BALTIC ICEBREAKING MANAGEMENT

Baltic Sea Icebreaking Report 2017-2018

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1. Introduction

Baltic Icebreaking Management, BIM is an organization with members from all Baltic Sea states. BIM is a development of the annual meeting between Baltic Sea States icebreaking authorities which have assembled since 1982. The member countries of BIM are Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Norway, Poland, Russia and Sweden.

After the difficult winter navigation season of 2002/2003 a project was started up within the framework of HELCOM, aiming at improving the safety of winter navigation in the Baltic Sea. The HELCOM recommendation 25/7 on the safety of Winter Navigation in the Baltic Sea Area was adopted in March 2004.

Within the EU concept Motorways of the Sea, which is one priority project in the trans-European network, the Baltic Sea countries established a working group with the aim of creating more efficient winter navigation by cooperation between the Baltic Sea countries. The icebreaking authorities around the Baltic Sea decided in Helsinki meeting 2004 that this work shall continue within the framework of BIM, where also non EU-member states are taking part. BIM should function all year round and its strategy should be to develop safe, reliable and efficient winter navigation between the Baltic Sea countries. The overall objective of BIM is to assure a well-functioning maritime transport system in the Baltic Sea all year round by enhancing the strategic and operational cooperation between the Baltic Sea countries within the area of assistance to winter navigation.

On 10 January 2007, the Joint Baltic web service on winter navigation www.baltice.org was launched. On 17 June 2015, a new version of the Joint Baltic web service on winter navigation was launched.

On 11 April 2007, the DVD of training in ice navigation for seafarers was launched.

On 15 November 2007, HELCOM adopted a new recommendation 28E/11 outlining further measures to improve the safety of navigation in ice conditions in the Baltic Sea; BIM was acting an “ice advisor” in this recommendation.

In 2008 the pamphlet “The World Icebreaker, Icebreaking Supply and Research Vessel Fleet” was presented and updated in 2011.

In April 2009, a computer based training program, based on the DVD, was introduced. After completing the course, the student gets a certificate over earned skills. One important task of BIM is to inform stakeholders in the maritime sector and policy makers about winter navigation and icebreaking. There is a need for information about winter navigation and icebreaking that covers the whole Baltic Sea region.

Several Baltic Sea countries prepare information about the winter navigation and icebreaking in their respective national waters. There has been a need to coordinate this country-specific information, improve the information and to distribute it to a wider target group by “Joint Annual Baltic Icebreaking Report”.

This report gives an overview of the winter navigation season 2017/2018 for the Baltic Sea area. National reports can be found on the site www.baltice.org . The report will also describe organizational changes in the icebreaking authorities or changes in icebreaking resources and provide a progress report of the Baltic Sea Icebreaking cooperation and the development of BIM.

2. Overview of the icebreaking season (2017-2018) and its effect on the maritime transport system in the Baltic Sea region

According to the Finnish Ice Service of the Finnish Meteorological Institute the Baltic Sea ice season 2017-2018 was average. The maximum ice extent, 175 000 km², was reached on 5 March.

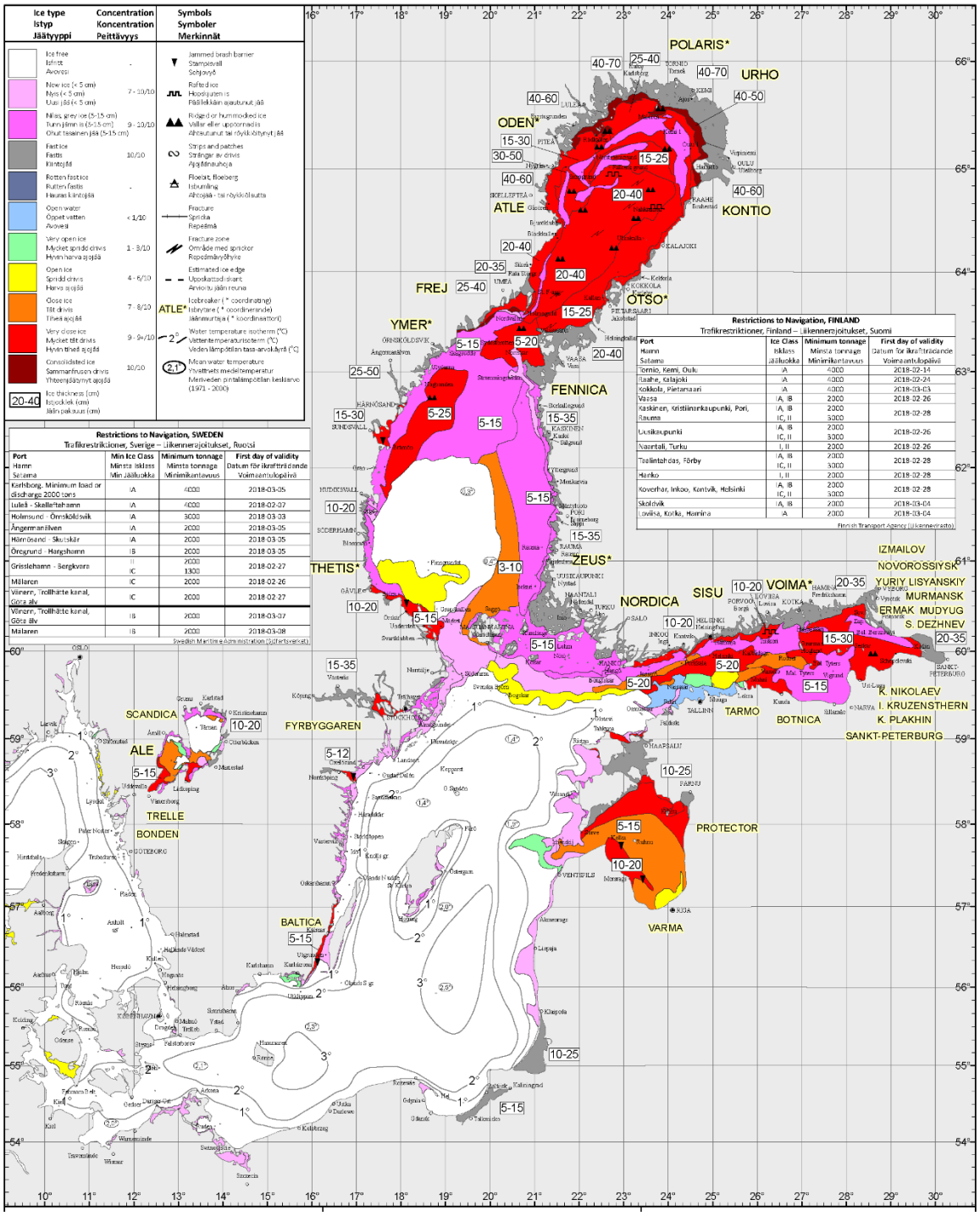


Figure 1. The maximum ice extent of the ice season 2017-2018 was reached on 5 March 2018.

The freezing started from inner bays of the Gulf of Bothnia in early November. December was warm and at the end of December, the extent of sea ice was only 13 000 km². Icebreaker ALE started her assistance work on 7 December.

In January and early February the area of ice increased in a regular manner. In mid-February, the weather changed clearly - cold weather hit the Baltic Sea region. Cold weather continued at the beginning of March and the peak of the ice winter was reached on 5 March, when the ice extent was 175 000 km².

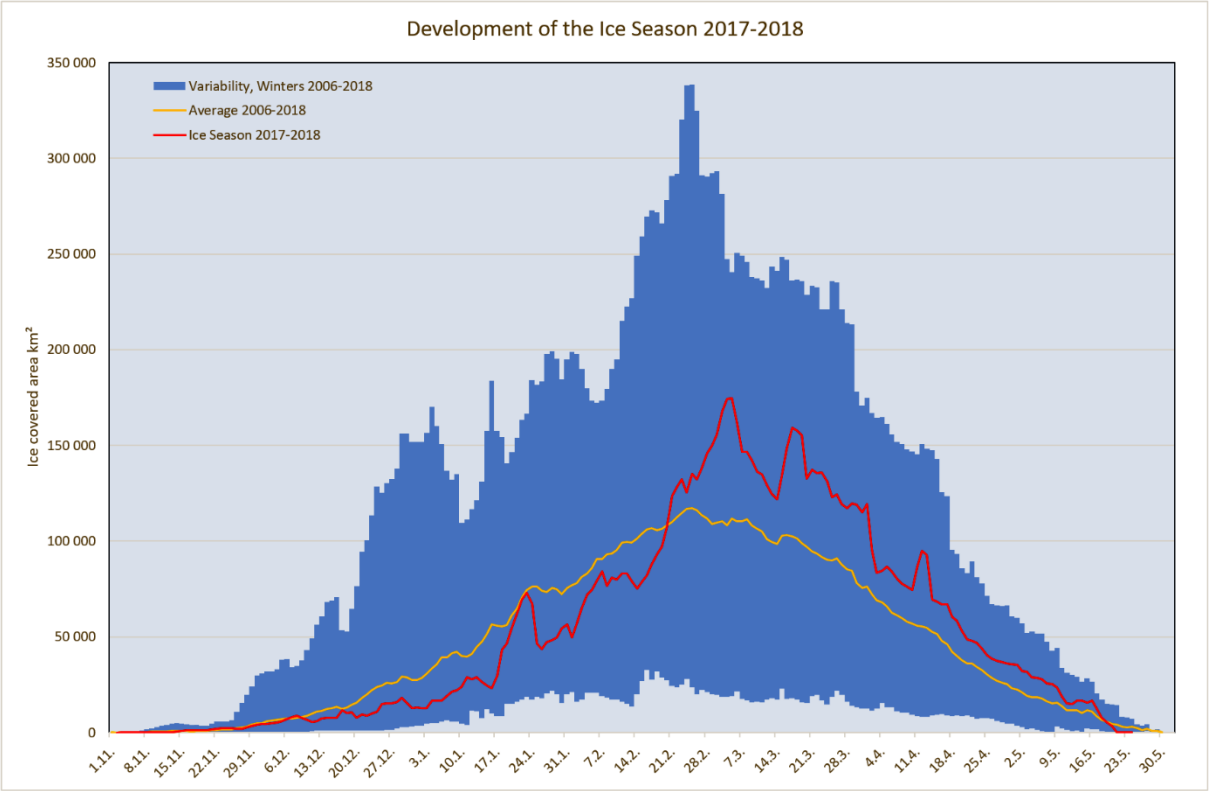


Figure 2. The development of ice season 2017-2018 compared to seasons 2006-2018.

In March the weather continued to be cold, but at times windy. At the end of March the extent of the ice was 115 000 km².

April was warmer than usual and ice melting accelerated. At the end of April the extent of ice was 35 000 km². May was clearly warmer than average and the Baltic Sea was ice free on 20 May.

Ice conditions in the eastern part of the Gulf of Finland in 2017-2018

The ice formation processes in the winter of 2017/2018 were those of a mild winter. Ice formation in the coastal shallow zone of the eastern part of the Gulf of Finland began in the third decade of December 2017. By mid-January, the entire water surface of the seaport “Big port of Saint-Petersburg” was completely covered with ice, the thickness of which was from 5 to 15 cm. Young ice spread to the west of the Meridian of the Cape Shepelevsky. In the northern part of Vyborg Bay lay fast ice. By the end of January, the ice situation had not changed.

February was the coldest month of the winter of 2017-2018. Air temperatures in some areas dropped to minus 26-27 degrees, so intense ice formation occurred at this time. At the end of the second decade of the month, drifting solid ice, 15-20 cm thick, spread to the meridian of island Hogland. The whole water area of Neva Bay and Vyborg Bay was covered with fast ice.

The most difficult ice situation developed by the beginning of March. The drifting cohesive ice of a thickness of up to 20 cm spread to the Meridian of the port of Tallinn. For ships, the most difficult places were the section of the Bolshoy Korabelnyy Fairway and the closed part of the St. Petersburg Sea channel in the area of the Neftyanaya Gavan, where the thickness of the ice edge of the channel reached 2 metres. The water areas of the seaports Ust-Luga and Primorsk were completely ice-covered; the thickness of ice reached 30-35 cm. In the third decade of March, daytime temperatures approached zero and ice formation slowed down. The site of the Big Ship fairway was practically cleared of ice. However, the waters of the ports were under cohesive and soldered ice, the thickness of which reached 25-40 cm.

In April, intensive destruction of the ice cover began. By 18 April, the water area of Neva Bay was clear of ice, and on 24 April the waters of all Russian ports in the eastern part of the Gulf of Finland were completely ice free.

The maximum thickness of fast ice was 30-70 cm in the Bay of Bothnia, 30-45 cm in the Sea of Bothnia and 25-50 cm in the Gulf of Finland. The thickness of pelagic ice was 40-60 cm in the Bay of Bothnia and 20-45 cm in the Gulf of Finland.

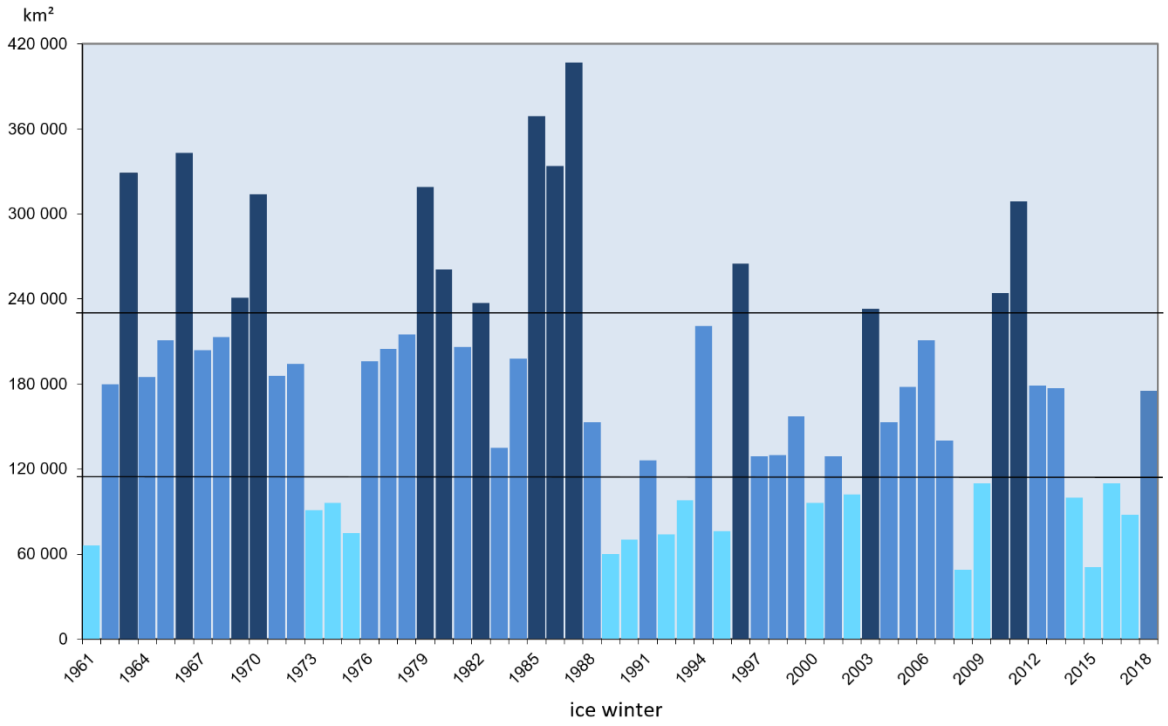


Figure 3. The maximum ice coverage in ice winters 1961-2018. The average of 1961-2011 (51 years) is 187 000 km². Severities of the season are indicated using colours from mild to severe (lightest blue to darkest blue respectively).

For safety reasons, the Baltic Sea countries have agreed within HELCOM on a joint policy when traffic restrictions are issued. For efficiency reasons, the icebreaking authorities can demand a lowest limit on vessels' engine power as well. Smaller vessels like buoy tenders and tugs with strong engines and hull are used as port icebreakers and for icebreaking mission in waters protected from drifting sea ice. In open sea areas that are affected by drifting sea ice with ridges and ice pressure, big sea icebreakers are required.

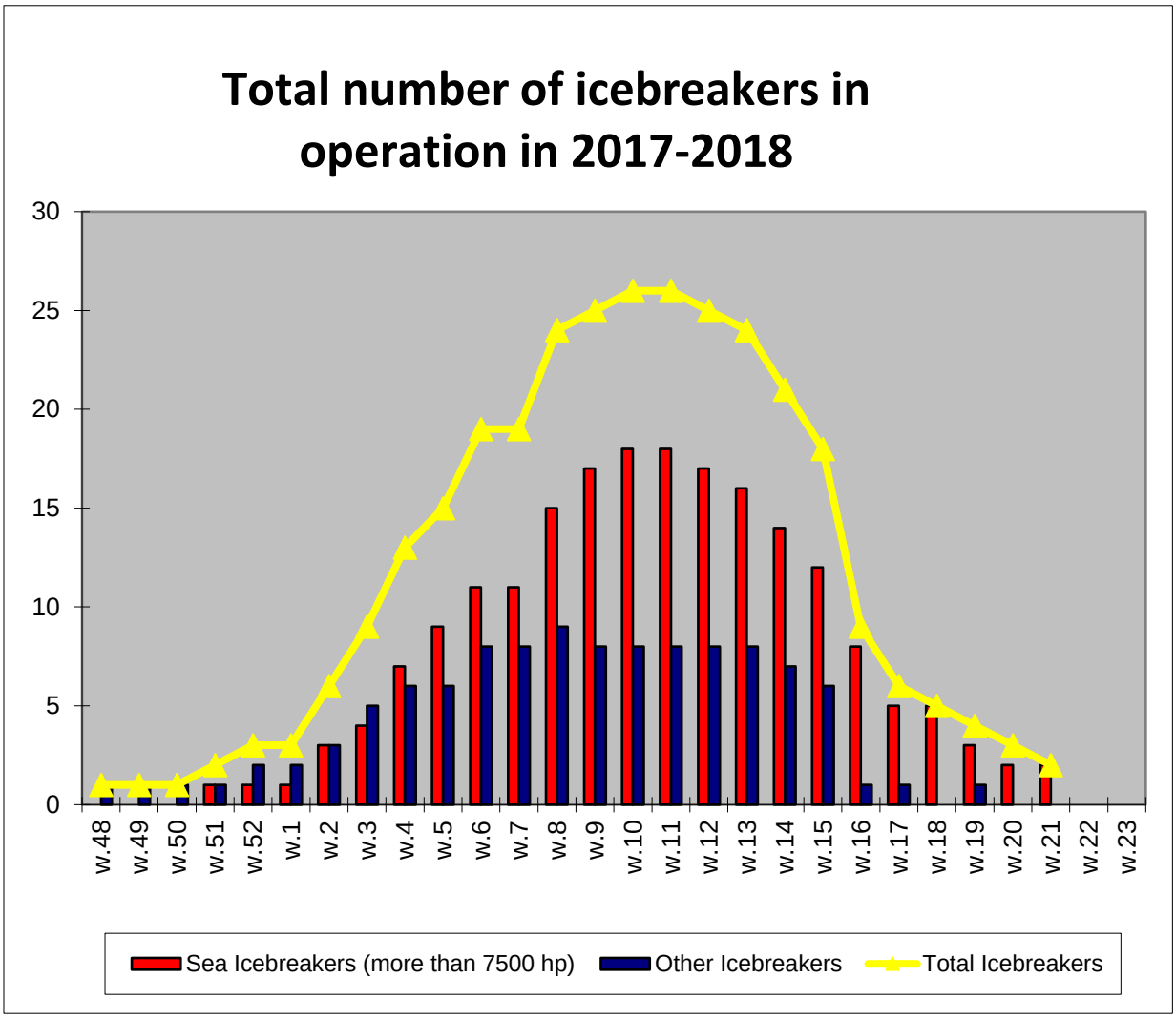


Figure 5. The total number of icebreakers in operation each week in the Baltic Sea during this season.

According to statistics from the Baltic Sea icebreaking authorities, 4980 vessels received assistance from icebreakers this season.

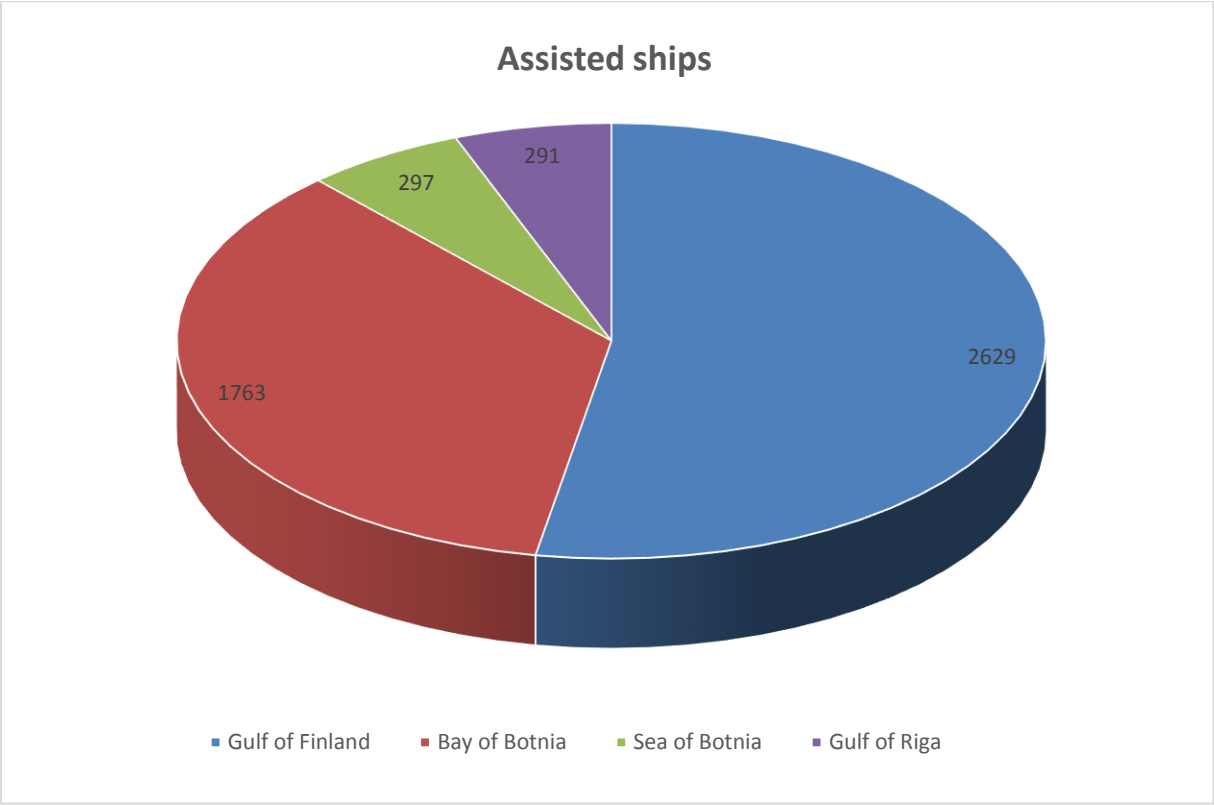


Figure 6. A total of 4980 vessels where assisted by icebreakers during the icebreaking season 2017-2018 in the Baltic Sea.

The longest sailing distance in sea ice is to the northernmost ports in the Bay of Bothnia. But due to the big number of vessels in the shorter fairway to the easternmost ports in the Gulf of Finland, the traffic is more affected by sea ice in this area, especially during periods with strong westerly winds when the icebreakers must tow many vessels one by one.

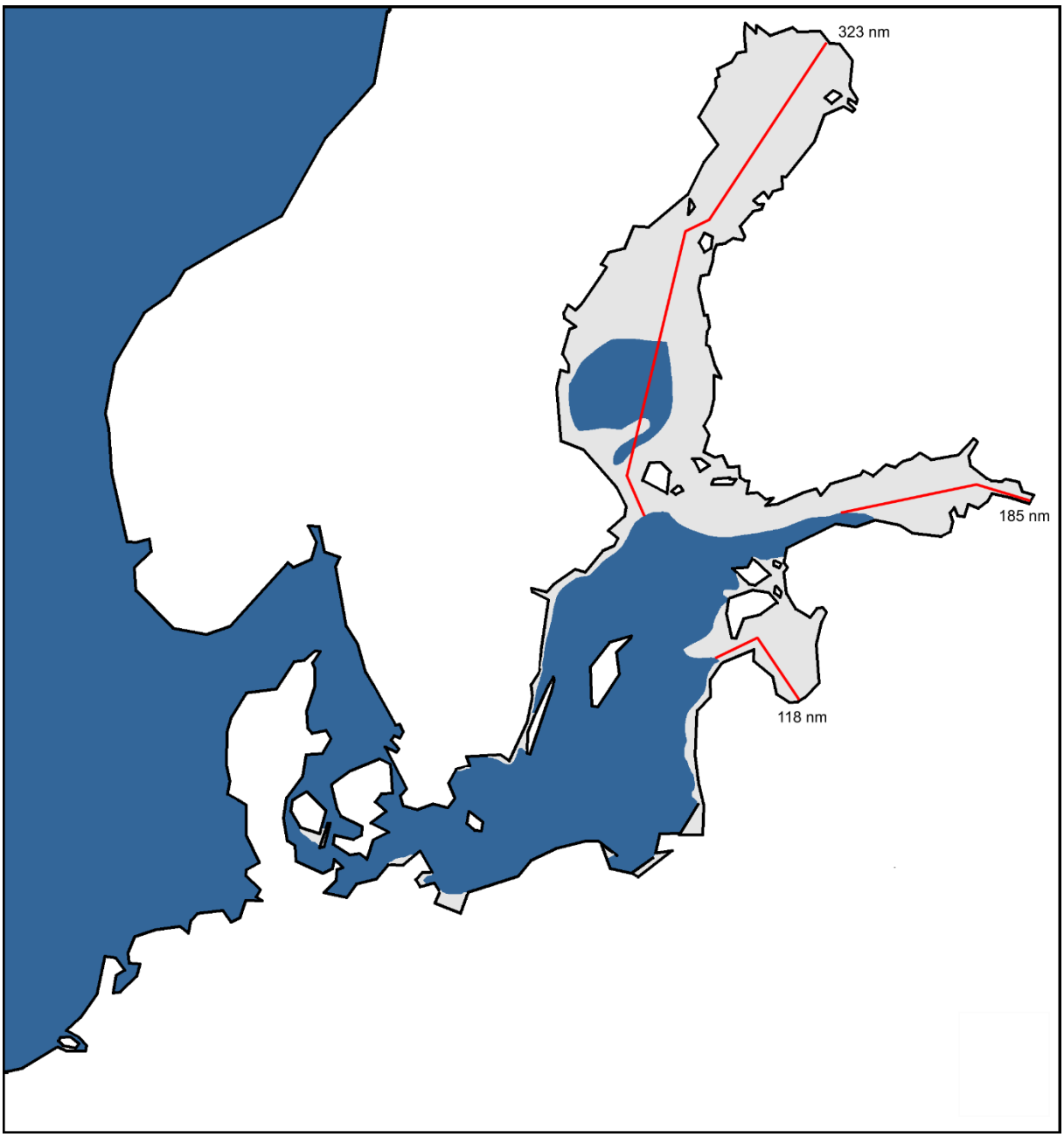


Figure 7. Sailing distance from ice edge during maximum ice extension on 5 March 2018: to Kemi 323 nautical miles, to St. Petersburg 185 nautical miles and to Riga 118 nautical miles.

3. Accidents and incidents in sea ice

The Technical University of Helsinki collects information on accidents related to navigation in ice. Ship-owners and others within winter navigation are requested to report accidents, incidents and damages that are ice-related to icedamage@tkk.fi or to

Ice Damage Database
Helsinki University of Technology
Ship Laboratory

PL 5300
02151 TKK
FINLAND

4. Winter Navigation Research

Winter navigation research is carried out in co-operation between Finland and Sweden. Funds for research projects are allocated by the Winter Navigation Research Board, which consists of representatives of the Finnish Transport Agency, Finnish Transport Safety Agency, Swedish Transport Agency and Swedish Maritime Administration. Published research reports can be found on www.trafi.fi (http://www.trafi.fi/tietopalvelut/julkaisut/talvimerenkulun_tutkimusraportit).

5. Costs of Icebreaking services in the Baltic Sea

5.1 Finland

In Finland the stand-by and operational costs of icebreakers were nearly 54 million euro in the period 2017-2018. Bunker costs were 7.15 million euro. This season started like a mild winter, but it gained rapidly more ice in mid-January; then there was a short mild period and the ice formation started again in mid-February. According to the Finnish Ice Service of the Finnish Meteorological Institute the Baltic Sea ice season 2017-2018 was average. The maximum ice extent, 175 000 km², was reached on 5 March. The winter lasted until 21 May when IB *Kontio* moored to Helsinki. The total number of operating days was 756. The Finnish Transport Agency (FTA) used all nine contracted icebreakers during the season – for the first time since the 2012-2013 season. The abovementioned costs include all FTA chartered seagoing icebreakers. The FTA has also contracts with private tugboat companies for minor operations. The total costs of the Finnish icebreaking services are normally around 60 million euro depending on the winter.

5.2 Sweden

In Sweden the cost for the stand-by period for our own icebreakers was approximately 11.5 million euro, additional operational costs were 8.5 million euro, and fuel costs 5.7 million euro. The total cost for the Swedish icebreaking services including external recourses varies from 20 to 40 million euro, depending on the severity of the winters. The costs this winter were estimated to be 30.9 million euro. This is the government's costs; costs for the different ports and industries are not included.

5.3 Russia

In accordance with the orders of the FTS of Russia dated 20 December 2007 No. 522-t/1 and 18 November 2014 No. 262-t/5, and by order FAS of Russia of 06 June 2016 No. 711/16, new rates of icebreaking dues in the Russian ports of the Gulf of Finland are established as follows:

Icebreaking dues:

1. Icebreaking dues are applied for coming in, coming out or transiting the port area.
2. For the cargo ships engaged in liner services, which are officially declared, the factor of 0.8 is applied to the rates of the icebreaking dues.

From icebreaking dues are exempted:

- vessels of ice class ARC7 (according to classification of the Russian Maritime Register of Shipping or classes of other classification societies corresponding to it);
- passenger vessels.

Upon the announcement by the Harbour Master of winter (summer) navigation before the target date, and also after the prolongation of its duration, icebreaking dues are paid as per corresponding rates from the date of announcement to a date of completion (inclusive), corresponding to the period of winter navigation.

Rates for ships engaged in an international trade rub/1 GT (for Bolshoy port of Saint-Petersburg)

	All vessels except Ro-Ro, Ro-Flow, container ships and tankers	Container ships	Ro-Ro, Ro-Flow	Tankers
The summer rate from 01 May to 30 November	**6.65**	**4.64**	**2.67**	**7.28**
The winter rate from 01 December to 30 April	**16.55**	**11.58**	**6.36**	**18.14**

During the period from 01 May to 30 November, the following vessels are exempted from payment of icebreaking dues:

- arriving at the port from inland waterways of Russia or from the Saimaa canal and sailing back within the current year;
- arriving at the port from other Russian ports situated in the eastern part of the Gulf of Finland.

During the period from 01 December to 30 April, the vessels with ice class **ARC5** and **ARC6** (according to classification of the Russian Maritime Register of Shipping or classes of other classification societies corresponding to it) are subject to icebreaking dues multiplied by factor 0.75.

5.4. Estonia

In Estonia, the total cost of icebreaking in the 2017-2018 season amounted to approximately 6.2 million euro, with about 600 000 euro accounting for the costs in the Pärnu Bay and 5.6 million euro for the Gulf of Finland. This is the Governmental costs.

5.5 Latvia, Lithuania, Poland and Germany

In Latvia no special fee is collected for icebreaker services. The operational costs of icebreaker services were around 435 000 euro for the 2017-2018 winter period. This includes bunker and crew costs, but excludes icebreaker maintenance costs.

There was no cost information for icebreaking operations in the season 2016-2017 for Lithuania, Poland and Germany.

5.6 Denmark

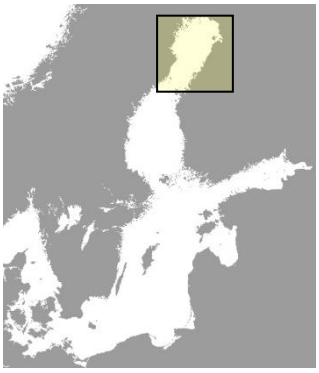
No icebreaking operations in the 2017-2018 season.

5.7 Norway

No information; there were no icebreaking operations in the 2017-2018 season.

6. Winter navigation in the different parts of the Baltic Sea

6.1 Bay of Bothnia



Traffic restrictions where initiated on 19 December in the Bay of Bothnia; the ice-breaking operations began on 18 December when IB *Kontio* was ordered to start this year's icebreaking.

The first assistance of the merchant vessels was conducted on 26 December. When the ice extension was at its peak in week 10, there were 6 liner icebreakers in operation at the same time.

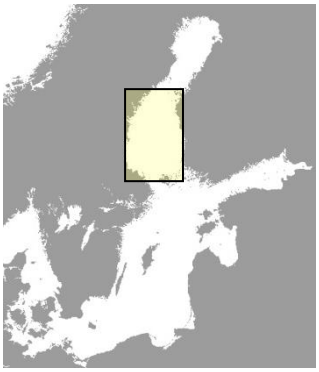
Assistance activity went on from 26 December to 15 May. During this winter 1763 vessels were assisted in the Bay of Bothnia.

The highest level of ice restrictions IA and 4000 dwt with cargo restriction 2000t were reached on 6 March in the northern and on 24 February IA and 4000 dwt in the southern parts. The icebreaking season ended in the Bay of Bothnia on 23 May when the last restrictions were cancelled. IB *Kontio* was the last icebreaker to leave the Bay of Bothnia.

Assistance was conducted to the following ports:

Karlsborg	Tornio
Luleå	Kemi
Haraholmen	Oulu
Skelleftehamn	Raahe
	Kalajoki
	Kokkola
	Pietarsaari

6.2 Sea of Bothnia and the Quark

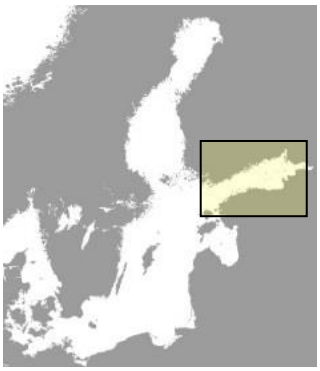


Traffic restrictions where initiated in the area on 10 January.

The highest level of ice restrictions IA and 3000 dwt were reached on 3 March in the northern and on 3 March IA and 2000 dwt in the southern parts. The icebreaking season ended in the Bay of Bothnia and the Quark on 4 May when the last restrictions were cancelled in Vaasa.

During this winter 297 vessels were assisted in the Sea of Bothnia and the Quark.

6.3 Gulf of Finland



For the Finnish parts of Gulf of Finland, the first traffic restrictions I, II 2000 were initiated on 27 January in Kotka, Hamina and Loviisa. The highest restrictions were raised to IA, 2000 in the abovementioned ports on 4 March.

All restrictions were cancelled on 22 April. There were 3 icebreakers operating in the Gulf of Finland. During the winter there were 184 ships assisted in the Finnish part of the Gulf of Finland.

The first traffic restrictions were imposed on 12 January 2018 in St. Petersburg. The restrictions were cancelled on 25 April 2018. All vessels which needed icebreaker assistance were bound for Russian ports. During the largest ice cover, the Russians had six sea (liner) icebreakers and **six** minor (port) icebreakers in use. The icebreaking season lasted from 25 December 2017 to 25 April 2018 in the Russian territorial water.

During the winter 2393 ships were assisted on their way to or from the Russian ports.

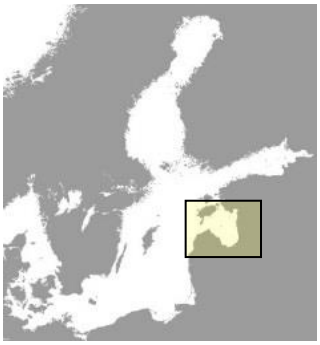
Assistance was conducted to the following ports:

Vyborg	Vysotsk
Primorsk	St. Petersburg
Ust-Luga	Hamina
Sillamäe	Kunda

For the Estonian part of the Gulf of Finland traffic restrictions were imposed from 1 March 2018. Restrictions were cancelled from 12 April 2018. IB *Botnica* and IB *Tarmo* assisted 52 ships to and from Estonian ports in the Gulf of Finland.

During the winter 2629 ships were assisted in the Gulf of Finland.

6.4. Gulf of Riga



The Estonian Meteorological and Hydrological Institute assessed the winter of 2017-2018 as normal. Traffic restrictions were initiated on 27 January (IC, 1600 kW) in Pärnu. On 12 April traffic restrictions were cancelled. The icebreaking season lasted from 8 January to 28 March, and 148 ships were assisted by the multi-purpose-vessel *EVA-316* and the tug *Protector*.

In the winter of 2017-2018 the Harbour Master of Riga declared commencement of ice navigation starting from 25 February and it was in force until 4 April, meaning that ice navigation regulations and traffic restrictions applied to all vessels visiting the port of Riga. Actual icebreaking operations in the Gulf of Riga and the Irbe Strait began on 1 March when IB *Varma* was ordered to sail out to the Irbe Strait and commence service. The last icebreaking assistance was carried out on 30 March and the *Varma* returned to her berth in Riga on 3 April. In total, the *Varma* assisted 118 ships in 32 days, sailed around 2300 nautical miles and used 326 tons of bunkers. No damages, incidents or accidents were reported related to navigation in ice.

Assistance was conducted to the following ports:

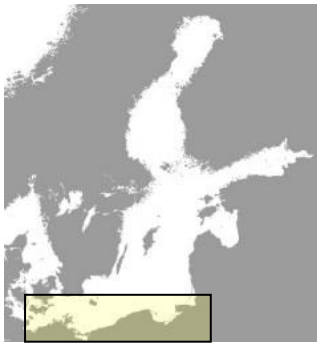
Pärnu Riga

The total number of ships assisted in the Gulf of Riga was 291.

6.5 Central Baltic

In Swedish waters restrictions were initiated from 27 February to 23 March from Grisslehamn - Bergkvara. The buoy tender vessel *Baltica* assisted five vessels to ports in the Kalmar sound.

6.6 Southern Baltic



East Coast Area. Ports of Gdańsk and Gdynia

There were no significant difficulties for shipping caused by ice. The ice on inner waters of the ports was easy to break by berthing / unberthing vessels.

The icebreaking action was announced only for inner waters of Gdansk harbour from 28 February to 8 March.

There was no need to engage icebreaking tugs on the approaches to the ports.

West Coast Area. Ports of Szczecin and Świnoujście

I. Winter season

Regarding temperatures the months of November and December 2017 were mild, with the mean temperatures 7 and 5 degrees above zero. January 2018 was a little colder; occasionally the temperature dropped below zero. February 2018 was definitely cold, with some days – the last week – with constant minus degrees, up to 11 degrees below zero. The mean temperature for February was 0.1 degrees. At the beginning of March the temperatures were down to 11 degrees below zero, but the following days were warm, the temperature occasionally rising to 16 degrees.

The first ice formation appeared on 26 February 2018. It was a 100% coverage of ice with a thickness of about 5 cm in the area within the ports of Świnoujście and Szczecin. In the beginning it was no obstacle to navigation. The navigation in the area was more difficult a little later when ice became thicker, about 10 cm, and due to the winds the ice became a little ridged and heaped up and obstructed traffic to a certain extent. When in March the warm days began ice started to melt very quickly. On 16 March 2018 ice disappeared and water was free of ice in the area.

II. Actions

1. Putting into force ice restrictions by the Harbour Master of Swinoujście / Szczecin, in their area of responsibility:

- The first restriction was put into force on 26 February 2018 and it was said that the main fairway Swinoujście-Szczecin and the ports of Swinoujście and Szczecin were not available for wooden and laminate small vessels. This restriction was suspended on 16 of March 2018.

- From 28 February to 13 March 2018, the main fairway Świnoujście-Szczecin and the port of Szczecin were available for vessels with ice class L-4 PRS (or an equivalent class of another Classification Society) and main engine power above 1200 KW.

2. Special statements of the Harbour Master of Świnoujście/Szczecin.

Statements issued by the Harbour Master of Szczecin:

- From 1 March 2018 to 12 March 2018 – one-way traffic was established on the water fairway between Gate No. I and Gate No. IV.

3. Icebreaking actions:

Generally, when there were ice formations, traffic was organized in convoys as one-way traffic.

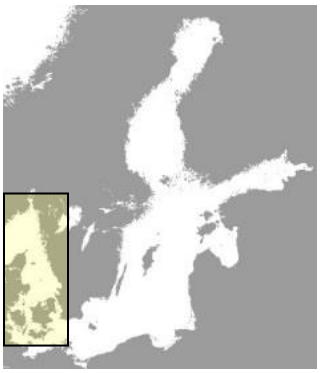
Summary

1. In the thermal aspect – the winter season 2017-2018 can be defined as gentle and causing some difficulties to navigation.

2. In the ice condition aspect – the winter season was not difficult, ice formation was not a serious obstacle to navigation.

There were no difficulties for shipping caused by ice. The ice on inner waters of the ports was easy to break by berthing / unberthing vessels. There was no need to engage icebreaking tugs on the approaches to the ports.

6.7 Danish waters, Swedish West coast, Germany and Norwegian waters



No restrictions were issued to Swedish ports.

Germany

There was only sporadic icebreaking in the inshore waters.

7. Description of organizations and icebreakers engaged during the season 2017-2018

7.1 Finland

The Finnish Transport Agency (FTA) is the national authority responsible for the assistance of winter navigation, its coordination, development and management nation-wide. The actual icebreaking services have been contracted out.

The FTA develops Finland's icebreaking policy, taking into account the requirements of its clients (mainly the Finnish industry). Essential for the industry are as short waiting times as possible for traffic. The FTA decides on the length of the assistance period, exemptions and traffic restrictions. Traffic restrictions are normally made more stringent than the minimum HELCOM safety recommendations, as the objective is, besides safety, to assure an efficient and safe maritime traffic flow. Only vessels fulfilling the criteria of daily traffic restrictions are given assistance.

The icebreaking services are procured mainly from Arctia Icebreaking Ltd., Alfons Håkans AS and also from other companies for minor operations. Minor operations are mainly tugboat services for icebreaking in light ice conditions in harbour entrances and in Lake Saimaa. FTA's winter navigation unit in general and VTS centres and specific area coordination IB masters locally are responsible for the management and daily operation of the icebreaking services to all assisted ports.

The main KPI is that vessels should not have to wait for an icebreaker for more than 4 hours on an average. Another goal for the Finnish icebreaker service level is that 90 % to 95 % of vessels navigating in the ice field could sail through without waiting for icebreaker assistance. The average icebreaker waiting time for all Finnish sea areas in this season was 4.28 hrs and 95 % of all port calls did not have to wait for icebreaker assistance at all.

In Finland no special fee is collected for icebreaker services. All ships pay fairway dues based on ship size and ice class. The fairway dues are used to cover the costs of fairway maintenance and icebreaking services. A State agreement between Sweden and Finland has further developed the co-operation in winter navigation activities between these two countries for a decade. Optimal usage of "common" IB resources lowers total costs and grants more reliable service to customers.

Icebreakers engaged by the Finnish Transport Agency 2017-2018:

Name	Type	Propulsion power
SISU	Icebreaker	16 200kW
URHO	Icebreaker	16 200kW
POLARIS	Icebreaker	19 000kW
OTSO	Icebreaker	15 000 kW
KONTIO	Icebreaker	15 000 kW
FENNICA	Icebreaker	15 000 kW
VOIMA	Icebreaker	10 200 kW

ZEUS	Icebreaker	6 000 kW
THETIS (substitute for ZEUS)	Icebreaker	8 004 kW

7.2 Sweden

Icebreaking operations are managed by the Icebreaking Management of the Swedish Maritime Administration in Norrköping and are based on the Swedish icebreaking regulation (2000:1149). It allocates icebreakers to work areas, issues traffic restrictions, monitors the operational situation and informs the shipping stakeholders of ice conditions and the traffic situation. Sweden controls six icebreakers, of which the Swedish Maritime Administration owns five and has one on long-term charter from a private ship owner. All Swedish icebreakers are manned by a private shipping management company.

Sweden and Finland use a jointly developed IT based on-line system, IBNet (Icebreaker Net) for coordination of the joint icebreaking operations. It contains information about the weather, ice conditions and traffic situation, and transmits the information between the different connected units (icebreakers, coordination centres, VTS etc.).

In addition to the icebreakers, ice strengthened buoy tenders of the Swedish Maritime Administration and private tugboats are also engaged in the icebreaking service. Helicopters are chartered and used for ice reconnaissance and personnel transport in order to reduce time expenditure for icebreakers. Cooperation with the tugboats in ports is common around the coastline.

The governmental funding and fairway dues cover the costs for the icebreaking operations and no vessel that receives assistance from icebreaker is charged.

Icebreakers engaged by the Swedish icebreaking service in 2017-2018:

Name	**Type**	**Engine power**
ALE	Icebreaker	3500 kW
ATLE	Icebreaker	18400 kW
FREJ	Icebreaker	18400 kW
YMER	Icebreaker	18400 kW
ODEN	Icebreaker	18000 kW
SCANDICA	Buoy & Lighthouse Tender	2588 kW
BALTICA	Buoy tender	2588 kW
FYRBYGGAREN	Buoy & Lighthouse Tender	1103 Kw

During the winter the Administration also engaged 11 different tugboats for icebreaking operations.

7.3 Russia

The Harbour Master of the Port has the power to impose ice restrictions in the port and approach channels, based on actual ice conditions (according to articles Nos. 74 & 76, Russian Federal Law No. 81-FZ, Russian Merchant Marine Code, 30 April 1999).

The ice navigation assistance is conducted by the state-owned icebreakers and covers the seaports: Bolshoy port of St. Petersburg, Primorsk, Vyborg, Vysotsk and Ust-Luga. The state-owned icebreakers assist the inland transit navigation via the Saimaa Canal both ways.

The icebreaker fleet consists of the following icebreakers:

Name	Type	Engine power
ERMAK	Icebreaker	30 400 KW
CAPTAIN SOROKIN	Icebreaker	18 300 KW
CAPTAIN NIKOLAEV	Icebreaker	18 000 kW
MOSKVA	Icebreaker	21 000 KW
SAINT-PETERSBURG	Icebreaker	21 000 KW
VLADIVOSTOK	Icebreaker	17 400 KW
MURMANSK	Icebreaker	17 400 KW
NOVOROSSIYSK	**Icebreaker**	**17 400 KW**
MUDYUG	Icebreaker	7 000 KW
KARU	Icebreaker	5 600 KW
TOR	**Icebreaker**	**10 120 KW**
SEMION DEZHNEV	Icebreaker	4 500 KW
IVAN KRUZENSTERN	Icebreaker	4 500 KW
YURI LISYANSKY	Icebreaker	4 000 KW
CAPTAIN ZARUBIN	Icebreaker	3 300 KW
CAPITAN M. IZMAILOV	Icebreaker	4 000 KW
CAPITAN PLAKHIN	Icebreaker	3 240 KW

The icebreaker assistance, as a rule, is conducted as follows:

1. Independent ice navigation following icebreaker recommendations and strictly under her supervision.
2. Icebreaker assistance in a convoy.
3. Individual icebreaker assistance behind an icebreaker.

Icebreaker assistance is rendered to ships which do not fall under the acting restrictions in the ports of their destination. Icebreaker assistance for the traffic coming from the sea is conducted from the point where the convoy is formed to the inner road of the port, and the ships leaving the port are assisted from the inner road to the area next to the convoy forming point (CFP).

All ships coming from the sea are prohibited from entering the ice east of the convoy forming point (CFP) without permission of the icebreaker. The Masters of the ships sailing independently upon receiving the permission of the icebreaker are to report to the icebreaker while passing the established control points of the recommended route and inform of the ice situation in the area. If such a ship gets stuck, the icebreakers are to release them and correct their recommended route or get them in the convoy for further motion. The Masters of the ships are not recommended to rely on data regarding recommended routes received from other ships and not confirmed by the Master of the icebreaker.

When the ice thickness over the approach fairways leading to Russian ports in the eastern part of the Gulf of Finland becomes considerable, the Harbour Master of seaport imposes restrictions on ships the ice class of which are not sufficient for navigation under prevailing circumstances.

7.4 Estonia

The responsible organization for icebreaking in Estonia is the Estonian Maritime Administration. The Director General of the Estonian Maritime Administration decides on traffic restrictions and directives on winter navigation. The icebreaking coordination Centre consisted of 9 members in 2015, chaired by the Head of the Maritime Safety Division of the Maritime Administration, and it acts as an advisory board for the Director General in icebreaking issues.

Ports that are serviced by state ice-breakers are Muuga Harbour, harbours of Tallinn and Kopli Bay, Paldiski North Harbour, Paldiski South Harbour, Kunda Harbour, Sillamäe Harbour and Pärnu Harbour.

Estonia has two icebreakers, *Tarmo* and *Botnica*, to operate in the Gulf of Finland area, and the multi-purpose vessel *EVA-316* to operate in Pärnu Bay. Icebreaking to the port of Pärnu was carried out by the multi-purpose vessel *EVA-316*. Icebreakers engaged by the Estonian Maritime Administration 2017-2018:

Name	**Type**	**Engine power**
EVA-316	Multi-Purpose Vessel	5150 kW
Protector	Tug	2700 kW
Botnica	icebreaker	15 000 kW
Tarmo	icebreaker	10 000 kW

7.5 Latvia

There is one icebreaker, the *Varma*, which is owned and operated by the Freeport of Riga Fleet, Ltd.

Icebreakers engaged by Latvia 2017-2018:

Name	**Type**	**Engine power**
Varma	icebreaker	10 000 kW

7.6. Lithuania

The port of Klaipeda is the northernmost ice free port in the eastern Baltic coast. Klaipeda State Seaport Authority is the responsible organisation for icebreaking in Klaipeda harbour areas. The Lithuanian fairways are open all year round.

7.7 Poland

Eastern part:
The winter season 2017-2018 was very moderate and no ice formation appeared in the area. There was no need to engage icebreaking tugs on the approaches to the ports.

Western part:
The winter season 2017-2018 was very moderate and ice formation light. The thickness of ice was *ca* 5 cm and only port tugs were used for icebreaking.

There was no need to engage icebreaking tugs on the approaches to the ports.

7.8 Germany

The Federal Waterways and Shipping Authority, Northern Region Office in Kiel coordinates according to an overall plan the icebreaking service for the harbour entrances, coastal and sea regions in German parts of the Baltic Sea.

The German ice service plan is set up annually by the responsible authority, listing all available vessels which are capable of icebreaking, giving information on the respective areas of icebreaking service, the expected ice situation etc.

Vessels available for icebreaking operations:

Name	Type	Engine power
NEUWERK	Multi-Purpose vessels	8400 kW
MELLUM	Multi-Purpose vessels	6620 kW
ARKONA	Multi-Purpose vessels	3700 kW

In addition to that, a number of smaller tugboats and river icebreakers are available for the inner coastal waters and harbours.

7.9 Denmark

Rules and regulations for icebreaking in Danish waters is described in “Act on the amendment of the National Ice Service Act”. Upon consultation with the Ice Service Council the minister of defence lays down the rules for the establishment of the icebreaking service in Danish waters for certain areas, named readiness areas.

The icebreaking service for readiness areas is financed by 25% from the requiring vessel and 75% by the Ice Service. The Ice Service will collect an annual fee from port administrations calculated on the basis of the volume of goods passing through the individual ports. In the new Act a state-controlled icebreaker shall be understood as icebreaking resources chartered by the state and other vessels used for icebreaking by the Ice Service.

When the ice situation so demands, assistance can be requested against payment. On Danish Defence homepage, ship owners with icebreaking capacity have the possibility to lay down information on these capacities and contact information to the company. If in any doubt or help needed, the Maritime Assistance Service at the Joint Operation Centre can be contacted.

The Ice Service recommends that the necessary precautionary measures be taken in areas where experience shows that ice may make navigation very difficult.

No icebreakers available for icebreaking operations.

7.10 Norway

In Norwegian waters, the Norwegian Coastal Administration is responsible for all icebreaking in the main fairways. Since 2014 this includes approaches to ports, which earlier has been conducted by the local port authority.

Governmental vessels with icebreaking capability:

Name	Type	Engine power

VILLA	Buoy tender	935 kW
SVALBARD	Coast Guard vessel	13 500 kW

Private vessels with icebreaking capability:

Name	**Type**	**Engine power**
BAMSETUG	Tug	3564 kW
TOR III	Harbour Tug	1052 kW
TUG FRIER	Harbour Tug	883 kW
SKILSØE	Harbour Tug	932 KW

8. Progress report of BIM (Baltic Sea Icebreaking Management)

BIM member states meet regularly every year to discuss the issues regarding icebreaking around the Baltic Sea. One important topic for many years has been to find solutions for how the existing Baltic Sea icebreakers can be utilized in the icebreaking services of all BIM member states. The Baltic icebreaking action plan for severe winters requires optimal use of resources, so that not only are ships to be helped to and from the ports of particular countries, but also icebreaking service is provided for all ships in the area. The long term vision of the BIM is a common icebreaker fleet in the Baltic Sea. The action plan is being worked out within the framework of the project WINMOS II, partly financed by the EU. This is an initiative of international nature and requires decisions made on the government level. BIM members are of the opinion that the best solution would be to reach an agreement within HELCOM.

One other important project was the modernization of the joint website www.baltice.org which has been operational since 2007; the modernization was completed before the winter season 2015-2016. At the 35th session of BIM annual meeting it was pointed out that the website has already received positive feedback from the industry and the site is visited by great numbers of readers. There is a group of active users, and it is important to continue updating the information on the website and adding illustrative information (photos of icebreakers). It is also important to promote the website among potential users. Information about it could be in materials about navigational information (List of Signals).

The chairmanship of BIM lasts for two years; this year Estonia's role as Chair ends and at the annual meeting in 2018, the Russian Federation was officially assigned the chairmanship for the next two years.

www.baltice.org