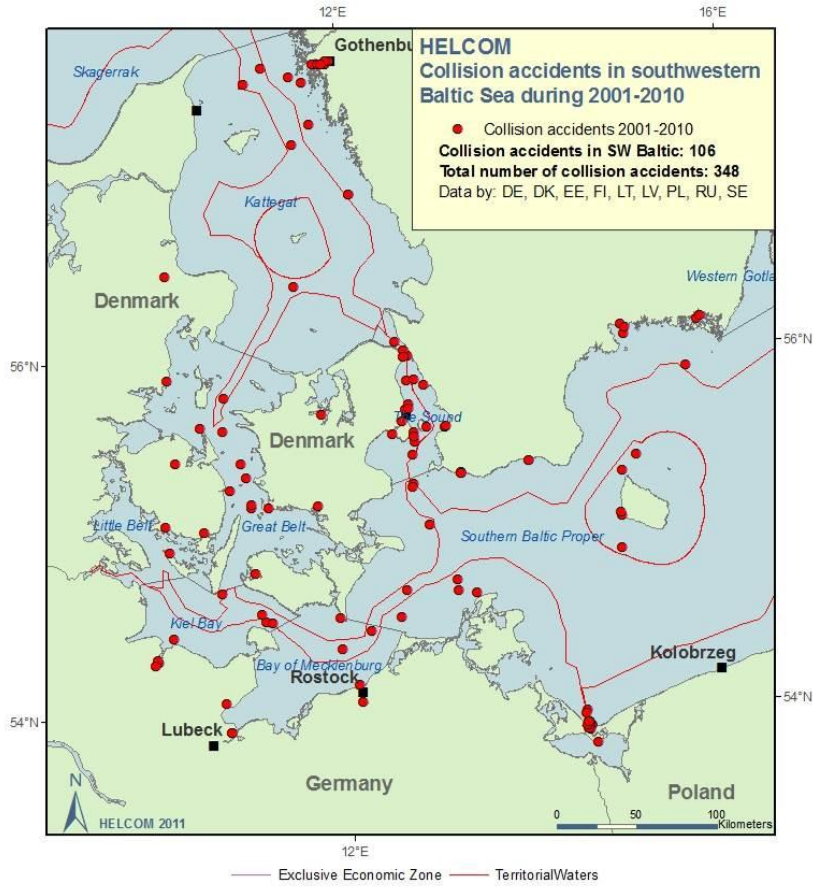


Figure 17

There had been a drastic reduction in the number of collisions occurring in the Gulf of Finland during previous years, but in 2010 the number of collisions increased again, however by a few cases only. Out of a total of 40 collisions in 2010, six were reported to have occurred in the Gulf of Finland (***Figure 18***). For the 10-year period 2001-2010, collisions in the Gulf of Finland made up 20% of the total number of reported collisions (***Figure 19***).

Figure 18

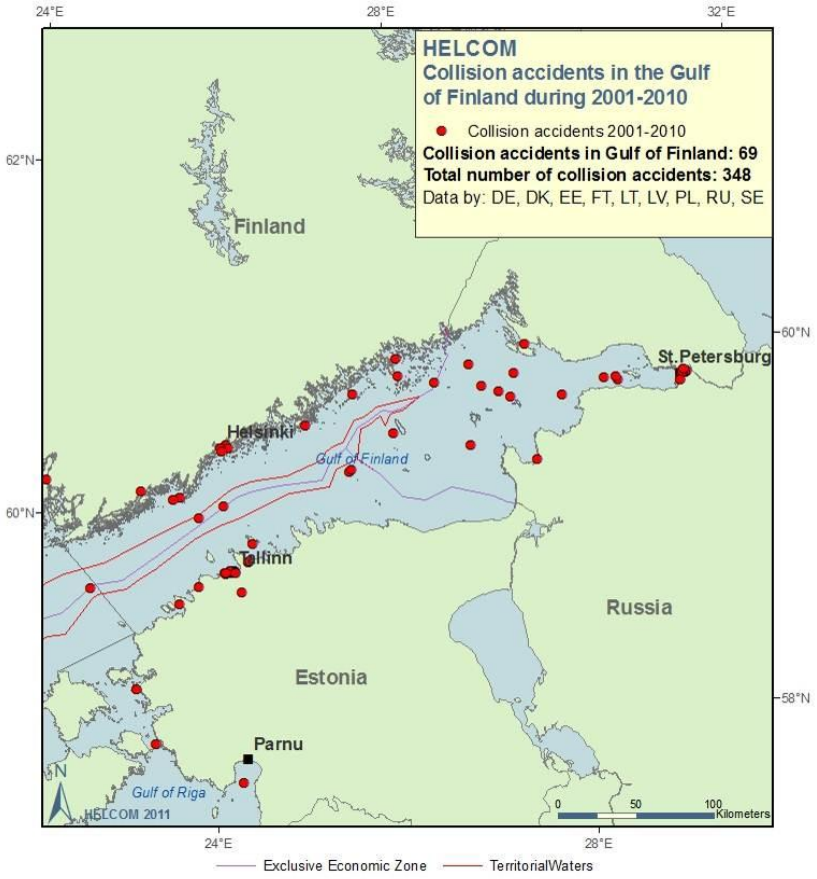


Figure 19

4.2 Groundings

In 2010, there were 36 reported groundings – the lowest amount since 2003 and 40% less than in the peak year 2008 (***Figure 20***). Accounting for 29% of the total number of reported accidents in 2010, groundings were the second most common type of accidents in the Baltic.

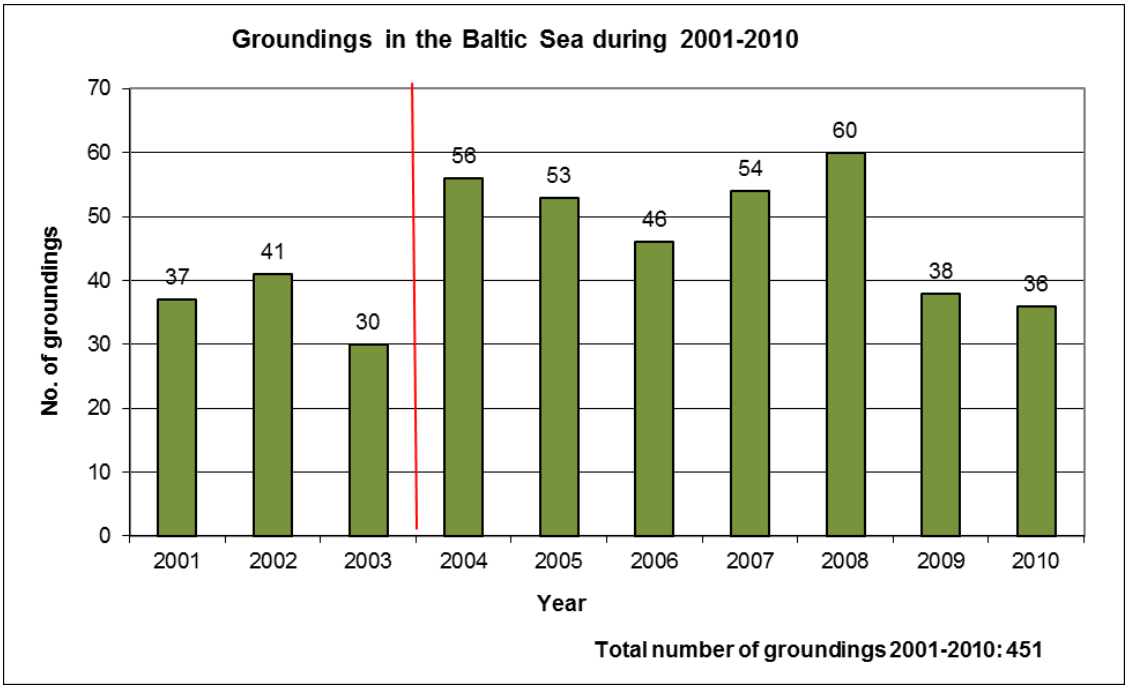


Figure 20

Figure 21 illustrates the presence/absence of a pilot on board vessels in cases of grounding accidents in 2010. Clearly the vast majority (70%) did not have a pilot on board at the time of grounding. In previous years, most reported groundings occurred with vessels having a draught of less than 9 meters. In 2010, information on draught size is missing for majority of ships, thus there is no full overview whether vessels involved in groundings were big or small (***Figure 22***). Small vessels are not covered by IMO's recommendations on the use of pilotage.

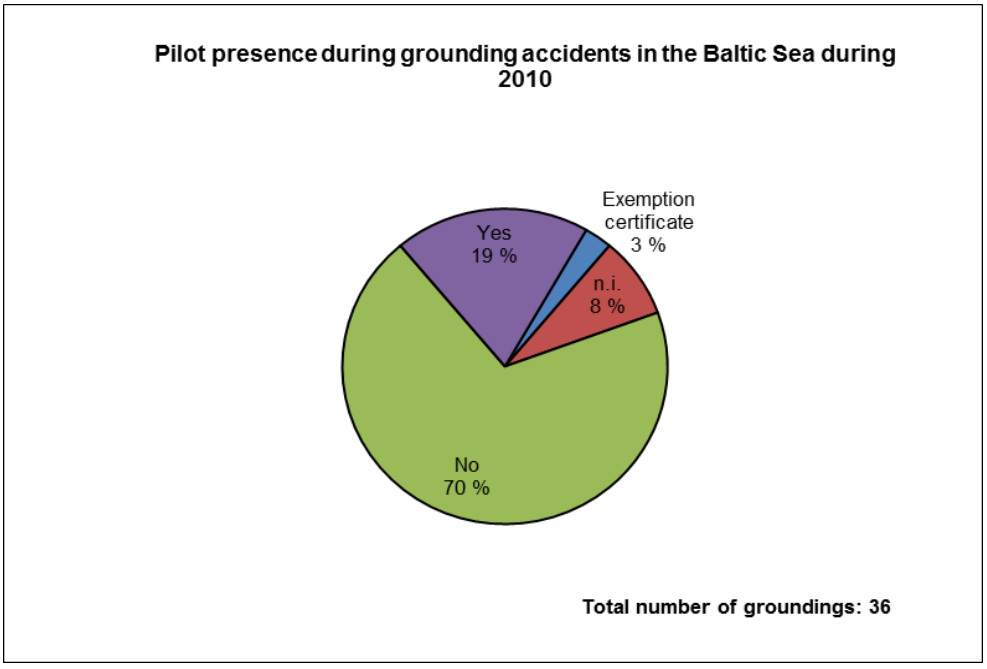


Figure 21

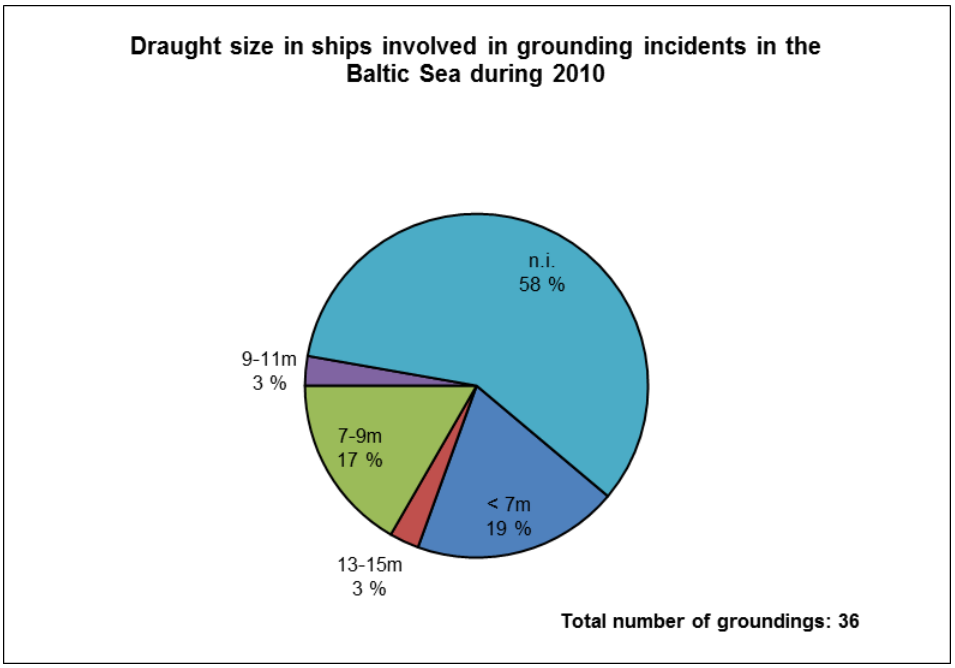


Figure 22

The map of the reported groundings in 2001-2010 (***Figure 23***) clearly indicates that the areas of primary concern are:

- Danish straits
- Gulf of Finland
- Åland/Archipelago Sea 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 2010 (***Figure 24***) especially points to the Danish straits and ports.

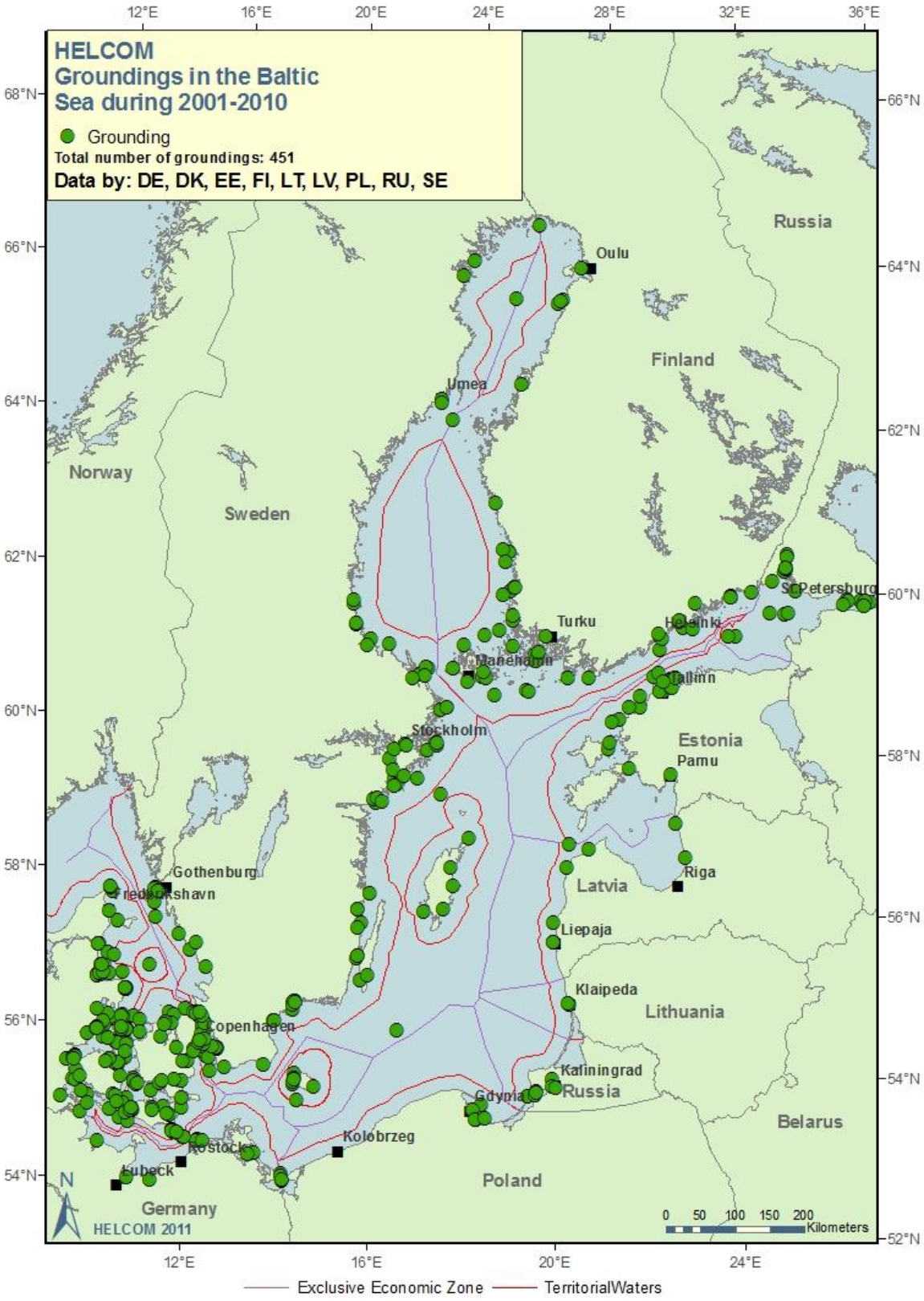

HELCOM
Groundings in the Baltic
Sea during 2001-2010
Grounding
Total number of groundings: 451
Data by: DE, DK, EE, FI, LT, LV, PL, RU, SE
12°E
16°E
20°E
24°E
28°E
32°E
36°E
68°N
66°N
64°N
62°N
60°N
58°N
56°N
54°N
52°N
Russia
Oulu
Finland
Umea
Norway
Sweden
St.Petersburg
Turku
Helsinki
Mariehamn
Tallinn
Stockholm
Estonia
Pamu
Gothenburg
Riga
Latvia
Liepaja
Klaipeda
Lithuania
Copenhagen
Kaliningrad
Russia
Gdynia
Belarus
Kolobrzeg
Rostock
Lubeck
Poland
N
Germany
HELCOM 2011
0 50 100 150 200
Kilometers
Exclusive Economic Zone
TerritorialWaters

Figure 23

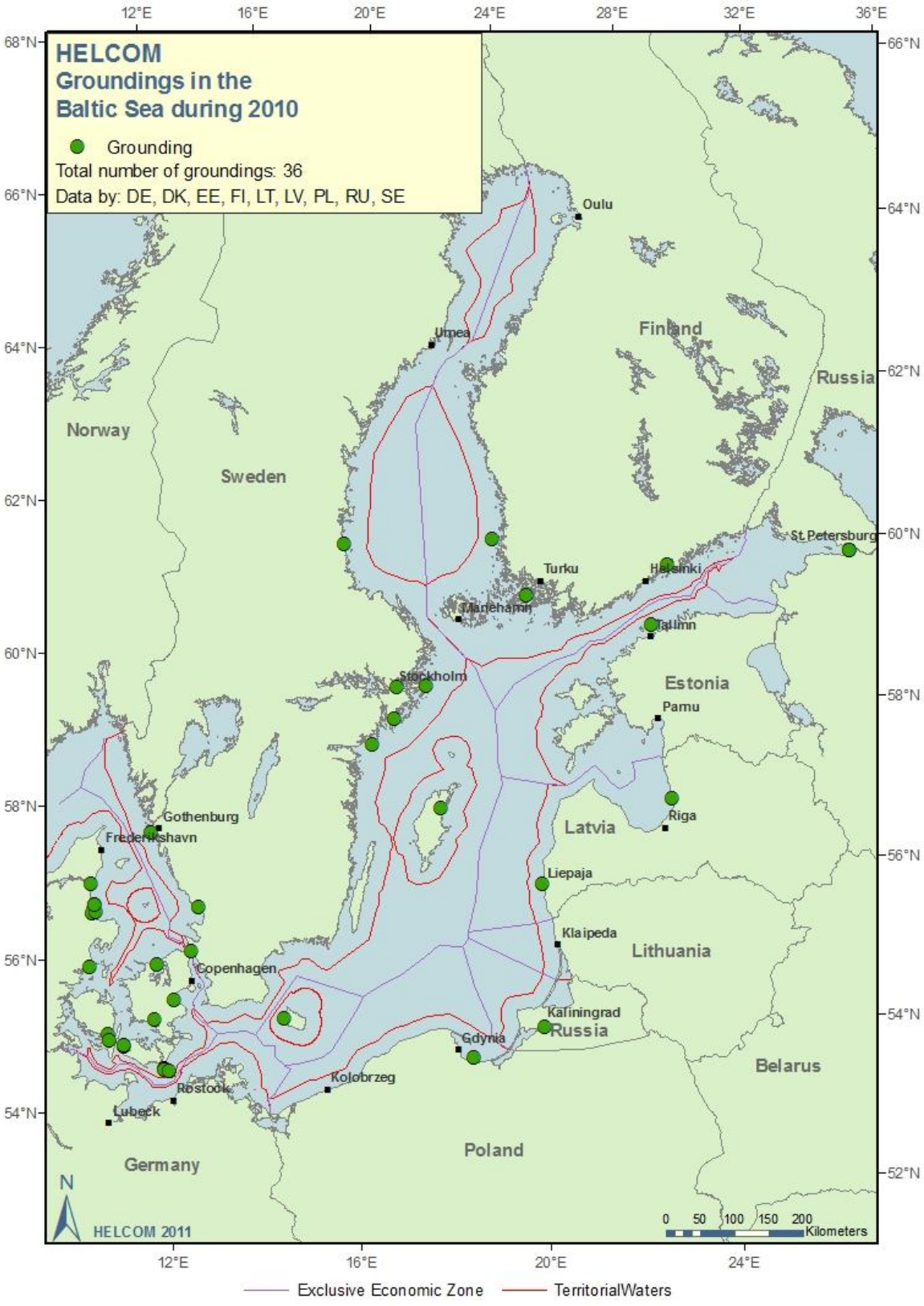

HELCOM
Groundings in the
Baltic Sea during 2010
Grounding
Total number of groundings: 36
Data by: DE, DK, EE, FI, LT, LV, PL, RU, SE
Finland
Russia
Norway
Sweden
Estonia
Latvia
Lithuania
Belarus
Poland
Germany
Oulu
Umea
Turku
Helsinki
St.Petersburg
Mariehamn
Tallinn
Stockholm
Pamu
Riga
Gothenburg
Frederikshavn
Liepaja
Klaipeda
Copenhagen
Kaliningrad
Gdynia
Kolobrzeg
Rostock
Lubeck
HELCOM 2011
0 50 100 150 200
Kilometers
Exclusive Economic Zone
TerritorialWaters

Figure 24

The number of groundings reported in the southwestern Baltic Sea increased by around 30% from 2009 to 2010. However, compared to 2007 and 2008 a decrease in the number of groundings can be seen (46% and 38%, respectively). The southwestern Baltic Sea, including the Danish straits, continues to be the main problem area for groundings in the Baltic, with 56% of the 2010 groundings occurring in the area, and 55% of all groundings registered for the period 2001-2010 (***Figures 25 and 26***).

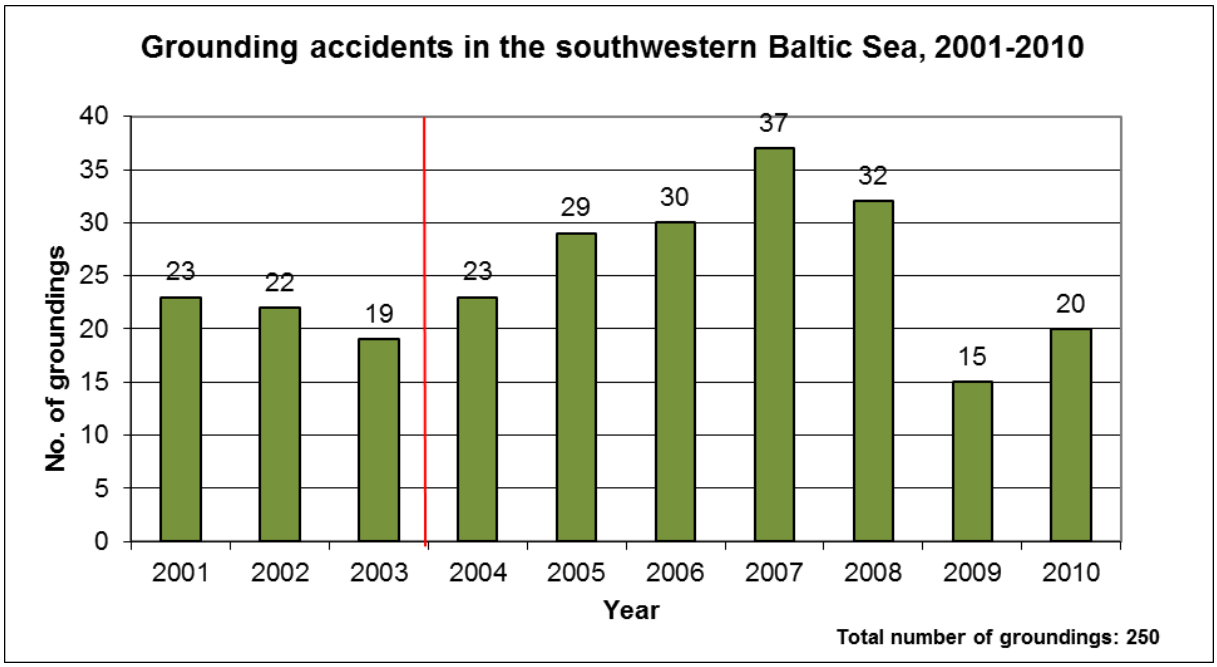


Figure 25

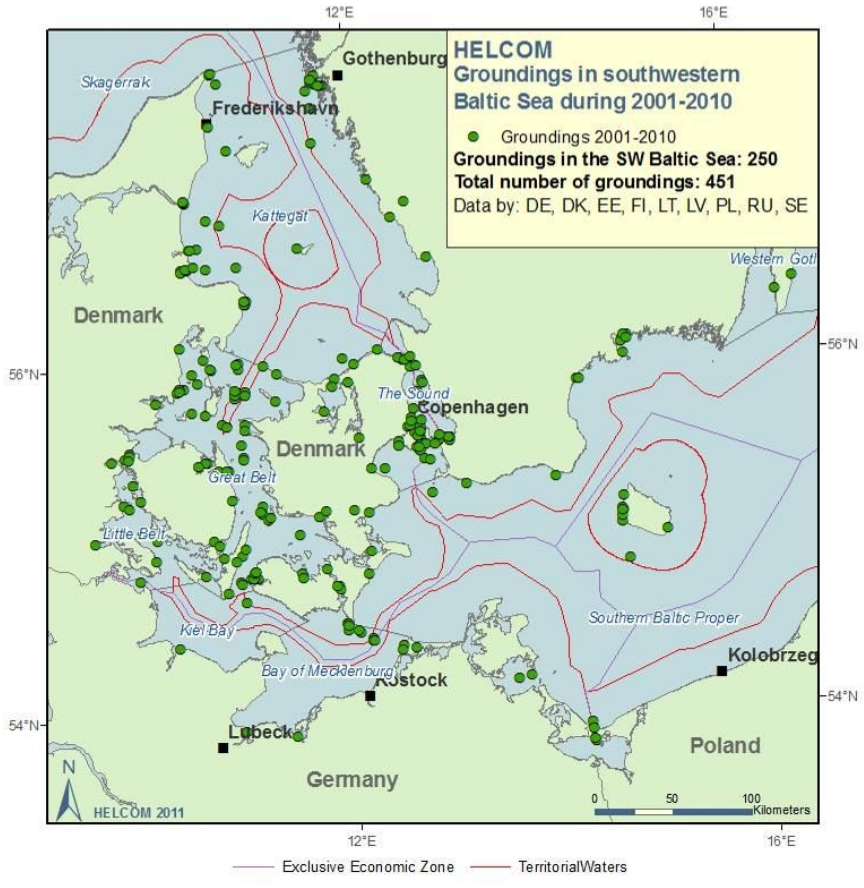


Figure 26

The number of the groundings in the Gulf of Finland in 2010 was reported to be four. This is at the same level as the previous years except for 2008 when the number of groundings in the Gulf of Finland was nine (***Figure 27***).

Figure 27

5 Types of vessels involved in the accidents

As can be seen from ***Figure 28***, cargo vessels were most commonly involved in accidents in 2010 (44%). Passenger vessels and tankers were involved in 24% and 10% of all reported accidents respectively.

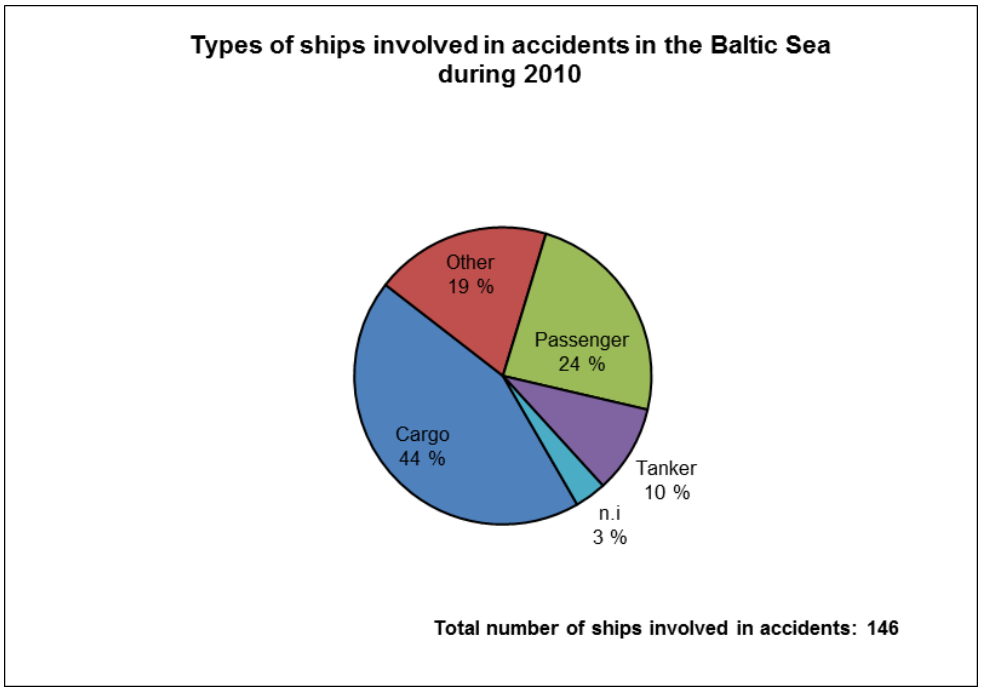


Figure 28

As tankers are often an issue of high concern, a map on accidents involving tankers from 2001 to 2010 (***Figure 29***) is also presented here. Of the 14 tankers involved in accidents in 2010, seven were double hulled and for the rest of the accidents information about hull type was not available. According to available data, no single-hulled tankers were involved in accidents in 2010, but keeping in mind that data on hull type was not available for 50% of the tankers.

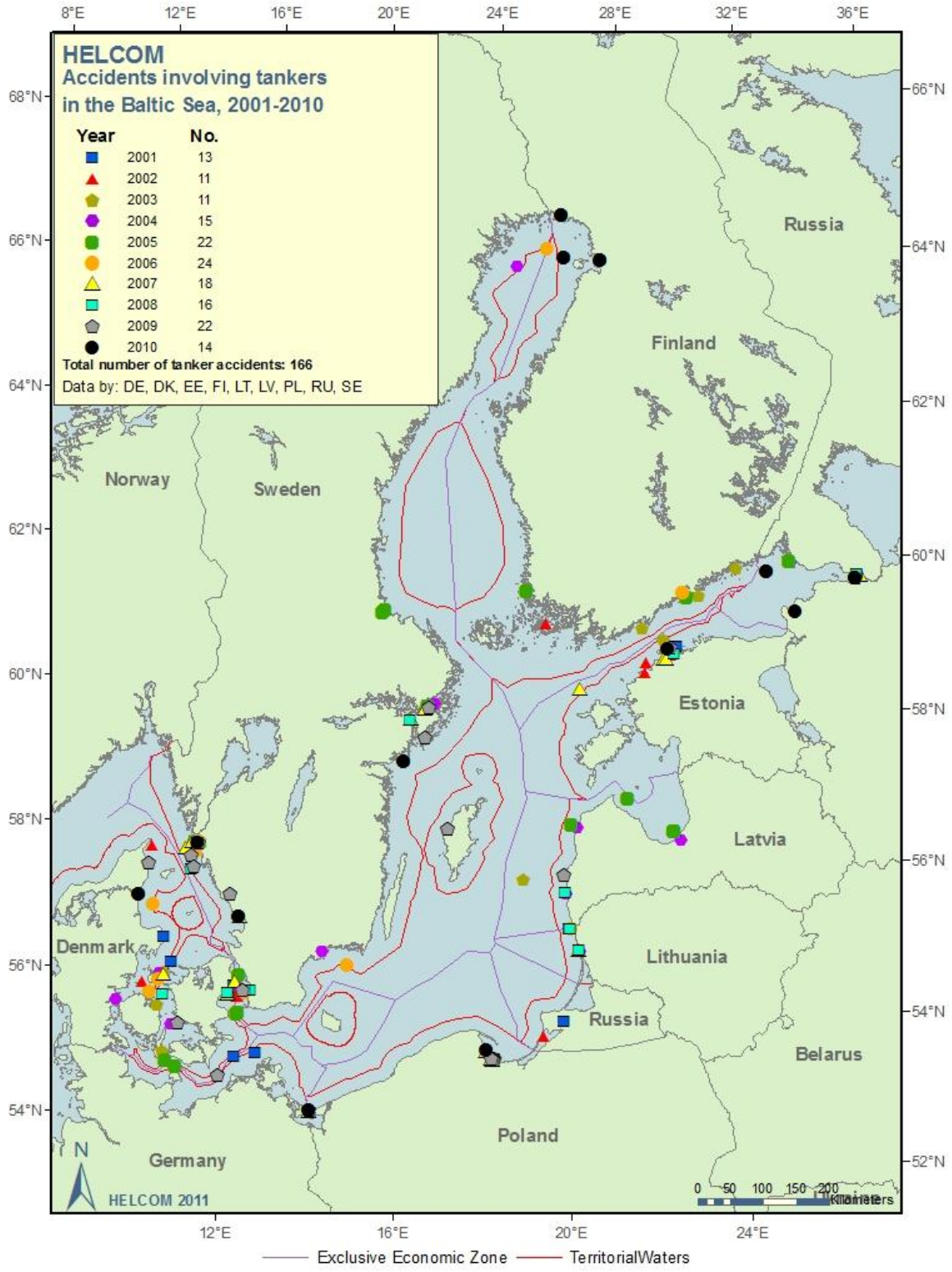

HELCOM
Accidents involving tankers
in the Baltic Sea, 2001-2010
Year No.
2001 13
2002 11
2003 11
2004 15
2005 22
2006 24
2007 18
2008 16
2009 22
2010 14
Total number of tanker accidents: 166
Data by: DE, DK, EE, FI, LT, LV, PL, RU, SE
Russia
Finland
Norway
Sweden
Estonia
Latvia
Lithuania
Denmark
Russia
Belarus
Poland
Germany
N
HELCOM 2011
0 50 100 150 200
Kilometers
Exclusive Economic Zone
TerritorialWaters

Figure 29

6 Causes of accidents

The causes of accidents for approximately one third of all incidents reported in 2010 were unknown. Human factor accounted for 30% of the accidents and was the main known cause as in many previous years. Technical factors accounted for one fifth of the accidents and 9% of the accidents were caused by external factors (***Figure 30***).

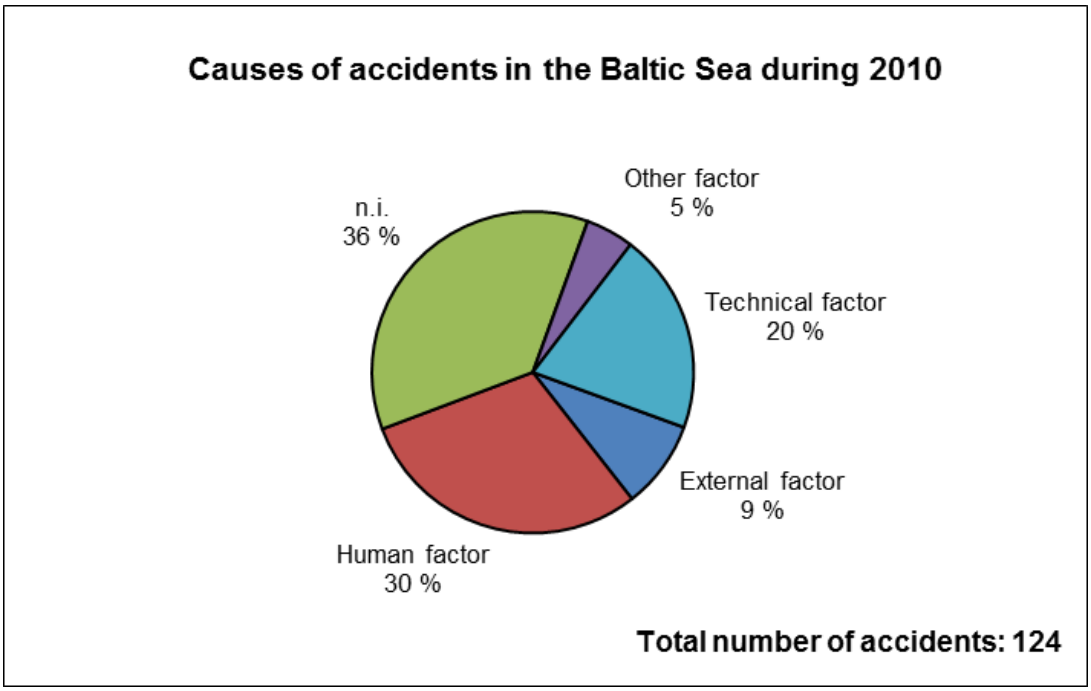


Figure 30

Spatial distribution of accidents with indication of the cause is presented in ***Figure 31***.

Of the reported accidents in 2010, 23 took place in icy conditions (***Figure 32***). No information was provided on ice presence for around 30% of the accidents.

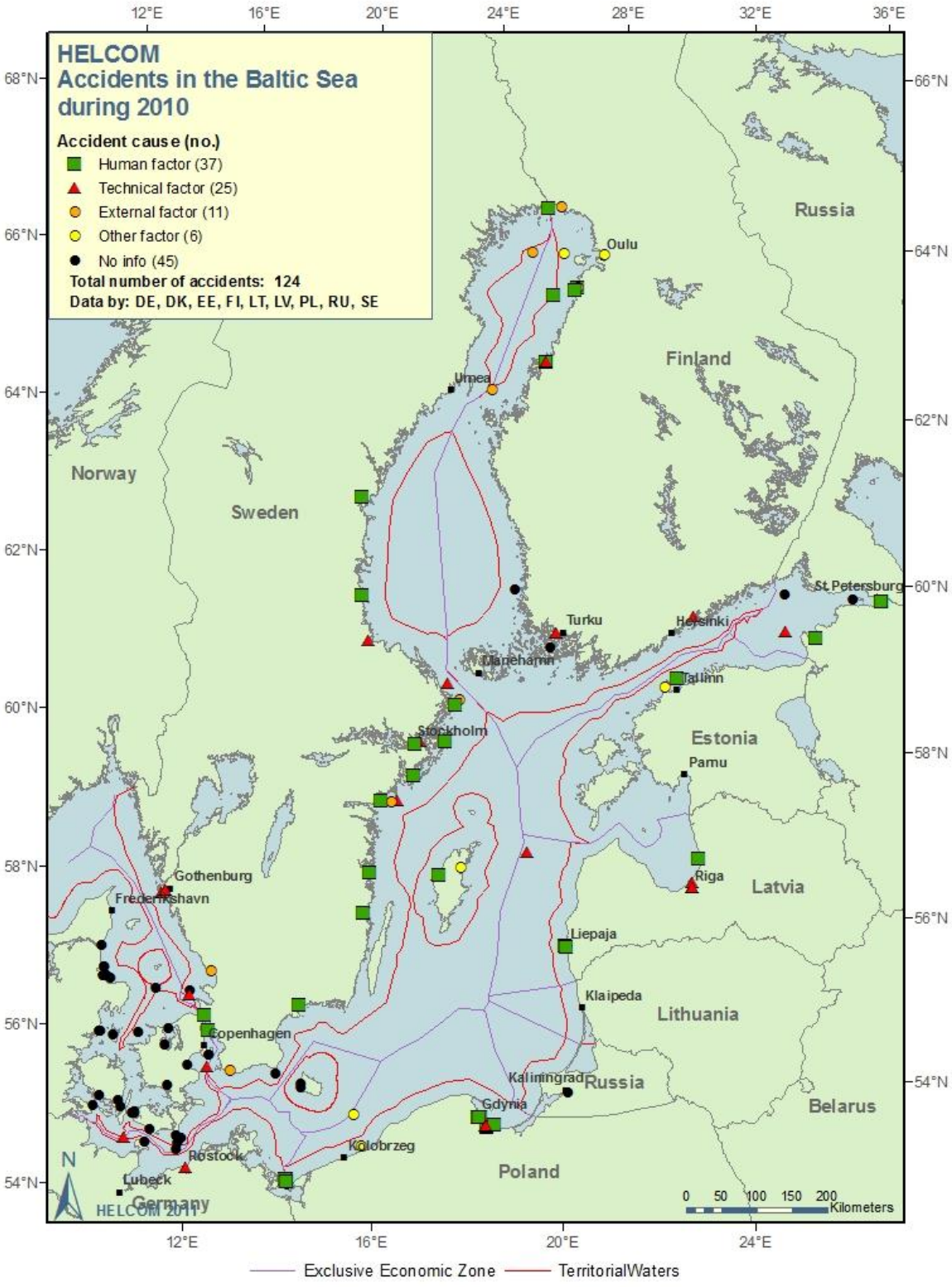

HELCOM
Accidents in the Baltic Sea during 2010
Accident cause (no.)
Human factor (37)
Technical factor (25)
External factor (11)
Other factor (6)
No info (45)
Total number of accidents: 124
Data by: DE, DK, EE, FI, LT, LV, PL, RU, SE
Russia
Finland
Norway
Sweden
Estonia
Latvia
Lithuania
Belarus
Poland
Germany
Oulu
Umea
Turku
Helsinki
St.Petersburg
Mariehamn
Tallinn
Stockholm
Pamu
Riga
Gothenburg
Frederikshavn
Liepaja
Klaipeda
Copenhagen
Kaliningrad
Gdynia
Kolobrzeg
Rostock
Lubeck
12°E
16°E
20°E
24°E
28°E
32°E
36°E
68°N
66°N
64°N
62°N
60°N
58°N
56°N
54°N
N
HELCOM 2011
0 50 100 150 200
Kilometers
Exclusive Economic Zone
TerritorialWaters

Figure 31

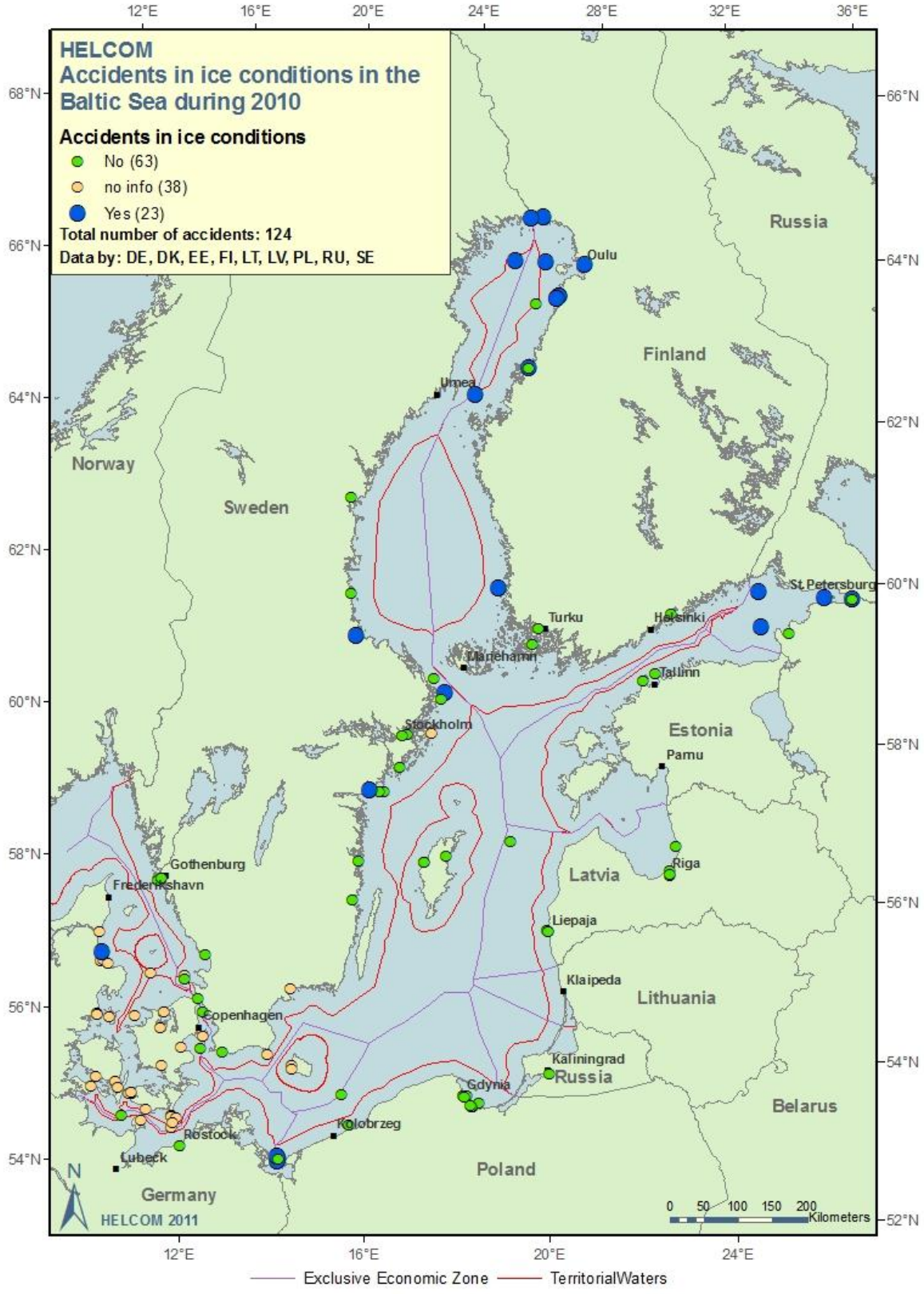


Figure 32

(Note that four accidents in ice conditions took place near Raahe and three took place near Swinoujscie*)*

7 Accidents with pollution

According to the 2001-2010 data, 7% of the reported accidents ended up with some kind of pollution. In 2010, this percentage was slightly higher at 8%, with 10 out of the total 124 reported accidents resulting in pollution. This was the same amount as in 2009 and one more than in 2008. Five of the incidents in 2010 were pollution incidents occurring e.g. during fuel transfer and three were groundings. One incident was caused by a collision and one for some other reason (***Figure 33***). The type of vessels involved in pollution accidents was varied, including two cargo ship, two passenger ships, three tankers, a tug boat, a bulk carrier, a hydrographic survey vessel and one other type of motor vessel (***Figure 34***).

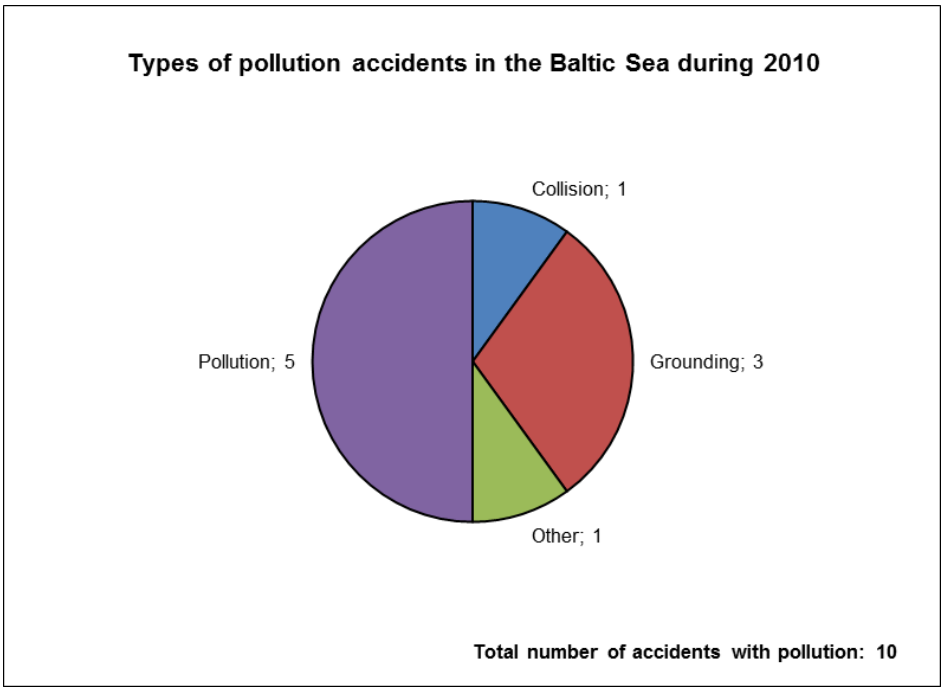


Figure 33

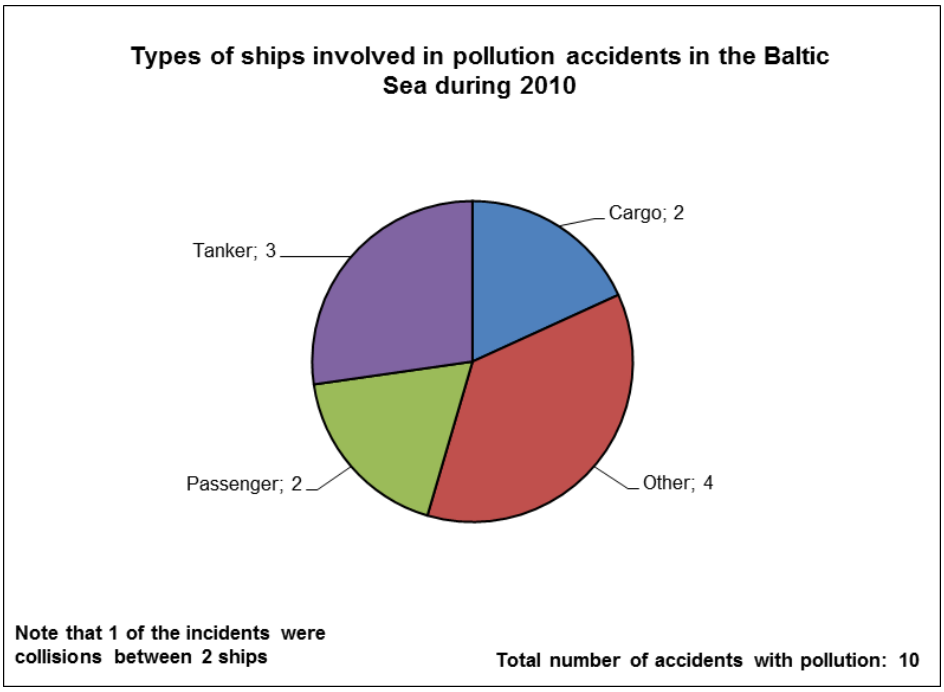


Figure 34

Six out of the ten accidents resulting in pollution in 2010 were caused by human factors, one by external factors and one by technical factors. No information was provided on the dominating cause of one of the reported pollution accidents (***Figure 35***).

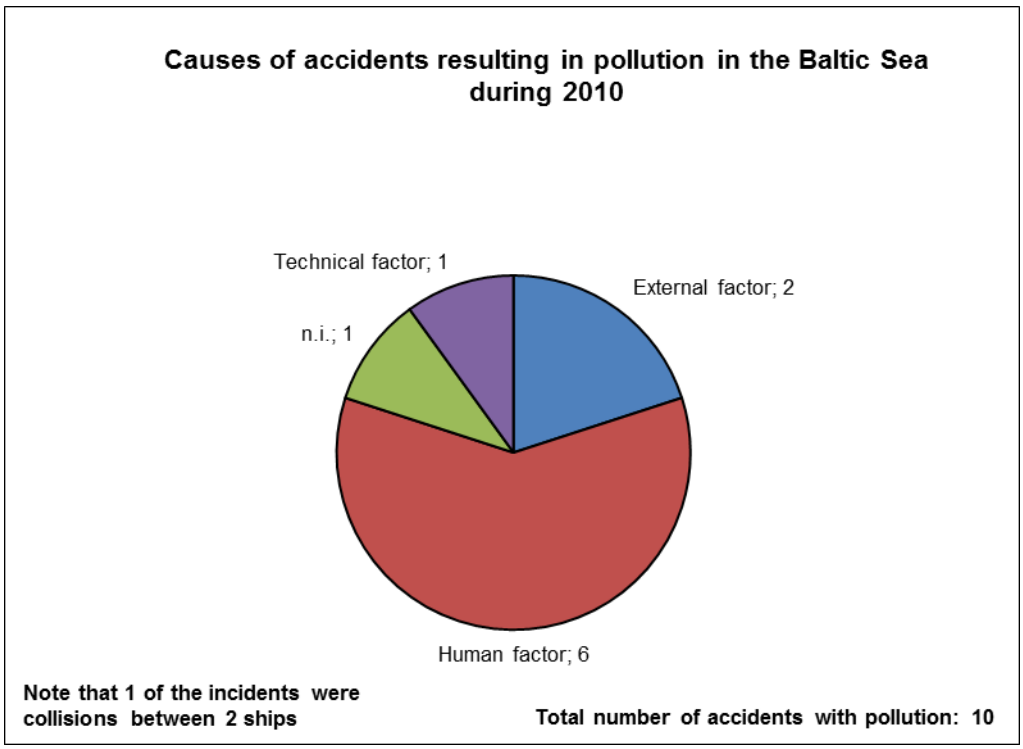


Figure 35

The spatial distribution of the accidents in 2010 resulting in pollution is presented in ***Figure 36*** and some additional details of the pollution accidents are contained in ***Table 4***.

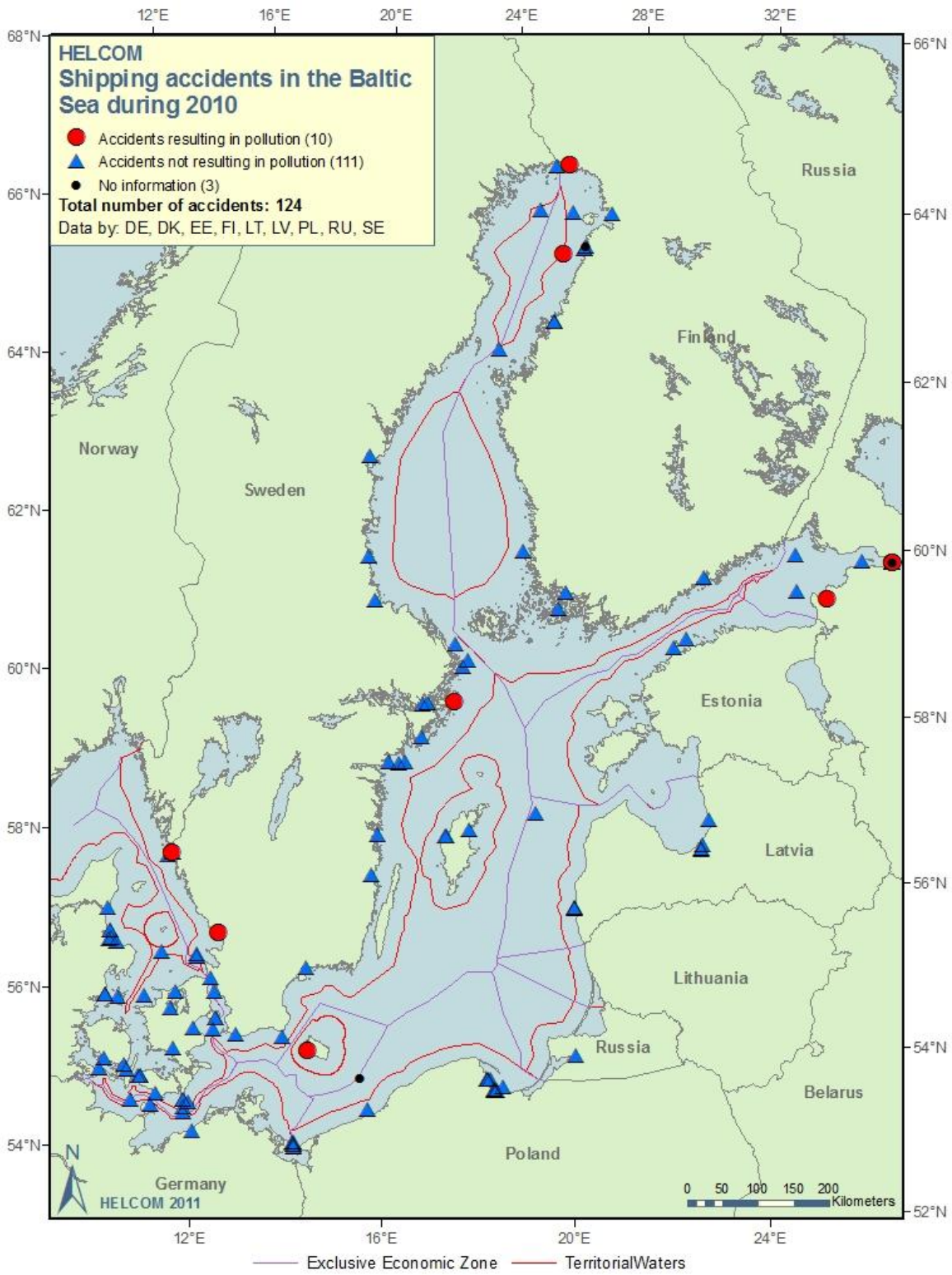

HELCOM
Shipping accidents in the Baltic Sea during 2010
Accidents resulting in pollution (10)
Accidents not resulting in pollution (111)
No information (3)
Total number of accidents: 124
Data by: DE, DK, EE, FI, LT, LV, PL, RU, SE
Russia
Finland
Norway
Sweden
Estonia
Latvia
Lithuania
Russia
Belarus
Poland
Germany
HELCOM 2011
N
0 50 100 150 200
Kilometers
Exclusive Economic Zone
TerritorialWaters

Figure 36

Country	Date	Latitude	Longitude	Ship name(s)	Ship type(s)	Ship size (gt)	Cargo	Type of accident	Cause of accident	Type of pollution
Denmark	27.10.2010	55,0985	14,6937	VILLUM CLAUSEN, 9216250, Denmark	Passenger	6402	Passenger and Ro-Ro cargo	Other	n.i.	n.i.
Finland	21.1.2010	65,7361	24,5639	Jurmo 9255270 Finland	Tanker	15980	Oil products	Pollution	External factor	0.5 tonnes oil
Finland	27.4.2010	64,6517	23,7667	Steel 8503503 Finland	Other	1562	n.i.	Pollution	Human factor	0.3 tonnes of oil
Russia	19.4.2010	59,9000	30,2500	ASKOLD, n.i., Russia	Other	n.i.	No cargo	Grounding	Human factor	Engine oil (amount unknown)
Russia	28.6.2010	59,9000	30,2500	GUODIAN-9, n.i., Hong Kong	Other	n.i.	mazut	Pollution	Human factor	Mazut (amount unknown)
Russia	7.12.2010	59,6833	28,4167	FIN KHRAFT, n.i., Finland	Passenger	n.i.	n.i.	Pollution	Human factor	Fuel IFO-380 (amount unknown
Russia	16.12.2010	59,9000	30,2500	AZIAN KOSMOS, n.i., Panama	Cargo	n.i.	n.i.	Pollution	Human factor	0.4 tonnes fuel IFO-380
Sweden	13.1.2010	59,3000	18,8670	Baltica,SJOY,Sweden	Other	974	n.i.	Grounding	Human factor	Unknown
Sweden	14.6.2010	56,6500	12,8333	Fox Luna,SIJK,Sweden	Tanker	2284	Ballast	Grounding	External factor	Hydraulic oil (amount unknown)
Sweden	22.3.2010	57,6830	11,8330	Tor selandia,SIZE,Sweden	Cargo	24169	n.i.	Pollution	Technical factor	0.6 tonnes diesel

Table 4. Data on accidents resulting in pollution in 2010.

More information

For more information about maritime traffic and accidents, see the HELCOM website: http://www.helcom.fi/shipping/en_GB/main/

The complete HELCOM dataset on shipping accidents from 1989-2010 can be accessed via the HELCOM map and data service (http://maps.helcom.fi/website/mapservice/index.html) for viewing, querying and/or downloading. Information on establishing a *web map service* connection to the dataset is also available via the HELCOM map and data service