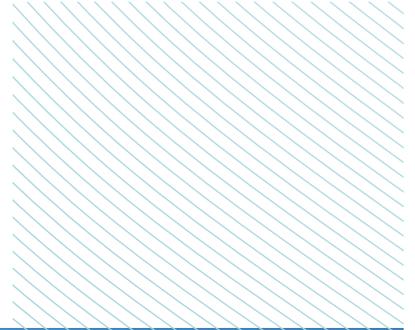


Norges  
Rederiforbund  
Norwegian  
Shipowners'  
Association



# High North – High Stakes Maritime opportunities in the Arctic





PHOTO: FOTOLIA

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# Great maritime opportunities

Norway's sea area is six times larger than its land mass. The majority of this area lies in what we define as the High North. The High North has become an object of increasing focus by many parties due to its significance for energy, the environment and security on a global scale. The trend in the form of serious melting of the polar icecap is cause for concern. At the same time, a number of players have explored the potentials that are opening up. This development makes particular demands on the authorities and all other stakeholders in the High North.

The potential for activities in the High North is linked to three factors of particular interest to the maritime industry: offshore energy extraction, intra-regional transport and polar transit. The most immediate opportunities are for extracting petroleum resources offshore, with intra-regional transport as a support service, and for exploiting mineral and natural resources onshore. Transit through the northern sea routes will gain in importance but will remain limited in volume in the next few years.

The clarification of the maritime border between Russia and Norway offers particularly great potential for prospecting for and extracting the resources that belong to Norway. The Norwegian Shipowners' Association believes it is important that the authorities facilitate exploitation of these opportunities.

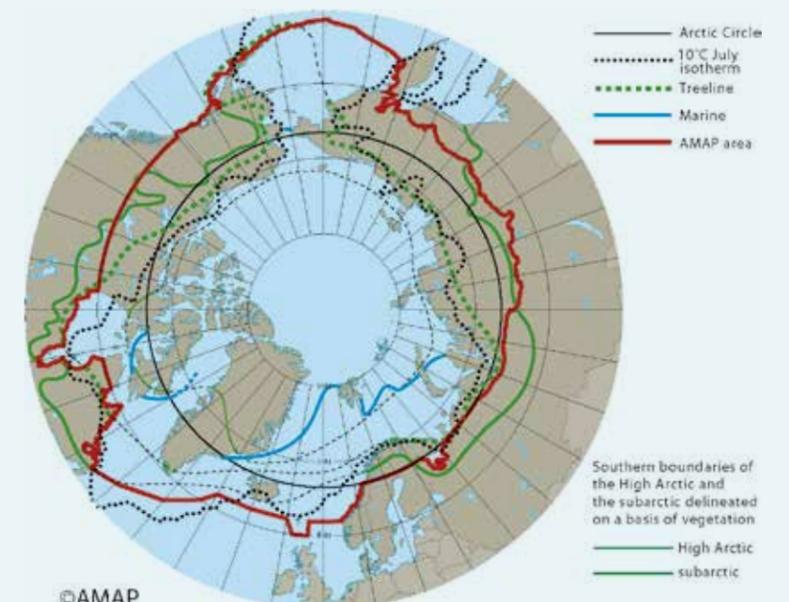
The debate on the development of the High North is particularly demanding in terms of knowledge and reflection. Expectations of increased levels of activity are faced with the need to protect the environment and biological diversity. The Norwegian maritime industry has world-leading capacity, in both technology and expertise, to perform demanding maritime operations in a safe and eco-friendly way. This creates great opportunities and gives us a responsibility to contribute to sustainable development.

*The Board of the Norwegian Shipowners' Association*

## What is the High North?

In this document, the Norwegian Shipowners' Association defines the High North as the entire circumpolar Arctic, including the Barents region and the Barents Sea area. This area is delineated by the Arctic Circle in this figure.

Our definition essentially corresponds to the governmental and political understanding of the geographical area that the High North encompasses.



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## Our ambition

**Norway is one of the world's largest and most advanced maritime nations, and we are possibly stronger now than ever before.**

**The Norwegian Shipowners' Association will strive to enhance and strengthen this position by contributing to responsible and sustainable development of maritime opportunities in the High North.**



## Responsible player and active participant

As Norwegians, we have long traditions for exploring and conquering the Arctic regions. Down the generations, we have lived on and from the sea. Natural resources have formed the basis of settlement from the South of Norway up to the North. Exploration and exploitation of the opportunities and natural resources in the High North is a continuation of the best of long-standing Norwegian traditions.

Both the challenges and the opportunities in the Arctic are of global significance. Nowhere else on Earth can the effects of climate change be seen more immediately and more clearly. Sustainable utilisation of the region's resources is therefore more important here than anywhere else.

In this High North strategy, we delineate three development areas of particular interest to shipping companies: offshore energy extraction, intra-regional transport and polar transit. Common to all three is the fact that operations are performed under extremely difficult conditions. High demands are made on operational expertise, technology and quality along the entire value chain.

The Norwegian maritime industry is a world-leader in technology and innovation. We already have very wide-ranging experience and

competence in participating in the types of activities that will arise in the High North. A number of shipping companies have under construction, or already in service, specialised ships and rigs adapted to working in extreme climatic conditions. Safe handling and transporting of oil and gas products are also disciplines in which Norwegian shipping companies have considerable experience.

We must continue developing our knowledge and expertise with regard to the challenges and opportunities this region presents. The Norwegian authorities must safeguard responsible and sustainable development in the region. The Norwegian Shipowners' Association seeks to make an active contribution to this aim.

I venture to say that the Norwegian maritime industry is second to none in its ability to approach future development opportunities in the High North in a proactive and responsible manner. We look forward to being an active participant in joint endeavours to create a new future in the High North.

*Sturla Henriksen*  
DIRECTOR GENERAL  
NORWEGIAN SHIPOWNERS' ASSOCIATION

## Executive summary

Norway's sea area is six times larger than its land mass. The majority of this area lies in what we define as the High North. The High North has become an object of increasing focus by many parties due to its significance for energy, the environment and security on a global scale. The trend in the form of serious melting of the polar icecap is cause for concern. At the same time, a number of players have explored the potentials that are opening up. This development makes particular demands on the authorities and all other stakeholders in the High North. The Norwegian authorities must safeguard responsible and sustainable development in the region. The Norwegian Shipowners' Association seeks to make an active contribution to this aim.

In this High North strategy, the Norwegian Shipowners' Association delineates three development areas of particular interest to shipping companies: offshore energy extraction, intra-regional transport and polar transit. All three share the fact that operations are performed under extremely difficult conditions. High demands are made on operational expertise, technology and quality along the entire value chain. The Norwegian maritime industry is a world-leader in terms of both technology and expertise.

The Norwegian Shipowners' Association is generally experiencing widespread and increasing interest in Arctic issues in our dialogue with national and international authorities and other stakeholders.

The main challenge relating to industrial activities in the High North is that nature in the Arctic is vulnerable to external influences and is slow to recover from encroachments and accidents. The Norwegian Shipowners' Association seeks to work nationally and internationally to ensure that industrial activities in the High North adhere

to the highest standards for health, safety and the environment in order to prevent or limit accidents and harmful discharges and emissions. Activities taking place in the High North must be based on a firm commitment to the environment, safety and emergency preparedness.

There are major opportunities in Northern Norway's business and industry, and industrial activities will have positive knock-on effects. The maritime industry is important for value-creation and employment in Norway, especially on the coast. In many of the country's coastal communities, more than half of the inhabitants are employed in the industry. It is important for the maritime industry that the Norwegian authorities develop the opportunities present on the Norwegian Continental Shelf, so that our maritime competence can be used in the development of transport and petroleum activities when industry moves into the High North. The Norwegian authorities must pursue an active policy to ensure effective and responsible resource utilisation of the petroleum resources in the North.

Norwegian shipping companies have many generations of experience of operating in the High North. Shipping has been the lifeblood for many communities because of poor or non-existent infrastructure onshore. Operations in the dark, in the ice and in polar low pressure systems that are difficult to predict pit crews and equipment against challenges that require specialist expertise and experience. The experience that Norwegian shipping companies have amassed over many years forms the basis of the operations that form an integral part of the petroleum activities as they extend northwards. In this document, the Norwegian Shipowners' Association sets out its perspectives and positions with regard to a knowledge-based and balanced development of the High North.



PHOTO: FOTOLIA

## From frozen front to geopolitical hotspot

The High North is rich in natural resources such as oil, gas, minerals and fish, and constitutes a geographical area in which national strategic interests will be both shaped and challenged by increased commercial activities. In addition to the five Arctic states that border each other in the North, the USA, Canada, Denmark (through Greenland), Russia and Norway, an increasing number of parties is seeking access to and greater influence in discussions on High North issues.

Geopolitics in the High North largely revolve around access to natural resources such as oil, gas, fish and minerals. There is also a keener focus on new sea routes. Climate change is expected to free up ice-covered areas and permit shipping over larger tracts of the ocean. This offers new opportunities for transport using the sea routes between the continents of North America, Europe and Asia. Such developments will alter the activity landscape in the High North while the opening of trans-continental sea routes may also indirectly lead to security policy challenges.

It is important to point out that a stable region characterised by low levels of tension and by international cooperation will form the basis for all maritime activity in the High North. In this

context, the Norwegian Shipowners' Association finds the Norwegian authorities' foreign and security policies in the High North to be stable and sound. The five Arctic coastal states share the view that maritime law must govern the resolution of outstanding issues concerning control of sea areas, and that generally accepted principles for resource management shall also apply in the Arctic. We believe that such an approach is beneficial for all stakeholders in the High North and the Arctic.

### Actors in the High North

The five Arctic states in the High North are key stakeholders by virtue of their territorial possessions bordering the Arctic Ocean. In addition to Norway, these are Canada, Denmark, the USA and Russia, the first four of these being NATO members. The sea areas in the North are of great interest and significance for all the continental shelf states. This has been particularly apparent on the Russian side, where Moscow's actions and rhetoric in recent years have had an assertive element, exemplified by the planting of a flag on the seabed. The Russian resumption of permanent sorties by strategic bombers and plans for the modernisation of its military presence have attracted attention, but are essentially



a natural modernisation of the country's forces. Resource utilisation is crucial to Russia's approach to the High North. There is great potential, both on land and at sea, especially in minerals and petroleum, despite the considerable challenges in extracting oil and gas and the associated construction of infrastructure.

China is also displaying increasing interest and a visible presence in the High North. As the world's largest trading nation, China has a major interest in significantly shorter sailing routes to the European markets. If a significant share of China's foreign trade were able to transit the Arctic Ocean, this would also arouse strategic interest in preventing threats against these trading routes. Beijing asserts that international waters in the Arctic are a maritime territory to which all nations have equal rights. Russia, for its part, emphasises that the sailing route in the Northeast Passage, which Russia calls the Northern Sea Route between the Bering Strait and Novaya Zemlya, should be closer to land and is therefore a route under national control.

The EU is also increasingly looking northwards, and there is little doubt that EU institutions consider the High North to be of great strategic significance. The EU's focus on the High North must be understood in terms both of its desire to be an international pioneer in environmental and climate issues, and of its vested interest surrounding access to natural resources and new trading routes. Some Arctic states are, however, in doubt about what kind of role the EU should have in the Arctic. The EU's interest appears to date to be driven from Brussels rather than by the member states. The EU is seeking to increase its influence on Arctic issues through the

application filed in 2009, by the European Commission on behalf of the EU, for permanent observer status on the Arctic Council. China and South Korea have also applied for observer status on the Arctic Council.

In general, the Norwegian Shipowners' Association is experiencing considerable and increasing interest in Arctic issues in our dialogue with national and international authorities and other stakeholders. These include the IMO, the UN shipping organisation, which is working on the Polar Code, aimed at complementing existing environmental and security regulations for shipping in Polar regions. The ICS, the International Chamber of Shipping, is also in the process of updating its High North policy. The Norwegian Shipowners' Association is following closely the policy developments of key stakeholders and is actively engaged in processes both domestically and in the ICS, IMO and EU on matters associated with the High North.

### Military presence in the High North

The High North is of considerable military strategic interest. The five Arctic states have different military capacities in the High North and carry out operations and exercises of differing natures. The forces undertake surveillance, assertion of sovereignty and exercise of authority. Navigable waters are regularly visited by surface vessels, and aircraft patrol parts of the airspace. Submarine operations and other military activities have so far gone on undisturbed by civilian activities. However, areas in which the military have effectively held a monopoly are now increasingly being opened up to commercial activities.



PHOTO: SIMON BOTTOMLEY/HURTIGRUTEN ASA

In parts of the High North, maritime business will to some extent have to accept a co-existence alongside a military presence. The Russian Northern Fleet, deploying the country's sea-based strategic nuclear weapons arsenal, is based on the Kola Peninsula. Russian military activity in the High North has increased substantially in recent years, from a very low level in the 1990s. This must be seen as a reflection of Russia's desire to be a key player in the Arctic, by virtue of its extended northern coastline. On the allied side, it is noticeable that NATO is intensifying its focus on the High North to some extent, especially as concerns reliable situational awareness. This will not necessarily bring about a greater allied military presence in the region. A certain military presence must be seen as a normal condition, not as an expression of incipient rearmament. A reasonable degree of visible military presence, and consistent and predictable behaviour, promote stability, and should not give cause for concern to commercial interests.

The Arctic and High North are very demanding waters for civilians and the military alike, and an extremely high standard of equipment and personnel is required to operate in the region. Increased military presence and activity in the High North will offer improved emergency response for civilian operations, as some military capabilities will be readily available for emergency response purposes. Civilian-military cooperation produces better situational awareness and ensures efficient use of available emergency resources when dealing with incidents. The five Arctic littoral states of the Arctic Council have agreed on a fundamental geographical allocation of search and rescue efforts up to the North Pole. The rescue resources are, however, limited. On the other hand, other sea areas of equivalent size, including those in the Antarctic, do not have especially comprehensive civilian helicopter coverage or tugboat response.

# Legal guidelines for the High North

## *Definitions of the northern areas in maritime law*

Definitions of the High North from an international maritime law perspective have traditionally sought to define the “Arctic”. Unlike the Antarctic, which has a comprehensive treaty regime and defines the Antarctic as the region south of 60° South latitude, no binding, common regulatory regime has been established with a clear definition of the Arctic. On the contrary, the regulations applying in the Arctic are fragmented and consist in part of the five adjacent coastal states’ national legislations as applied to their land masses, maritime zones and continental shelves, and in part to the regulations ensuing from the law of the sea.

Maritime law is largely based on customary international law. The UN has however attempted to codify and develop the regulations by establishing international conventions. The UN Convention on the Law of the Sea (UNCLOS), to which Norway is a signatory, is the overarching international legislative framework for maritime rights, obligations and jurisdiction. It is supplemented by other international agreements that address more specific topics. These include the IMO conventions on the prevention of pollution from ships (MARPOL), on the safety of life at sea (SOLAS), and on ballast water (BWC), the UN convention on biological diversity, the IWC convention on the regulation of whaling (ICRW) and the FAO Code of Conduct for Responsible Fisheries. However, none of these include definitions of the Arctic or any other sea areas.

Under maritime law, there is no generally adopted or natural southern boundary of the Arctic. In practice in maritime law, the Arctic has largely been defined based on the purpose of the organisation providing the definition or the purpose of the agreement in which the definition applies. There are accordingly many ways of defining and delimiting the Arctic.

*The Norwegian Shipowners’ Association’s position* is that current jurisprudence generally functions

appropriately because it ensures that a convention whose purpose is to regulate shipping in Arctic waters, with the particular challenges that ensue, is not applied to waters without these same characteristics and challenges.

*The Norwegian Shipowners’ Association’s position* is that, rather than attempting to agree on a single legislative definition of the Arctic, it is expedient to be able to delimit the Arctic on the basis of the activities to be regulated, whether this means shipping, fisheries, the preservation of biological diversity, oil and gas activities and so forth. This allows a specific delimitation to be defined and thereby ensures that new regulations do not impact activity in areas where the purpose of the regulation does not apply.

The basis of international law is that applicable international regulations – especially as laid down in UNCLOS 1982 and other conventions on liability for oil accidents and spills – also apply in the northern sea areas.

In terms of maritime interests, the key aspects of UNCLOS are the principle of navigational freedom, the right to innocent passage, and the coastal state’s exclusive right to extract the resources under the seabed. In Norwegian white paper no. 15 (2008-2009) on the main tenets of Norway’s foreign policy, the government emphasises that given Norway’s small and open economy, to prevent a weakening of international law should be considered our primary and prioritised foreign policy interest. The Government also emphasises the importance of implementation of and proper compliance with UNCLOS regulations by all states. *The Norwegian Shipowners’ Association supports this view.* In terms of the continental shelf, the importance of UNCLOS regulations has been further strengthened as a result of the adoption by the Commission on the Limits of the Continental Shelf, in the winter of 2009, of final recommendations concerning the limit of the shelf beyond

200 nautical miles in all of Norway’s sea areas, including in the Nansen Basin north of Svalbard. Norway has thereby largely prevailed in its view on where the outer limits should be drawn.

*The Norwegian Shipowners’ Association supports* and works in concert with the principles in UNCLOS and the requirements in the IMO’s tabled proposal for a Polar Code. Due to the special health, safety and environment challenges that may arise as a result of increased activity in the High North, the industry must be prepared for lobbying for supplementation of the general regulations by regional regulatory mechanisms, for example from the Russian and Canadian sides.

## *Compensation rules in the event of oil spills from vessels transporting oil as cargo*

Increased activity in oil exploration and production will lead to increased ship traffic. This in turn may lead to questions being raised as to whether international compensation regulations provide adequate protection in the event of accidents at sea.

The international regulatory framework consists of the International Convention on Oil Pollution Preparedness, Response and Cooperation, and the International Oil Pollution Compensation Funds, including the Supplementary Fund. Norway is a party to all these frameworks, which means that the total available compensation amount comes to 750 million SDR (approx. NOK 7,5 billion). It is difficult to imagine that a claim for compensation following an accident off the Norwegian coast would exceed this amount. Consequently, there is an excellent compensation scheme in place, which should prevent compensation issues being put forward as an argument against increased oil transport along the Norwegian coast.

## *The compensation rules in the event of discharging of bunker oil and removal of wrecks*

Compensation claims in the event of a discharge of bunker oil from ships not transporting oil as

cargo, and charges for removal of wrecks are subject to limitation of liability rules (LLMC, 1996). Under these rules, member states have the option to establish higher national rates in place of the ordinary international rates. Norway has exercised this option and has recently adopted a further increase. The purpose of the increase is to ensure that sufficient compensation is available to cover most accidents, including the largest-scale ones. Excellent compensation cover is accordingly also available here.

## *Problems relating to places of refuge*

There has been discussion in the IMO Legal Committee as to whether separate compensation rules should be introduced for guaranteeing the authorities compensation in the event of pollution from a ship seeking a place of refuge. Based on the fact that the ordinary compensation conventions also apply in respect of places of refuge, the Legal Committee decided it was neither necessary nor desirable to establish separate compensation rules for places of refuge. On the contrary, note was also taken that further work on this question might, foster the misapprehension that the international regulations are inadequate. *The Norwegian authorities and the Norwegian Shipowners’ Association are fully in accord on this issue.* Even though this case was thereby closed in the IMO, the EU, for its part, is continuing to address the same issue as part of the Erika packages. There is a possibility that the EU could use increased activity in the High North as an argument for the importance of continuing to work on establishing separate compensation rules in respect of places of refuge.

## Delimitation Treaty between Norway and Russia

On 15 September 2010, Norway and Russia signed the Treaty concerning Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean. This agreement means that the most important outstanding issue between Norway and Russia for several decades has been resolved.

The agreement clarifies the boundary between Norway and Russia in the Barents Sea and Arctic

Ocean and contributes to legislative clarity and predictability in the area. The solution the parties have agreed on is within the framework of contemporary international law on maritime borders. The agreement also includes provisions on the exploitation of possible cross-border petroleum deposits in these sea areas.

## A global industry must be regulated globally

Norway has been a prime mover in developing new international regulations for maritime safety, environment and labour. To maintain our position in this area requires active participation in international forums such as the IMO, the ILO, the EU, the WTO, the OECD and the Paris MoU. Norway also participates in regional forums that co-operate on improved environmental requirements in the North Sea and Baltic Sea.

Norway has a large fleet in global terms and a relatively high proportion of vessels under Norwegian flag. Norwegian shipping is considered to maintain high levels of quality in respect of safety and environment. The fact that Norway can draw on a broad maritime environment, comprising a classification society, ship-owners, equipment suppliers and technical specialists, also boosts Norwegian influence in the IMO.

Due to the international nature of shipping, national regulations alone cannot solve safety problems. The formulation of new regulations in the IMO is therefore given high priority, so that global standards are defined. In addition to working to improve safety at sea and prevent pollution of the marine environment, the organisation also prepares international regulations for certification, training and watchkeeping.

Traditionally, the development of the IMO's regulatory framework has been influenced by marine accidents. There has been little focus on risk levels in shipping or on whether measures are cost-effective. This situation is now changing. In future, the IMO will give more weight to risk analyses in the development of regulations. This has the potential for increasing safety, by avoiding marginal measures with little risk-reducing effect.

## Core IMO conventions

- SOLAS - International Convention for the Safety of Life at Sea, 1974
- STCW-95 - International Convention on Standards of Training, Certification and Watchkeeping for Seafarers
- MARPOL 73/78 - International Convention for the Prevention of Pollution from Ships
- AFS - International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001
- International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004
- Athens Convention relating to the Carriage of Passengers and their Luggage by Sea (PAL), 1974, and protocol of 2002
- Protocol to the International Convention on Civil Liability for Oil Pollution Damage, 1992
- International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1992
- 2003 Supplementary Fund Protocol to the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1992
- International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea, 1996 (the HNS Convention)
- Convention on Limitation of Liability for Maritime Claims, 1976, and protocols of 1996 and 2012 (LLMC)
- International Convention on Civil Liability for Bunker Oil Pollution Damage, 2001



PHOTO: NORWEGIAN SHIPOWNERS' ASSOCIATION

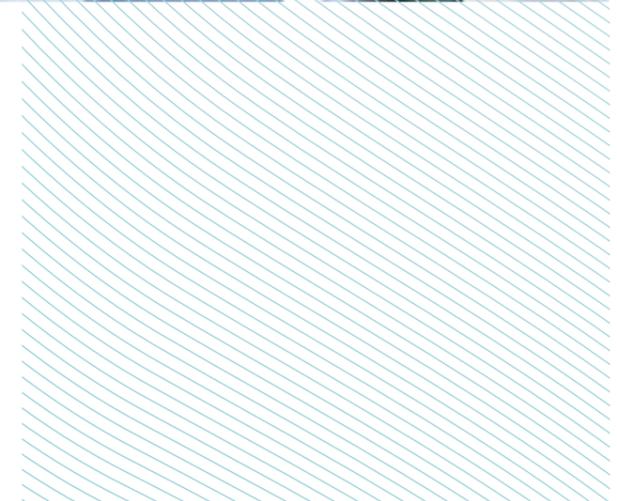




PHOTO: FOTOLIA

## A responsible policy for sustainable development

There are three development areas of particular interest to shipping companies: offshore energy extraction, intra-regional transport and polar transit. Common to all three is the fact that operations are performed under extremely difficult conditions. High demands are made on operational expertise, technology and quality along the entire value chain.

### Three potential sea routes

Global climate change will gradually make formerly ice-bound waters in the Arctic Ocean and neighbouring sea areas more accessible to international shipping. In particular, increases are expected in maritime activity deriving from offshore petroleum extraction, freight shipping of goods and equipment into, and, notably, natural resources out of, Arctic destinations, as well as a gradual rise in circumpolar transit shipping.

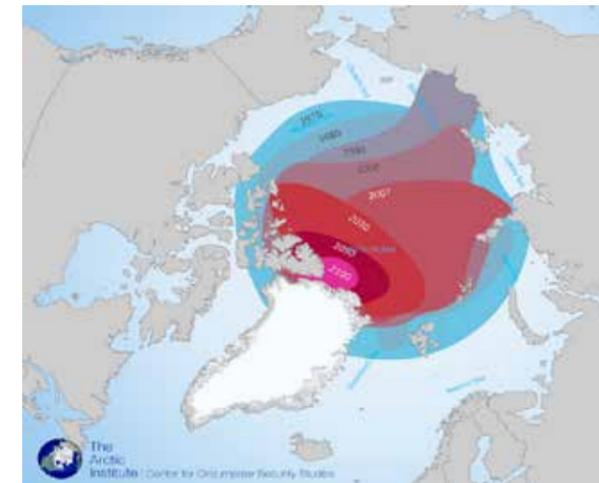
The sea areas farthest north have been difficult to access because of the thick sea ice there, but climate change is now altering the situation. In 2012, the sea ice melt in the North reached a record level and the extent of Arctic ice was less than the previous record low of 2007.

### Sea ice September 2007/Sea ice August 2012



ARCTIC SEA ICE. THE IMAGES SHOW THE STATE OF THE ICE FROM THE RECORD LOW IN SEPTEMBER 2007 AND FROM AUGUST 2012.  
PHOTO: [HTTP://OSISAF.MET.NO](http://osisaf.met.no) /COPYRIGHT (2012) EUMETSAT

The chart extracts below, from the Arctic Institute, show the historical extent of sea ice in the Arctic and projected developments, along with relevant sea routes in the area:

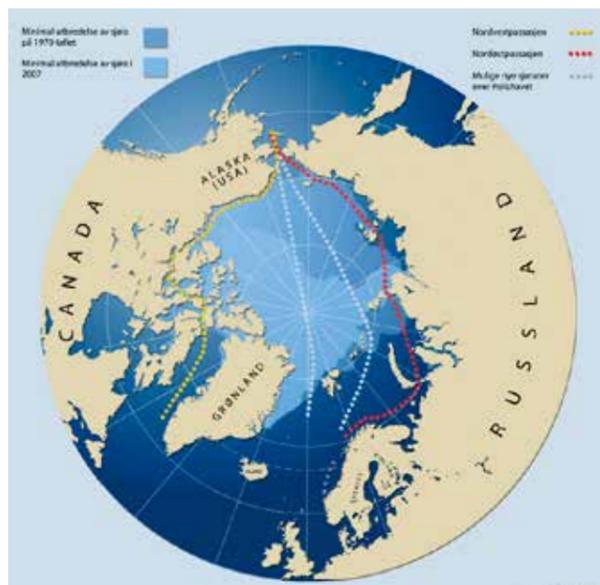


For commercial shipping in the High North, there are three possible sea routes:

- The Northeast Passage
- The Northwest Passage
- The Transpolar Sea Route

We use “Northeast Passage” to refer to the route from North Cape to the Bering Strait. The “Northern Sea Route”, as defined by Russian authorities, runs from the Kara Strait at the southern end of Novaya Zemlya, to the Bering Strait. The most accessible of these Arctic shipping routes, and the one that has always had the most traffic, is the Northeast Passage. This is not a single sea lane, but different possible passages through straits and waters at varying distances from the Russian mainland. The Northeast Passage is interesting as a connection between the Atlantic and Pacific Oceans, and for intra-Arctic and intra-regional transport. The Northwest Passage connects the Pacific and Atlantic Oceans through the Canadian Arctic, and the passage comprises 5 or 6 main routes through the Canadian archipelago. Ice conditions here are more difficult than in the Northeast Passage, and only two routes are passable by ocean-going vessels. The others are shallow, with maximum depths of less than 10 metres. The waters are also less well charted than is the case for the Northeast Passage, and there are no aids to navigation along the route. A transpolar route implies that vessels will leave the exclusive economic zones of the coastal states and much of the transit will be subject only to the flag state’s jurisdiction. It is reckoned that, for Yokohama to Hamburg, a saving of 40 per cent in distance and around 20 per cent in bunkers can be obtained by navigating the Northeast Passage compared with sailing through the Suez Canal. Experience shows that, from Murmansk, the Northeast Passage offers savings over the Suez Canal of 13 days to Japan, 11 days to South Korea and 8 days to China. The distance between Kirkenes in the far Northeast of Norway to Qingdao in China is 6,650 nautical miles via the Northeast Passage, 12,405 nm via Suez and 15,842 nm via the Cape of Good Hope.

The volume of goods transported along the entire NSR or parts thereof has been estimated to increase from 3.1 million tons in 2011 to 50 million tons in 2020. For comparison 691.8 million tons was transported through the Suez Canal in 2011.



NEW SEA ROUTES IN THE ARCTIC OCEAN. SOURCE: MINISTRY OF FOREIGN AFFAIRS (THE HIGH NORTH - VISIONS AND STRATEGIES WHITE PAPER NO. 7 (2011-2012))

## Economic development in the North

There are great opportunities in business and industry in Northern Norway, notably based on petroleum and marine resources, tourism and proximity to Russia. Nonetheless, large parts of the region face challenges associated with high unemployment and disturbing demographic trends in terms of a declining population, age distribution and gender balance. Wide-ranging and varied economic development in the region is necessary in order to meet these challenges.

On the whole, the shipping companies have seen only a small share of their operations devoted to activities in the High North. However, the Government's focus areas in the High North and the Maritime Delimitation Treaty with Russia elicit great expectations, especially of petroleum-related offshore activities and the maritime services these will require.

A number of shipping companies have under construction, or already in service, specialised vessels and rigs adapted to working in the High North. Norwegian shipping companies possess considerable experience and expertise in the activities that will be taking place in the High North. Time-consuming political clarifications are contributing to moderating the pace of development in relation to the identification of rights, resource access, technological developments, dealing with climate issues and the demand for raw materials.

One particular feature of shipping is that it is not based exclusively on the extraction of natural resources, but primarily on human expertise. With a foundation consisting of generations of seafarers' experience and knowledge, Norwegian maritime expertise has developed into a powerful and competitive industrial cluster. Today, Norway has one of the world's most complete maritime industrial environments, grounded in centuries of experience that have produced the skills to undertake demanding maritime operations.

The interaction between seafarers, shipowners, shipbuilders, equipment manufacturers and service providers has made the Norwegian maritime industry into a world leader and yielded synergies with industries such as fishing, technology, finance, oil and gas. The Norwegian offshore industry and shipping combined constitute a complete value chain in terms of logistics and the establishment of oil and gas fields, but they need to be given new opportunities in order to maintain and develop their expertise. Safe handling and transporting of oil and gas products from petroleum installations are also disciplines which we have considerable experience of. Offshore activities are not new to the High North and, with the world's most modern fleet, we have demonstrated that we can solve the challenges within the defined frameworks.

## The Norwegian Shipowners' Association's position:

- It is important for the maritime industry that the Norwegian authorities develop the opportunities present on the Norwegian Continental Shelf, so that our maritime competence can be used in the development of transport and petroleum activities when industry moves into the High North.
- Based on the skills and experience that the industry possesses, Norwegian shipowners, represented by vessels, movable rigs, and top-side and subsea contractors, will help petroleum activities in the High North to progress in a safe and secure manner for personnel, equipment and the environment.
- In the High North, Norwegian shipping companies will be prime movers and offer transport facilities and services, and subsea and surface installations adapted to Arctic conditions in respect of the polar competence and quality of personnel and equipment.
- In the Barents Sea, the aim is for the maritime offshore industry to win considerable market shares and play a key role in the development of petroleum activities on both the Norwegian and Russian sides.

## Petroleum activities

Even though there are varying interpretations of what the Arctic is, there is reasonable consensus that the sea areas north of Northern Norway are part of the Arctic. Consequently, there is currently petroleum activity in the Arctic and this activity will increase in the years to come.

There are many opinions and perspectives associated with petroleum activity in the Arctic. However, there are great opportunities for increased future value creation in the region. Uncertainty in supplies

from the Middle East and climate change seemingly making new sea areas more accessible to the offshore industry have contributed to a greater focus on Arctic energy. But the resource estimates for the Arctic are uncertain and the reports that are circulating often do not define the types of reserve or resource categories in question – nor indeed what the limits of the Arctic are. In addition, the petroleum reserves in the Arctic are resource-intensive to extract. This will place high demands on future innovation and technological developments.

Much attention has been given to the estimates from the US Geological Survey (USGS) of undiscovered petroleum resources in the Arctic. A report from 2009 states that 22 per cent of the world's undiscovered petroleum resources may lie North of the Arctic Circle. The estimates do not take account of technological limitations or innovations and the costs of extraction. The USGS also has a view on where in the Arctic the undiscovered oil and gas may be found. Alaska and Canada are expected to have the greatest oil reserves, but oil is also anticipated in the Russian and Norwegian sections of the Barents Sea, on the Siberian coast and off Greenland. The gas resources are more concentrated: two-thirds are in the Kara Sea, the Norwegian and Russian

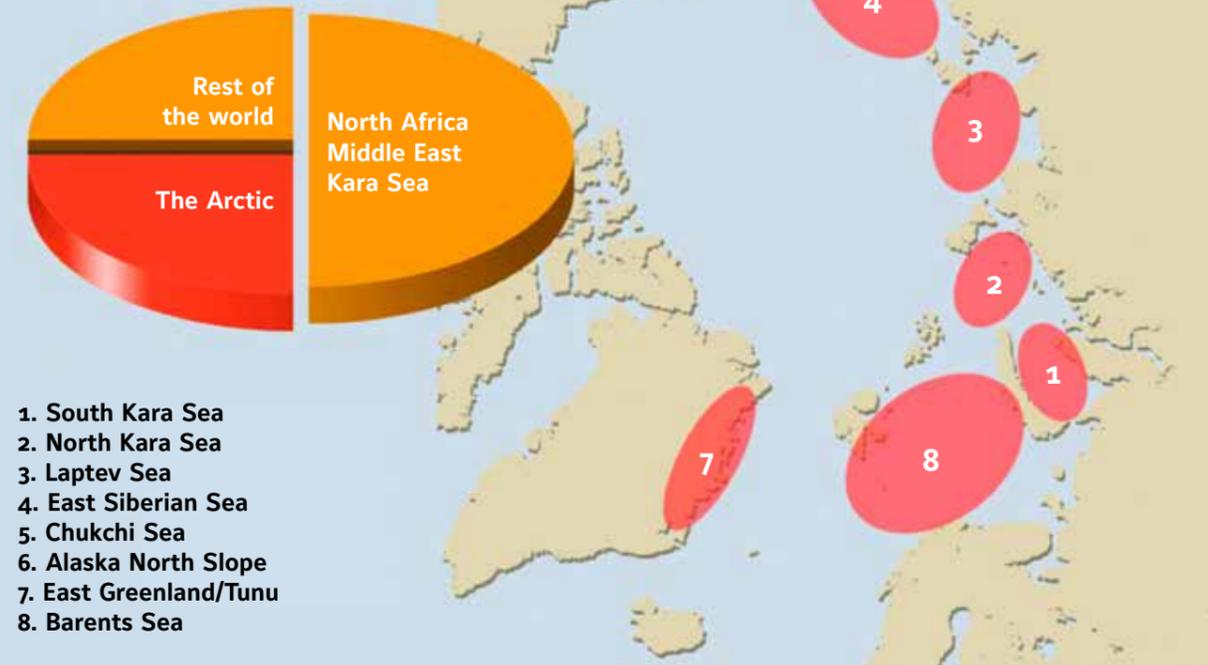
## Facts

The Arctic Ocean is the sea around the North Pole, delimited by the northern coasts of North America, Greenland, Europe and Asia, as well as Svalbard and Novaya Zemlya. The Arctic Ocean itself covers 7.26 million km<sup>2</sup>, and is connected to the Pacific Ocean through the 90-km-wide Bering Strait and to the Atlantic Ocean through the Barents Sea, the Greenland Sea and the Norwegian Sea, and, on the West side of Greenland through Baffin Bay and the sounds to the North.

## Petroleum resources in the Arctic

Approximately 22 per cent of the world's undiscovered petroleum resources may lie North of the Arctic Circle

Source: USGS



ESTIMATES OF UNDISCOVERED PETROLEUM RESOURCES IN THE ARCTIC.  
SOURCE: UNITED STATES GEOLOGICAL SURVEY

sections of the Barents Sea and Alaska.

The figures from the USGS tell us primarily something about areas that may be developed in time.

There are reasons to assume that petroleum activity in the High North will increase based on the anticipated resource estimates. Our competitive advantage is the expertise and technological development that we possess as a result of Norwegian shipowners having contributed to the exploration for and extraction of resources in the High North for the last 25 years.

Norwegian shipping companies own and operate the most modern offshore fleet in the world. Our members control around 600 offshore service vessels, making us the world's second largest maritime offshore nation after the USA. These vessels have competitive advantages in terms of technology, competence and capital. It is this specialised tonnage that will ensure that Norwegian offshore shipping companies will remain world leaders in the future. They are dominant within the most demanding segments of the offshore service sector.

### The Norwegian Shipowners' Association's position:

- The Norwegian authorities must conduct an active policy to ensure effective and responsible resource utilisation of the petroleum reserves in the North.
- Increased petroleum activity in Arctic waters is a desirable development.
- Norwegian shipping companies possess wide-ranging expertise for future operations in the North through experience garnered over many years. This proven track record gives us a unique competitive advantage and will be the foundation-stone of safe and environmentally-friendly offshore activities in the Arctic in the future.
- With respect to the Arctic Ocean, a more circumspect approach is justified since there are, to date, insufficient emergency response solutions for activities here. There is, for example, currently no equipment for removing oil pollution from ice.

### Demanding operations in vulnerable areas

The main challenge relating to industrial activities in the High North is that nature in the Arctic



PHOTO: TROMS OFFSHORE

is vulnerable to external influences and is slow to recover from encroachments and accidents. The eco-systems are characterised by relatively few species in high numbers, where many of the species grow slowly, have long lifespans, have low reproduction rates and are also key species in the transport of energy within the eco-system or between eco-systems. Such eco-systems are generally defined as vulnerable, which is a reason for great caution concerning the potential consequences of industrial developments in the area.

Another challenge is that the High North is not uniform in respect of the composition of its eco-systems, and there are large seasonal variations. This means that vulnerability assessments cannot be performed universally, but must be tied to specific activities, seasons and areas. The high concentrations of birds, fish and mammals mean that the impact potential of external encroachment on their habitats is considered to be large.

The fish resources in the High North are characterised by large, dense concentrations in limited areas. This presents challenges in respect of

pollution-causing incidents. Spawning grounds are relatively small and with higher concentrations of fish than further south, where the grounds are more extensive. Seabirds are likely to be dominant species in these eco-systems. Many of them nest in dense colonies, and in some cases also feed in restricted areas.

### The Norwegian Shipowners' Association's position:

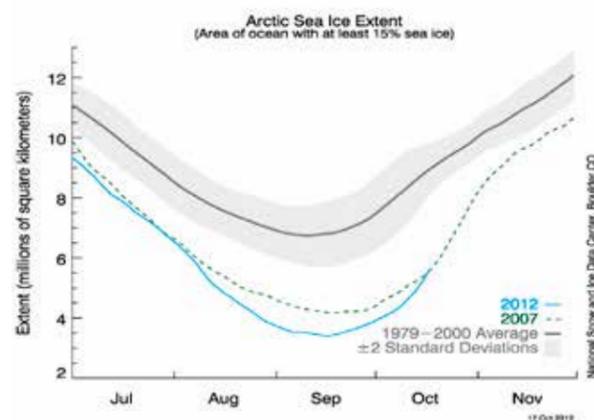
- We should work nationally and internationally to ensure that industrial activities in the High North adhere to the highest standards for health, safety and the environment in order to prevent and limit accidents and harmful discharges and emissions.
- Activities taking place in the High North must be based on a firm commitment to the environment, safety and emergency preparedness.
- The areas in the North are particularly challenging in respect of more extreme weather and greater distances. This means that we need to impose different, stricter requirements for safety and emergency response, and develop realistic but ambitious environmental requirements.

## The sea ice is melting

The sea areas in the farthest North have been difficult to access because of the thick multi-year ice, but climate change is now altering the situation. The changes we are seeing in the northernmost sea areas are most clearly manifest in the reduction in the sea ice.

The main challenge purely in terms of the climate is that increased ice melt throughout more of the year leads to thinner ice in winter. This so-called first-year sea ice melts quickly, is much easier to break up and causes the extremely hard multi-year ice to be exposed to direct action. The extent of multi-year ice has therefore been considerably reduced, meaning that the ice edge has moved north of Svalbard, making the Northeast Passage almost ice free. In recent years, the entire Northwest Passage and the Beaufort Sea north of Alaska have been ice free. An ice-free sea facilitates traffic, especially so in the Beaufort Sea where the ice has moved in gyres with no discernible pattern, making transport in the area extremely difficult.

Observations of the extent of sea ice in the period 1979 to 2006 show an annual reduction of 45,000 km<sup>2</sup> of sea ice, corresponding to 3.7 per cent per decade. In 2012, a new melting record was set in the Arctic, when the ice extent was a full 700,000 km<sup>2</sup> lower than the previous record of 2007, corresponding to an area more than twice the size of mainland Norway.



The climate message is that the Arctic ice melt is dramatic and extremely serious. Nonetheless, it must be stressed that, for the foreseeable future, these sea areas will be covered by ice in the dark and cold winter season. Ice conditions may vary greatly from year to year. The near future will tell us if the trend of greater melting continues, but regular year-round sailing through these sea areas is still a way off in the future. Most probably, there will be sailing opportunities for around 4-6 months of the year. It is estimated that the volume transported through the Northern Sea Route will increase from 1.5 million tonnes in 2012 to 50 million tonnes in 2020.

### The Norwegian Shipowners' Association's position:

- The emission of greenhouse gases is a serious global problem. The solution must therefore be regulated through binding global agreements. We will work actively with the Norwegian authorities to reduce emissions of greenhouse gases and exhaust particles that may accelerate Polar ice melt.

The Norwegian Shipowners' Association has adopted an environmental vision that commits the industry to assuming special responsibility for its

effect on the external environment: "Norwegian shipping and offshore contracting activities shall produce no environmentally harmful emissions or discharges to the air or sea".

Dense concentrations of vulnerable natural resources together with Polar low pressure systems, icing, fog, darkness, great distances and climatic difficulties make the risk picture challenging and complex. Knowledge of these challenges, operational experience and development of new technology are crucial for safeguarding operations in the High North.

In the most vulnerable areas such as the ice edge and the coastline, the consequences of an external impact would be considerable. Even small quantities of, for example, oil may create significant consequences depending on the time of the year, the site of the spill and the weather conditions prevailing during and following the incident. Long periods of dark and extreme cold affect the working conditions for crews and equipment with increased likelihood of exhaustion, icing of vessels and material damage to oil spill equipment such as booms and oil recovery vessels.

Large distances to land mean, for example, that helicopters cannot fly without refuelling. The transport of personnel and equipment to and from installations takes a long time under normal operations, as well as in the event of injury and of evacuation. Long response times increase the potential scope and consequences of accidents. Communication with and between installations and ships is made more difficult by generally poor coverage.

The High North and the Arctic have been the subject of a number of risk analyses in respect of safety and the environment, especially as concerns

the extraction of oil and gas in the Barents Sea. It is important to take account of and utilise these results in future work.

Providing for the safety of personnel on board must always be the highest priority. Maritime personnel are used to being far from home, but operations under extreme and unpredictable climatic conditions require thorough training and instruction in order to tackle long-term physical and mental stress.

Increased production activities in the High North will lead to increased maritime activity. We will see increases in both traffic volumes and the number of ship types.

Both traditional search and rescue services and oil spill response face great and new challenges in the Arctic. The largest threat to the marine environment in the Arctic is oil pollution. A discharge of, for example, heavy bunker oil in the High North would be difficult to collect and could well lead to environmental damage.

There is a long history of activity in the High North in which Norwegian shipowners and shipping companies have been pivotal, in Norway, Canada and Russia; from seismic surveys via test bores, field development and operation, to outbound shipment of oil or gas. On the Norwegian Continental Shelf, the Snøhvit and Goliat fields are well-known developments in the High North where Norwegian maritime expertise has been crucial, but Norwegian interests have also been involved in test bores in the Stokhman field, Skrugard and the use of offloading buoys on the Canadian Continental Shelf. This expertise is an important prerequisite for safe and environmentally friendly operations and industrial development in the High North in the future.



FROM MELKØYA. PHOTO: STATOIL

The most important elements on the operational side are to arrange for the use of vessels with the necessary ice class and support vessels or convoys, where one of the ships has a medical support system, in planned sailings within a defined transarctic sailing route subject to traffic monitoring. Such convoying should be coordinated, to make more resources available, while traffic monitoring and the Arctic states' emergency response must be properly organised and reliable. Other priority areas are the optimisation of communications facilities, both satellite and traditional radio communications. We would like the authorities to organise a new shortwave radio listening station and provide more satellite coverage for the High North. These could be combined with the creation of a search and rescue base with medical personnel and equipment, for example on Svalbard.

#### The Norwegian Shipowners' Association's position:

- A strong Norwegian flag is important if Norway is to be a leading player internationally, not least when the drafting of regulations for the High North is undertaken in different international agencies. It is therefore crucial that, in this area too, Norway has attractive and competitive conditions for its maritime activities.
- The IMO's Polar Code, currently under development, must be made mandatory for all vessels it applies to.
- Transarctic sailing routes with traffic monitoring should be established.
- Effective electronic information exchange and monitoring systems across sectors and national borders in the circumpolar region are necessary.
- The EU's work on harmonising and simplifying the formalities for ships when arriving in or leaving ports is positive.

- Normal operational emissions from ships, primarily regulated through the IMO, may have more impact on the environment. It may be appropriate to perform further risk and impact assessments for this type of emission in icy areas.
- The use of support vessels or convoys, where one of the ships is equipped with a medical support system should be increased.
- Each installation should have an emergency response vessel available, which will constitute part of a pool whereby the vessels can support each other and tackle more situations despite the long response time from land.
- Common technical regulations must be adapted to the conditions in the Arctic. Efforts must be made towards agreement by the continental shelf states, coastal states and flag states on common technical requirements. Typical focus areas for moveable installations may be hulls, machinery, decks, loading equipment, drilling and processing equipment, lighting, safety equipment, de-icing gear, evacuation equipment, emergency lighting and personal life-saving equipment.
- We shall support facilitation work that has been initiated, and see this in the context of processes existing at international level through the efforts of the IMO's Facilitation Committee (FAL).

#### Safety and emergency response

Norwegian shipping companies have many generations of experience of operating in the High North. Shipping has been the lifeblood for many communities because of poor or non-existent infrastructure onshore. Operations in the dark, in the ice and in polar low pressure systems that

are difficult to predict pit crews and equipment against challenges that require specialist expertise and experience. The experience that Norwegian shipping companies have accrued over many years forms the basis of the operations that have followed petroleum activities as they have moved northwards.

It is expected that Norwegian authorities will plan and dimension the necessary oil spill response in the High North with regard to response times, monitoring and the presence of operational personnel with technical, Arctic-related expertise. It is expected that an emergency response capability will be developed on the basis of the capacity and quality needed to ensure that the consequences of a spill are limited to the same level in the High North as for other sectors of the Norwegian coast. Key factors here are weather forecasts with ice warnings, icebreaker services, facilities for convoying with support vessels, depots with oil spill equipment and training of personnel who will be working under extreme weather conditions. The development of effective oil spill equipment is a special focus area since the equipment currently on the market will not work as effectively under extreme climatic conditions. It is also presupposed that the organisation between the different actors in oil spill response is streamlined and coordinated so that all available resources are deployed optimally in the event of pollution from ships operating in the area.

Increased activity in areas far from land and where there is extensive multi-year ice will require special preparations and measures. This is particularly the case with regard to training of personnel, first line response on board and close contact with land-based organisations.

One example of such work is the initiative for national cooperation to safeguard personal safety in the event of increased activity in the High North. Maritimt Forum Nord and Maritim21 have taken the first step to define a substantial national project on the topic of personal safety during ship and offshore operations in the Norwegian SAR area. There is a need for more focus on personal safety among all stakeholders who do business in the High North. The aim is for this to be shared between the authorities, the industry and private

#### Centre for High North Logistics (CHNL)

The Centre was established in the spring of 2009 jointly by the Norwegian Shipowners' Association, the Ministry of Foreign Affairs, Det Norske Veritas and Tschudi Shipping.

The purpose of CHNL is to collect and disseminate information of importance to anyone wishing to assist in the development of logistics services in the High North, with a special emphasis on shipping. The Centre organises conferences for relevant stakeholders. CHNL has an office in Kirkenes, and has assisted in the creation of the Arctic Logistics Information Office (ARCLIO) which also operates from Murmansk.

The main focus of CHNL in 2012-2013 is the launch and operation of an English-language database intended as a knowledge hub for maritime conditions in the High North, called Arctic Resources & Transport Information System (ARCTIS).

The aim is to collate knowledge from commercial entities, authorities and research institutions for the benefit of all these users, with professional editors and contributors from different countries. The Norwegian Shipowners' Association supports CHNL and is represented on the Board.



companies. Such shared efforts are important in creating the necessary networks.

#### The Norwegian Shipowners' Association's position:

- We will cooperate with the Norwegian authorities to promote global progress to ensure that IMO regulations/the Polar Code shall apply to everyone and set out the technical and operations frameworks for high-quality shipping in the High North.
- Effective response procedures for working in the High North must be developed. We see it as positive that this activity will also contribute to developing local presence, competence building and substantial knock-on effects in Northern Norway.

#### Innovation and technology in the High North

In order to develop the great opportunities that exist in the High North, we need innovation and new technology. The Norwegian maritime industry is currently a world leader in innovation. The entire Norwegian maritime environment should be able to contribute to realising the potentials and solving the challenges we face in the High North. It is important to create opportunities for regional value creation and employment, secure development in the High North, legitimacy in Norway's northern counties, and necessary investments in infrastructure and emergency response.

We face specific challenges in terms of increased innovation and economic development in Northern Norway. Settlement patterns and business structure here are very different from the rest of the country, with small, scattered, localised businesses, and the capacity for innovation is low compared with the national average.

Both the authorities and trade and industry must therefore promote initiatives for innovation and value creation, which are key aspects of activities in the High North. Such initiatives imply strengthening research and educational institutions, improving infrastructure, a focus on the environment, climate and emergency preparedness, and measures to boost value creation and innovation activities.

Increased innovation activities must be based on the region's advantages. In order to exploit the potentials in the High North, efforts must be made to strengthen the research environments with a special emphasis on Arctic technology and maritime activities.

A comprehensive industrial, sustainable and expertise-focused development requires cooperation between international, national and regional stakeholders. The creation of regional research funds, in combination with the government's strategic instruments for innovation and increased R&D, strengthen the cooperation between R&D

environments and industry. The regional research funds enhance research capability through regional research, innovation and development. As part of the High North initiative, around 5 per cent of the return is to be devoted to the three northernmost Norwegian counties. The VRI, ARENA and NCE programmes will provide for inter-county cooperation. These factors combined provide a comprehensive and substantial regional policy for competence development and regional value creation.

It is important that the authorities' initiatives in the North have a significant focus on innovation, with a view to new future-oriented technology. It is a positive feature that much of this work takes place in cooperation with local actors in the North.

We must take account of the fact that there are other stakeholders in these same northern areas. Russia, in particular, is a key actor but the other Arctic states are also important. We therefore need to cooperate with these stakeholders as well as with local actors in the North of the country. Our interests in the North are best provided for by implementing resource management regime that ensures international recognition and legitimacy. This requires knowledge, expertise, capacity for innovation and good technology both within resource management and among all the public and private sector stakeholders who contribute to the success of this endeavour.

#### Maritime industry

The Norwegian maritime industry has demonstrated a capacity to develop a world-leading maritime cluster based on knowledge. Value creation per employee is among the highest in Norway.

The combination of shipping companies with knowledge of new needs and an effective industrial cluster is the main reason for the maritime industry's present standing. The shipping companies and their owners, through their constant search for better and more efficient solutions, are the drivers of the industry. The seafarers are key disseminators of experience and knowledge from sea to land and among the actors onshore (see the FAFO report "From sea to land. The significance of sea-based experience in the maritime industry to 2020", 2012). The Norwegian maritime cluster has a breadth which makes it virtually complete within the knowledge-intensive areas, including shipyards, equipment suppliers and maritime services. Very intense domestic competition renders the individual actors competitive and powerful on a global scale. At the same time, this maritime cluster has established close and effective cooperation in those areas where joint initiatives yield shared benefits.

In order to exploit the great maritime opportunities in the High North, it is important to ensure that

Norway remains an attractive location for the most innovative sections of the industry. Without shipping companies with head offices and active owners in Norway, and a critical number of Norwegian seafarers, the basis for the maritime industry's strong capacity to innovate will disappear. A strategy and policy for innovation in the maritime industry must therefore be based on competitive conditions for shipping companies, their owners and seafarers. The industry's initiatives in recruitment and competence building are contributing to sustaining the capacity to innovate in the longer term.

The Norwegian maritime industry has always been at the leading edge of developments. Norwegian ships and offshore vessels are among the world's most advanced, and are therefore well-suited to activities in northern waters. Innovation and cooperation with ships' engineers, seafarers and industrial designers in the maritime cluster have yielded results that have attracted international attention. This demonstrates that Norway possesses the prerequisites for remaining a world-leading maritime nation and a future prime mover in the High North.

Renewable energy (especially offshore wind) is a dynamic new area in which the maritime industry is now growing. Norwegian players are using their expertise from oil-related activities to develop new market opportunities.

#### **The Norwegian Shipowners' Association's position:**

- Norway must position itself so that we manage to combine traditional and new business activities in a responsible and sustainable way in the High North. Innovation and technology are key components for achieving this objective.
- The presence of national and international competitive knowledge institutions in the North is crucial for creating innovation environments and technological developments. These environments must lay the foundation for lasting knock-on effects across Norway's northern counties in both the short and long terms.
- The maritime industry is one of Norway's most valuable renewable resources. Industry and the authorities must jointly manage and nurture

this competitive knowledge environment with its global impact and attraction.

- Knowledge does not yield sustainable competitive advantage without being renewed and used to create something new. It is the capacity to innovate that determines whether the maritime industry is able to maintain its strong position. Technology can also be copied by others. We cannot maintain the lead without a willingness to take risks and invest. We therefore need to excel at both knowledge and innovation if we are to keep our global lead.
- In partnership with the industry, Norwegian authorities must work actively to ensure that maritime Norway remains a world leader in innovation and technological development through an active and targeted industrial policy.
- The authorities should conduct a more active policy in respect of developing renewable energy sources, such as offshore wind and wave power. The Norwegian maritime industry wants to play a key role in such efforts.

#### **Competence is crucial**

Norway has long traditions in, and wide experience of, both oil and gas development and demanding maritime operations. As a result, Norway now has one of the world's most complete maritime environments. We have the expertise to conduct demanding maritime operations, for example logistics and offshore production on fields up to 500 km from shore and at sea-depths of 3,000 metres.

The expertise that has been accumulated in the Norwegian maritime environment is therefore a solid starting point for both petroleum activities in the Barents and Norwegian Seas and general shipping activities in the High North. Nonetheless, increasing activities in the High North present the industry with additional challenges associated with:

- Extremely long distances to shore
- Very demanding maritime conditions
- Poor industrial infrastructure
- Demanding environmental challenges
- Emergency response, search and rescue

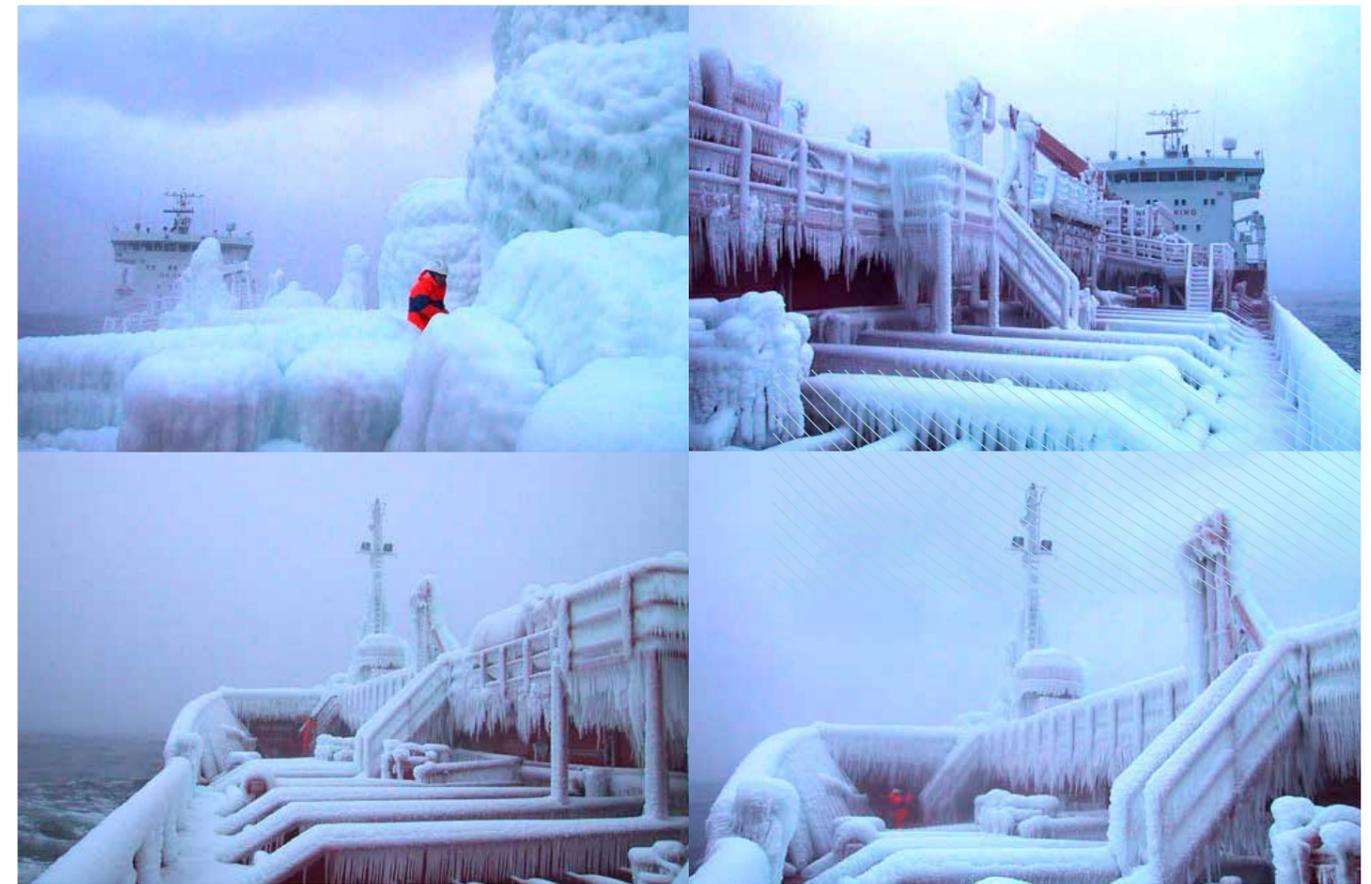


PHOTO: UTKILEN AS

It is important that the Norwegian authorities facilitate the utilisation of our maritime expertise in the development of the High North. Norway's interest in the Arctic requires mobilisation of the whole country's knowledge, resources and experience. Therefore, maritime competence initiatives must take on the challenges inherent in demanding Arctic operations. The Norwegian Shipowners' Association has developed the following vision for competence:

*"In order to be the world's leading maritime nation, the Norwegian maritime industry must at all times have employees at sea and onshore with the best possible competence at competitive costs."*

Future initiatives in the High North will necessitate an increase in maritime training capacity. It must be possible to develop maritime training certification so that the candidates advance further and acquire specific operational competence. One example of such initiatives is the agreement signed in early 2012: the University of Tromsø, the University of Nordland and the maritime technical colleges in the two towns are to cooperate more closely to give maritime training in Northern Norway a boost. The agreement covers the entire spectrum from certificate of apprenticeship

to doctoral level. Another example is the Bodø Graduate School of Business at the University of Nordland, which is establishing a number of study options in maritime subjects aimed at shipping company managements and ships' officers, which focus on giving employees with backgrounds from maritime technical colleges further education opportunities in maritime finance and management.

#### **The Norwegian Shipowners' Association's position:**

- In order to attract and develop competent employees, the industrial development must be promoted to relevant pupils and students. Efforts must be made to promote the opportunities which the development of the High North will produce over time for pupils and students in general and in Northern Norway in particular. International environments should also be incorporated into this.
- Environments that conduct research and development linked to the High North must be given good framework conditions. Examples include the Norwegian Polar Institute, NORUT, MARINTEK and SINTEF. The same applies to new initiatives, such as the Research and Competence Centre for Petroleum Activities in

the High North and Arctic, to be developed by the Ministry of Petroleum and Energy and the Ministry of Foreign Affairs.

- It is important to contribute to long-term structured cooperation between research environments, institutes of education and commercial entities through initiatives such as Maritim21 and Global Maritime Knowledge Hub.
- Relations with international competence environments must be enhanced and strengthened.
- Proactive work must be done to recruit and develop able candidates. Demanding maritime operations in the North require skilled employees. Employees at sea and onshore who work in the High North must have knowledge and understanding of Arctic conditions. They may be recruited from across various disciplines. Meteorologists, geologists, engineers and ships' officers in combination will be able to solve challenges ahead.
- Work must be done to develop competence requirements and standards that are in step with the challenges that exist in the High North.
- Specialised courses of education with a focus on the High North/Arctic operations must be extended and strengthened. The University Centre in Svalbard (UNIS) and Maritim Arktisk Kompetanse (MAK) offered by the University of Tromsø are examples of this.
- The cooperation with MARKOM 2020 is important for specialist maritime professional education.

## Infrastructure in the North

Infrastructure is the bedrock required to allow society to function efficiently. This includes roads and streets, airports, harbours (and fairways with lighthouses, aids to navigation, etc.), railways, energy supply, telecommunications (including

broadband), buildings, water and sewage and waste management. Infrastructure needs to be monitored, managed and maintained.

All movement of people and goods requires some form of facilitation through the creation of an appropriate infrastructure. Infrastructure permits contact between people and the movement of things between different destinations. Communication links such as telephones, computers and satellites, as well as secure and stable energy supplies, are crucial factors in a fully functioning society with value-generating trade and industry.

## Comprehensive transport solutions

The existing infrastructure in the High North is not sufficient to cater for the future growth estimates in the region. The authorities' ambitious targets for the region must therefore also apply to future infrastructure in the North. Norway has a tradition for strong public participation in the design, construction and operation of infrastructure. It is therefore important that the authorities are strong and active contributors to the design of future infrastructure in the North.

The Norwegian authorities have begun this work. When debating the National Transport Plan 2010-2019, the Government gave notice of a special review of transport infrastructure in the High North. The aim of the report was to procure a sounder knowledge base for future decisions on infrastructure development in the North. The following industries were indicated as especially important and provided a basis for the report's structure: petroleum, fisheries/aquaculture, tourism, manufacturing, mining and international shipping/maritime industries.

In our opinion, this report is inadequate on the question of shipping. The Norwegian Shipowners' Association believes that the Norwegian authorities in the High North as elsewhere must be far more ambitious when it comes to planning and implementing comprehensive transport solutions at sea.

Future international demand for raw materials will be crucial for the structure of trade and industry and, therefore, the need for future infrastructure in the North.

We already know with a high degree of certainty that the world's energy requirements will increase strongly in the years ahead. This will be the result of millions of people around the world moving out of poverty to a higher standard of living. Energy is a key factor in this development. The same will apply to the demand for Norwegian fish and Norwegian minerals. Northern Norway will have an important role to play within all these segments in the years ahead. The region is also in demand internationally as a tourist destination. One precondition for growth within all these segments is a reliable and future-oriented infrastructure.

Natural resources provide a foundation for prospective growth in the North in industries such as oil and gas, mining and manufacturing, fish farming and tourism. Mineral discoveries in neighbouring countries and new international transport routes may also produce new challenges for Norwegian transport. Future growth requires concentrated initiatives in a few growth regions in order to develop strong and attractive business environments with dependable expertise. This must occur through interaction between the region's two large towns, Tromsø and Bodø. The transport flows are concentrated in the growth regions that should have

access to efficient transport nodes and corridors to other parts of Norway and to international markets. There is a need for good roads to the regional centres, good interconnections from the fish farming areas to road and railway corridors and upgrading of the main E6 connection and east-west connections to neighbouring countries. In addition, good harbours and terminals need to be established at all strategic locations in Northern Norway.

From local quarters, there are ambitions and proposals for national and cross-border investment projects in order to meet future transport needs nationally and in neighbouring countries. In order to guarantee efficient use of resources, a combined assessment of the various local initiatives for transport solutions in terms of traffic data is necessary.

## Data, telephone and satellite communications

All modern societies which seek to grow and develop must have an up-to-date infrastructure for data, telephone and satellite communications and other future oriented ways of communicating. In the High North, it is also highly important from a maritime safety perspective that there are good opportunities for effective communication in the northern sea areas.

## Future energy requirements

Infrastructure that provides for energy supply is fundamental to growth and development. For many years in Northern Norway, there have been many challenges in relation to the infrastructure between the South and the North of the country. There has been a bottleneck in energy supply,

which at times has led to high energy prices in the region. High and unstable energy prices are a poor foundation for future industrial development. In addition, this has made it difficult to establish and develop the large renewable energy resources that the region possesses in the form of wind power, wave power, offshore turbines, etc. An unstable energy supply will make it less attractive to provision future petroleum installations with power from onshore to replace gas-fired power plants on each individual installation.

**The Norwegian Shipowners' Association's position:**

- It is critical that necessary infrastructure is in place within a relatively short time horizon in order to be able to achieve our objectives in each of these growth regions. Adequate and appropriate infrastructure is an essential framework condition for growth and development.
- The potential for better coordination of future plans for transport infrastructure between the countries in the region must be mapped out.
- Norway must strive to secure a leading position for our northern counties within data, telephone and satellite communications for the High North.
- It is necessary to implement a modern and future-oriented energy infrastructure in the High North. Infrastructure that secures dependable energy exchange between the North and South of Norway must be constructed at the earliest opportunity.

**Strengthening of shipbuilding and engineering capacity in the North**

Shipyards can be roughly divided into two groups: those that build new ships and other maritime installations, and those that occupy themselves with the repair and maintenance of ships in operation. The latter are known as repair yards.

The maritime industry is important for value-creation and employment in Norway, especially on the coast. In many of the country's coastal communities, more than half of the inhabitants are employed in the industry. The shipyards are an important component of the maritime cluster, and we have a dynamic and vital shipbuilding industry represented in many of our counties and towns. Norwegian shipyards are world leaders in the building of sea-going ships and maritime structures and are characterised by high levels of expertise and innovation.

Around 35,000 people are employed in the building of ships and oil platforms. Another 50,000 work for service and equipment suppliers to the maritime sector and offshore industry. In 34 municipalities, more than 20 per cent of those employed in trade and industry work for shipyards or equipment and service supply companies. Many of these are export companies supplying international shipping and offshore industries.

Norwegian shipowners point out that one bottleneck is a lack of docking capacity in the North. The companies note that there are only four docks in Northern Norway capable of receiving the type of service ship that works with the petroleum industry in the High North. If these docks are in use, ships have to travel to Western Norway for repairs and maintenance.

From the oil companies' and shipowners' perspective, it is a major problem that engineering workshop capacity has declined considerably in the last 20 years. The main engineering workshops are now at Sandnessjøen, Nesna, Svolvær, Harstad, Tromsø and Kirkenes.



PHOTO: FOTOLIA

**The Norwegian Shipowners' Association's position:**

- An active and ambitious policy in the High North in terms both of petroleum resources and general maritime activities in the region will be crucial for Norwegian shipbuilding in the future.
- Stable and advantageous framework conditions in maritime policy are important for safeguarding willingness to invest in the maritime industry. This is the very mainstay of Norwegian shipbuilding.
- Capacity in the shipbuilding industry must be at a level such that projects are not held up or deferred due to lack of capacity.
- In order to avoid unnecessary sailings between North and South, shipyard and workshop capacity in the High North should be strengthened. This will also enhance the regional knock-on effects from future petro-maritime activities in Northern Norway.

**“The debate on the development of the High North is particularly demanding in terms of knowledge and reflection. Expectations of increased levels of activity are faced with the need to protect the environment and biological diversity. The Norwegian maritime industry has world-leading capacity, in both technology and expertise, to perform demanding maritime operations in a safe and eco-friendly way. This creates great opportunities and gives us a responsibility to contribute to sustainable development.”**



# References and sources:

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**The Norwegian Government's websites and High North portal:**

<http://www.regjeringen.no/en/dep/ud/campaigns/the-high-north.html?id=450629>

**FAFO - report 2012:22 Fra sjø til land** - Betydningen av sjøbasert erfaring i maritim næring fram mot 2020 (From sea to land. The significance of sea-based experience in the maritime industry to 2020)

**National Snow and Ice Data Center, Boulder CO**

**The VRI programme** (Programme for Regional R&D and Innovation)

The Research Council of Norway's main support mechanism for research and innovation in Norway's regions. The primary goal for VRI is to encourage innovation, knowledge development, and added value through regional cooperation and a strengthened research and development effort within and for the regions.

[http://www.forskningsradet.no/prognett-vri/Home\\_page/1224529235237](http://www.forskningsradet.no/prognett-vri/Home_page/1224529235237)

**The ARENA programme**

Offers financial and advisory support for the long-term development of regional business clusters. The objective is to stimulate innovation through interaction between the industry, R&D institutions, universities and the public sector. Arena is a national programme owned by Innovation Norway, SIVA and the Research Council of Norway. <http://www.arenaprogrammet.no/>

**The NCE programme**

Norwegian Centres of Expertise have been established to strengthen innovation in the most dynamic and internationally oriented business clusters in Norway. The programme's objective is to contribute to targeting, improving and accelerating ongoing development processes in these clusters.

[http://ekstranett.innovasjon Norge.no/templates/Page\\_Meta\\_\\_\\_\\_\\_56522.aspx](http://ekstranett.innovasjon Norge.no/templates/Page_Meta_____56522.aspx)

**The Arctic Institute**

An interdisciplinary, independent think tank focused on Arctic policy issues.

<http://www.thearcticinstitute.org/>

**EUMETSTAT**

The main purpose of the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) is to deliver weather and climate-related satellite data, images and products- 24 hours a day, 365 days a year. This information is supplied to the National Meteorological Services <http://www.eumetsat.int/Home/index.htm>

**United States Geological Survey (USGS)**

The USGS is a science organization that provides impartial information on the health of our ecosystems and environment, the natural hazards that threaten us, the natural resources we rely on, the impacts of climate and land-use change

<http://www.usgs.gov/>

