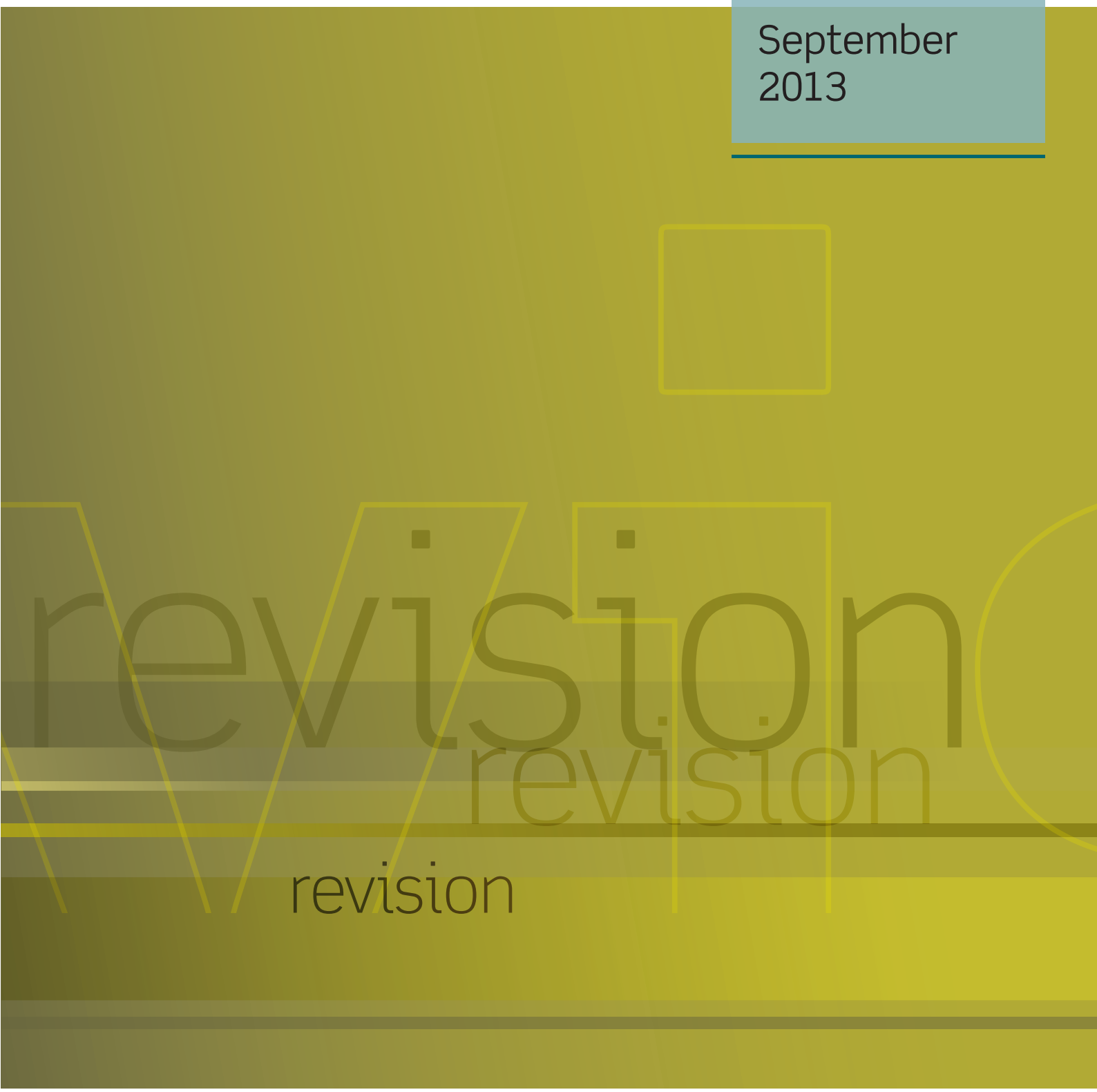
RIGSREVISIONEN

Report to the Public Accounts Committee on Denmark's performance in the Arctic

September 2013



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Rigsrevisionen submits this report to the Public Accounts Committee under section 17(2) of the Auditor General's Act, see Consolidation Act No. 101 of 19 January 2012.

The report relates to the Danish Appropriation Act, section 5. The Prime Minister's Office, section 6. The Ministry of Foreign Affairs, section 8. The Ministry of Business and Growth, section 11. The Ministry of Justice, section 12. The Ministry of Defence, section 19. The Ministry of Research, Innovation and Higher Education, section 23. The Ministry of the Environment, and section 29. The Ministry of Climate, Energy and Building.

In the period during which the examination was carried out, the ministries were headed by the following ministers:

The Prime Minister's Office:
Helle Thorning-Schmidt: October 2011 -

The Ministry of Foreign Affairs:
Villy Søvndal: October 2011 -

The Ministry of Business and Growth:
Ole Sohn: October 2011 - October 2012
Annette Vilhelmsen: October 2012 - August 2013
Henrik Sass Larsen: August 2013 -

The Ministry of Justice:
Morten Bødskov: October 2011 -

The Ministry of Defence:
Nick Hækkerup: October 2011 - August 2013
Nicolai Wammen: August 2013 -

The Ministry of Research, Innovation and Higher Education:
Morten Østergaard: October 2011 -

The Ministry of the Environment:
Ida Auken: October 2011 -

The Ministry of Climate, Energy and Building:
Martin Lidegaard: October 2011 -

I. Introduction and conclusion

1. This report concerns the Danish authorities' effort in the Arctic parts of the Danish Realm, that is, the Faroe Islands and Greenland.

__The Danish Realm__ consists of Denmark, the Faroe Islands and Greenland. The Danish Constitution applies throughout the Realm. Together with the Danish Constitution, the home rule and self-government systems of the Faroe Islands and Greenland delegate powers and responsibilities among the different parts of the Realm. Denmark is, for example, responsible for providing defence throughout the Realm.

__SAR__ – Search and Rescue.

2. Climate change poses not only new opportunities but also challenges for the Arctic environment and navigation in the area. The Danish authorities are responsible for performing a number of essential tasks in the Arctic region, particularly tasks relating to the provision of marine navigation safety and the management of search and rescue response (hereinafter 'SAR response'), marine environmental monitoring and marine environmental emergency response. The Ministry of Defence, the Ministry of Business and Growth, the Ministry of the Environment and the Ministry of Justice share the responsibility for these tasks. The Prime Minister's Office is responsible for the tasks relating to the home-rule acts of the Faroe Islands and Greenland, whereas the Kingdom of Denmark's responsibility for the cross-sectoral coordination of the Arctic strategy is vested in the Ministry of Foreign Affairs.

The tasks in the Arctic parts of the Realm are carried out under conditions not readily comparable to Danish conditions, particularly because of the extreme climatic conditions and the vast geographical distances. Accordingly, it is not realistic, for example, to have SAR response or marine environmental monitoring and emergency response units in Greenland corresponding to those existing in Denmark.

3. Rigsrevisionen launched this examination at its own initiative in September 2012 as part of a joint examination with the supreme audit institutions of the Arctic Council member states. In this report, Rigsrevisionen examines the issues that relate to the Realm.

The member states of the __Arctic Council__ are the countries with territories north of the Arctic Circle, ie, Canada, the United States of America, Norway, Iceland, the Russian Federation, Finland, Sweden and Denmark, including the Faroe Islands and Greenland.

4. The purpose of the examination is to assess whether the Danish authorities' responsibility for the effort in the Arctic parts of the Realm has been clearly divided and whether it matches the risk associated with the increase in marine traffic. Rigsrevisionen has examined this by addressing the following questions:

- Does the preventive action of the Danish authorities – aimed at enhancing marine navigation safety – match the risk?
- Has the Danish authorities' responsibility for the SAR response been clearly divided and does the equipment match the risk, eg, in connection with major accidents?
- Do the Danish authorities monitor the marine environment and does their marine environmental emergency response match the risk of marine pollution?

MAIN CONCLUSION

Danish authorities handle a wide range of tasks in the Arctic parts of the Realm, many of which have to be performed under difficult climatic conditions and over long distances. Consequently, it is important to ensure that these tasks are performed in consideration of the risks to human beings and the environment that are a consequence of climate change and the increase in marine traffic. Because the Arctic conditions pose a challenge to the SAR response and the marine environment tasks, the Danish authorities' preventive action is particularly important. Rigsrevisionen has assessed the Danish authorities' contributions in that light.

Rigsrevisionen finds that the responsibility for the Danish authorities' effort in the Arctic parts of the Realm is clearly divided, but that in some cases responsibility for SAR operations could be defined more clearly. Rigsrevisionen also finds that the efforts do not always match the risks associated with the increase in marine traffic in the Greenland waters.

The Ministry of Defence and the Ministry of Justice base the coordination of certain types of SAR operations on an imprecise delimitation of responsibilities. In February 2013, the Prime Minister's Office initiated an analysis of the division of SAR response responsibilities in Greenland in an attempt to simplify the organisation of this area.

In the event of major accidents the Danish Defence has equipment in Greenland at its disposal, for example, patrol ships and vessels, to support the Danish and Greenland authorities. The climatic and geographical conditions prevent the SAR and anti-pollution equipment for the marine environment that is located in Denmark from being used for time-critical operations such as the rescue of persons from fast-sinking ships. Moreover, the equipment is unsuited for Arctic conditions. The Danish Defence has assessed the equipment and the options for meeting the needs in the event of, eg, major shipping accidents. The Danish Defence has not yet decided how to implement the results of this assessment.

The Danish authorities have taken preventive action aimed at enhancing marine navigation safety. The Danish Maritime Authority is working to introduce tougher marine navigation safety requirements in the Greenland waters and secure the adoption of binding international marine navigation safety rules in the Arctic. It is as yet uncertain whether, within the course of the next few years, the international community can agree on rules that cover the marine navigation safety need. In June 2013, the Danish Parliament passed an act enabling tougher navigation safety requirements in parts of the Greenlandic waters. However, Rigsrevisionen finds that the Danish Maritime Authority should clarify on an ongoing basis how international and national measures in the area can best prevent shipping accidents in the Greenland waters.

The Danish Geodata Agency updates and prepares new nautical charts for the areas around Greenland's south-west coast, where traffic is densest. The Agency has stated that it will give priority to developing the system which is to secure the target of producing 73 nautical charts by 2018.

The Danish Defence has failed to prioritise its task of monitoring the marine environment and enforcing the Greenland marine environment order. Rigsrevisionen considers it important that the Danish Defence monitors and operates a system of preventive control to ensure that the ships sailing in Greenland waters comply with the marine environment rules for which Denmark is responsible. In addition, the Danish Defence should organise the control and the marine environmental emergency response on the basis of regular risk assessments of marine pollution. The Ministry of the Environment is responsible for the set of rules contained in the marine environment order. In the light of the increase in marine traffic, the Ministry of the Environment and the Ministry of Defence should jointly assess whether the follow-up on the marine environment order can be strengthened.

The Danish Defence is in fact carrying out an analysis of the threats to the marine environment in the waters around Greenland. This work is being done as part of the defence agreement 2013-2017 and will form the basis of its task performance in the area. The Danish Defence expects to complete this analysis in 2014.

II. Preface

A. Background

The Greenland ice sheet *constitutes the largest body of freshwater ice in the Northern hemisphere. The ice is approx. 3 kilometres thick and has a volume of almost 3 million cubic kilometres. The upper layers and edges of the ice cap are melting faster than in the past.*

5. The ice is melting. Greenland, in particular, is experiencing the consequences of climate change in the form of changes to the thickness and propagation of the sea ice and increased melting from the ice cap. The Faroe Islands are also being affected, in part by changed fishing opportunities.

Climate change provides new opportunities to exploit natural resources, eg, oil and gas, that used to be difficult to access, and enables marine traffic in waters previously covered by ice. Cruise tourism and marine traffic related to oil exploration, marine research and other transport have increased during the past few years.

At the same time, the new opportunities for sailing the Arctic waters also increase the risk of accidents where ships strike rocks or icebergs and at worst founder in waters in which survival is impossible without fast rescue. These waters have become more navigable, but not more secure. Depths are unknown and there are more icebergs. The increased risk reinforces the need to promote navigation safety and save human lives, if an accident occurs.

In August 2012, a container vessel foundered by the entrance to the Godthåbsfjord in an attempt to avoid an iceberg. The episode illustrates the risks associated with navigation in Greenland waters. The area was covered by nautical charts approved for navigation by means of GPS, and these nautical charts were on board.

Photo: The Greenland Police

6. Increased marine traffic also entails a risk of pollution from ships by way of the discharge and release of pollutants such as oil and chemicals. One of the conclusions made by the Danish Centre for the Environment and Energy (DCE) is that the rise in marine traffic may more seriously affect the nature of the Arctic region. In this connection accidents resulting in oil spills pose the greatest threat to the Arctic ecosystems.

The National Institute of Aquatic Resources (DTU Aqua) points out, for example, that the abundant wildlife of the West Greenland marine ecosystems provides the basis for the extensive fishing operations that constitute a large part of Greenland's exports and contribute to people's diet. The large fish stocks in these areas are also important to seals and whales that seek food there during summer and to millions of North Atlantic seabirds overwintering in the ice-free area. Many of these species are being threatened as the effect of climate change on ecosystems makes them habitable for other species from the south. The polar bear has become a symbol of the sensitive Arctic environment. Some researchers fear that up to 60% of the total polar bear population may have disappeared by 2050.

BOX 1. CLIMATE CHANGE AFFECTS MARINE TRAFFIC CONDITIONS, ECOSYSTEMS AND LIVING CONDITIONS

Increased marine traffic
In recent years, more areas have become navigable and cruise tourism has increased. Likewise, the activities of fishing vessels and ships exploring the potential for natural resource recovery have increased. Marine traffic for all types of ships increased from 2004-2012, with a total of 590 voyages being registered in 2012 against 390 in 2004.

Vulnerable ecosystems
Researchers today agree that climate change is a reality, but knowledge about how climate change more specifically affects Arctic ecosystems is still lacking. Researchers are particularly interested in studying the changes to the cryosphere, which includes the perennial Arctic ice caps. Increased ice melting exposes sea and mainland areas hitherto covered in ice, which thereby absorb more heat from the sun. This further boosts ice melting. Once the permafrost thaws, the carbon dioxide and methane previously stored in the frozen soil is released. Consequently, a significant discharge of greenhouse gases may be expected from the Arctic areas. Precipitation will increase, more freshwater will generate from melted ice, and ocean currents will change. Glacier melt water will mix with the nutritious bottom water and take it to the sea surface where favourable light conditions will stimulate the production of plankton algae. The changes in the ocean currents will affect the mixture of nutrients and thus the production of plankton and seabed sedimentation. These changes will fundamentally change the characteristics of the Arctic ecosystems and the living conditions for flora and fauna in the Arctic.

Changed living conditions
Climate change affects the living conditions of the Arctic populations. For example, fishing and hunting opportunities at sea change when certain areas become accessible, while other areas become more dangerous as a result of increased iceberg calving or thinner ice. Business opportunities also arise in the form of tourism, forestry, agriculture and use of raw materials. Combined with the development in the economic, demographic, political, and social conditions, climate change has a multifaceted and enhanced effect on Arctic living conditions and complicates the adaptation process.

Source: The Danish Defence, the Ministry of Climate, Energy and Building and research institutions in Denmark, the Faroe Islands and Greenland.

7. Danish, Faroese and Greenlandic research institutions are currently conducting extensive research which contributes to the work of the Arctic Council and others.

8. For the purpose of this examination, in order to identify the main challenges for the Arctic, Rigsrevisionen has visited a number of Faroese and Greenlandic research institutions. These institutions are adopting different approaches to clarify the consequences of the present climate change for the fauna, flora and human beings in the Arctic and supplying scientific data to the working groups of the Arctic Council. In this connection, the research institutions monitor the development in the biodiversity and certain ecosystems.

BOX 2. EXAMPLES OF ARCTIC RESEARCH IN DENMARK, THE FAROE ISLANDS AND GREENLAND

Denmark
In Denmark, the Arctic Research Centre (ARC) at the University of Aarhus is conducting interdisciplinary research on Arctic problems. The Danish Centre for the Environment and Energy (DCE), also based at the University of Aarhus, has an agreement with the Greenland government about providing research, monitoring and research-based consultancy to the authorities for the purpose of environmental administration in the raw materials area. The DCE also conducts research on cross-border pollution. The Programme for Monitoring of the Greenland Ice Sheet (PROMICE) is a research and monitoring programme in which, in cooperation with other national and international projects, the Geological Survey of Denmark and Greenland (GEUS), the Technical University of Denmark (DTU) and Asiaq (Greenland Survey) measure any changes to the Greenland ice sheet.

Greenland Ecosystem Monitoring (GEM) is a Danish/Greenlandic collaboration on long-term monitoring and research into how ecosystems react to climate change. The research stations Zackenberg and Nuuk Basic in North-East Greenland and South-West Greenland, respectively, also monitor ecosystem changes.

Faroe Islands
In the Faroe Islands, Náttúrugripasavnið (the National History Museum of the Faroe Islands) is conducting research into biodiversity and ecosystems, including the impact of climate change. The Faroe Islands are covered by the Ramsar Convention, an international agreement on the protection of wetlands of international importance, especially wetlands constituting important waterfowl habitats. In 2012, the Faroese Government decided to protect three so-called Ramsar areas: the Skúgvoy, Mykines and Nólsoy areas with large colonies of guillemots, puffins and storm petrels. Havstovan (the Faroe Marine Research Institute) monitors the population of, eg, guillemots on Skúgvoy and presents its population assessments to the seabird working group (Cbird) of the Arctic Council.

In addition, Havstovan conducts research on the development of ocean currents and fish stocks, among others, while Umhvørvisstovan (the Environmental Protection Agency) has conducted long-term research into the pollution of sea mammals and birds as part of projects under the Arctic Council's working groups. Jarðfeingi (the Faroese Earth and Energy Directorate) conducts research into, among other things, the energy supply in sparsely populated areas and the impact of climate change on the Arctic environment.

Greenland
In Greenland, Pinngortitaleriffik (the Greenland Institute of Natural Resources) conducts research into the fauna, flora and the environment in and around Greenland. The institute supervises and monitors the species most important to the Greenland economy and society/population, ie, shellfish and fish caught commercially, and musk oxen, reindeer, eider, guillemots, kittiwake and various kinds of whales.

In addition, Ilisimatusarfik (the University of Greenland) conducts research on living and social conditions in the light of climate change. Silap Pissusianik Ilisimatusarfik (Greenland's Climate Research Centre) carries out research into the influence of climate change on Arctic environments and the Greenlandic society. Asiaq participates in several research collaborations to monitor climate change in Greenland.

Source: Research institutions in Denmark, the Faroe Islands and in Greenland and the Faroese Home Rule Government ('the Faroese government') and Greenland Self-Government Arrangement ('the Greenland government').

Activities under the auspices of the Arctic Council

9. The consequences of climate change transcend national borders and cannot only be solved by the countries individually. The Arctic Council supports cooperation between the governments of the Arctic countries. However, in order to achieve results, each country is required to translate the agreements they conclude in the Arctic Council into concrete action.

BOX 3. THE ARCTIC COUNCIL

The Arctic Council was set up in 1996 to promote sustainable development in the Arctic. The Council is an inter-governmental collaboration between the governments of the eight Arctic countries – Canada, USA, Norway, Iceland, Russia, Finland, Sweden and Denmark, including the Faroe Islands and Greenland – and six organisations, including the Inuit Circumpolar Council (ICC) which works to protect the indigenous peoples. The six organisations have the status of permanent participants. In addition, several countries and organisations are associated with the Arctic Council as observers. The Arctic Council meets every other year at the level of ministers of foreign affairs. Every six months representatives of the member states – Senior Arctic Officials (SAO) – meet with representatives of the indigenous peoples and the observers. The chairmanship of the Arctic Council rotates between the member states. The indigenous peoples are represented in their own capacity and have the status of permanent participants. The Realm has one vote and is represented by Denmark, the Faroe Islands and Greenland.

Working groups

The Arctic Council has six working groups that prepare or support scientific reports for the Council. These reports provide the basis of the Arctic Council's recommendations to the member states, eg, the Kiruna Declaration of May 2013, which recommends that member states take further action to protect the Arctic's biodiversity.

The six working groups are:

- AMAP (Arctic Monitoring and Assessment Programme)
- ACAP (Arctic Contaminants Action Program)
- PAME (Protection of the Arctic Marine Environment)
- CAFF (Conservation of Arctic Flora and Fauna)
- EPPR (Emergency Prevention, Preparedness and Response)
- SDWG (Sustainable Development Working Group).

Greenland holds the membership of CAFF and SDWG on behalf of the Realm.

Binding agreements

Two binding agreements have been entered into within the auspices of the Arctic Council:

- the Arctic sea rescue agreement concluded at the ministerial meeting in Nuuk on 12 May 2011
- the marine oil pollution response agreement concluded at the ministerial meeting in Kiruna on 15 May 2013.

Source: The Ministry of Foreign Affairs, the Greenland government and the Arctic Council.

10. Research is financed primarily by the individual member states based on their own criteria and preferences. The Arctic Council has no independent financial resources.

The Arctic Council has no possibility of organising more systematic scientific data collection such as that required for, eg, ecosystem monitoring projects. However, the Arctic Council reports – eg, Arctic Biodiversity Trends, SWIPA and SLiCA – contain current knowledge about the consequences of climate change and other changes to conditions affecting the development of Arctic societies.

SWIPA *– Snow, Water, Ice and Permafrost in the Arctic.*

SLiCA *– Survey of Living Conditions in the Arctic.*

Activities under the auspices of the Realm

11. In August 2011, Denmark, the Faroe Islands and Greenland launched the 'Kingdom of Denmark – Strategy for the Arctic 2011-2020' (hereinafter 'the Arctic strategy') in a response to the opportunities and challenges that come with climate change. The Arctic strategy is based on the work of the Realm in and around the Arctic Council. The other seven Arctic Council member states have also prepared Arctic strategies.

The Arctic strategy includes a number of objectives. The Ministry of Foreign Affairs has subsequently prepared an action plan defining the subobjectives for 2012, 2015 and 2020. The action plan sets out which authorities are involved in the work of meeting the individual objectives.

The Ministry of Foreign Affairs coordinates the follow-up on the work of the responsible authorities to meet the subobjectives. A steering committee consisting of representatives of the individual ministries, the Faroese and Greenland governments meets every six months to follow up on and update the tasks of the action plan.

12. The Ministry of Foreign Affairs submits an annual account to the Danish Parliament on the development in the Arctic collaboration. The account outlines the state of play of selected Arctic strategy objectives.

***AMSA** (Arctic Marine Shipping Assessment). Report prepared by the PAME working group under the Arctic Council. The report assesses the existing and future shipping activities in the Arctic waters.*

The Arctic strategy reflects a number of the main challenges highlighted in the so-called AMSA report of the Arctic Council, including marine navigation safety, SAR response, monitoring of the marine environment, and marine environmental emergency response.

Joint examination

13. Rigsrevisionen launched this examination at its own initiative in September 2012 as part of a joint examination with the supreme audit institutions of the Arctic countries Canada, USA, Norway, Russia, Finland and Sweden. In this report, Rigsrevisionen examines the issues that relate to the Realm, just as the other supreme audit institutions have examined those of their own issues that they consider most important. Therefore, the examinations are not completely parallel.

The supreme audit institutions will subsequently prepare a joint memorandum to include the results of the individual examinations. The joint memorandum will therefore have a broader focus than this report.

B. Purpose, delimitation and method

Purpose

14. The purpose of the examination is to assess whether the Danish authorities' responsibility for the effort in the Arctic parts of the Realm has been clearly divided and whether it matches the risk associated with the increase in marine traffic. Rigsrevisionen has examined this by addressing the following questions:

- Does the preventive action of the Danish authorities – aimed at enhancing marine navigation safety – match the risk?
- Has the Danish authorities' responsibility for the SAR response been clearly divided and does the equipment match the risk, eg, in connection with major accidents?
- Do the Danish authorities monitor the marine environment and does their marine environmental emergency response match the risk of marine pollution?

Delimitation

15. The Danish ministries that form part of the examination are the Prime Minister's Office, the Ministry of Foreign Affairs, the Ministry of Business and Growth, the Ministry of Justice, the Ministry of Defence, the Ministry of Research, Innovation and Higher Education, the Ministry of the Environment and the Ministry of Climate, Energy and Building. The Ministry of Transport, which is responsible for the air rescue element of the SAR response in Greenland, does not form part of the examination.

16. The examination concerns the Danish authorities' effort regarding marine navigation safety, SAR response, monitoring of the marine environment and marine environmental emergency response. This focus was chosen on the basis of the 2009 AMSA report, among others. The AMSA report recommends a number of key action areas, including that efforts should be made to develop international guidelines for navigation in the Arctic waters, SAR response and capacity for pollution control.

17. The examination does not include assessments of Danish-funded research.

18. The Home Rule Act of the Faroe Islands of July 2005 and the Act on Greenland Self-Government of June 2009 allocate responsibility for some of the tasks that form part of this examination to the Faroe Islands and Greenland. Denmark is responsible for the tasks not taken over by the Faroese and Greenlandic authorities. The tasks assumed by the Faroese authorities differ from those assumed by the Greenlandic authorities. Accordingly, the Faroe Islands and Greenland are weighted differently in the report.

As regards marine navigation safety, the Danish Geodata Agency is responsible for hydrographic surveys. In the Faroe Islands, Landsverk (the Faroese authority in charge of infrastructure) is responsible for hydrographic surveying of ports and fjords while the Danish Defence is responsible for hydrographic surveying in Greenland.

The Faroe Islands have taken over responsibility for the SAR response in the Faroe Islands, whereas the Danish authorities are responsible for the SAR response in Greenland. Greenland has taken over responsibility for some of the follow-up activities relating to SAR operations, eg, health emergency facilities, and accommodation and provisioning for persons in distress.

As regards monitoring the marine environment and the marine environmental emergency response, the Faroe Islands have taken over responsibility for the Faroese marine environment. Greenland has taken over responsibility for the marine environment landward of its internal waters and territorial sea, ie, from the coast line and up to three nautical miles. The Danish authorities are responsible for the waters extending from three to 200 nautical miles.

Greenland has taken over the mineral resources area. The mineral resources authority in Greenland requires enterprises granted licences in the area to ensure that safety and emergency response measures are taken. This also applies outside the three-nautical mile limit. The Ministry of the Environment and the Ministry of Defence have stated that work to clarify the powers of the authorities relating to the marine environment area in Greenland has been initiated. Relevant Danish and Greenlandic authorities will be involved in the work.

Method

19. The examination is based on information from meetings with and written material from the Prime Minister's Office, the Ministry of Foreign Affairs, the Ministry of Business and Growth, the Ministry of Justice, the Ministry of Defence, the Ministry of Research, Innovation and Higher Education, the Ministry of the Environment, the Ministry of Climate, Energy and Building and the Ministry of Transport.

20. Rigsrevisionen is only authorised to assess the Danish authorities' task performance in the Arctic parts of the Realm. However, we visited the Faroe Islands and Greenland, where we held meetings with and received written material from Danish, Faroese and Greenlandic authorities, research institutions and enterprises which in various ways deal with the areas covered by the report. These visits have made the assessment of the authorities' task performance more comprehensive.

BOX 4. AUTHORITIES, RESEARCH INSTITUTIONS AND ENTERPRISES THAT HAVE SUPPLIED DATA FOR THE EXAMINATION

The Faroe Islands

- Fróðskaparsetur Føroya (The University of the Faroe Islands)
- Náttúrugripasavnið (The Natural History Museum of the Faroe Islands)
- Løgmansskrivstovan (The Faroese government)
- Innlendismálaráðið (The Ministry of the Interior)
- Jarðfeingi (The Faroese Geology and Energy Directorate)
- Fiskimálaráðið (The Ministry of Fisheries)
- Landsgrannskoðanin (The National Audit Office of the Faroe Islands)
- Fiskiveiðieftirlitið (The Faroese Fisheries Inspection)
- Havstovan (The Faroese Marine Research Institute)
- Umhvørvisstovan (The Environment Agency).

Greenland[1)]

- The Ministry of Domestic Affairs, Nature and the Environment
- The Ministry of Housing, Infrastructure and Traffic
- Ilisimatusarfik (The University of Greenland)
- The Ministry of Industry and Mineral Resources – the Bureau of Minerals and Petroleum
- The Ministry of Education and Research
- The Directorate of Foreign Affairs
- The Premier's Office
- Silap Pissusianik Ilisimatusarfik (The Greenland Climate Research Centre)
- Pinngortitaleriffik (The Greenland Institute of Natural Resources)
- The Secretariat of the Audit Committee
- Air Greenland.

1) The composition of the Greenland authorities has changed since the election to Inatsisartut (the Parliament) in March 2013.

21. The Faroese and Greenland authorities have been given the opportunity to comment on the information relating to Faroese and Greenlandic conditions, respectively. The comments by the Faroese and Greenlandic authorities have been incorporated in the report to the widest possible extent.

22. The draft report was presented to the Prime Minister's Office, the Ministry of Foreign Affairs, the Ministry of Business and Growth, the Ministry of Justice, the Ministry of Defence, the Ministry of Research, Innovation and Higher Education, the Ministry of the Environment, the Ministry of Climate, Energy and Building and the Ministry of Transport, whose comments have been incorporated in the report to the widest possible extent.

23. Appendix 1 is a glossary that explains certain words and concepts.

III. Marine navigation safety

The Danish authorities have taken preventive action aimed at enhancing marine navigation safety. However, the action taken does not fully match the risks associated with the increase in marine traffic, one reason being that the increase entails risks which the Danish authorities cannot counter on their own. Solving this task requires the adoption of international and national rules on marine navigation safety in the Arctic waters.

The Danish Maritime Authority is working to secure the adoption of binding international marine navigation safety rules for the Arctic, which will apply to, eg, cruise liners and tankers. Such international rules will not take effect until 2017, at the earliest.

In May 2013 the Danish Parliament passed an act enabling tougher marine navigation safety requirements for parts of the Greenlandic waters. Based on the new legislation, in cooperation with the Greenland government, the Danish Maritime Authority intends to introduce tougher marine navigation safety requirements for the area, which will reduce the risk of loss of human lives and pollution of the sensitive Arctic marine environment. These requirements cannot take effect until 2014, at the earliest. However, Rigsrevisionen finds that the Danish Maritime Authority should clarify on an ongoing basis how international and national measures in this field can best prevent shipping accidents in the Greenland waters.

The Danish Geodata Agency must substantially increase its production of nautical charts to achieve the target of 73 nautical charts by 2018. To this end, production must be increased already in 2013 by the introduction of a new production system. However, the system has not yet been fully developed, and the Agency has stated that it will give priority to developing the production system which is to secure achievement of the target.

24. Rigsrevisionen has examined whether the preventive action taken by the Danish Maritime Authority and the Danish Geodata Agency aimed at providing safe navigation, matches the risk.

A. The Danish Maritime Authority's regulation of marine traffic in the Arctic

25. Rigsrevisionen's examination of whether the Danish Maritime Authority ensures that the marine navigation safety regulation for Arctic traffic matches the established risks has shown the following:

- Partly at the initiative of the Danish Maritime Authority, several Arctic countries are working to adopt an internationally mandatory Polar Code under the auspices of the IMO. The Authority is working to ensure that the Polar Code includes mandatory regulation to underpin marine navigation safety and prevent accidents, etc, in the Greenland waters and that will apply to large ships, eg, cruise liners and tankers. The Authority expects the Polar Code to be adopted in 2015 and become effective in 2017.

- In June 2013, the Danish Parliament passed an act (Act No. 618 of 12 June 2013 amending the Danish Merchant Shipping Act) that provides for more stringent safety requirements for navigation in parts of the Greenland waters. In cooperation with the Greenland authorities, based on the options embodied in national legislation and in consideration primarily of the UN convention on the law of the sea, the Danish Maritime Authority will introduce more stringent marine navigation safety requirements for the Greenland waters to take effect in 2014, at the earliest.

- Rigsrevisionen finds that the Danish Maritime Authority should clarify on an ongoing basis how international and national measures – addressing the risks resulting from the increase in marine traffic in the area – can best prevent shipping accidents in the Greenland waters.

Navigation in the Arctic

26. The Arctic strategy points out that in recent years, climate change has increased the navigable areas and the resulting commercial activities in Greenland in the summer from mid-May to mid-October. Cruise tourism has grown as it is now possible to travel to previously inaccessible areas in Greenland. The number of other vessels in the area such as fishing and research vessels has also increased. However, many areas on the Greenland east coast remain accessible only during a limited number of weeks a year.

***Greenpos** is a reporting system administered by the Danish Defence. As a marine safety measure, the system requires ships travelling in Greenland waters to report to Greenpos every six hours until they can report their safe arrival at their destination or departure from Greenland waters.*

27. Table 1 shows the total number of Greenpos-registered voyages in Greenland waters during the period 2004-2012.

Table 1. Registered voyages in Greenland waters by ship type during the period 2004-2012[1)]
(Number)

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Merchant vessels	142	192	159	240	206	171	162	184	155
Tankers	47	51	39	42	42	57	58	60	54
Fishing vessels	49	65	58	54	44	54	169	145	101
Research vessels	44	44	48	37	77	62	71	44	63
Cruise liners	84	83	86	87	124	96	193	113	106
State ships and warships	8	27	13	21	24	12	16	17	25
Other ships	16	36	23	35	74	59	186	134	86
Total	**390**	**498**	**426**	**516**	**591**	**511**	**855**	**697**	**590**

[1)] Before 2004 only ships from the Realm were required to report their presence in the Greenland waters.

Source: The Arctic Command.

According to table 1, the number of voyages during the period 2004-2012 increased for all ship types from a total of 390 registered voyages in 2004 to a total of 590 in 2012. For cruise liners this figure increased from 84 to 106.

*A **voyage** means a ship sailing in Greenland waters. A ship sailing into and out of Greenland waters counts as two voyages.*

28. The Danish Maritime Authority's survey of cruises in the Greenland waters shows that during the period 2010-2012 cruise liners with a capacity for more than 1,000 passengers plied routes in southern Greenland without ice strengthening.

29. Beyond the Greenpos-registered voyages, traffic from cargo ships is expected to increase because the reduced amount of ice enables shorter shipping routes from, eg, Europe to Asia by using the lanes around the North Pole.

International regulation

30.The Danish Maritime Authority represents the Realm in the IMO, which lays down international rules for cargo and passenger ships. IMO rules are crucial because national rules for marine traffic in the Greenland waters apply only to the internal waters, ie, fjords and bays, and not to the territorial sea, which is defined as the waters extending seaward up to three nautical miles from the base line.

***Cargo and passenger vessels** are merchant ships, tankers and cruise liners.*

***The baseline** is the low-water line along the coast as marked on large-scale nautical charts. The internal waters are the waters on the landward side of the base line, and the territorial sea is the sea on the seaward side of the base line.*

National rules must comply with international conventions on 'innocent passage', etc, meaning that foreign ships are allowed to pass unhindered through the Greenland territorial sea and even call at a Greenlandic port without complying with Danish rules on, for example, ice-strengthened hulls. This means, for example that cruise liners may refrain from complying with all provisions laid down by the Danish Maritime Authority as long as they can claim to be exercising their right of 'innocent passage' through the waters.

31. Currently international rules in certain areas, passenger safety, for example, exist that apply to all ships, also in Arctic waters. However, there are other areas where no international rules exist that take navigation in ice-filled waters into special account. Ships are, for example, not required to be ice-strengthened. The IMO has adopted guidelines for ships operating in ice-filled waters. Adhering to the guidelines, covering the ships' construction, equipment on board, training of the crew and environmental protection, is voluntary.

Consequently, the Danish Maritime Authority's work in the IMO focuses on the adoption of a special Polar Code. The IMO has initiated negotiations on the code on the basis of a proposal from Denmark, Norway and Canada. Initially, the proposal concerns cargo and passenger ships.

32. The Danish Maritime Authority has stated that in connection with its work on the Polar Code it has proposed to the IMO that cargo and passenger ships operating in Arctic waters coordinate their navigation with other ships so that they can come to each other's rescue if needed.

***Coordinated navigation** means that cruise liners safeguard passenger safety by having another vessel with a similar passenger capacity within a reasonable distance, because the SAR response does not have the capacity to cover an accident that requires evacuating passengers on large cruise liners.*

However, the Danish Maritime Authority has stated that it is uncertain whether the requirement for coordinated navigation will form part of the final Polar Code. The Authority expects the Polar Code to be adopted by the IMO in 2015 and to become effective in 2017 at the earliest.

National regulation

33. To the extent that the Danish Maritime Authority finds that international regulation does not keep pace with the need, the Authority can lay down requirements for ships operating in Greenland waters. However, the 'innocent passage' provisions and other international requirements continue to limit the requirements that the Danish Maritime Authority can make in relation to foreign ships.

34. The Danish Maritime Authority has stated that 25 cruise liners plan to operate in Greenland waters in 2013, of which 20 are expected to call at a Danish port before sailing to Greenland. The Authority intends to give priority to the port state control of this group of cruise liners in Denmark. In addition, cruise liners with, potentially, 300 passengers, are planning routes to the Greenland east coast, which is even more remote than the west coast.

BOX 5. THE DANISH MARITIME AUTHORITY'S CONTROL OF SHIPS IN ARCTIC WATERS

Three types of ship control exist:

- *Flag state control* is, eg, Danish control of ships under the Danish flag. The flag state checks whether the ships comply with all international health, safety and environmental rules.
- *Port state control* is, eg, Danish control of both Danish and foreign ships in Danish and Greenland ports. The port state checks whether the ships have the required certificates and whether the ships appear to comply with the requirements. In connection with port state control of cruise liners travelling to Greenland, the Danish Maritime Authority carries out supplementary control of the special rules that apply to navigating in Greenland waters.
- The Danish Maritime Authority's *supplementary control* of whether the special Danish rules and international recommendations regarding navigation in the Arctic are complied with.

Source: The Danish Maritime Authority.

35. The adoption of Act No. 618 of 12 June 2013 amending the Danish Merchant Shipping Act enabled the introduction of more stringent requirements to improve navigation safety in the Greenland waters. Initially, the requirements are targeted at cruise liners with a capacity for more than 250 passengers. Safety requirements for other ships can also be laid down as necessary.

The Danish Maritime Authority's new initiatives concern:

- the establishment of navigation zones
- requirements for a so-called ice-class (ice-strengthening of the ship's hull)
- more stringent requirements for navigation planning and emergency response plans for ships
- requirements for enhanced training and education of the crew
- requirements for coordinated navigation
- introduction of a duty to take a pilot on board.

The Danish Maritime Authority's initiatives are implemented through executive orders prepared in dialogue with the Greenland government, although these initiatives will not become effective until 2014 at the earliest. Accordingly, the actual content of the Danish Maritime Authority's new initiatives has not yet been decided.

B. The Danish Geodata Agency's production of nautical charts and the Danish Defence's hydrographic surveying

36. Rigsrevisionen's examination of whether the Danish Geodata Agency's production of nautical charts and the Danish Defence's hydrographic surveying measure up to the risk of shipping accidents showed the following:

- The Danish Geodata Agency must substantially increase the production of nautical charts to achieve the target of 73 updated and new nautical charts by 2018 and to comply with the cooperation agreement concluded with the Greenland government. The Danish Geodata Agency intends to optimise the production and therefore expects to comply with the existing production plan, provided that production increases already in 2013. This is to be achieved by means of a new production system that still requires development, however.

- The Danish Geodata Agency and the Danish Defence have stated that hydrographic surveys and nautical charts need to be made and produced for areas in addition to those covered by the 2009 cooperation agreement.

Nautical charts in the Faroe Islands
The Danish Geodata Agency believes there is no need to re-survey the waters around the Faroe Islands, nor has the government of the Faroe Islands requested that new hydrographic surveys be made. Today, the Faroese collection of nautical charts amounts to eight charts.

Nautical chart production and hydrographic surveying

37. According to the Arctic strategy, new nautical charts of Greenland must be produced, one reason being to avoid shipping accidents in the Greenland waters.

38. The Danish Geodata Agency is responsible for hydrographic surveying and nautical chart production, including the preparation of updated and new nautical charts in Denmark, the Faroe Islands and Greenland.

39. In Greenland, the waters of East, North and North-West Greenland are covered by rather old, random surveys. A total of approx. 20% of the 2.1 km² Greenland waters has been surveyed (equal to approx. 20 times the size of the Danish waters). Ships are also operating in the remaining 80% unsurveyed waters, but on a limited scale.

Nautical chart production
New nautical charts are prepared on the basis of old nautical charts and new hydrographic surveys, new geographical maps of the coastline and reports from authorities and citizens of changed conditions at sea. This makes the nautical charts more accurate. They may then be used for GPS-based navigation not supported by the old charts.

40. The Danish Geodata Agency has stated that the existing nautical charts have not been adjusted to the use of satellite navigation (GPS) in modern shipping. The nautical charts of the Greenland coastline were originally drafted on the basis of old charts, which resulted in inaccuracies. New surveys have shown that the old nautical charts of the west coast may be skewed by up to 1 km on the west coast and 1-5 km on the east coast. Although old nautical charts are unsuited for GPS-based navigation, they can be used for traditional navigation methods, eg, radar-based navigation.

41. The Danish Defence surveys the internal waters and the territorial sea on the basis of an operating agreement with the Danish Maritime Authority and the Danish Geodata Agency. The Danish Defence provides ships, equipment and personnel. The hydrographic surveys of the Danish Defence form part of the Danish Geodata Agency's production of new nautical charts and have an impact on the quality of the nautical charts. The operating agreement assumes that the Danish Defence's hydrographic surveying will continue on the same level as before.

Prioritisation and targets for nautical chart production

42. In October 2009, the Danish Geodata Agency concluded a cooperation agreement with the Greenland government to renew the nautical charts of Greenland. The agreement includes targets according to which the Danish Geodata Agency is to have produced 73 nautical charts for the bulk of the busy Greenlandic south-west coast – from Uummannarsuaq to Upernavik – by the end of 2018, at the latest. It is not a part of the Danish Geodata Agency's agreement with the Greenland government that the 73 new nautical charts must be based entirely on new surveys. After 2018, there will still be large parts of the Greenland coast that have not been re-surveyed.

Prioritisation of hydrographic surveying
1. *The shipping lanes to the major Greenland ports.*
2. *The lanes in sheltered waters from Uummannarsuaq and up along the south-west coast to Upernavik.*
3. *Other areas and lanes of interest to tourism and other industries.*

43. In cooperation with the Greenland government, within the framework of the agreement, the Danish Geodata Agency prioritises which areas should be subject to hydrographic surveying and nautical chart production based on an assessment of where traffic is most dense and navigation is most dangerous.

The Danish Geodata Agency discusses the year's hydrographic surveying and nautical chart production proposals with the Greenland government, Defence Command Denmark and other interested parties, eg, the Municipality of Nuuk, the Greenland Police and the Royal Arctic Line shipping company, after which it makes an annual prioritisation of the areas to be hydrographically surveyed. The progress of the nautical chart production is evaluated annually.

44. Table 2 shows the Danish Geodata Agency's planned and realised nautical chart production according to the 2009 cooperation agreement.

Table 2. The Danish Geodata Agency's planned and realised nautical chart production during the period 2008-2018 (Number)

	2008[1)]	2009	2010	2011	2012	2013[2)]	2014	2015	2016	2017	2018	**Total**
Planned nautical chart production	2	4	3	3	4	6	6	9	10	12	14	**73**
Realised nautical chart production	2	4	4	3	3	-	-	-	-	-	-	-

1) The nautical charts produced during the period 2008-2009 are comprised by the agreement with the Greenland government.

2) To date, two nautical charts have been produced in 2013. The Danish Geodata Agency expects to produce another five nautical charts in the course of 2013.

Source: The Danish Geodata Agency.

Table 2 shows that from 2008-2012, the Danish Geodata Agency issued two to four new nautical charts per year, including recommended shipping routes for the entrance to Nuuk. By the end of 2012, a total of 16 nautical charts had been updated and re-issued. The new nautical charts cover the area from Nuuk and approx. 200 km southwards and have been adapted to the use of satellite navigation in modern shipping.

45. Rigsrevisionen's examination has showed that achieving the agreed targets is conditional on optimising and developing the production system in several areas.

The Danish Geodata Agency has stated that the new production system must increase production on an ongoing basis and that the main increase in production is planned for 2015 when the number of new nautical charts will rise from six in 2014 to nine in 2015. In the time ahead the Agency will give priority to further develop the system.

New hydrographic survey ships in the years ahead

The Danish Defence has two hydrographic survey ships in Greenland. Both are equipped with state-of-the-art survey instruments, eg, multibeam echosounders.

46. The Danish Defence has stated that new hydrographic survey ships need to be phased in over the next few years. The Danish Defence's hydrographic surveying forms part of the Danish Geodata Agency's production of updated and new nautical charts, but is not a prerequisite.

47. Since 1989 two Danish Defence ships for hydrographic surveying have been located in the internal Greenland waters. According to the Danish Geodata Agency's internal target, the Danish Defence must annually survey 4,500 km of the south-western Greenland waters. The internal target is based on the survey production over the past ten years. The distances that the Danish Defence can survey in the individual seasons depend on climate and weather conditions, but to date the annual average distance surveyed by the Danish Defence has been approx. 5,000 km.

48. However, the Danish Defence has stated that the two survey ships have limited application and are not the best possible solution for the present task.

49. The most recent defence agreement provided the Danish Defence with yet another patrol vessel for the Greenland waters. The patrol vessel will be designed to be able to conduct occasional hydrographic surveys.

The Danish Defence expects to start using the new patrol vessel in 2017. Until the vessel is ready, the Danish Defence has stated that one of its two other patrol vessels will be fitted out to support the existing two survey ships.

Nautical chart production in addition to the existing agreement

50. The Arctic strategy points out that even after 2018, when the existing agreement on nautical chart production expires, there will be vast unsurveyed and uncharted areas in the Greenland waters.

51. The Danish Geodata Agency has stated that the existing nautical chart surveying and production programme does not fully meet the existing and growing need for accurate nautical charts of the Greenland waters as marine traffic in the form of cruise liners and other vessels in the area increases. The Danish Defence agrees with the Danish Geodata Agency's assessment.

The Danish Geodata Agency has further stated that major investments will be required if, in the course of a few years, even more new hydrographic surveys and nautical charts of the Greenland waters have to be made and produced beyond those planned in the existing agreement.

IV. Search and rescue response (SAR response)

In general, the Danish authorities have divided the SAR responsibilities clearly, although the division could be more accurately defined in some cases. In certain types of SAR operations, the Greenland Police and the Danish Defence coordinate their response on the basis of an imprecise geographical delimitation, and the two authorities agree that the division of responsibilities should be clarified. In February 2013, the Prime Minister's Office initiated an analysis that may simplify the division of responsibilities regarding the SAR response in Greenland.

In relation to the risk of major accidents, the Danish Defence has equipment in Greenland at its disposal, eg, patrol ships and vessels to support the Danish and Greenland authorities. The Danish Defence's patrol vessels, for example, can attend to more than 200 persons for a short period of time. The equipment for major accidents which is located in Denmark cannot be used for time-critical operations such as the rescue of persons from fast-sinking ships. Moreover, the equipment is not fully suited for Arctic conditions. The Danish Defence has assessed the equipment and the options for meeting the needs in the event of, eg, major shipping accidents. The Danish Defence has not yet decided how to implement the results of this assessment.

52. Rigsrevisionen has examined whether the responsibility for the SAR response is clearly divided between the Ministry of Defence and the Ministry of Justice and whether the equipment matches the risk, for example in connection with major accidents. Rigsrevisionen's examination showed the following:

***The Danish Rescue Council for Shipping and Aviation**, dating back to 1960, is composed of the authorities responsible for SAR operations relating to shipping and aviation. The members are the Ministry of Defence, the Ministry of Justice, the Ministry of Business and Growth, the Ministry of Food, Agriculture and Fisheries, and the Ministry of Transport. The Ministry of Defence holds the chair. The Council meets twice a year.*

- The Danish Rescue Council for Shipping and Aviation has set a target for SAR operations in Greenland. The 94% rescue target rate for Greenland was achieved in the period 2010-2012.

- The division of responsibilities between the Greenland Police and the Danish Defence in connection with SAR operations should be clarified because the division of the coordinating responsibility is based on an imprecise geographical delimitation. The Prime Minister's Office has taken steps to draw up a proposal for a clearer division of responsibilities in relation to the coordinating responsibility for SAR operations.

- The Danish Defence has equipment in Greenland at its disposal, including patrol ships and vessels, to support other authorities in dealing with SAR operations and major accidents.

- In a report published in January 2013, the Ministry of Defence concluded that the equipment for use in SAR operations and major accidents, which is located in Denmark, cannot be used for time-critical operations and is unsuited for Arctic conditions. The Danish Defence has not yet decided how to implement the findings of the report.

Danish authorities responsible for the SAR response in Greenland

53. The Arctic strategy focuses on the authorities' need to strengthen the SAR response internationally and locally. The rules governing the government's SAR response obligations in Greenland are based on the 1979 SAR convention. The Danish authorities must provide a coordinated SAR response and rescue equipment suitable for the task. The SAR equipment is not required to be dedicated exclusively to SAR operations.

International SAR rules
Several of the rules that apply to Denmark, Greenland and the Faroe Islands originate in international conventions acceded to within the auspices of the UN. The1979 SAR convention, for example, helps define how to coordinate the handling of SAR operations.

54. The Ministry of Defence has stated that a SAR response is based, partly on the executive authorities working according to a clear division of responsibilities and on the response being coordinated to secure the best use of the resources available.

55. The Ministry of Business and Growth, the Ministry of Justice and the Ministry of Transport are responsible for the SAR response in Greenland. Overall, these ministries and the Ministry of Defence, which carry out SAR operations, coordinate the area through the Rescue Council of Shipping and Aviation. However, the Ministry of Transport does not form part of the examination.

56. The Rescue Council of Shipping and Aviation has set a trial target of 94% for the rescue rate in Greenland. In 2010, 2011 and 2012 rescue rates were 95%, 99% and 99%, respectively. Most rescue operations take place under the responsibility of the Ministry of Justice and the Ministry of Defence, that is, under the Arctic Command and the Greenland Police.

57. Table 3 illustrates the Danish responsibility for the SAR response in Greenland, including which authority is responsible, which authority is the executive authority and which equipment is available to the relevant authority.

Table 3. Danish responsibility for the SAR response in Greenland

	Sea rescue	Local rescue
Danish authority responsible	The Ministry of Business and Growth (The Danish Maritime Authority)	The Ministry of Justice
Executive authority	Arctic Command	The Greenland Police
SAR operation equipment[1)]	• 1 patrol ship with 1 helicopter • 2 patrol vessels • 1 patrol cutter • 1 Challenger aircraft (100 days a year)	• 2 helicopters[2)] • 4 police ships • snowmobiles

1) In many cases, the SAR operation equipment is used for a host of other tasks when not required for SAR operations.

2) The Ministry of Justice is responsible for the contract with Air Greenland, operating the helicopter service. Naviair – with the Ministry of Transport as the responsible authority – is in charge of air rescue, that is, aircraft crashes, missing aircraft or aircraft in distress, including persons in distress on board. This examination does not cover air rescue.

Source: The Ministry of Business and Growth, the Ministry of Defence and the Ministry of Justice.

According to table 3, the Ministry of Business and Growth and the Ministry of Justice hold the overall responsibility for sea and local rescue in Greenland. The authorities responsible cooperate with the executive authorities – the Arctic Command and the Greenland Police. The responsibility has been divided between the two authorities according to whether the SAR operation takes place at sea or in local waters.

The responsibility for coordinating a SAR operation on the coast is defined on the basis of the Greenland coastline. The Danish Defence is responsible for sea rescue, that is, rescue in open waters up to 200 nautical miles from the baseline. The Greenland Police are responsible for local rescue, that is, rescue in local waters, which are inshore sheltered waters.

The Arctic Command and the Greenland Police are main holding authorities for the Danish authorities' SAR equipment in Greenland.

58. The Arctic Command is responsible for coordinating sea rescue operations, except for minor SAR operations in local waters. Sea rescue covers persons in distress from cargo and passenger ships. In such cases, a SAR operation will be coordinated by the Maritime Rescue Coordination Centre (MRCC) from the Arctic Command in Nuuk. An operation may involve Danish Defence vessels, helicopters and aircrafts.

The primary tasks of the Arctic Command are policing and monitoring, although SAR operations always take precedence over other tasks.

***Air Greenland's two helicopters** can be requisitioned by the Arctic Command, the Greenland Police and Naviair.*

Other equipment may be used in SAR operations, eg, Danish state ships, ships and boats rented by the state, the Danish Defence's aircraft, the aircraft of private airlines and the SIRIUS Sledge Patrol.

59. The Greenland Police are responsible for coordinating local rescue operations, that is, minor SAR operations in local waters and all onshore operations. The purpose of local rescue operations is most often to rescue small-boat fishermen, yachtsmen, hunters and other expeditions.

The Ministry of Justice has concluded a contract with Air Greenland to secure access to Air Greenland's helicopters if necessary for SAR operations. According to the agreement, two helicopters will be dedicated to the SAR response – for both sea and local rescue – meaning that the two helicopters have short response times and are always equipped with the hoisting considered crucial for rescuing persons in distress during SAR operations.

SAR operation equipment: Left: police ship from the Greenland Police. Top right: patrol vessel Ejnar Mikkelsen. Bottom right: Challenger aircraft.

Photo: Rigsrevisionen

SAR response in the Faroe Islands
The Faroe Islands have taken over responsibility for the SAR response. The equipment of the Faroe Islands consists of two fisheries inspection vessels, which are also used for SAR operations, three high-speed motor boats (a fourth is on its way) and one helicopter. The Faroe Islands have entered into cooperation agreements with Scotland and Iceland and may also request assistance from the Danish Defence, eg, in the form of a patrol vessel whose basic equipment is a helicopter and which operates exclusively in Faroese waters in the winter months.

Division of responsibilities for SAR response

60. The Danish Defence, the Ministry of Justice and the Prime Minister's Office have stated that the responsibilities for the SAR response in Greenland are clearly divided, but in a more complex manner than in Denmark. The Greenland Police, for example, has the coordinating responsibility for SAR operations in local waters, whereas the Danish Defence has the coordinating responsibility for SAR operations outside local waters, that is, sea rescue. However, the distinction between sea rescue and local rescue has not been clearly defined, which has resulted in rescue operations where the coordinating responsibility had to be allocated in each individual case.

The Danish Defence and the Ministry of Justice agree that the division of responsibilities for sea rescue between the Arctic Command and the Greenland Police should be clarified as the definition of 'local waters' needs to be explained more precisely. However, the authorities point out that the existing division of responsibilities works in practice.

61. The Prime Minister's Office has stated that the ministries responsible for the SAR response in Greenland, the Prime Minister's Office and the Ministry of Finance have taken steps to draw up a proposal for a decision to simplify the division of responsibilities. Coordinated by the Ministry of Defence, the work was initiated in February 2013 and is soon to be completed.

The Prime Minister's Office has also stated that, if useful, the work is intended to simplify the division of responsibilities, with responsibilities to be vested in fewer authorities in order to integrate the issue of rules and the allocation of resources in the operative structure.

SAR response and new risks

62. The Arctic Command has stated that the risk scenario for SAR operations in Greenland has changed owing to the increase in number of cruise liners sailing in the Faroese and Greenland waters. In Greenland, for example, cruise liners sail into fjords on the sparsely populated east coast, which has no infrastructure and where it may take several days for the response team to arrive if needed. The Arctic Command has stated that it has observed careless navigation on the part of some cruise liners, but can forbid the liners neither to travel fast nor to travel in ice-filled waters.

A cruise liner in the Disko Bay in 2011. The liner has capacity for 3,760 persons (passengers and crew).

Photo: Private photo

63. The Danish Defence has stated that the response to a major accident will depend on the time of the year, weather conditions, other traffic in the area, proximity to infrastructure, etc. Consequently, it may be difficult to assess precisely whether the existing response capacity can handle a major accident.

64. The Danish Defence is not responsible for making dedicated equipment available to support other authorities in connection with major accidents. However, the authorities responsible, eg, the Greenland Police, are expected to ask the Danish Defence for assistance. Similarly, the Danish Defence is expected to support the other authorities in connection with major catastrophes as part of the Danish Defence's general support to civil society.

The Danish Defence can provide support through the units operating in the area, and has stated that a patrol ship is equipped with a helicopter and a hospital. Moreover, an inspection vessel can take care of more than 200 persons for a short period of time, and rescue equipment that can be dropped from the air is stored at Kangerlussuaq.

The Danish Defence and the Danish Emergency Management Agency also have equipment in Denmark. However, in a report issued in January 2013, the Ministry of Defence concluded that the equipment could not be used for time-critical operations such as the rescue of persons in the water or on board a fast-sinking ship. The Danish Defence has stated that locating equipment in Greenland will have no immediate effect on whether the equipment can arrive in time for time-critical operations because of the major challenge that climatic conditions pose for an area's accessibility.

At the moment, nor can the equipment be used for so-called non-time-critical operations, for example, establishing a tented camp to handle survivors or injured persons, because the equipment would need upgrading. In addition, the Danish Emergency Management Agency has no experience in working in the Arctic. This will require both training staff and upgrading their apparel and equipment. The Danish Defence has not yet decided how to implement this work.

65. In the light of the increase in shipping traffic with many passengers in remote and unpopulated areas of the Arctic, the Arctic countries wish to strengthen the international SAR cooperation. In May 2011, the ministers for foreign affairs of the Arctic Council member states signed the first binding SAR agreement between the eight Arctic countries.

The SAR agreement builds on the existing international agreements, for example, the SAR Convention, and its purpose is to strengthen the cooperation on seaborne and airborne SAR operations. The agreement formalises cooperation in which the countries provide mutual support precisely because resources in the Arctic regions are sparse.

The Greenland Police and the Danish Defence hold two annual exercises to learn how to cooperate in realistic SAR operations.

66. The Ministry of Defence has stated that the agreement proposes more operative cooperation between the Arctic countries and that the countries must increasingly exchange experience and share information about SAR equipment. The ministry has also stated that the SAR agreement has not changed the overall emergency response of the Realm, eg, in the form of more equipment.

***SAREX** – Search and Rescue Exercise.*

67. The Ministry of Defence believes the SAR agreement will lead to more exercises being held in future with participation from the Arctic countries. The exercises are intended to simulate the major accidents that the new risks indicate will occur. Against the background of the SAR agreement Denmark took the initiative to hold an exercise in Greenland in September 2012 – SAREX 2012. Canada, USA, Norway, Iceland and Denmark participated in the exercise while Russia participated as observer. The Ministry of Defence has stated that SAREX 2012 was the first SAR exercise between the Arctic countries.

Denmark has also taken the initiative to stage yet another exercise as a result of the SAR agreement. The exercise will be held at the beginning of September 2013 and, in addition to a SAR operation, also includes a marine environment accident scenario.

V. Marine environment and marine environmental emergency response

The Danish Defence has failed to prioritise its task of monitoring the marine environment and enforcing the marine environment legislation in Greenland. The Danish Defence monitors the marine environment as an element of its general presence and not on a risk basis. The Danish Defence has stated that it could have performed the task more effectively.

Rigsrevisionen finds it important that – based on an ongoing assessment of the marine pollution risk – the Danish Defence monitors and operates a system of preventive control to ensure that ships sailing in Greenland waters comply with the marine environment rules. In addition – in the light of the increase in marine traffic – Rigsrevisionen finds the Ministry of the Environment and the Ministry of Defence should jointly assess whether the follow-up on the marine environment order can be strengthened.

The Danish Defence has not yet calculated the marine pollution risk in the Arctic parts of the Realm. The Danish Defence also has no overview of whether the marine environmental response equipment that is located in Denmark can be used in the Arctic. Finally, although the Arctic Command is responsible for combating marine pollution, it has no staff trained for this task.

The Danish Defence has initiated an analysis of the threats to the marine environment in the waters around Greenland which can be used to calculate the risk of pollution. The Danish Defence expects this analysis to be completed in 2014. Rigsrevisionen considers it important that the Danish Defence uses this analysis to assess the need for control measures to enforce the marine environment order and determine the amount of equipment needed.

68. Rigsrevisionen has examined whether the Danish authorities monitor the marine environment and whether their marine environmental emergency response matches the marine pollution risk.

A. Monitoring the marine environment

69. Rigsrevisionen's examination of whether the Danish authorities monitor the marine environment showed the following:

- Since the rules concerned took effect in 2004, the Danish Defence has failed to check whether ships operating in Greenland's exclusive economic zone comply with the marine environment order, eg, by way of spot checks. Moreover, the crew on the Danish Defence's ships has not received the special training required to carry out the preventive control.
- The Danish Defence has no risk-based approach to the marine environment tasks. The Danish Defence monitors the marine environment as a by-product of its general presence. According to the Danish Defence, this is due to the established policy framework.
- The Danish Defence has stated that it will increase its focus on the environment task in future.

Greenland's exclusive economic zone *covers the area stretching from three to 200 nautical miles from the shore. Within this zone Greenland has an exclusive right to explore for and use the natural resources of the sea, on the seabed and in the subsoil and a right to any other economic exploitation.*

Responsibility for monitoring and protecting the marine environment

70. The Danish and Greenland authorities share the responsibility for the protection of the marine environment in Greenland.

71. Greenland has taken over the marine environment tasks within its internal waters and territorial sea, ie, the internal waters and the waters extending up to three nautical miles from the baseline. The Greenland government is responsible for the marine environment legislation and for controlling pollution, but may request Danish authorities for pollution control assistance.

Moreover, the mineral resources authority in Greenland requires enterprises granted licences in the mineral resources area to ensure that safety and emergency response measures are taken. This also applies outside the three nautical-mile limit.

The Marine environment order
The marine environment in Greenland's exclusive economic zone is regulated by order no. 1035 of 22 October 2004 on the commencement for Greenland of the act on the protection of the marine environment. The order is called the marine environment order.

72. The Ministry of the Environment holds legislative responsibility for the waters extending three to 200 nautical miles from the shore to the boundary between Greenland and Canada/Iceland. Since 2000, the Ministry of Defence has been responsible for monitoring the marine environment, checking compliance with the provisions of the marine environment act and combating oil pollution and chemicals contamination. Since 2004, the Danish Defence has also been responsible for checking whether ships and vessels comprised by the marine environment order comply with the rules governing the exclusive economic zone.

BOX 6. RESPONSIBILITY FOR THE MARINE ENVIRONMENT IN THE FAROE ISLANDS

The Faroe Islands have taken over responsibility for the marine environment. Accordingly, the Faroese authorities are responsible for protecting and monitoring the marine environment in the Faroese part of the Arctic.

Source: The Ministry of the Environment.

Preventive control of ships

73. Under the marine environment order, the Danish Defence can check whether the provisions of the order are complied with, for example, the provisions governing transport and discharge of pollutants, such as oil.

The Danish Defence may board a ship and examine its papers without a court order to check compliance with the marine environment order and carry out spot-checks to ensure compliance with the rules. The control must not unnecessarily delay or inflict any unnecessary expenses on the ship. If the ship is a foreign ship, allowance must also be made for the related international rules. This implies, for example, that access to the ship is only possible in a port.

74. Rigsrevisionen's examination has shown that the Danish Defence does not check whether the provisions of the marine environment order are complied with. Accordingly, the Danish Defence has failed to carry out preventive controls since the marine environment order took effect, for example, by carrying out spot-checks on ships. The Danish Defence does not plan to implement controls in 2013 either.

The examination has further shown that the Danish Defence has in fact described how such control can be implemented in practice. This appears from the 2007 emergency response plan of the former Greenland Command to combat marine pollution by oil and other hazardous substances in the waters off the Greenland coast. The Danish Defence, for example, has so-called challenging options in relation to ships. Challenging means that the Danish Defence may call a ship to obtain information about the ship, including its cargo and oil record book.

Finally, the examination has shown that the Danish Defence's ships in the Arctic are equipped to take oil samples from the sea for preservation of evidence, and that crews are trained to take these samples. However, the crews have not received the special training required to carry out the preventive control.

75. The Danish Defence has referred to the agreement text of the defence agreement 2000-2004 and the legislative history of the marine environment order. According to the agreement text, the Danish Defence effort was to continue at the level decided in 2000 when responsibility for monitoring, controlling and combating pollution of the marine environment was assigned to the Danish Defence.

Furthermore, the Danish Defence has referred to the comments of the Ministry of the Environment and the Ministry of Defence on the draft marine environment order. According to the comments, the marine environmental emergency response will not be expanded when an exclusive economic zone around Greenland is established. The Danish Defence stated that it did not have the equipment and financial resources to increase its contribution. The Danish Defence would perform the tasks at the existing level as a by-product of its presence in general unless it was decided politically to contribute further resources.

In addition, the Danish Defence has stated that the size of the operational area makes it difficult to specifically monitor the marine environment by means of the ships and aircraft allocated. At present, the Arctic Command does not allocate time for the units, whose primary task is to police the area, to carry out marine environment tasks. This means that the Danish Defence's ships and aircraft operating in the Greenland waters will only handle environmental tasks when the units are in the area anyway.

Ship inspection

76. In addition to preventive control, according to the marine environment order, the Danish Defence can also make such inspection of a ship as is necessary to prevent or control marine pollution. However, no delay or unnecessary expenses may be inflicted on the ship. In order to be allowed to board the ship the Danish Defence must, for example, have established oil pollution or contamination by chemicals or suspect that the ship does not comply with the provisions of the marine environment order. The Danish Defence is only permitted to inspect foreign ships in the exclusive economic zone if a discharge has been made from the ship and the Danish Defence has probable cause to believe that the violation was committed by the ship concerned.

The Danish Defence has stated that it can use a special radar for air monitoring of the marine environment. However, the radar cannot be brought along from Denmark to Greenland because two different types of radar are used for monitoring the marine environment and for SAR operations. The aircraft cannot be equipped with both radars at the same time, and there are no facilities and personnel in Greenland who can switch between the two radars. Because SAR operations have higher priority, the Challenger aircraft flying in Greenland are only equipped with the radar that can handle this type of task.

During the period 2002-2012, the Danish Defence observed no environmental conditions requiring any action. The Arctic Command has not yet had any probable cause to believe that the marine environment act has been violated, nor has it received information about possible polluters. The Arctic Command has prepared a set of boarding rules.

Preventive measures

77. The Danish Defence has stated that a measure exists to prevent ships from violating the marine environment order, ie, the port state control carried out by the Danish Maritime Authority. Port state control enables the Danish Maritime Authority to check whether ships calling on a Danish or Greenlandic port comply with the rules in force.

Rigsrevisionen agrees that the port state control is a preventive measure, but notes that port state control is primarily carried out on ships calling at a Danish port before sailing to Greenland.

78. The Danish Defence has further stated that at present it is looking into whether Greenland can be covered by the European Maritime Safety Agency's (EMSA) satellite monitoring system (CleanSeaNet), which is also used in Denmark. The Danish Defence believes the system can provide cost-effective monitoring capacity for detecting potential marine pollution in the waters around Greenland.

79. Finally, the Danish Defence has stated that it will increase focus on the environmental task in future.

First, the Arctic Command must report to Defence Command Denmark when the units allocated do not have the equipment required to handle the marine environment task or if the crews or units have not been trained in or had exercises in handling the equipment from Denmark to combat oil spills.

Second, the Arctic Command's planning documents must be made more stringent relative to the marine environment order and directions from Defence Command Denmark, etc, concerning supervision and marine environment control.

Third, the Danish Defence intends to make a supplementary training plan for personnel with a view to coordinating and managing the marine environment effort of the Danish Defence.

Responsibility for the legislation

80. The Ministry of the Environment is responsible for the marine environment order in Greenland. Since January 2000, the authority responsible for performing the tasks in the marine environment area has been vested in the Ministry of Defence, which is also responsible for the government's marine environmental monitoring, enforcement of the rules and pollution control at sea.

81. The Ministry of the Environment has stated that the Ministry of Defence and the Danish Nature Agency has an effective and clear segregation of duties and has bilateral contact as necessary. However, Rigsrevisionen has established that the Ministry of the Environment has been unaware that the Ministry of Defence does not check that ships comply with the marine environment order.

82. The Ministry of the Environment has stated that the marine environment order is being updated. In this connection the ministry expects to incorporate a number of IMO provisions to ensure the continued relevance and effectiveness of the legislation in relation to the marine environment. The ministry also intends to examine the marine environment order in general, including the provisions relating to supervision, to ensure that the marine environment order is up-to-date and clear. The outcome of the work on an international Polar Code for navigation and the work relating to sensitive waters in the Arctic Council's PAME working group may also lead to updating of the marine environment order in future.

B. Marine environmental emergency response

83. Rigsrevisionen's examination of whether the Danish authorities' marine environmental emergency response matches the risk of pollution has shown the following:

- The Danish Defence has initiated a risk analysis of the marine environment in the Greenland waters, which is expected to be completed in 2014. Rigsrevisionen considers it important that the Danish Defence determines the scope of the marine environmental emergency response according to a risk-based approach.

- The Danish Defence's marine environmental response equipment is located in Denmark, and the Danish Defence does not know whether it can be used in the Arctic. The Arctic Command is responsible for the Danish Defence's pollution control in the Arctic, but its lack of trained personnel for the task affects its practical options for combating marine pollution.

Risk analysis of the marine environment

84. The Arctic strategy describes the work of conducting research into the environmental consequences of climate change and protecting the particularly sensitive Greenlandic waters. Moreover, according to the strategy, based on a risk analysis of the marine environment in and around Greenland, the Realm will assess the extent to which it may be useful to increase protection of the marine environment.

A project carried out by the Ministry of the Environment and Danish and Greenland authorities has identified 12 particularly sensitive marine areas. The Ministry of the Environment is working on preparing administrative analyses focusing on navigation in three of these areas: Disko Bay and Big Halibut Bank, the Northwater Polynya and the area around Scoresby Sound. Disko Bay is the first case area. It is the steering group of the 'Sensitive marine areas around Greenland' project, among others, which is to coordinate the sensitive marine area work and the marine environment risk analysis.

85. On various occasions the Danish Defence has pointed out that seen in relation to the existing dimensioning of the marine environmental emergency response, the increased activity in and around Greenland entails an increased risk of pollution.

86. The Danish Defence is conducting a risk analysis of the marine environment in Greenland, including an analysis of the risk of oil pollution and contamination by chemicals as a consequence of the expected increase in marine traffic and activity levels in the area. The risk analysis is mentioned in the Arctic strategy and laid down in the defence agreement 2013-2017. In addition to the Danish Maritime Authority, the Greenland government and others will also be involved to ensure that the Greenland territorial sea forms part of the analysis. Furthermore, the analysis will also involve the Danish Nature Agency and its ongoing work to identify any need for additional national and/or international measures to protect particularly sensitive marine areas in Greenland.

The Ministry of Defence has stated that the results of the marine environment analysis will form part of the determination of the future tasks to be performed by the Danish Defence.

The Danish Defence's existing equipment for marine environmental emergency response in the Arctic

87. In May 2013 Denmark signed a binding oil spill agreement within the auspices of the Arctic Council. The agreement requires the eight Arctic Council member states to have emergency response units that respond promptly and effectively to oil pollution incidents in the Arctic. Such emergency response must pay particular attention to activities that may cause pollution and to the ecosystems and areas that may suffer from it. The agreement specifies that the equipment must be commensurate with the risk of pollution and that exercises must be held.

The oil spill agreement orders the other Arctic Council member states to provide assistance to the Danish emergency response units in case of an oil spill incident in, for example, Greenland. However, the numerous qualifications in the agreement make it uncertain which assistance – if any – the other member states can and will render.

88. In addition to the oil spill agreement, Denmark has been covered by the so-called Copenhagen Agreement since 1971 which, following an extension in 1993, concerns mutual assistance in combating pollution from oil and other hazardous substances in the territorial seas of the respective countries. The agreement covers Denmark, including the Faroe Islands and Greenland, Sweden, Norway, Finland and Iceland. Denmark is also covered by the CANDEN Agreement, a bilateral agreement concluded with Canada in 1983. The agreement requires the countries to provide adequate resources and mutual assistance in combating pollution in the waters between Greenland and Canada. Similarly, a joint contingency plan based on this agreement was drawn up in 1991.

89. The Arctic Command itself has no marine environmental response equipment based in Greenland or on board its ships. The Danish Defence's equipment for marine environmental emergency response, eg, containment booms, is located at various places in Denmark, from where it can be flown to Greenland. The equipment can then be taken on board the Arctic Command ships.

90. The Danish Defence has stated that the marine environmental response equipment has been acquired partly to respond to incidents in Danish waters and accordingly is not exclusively to be deployed for marine environment tasks in Greenland.

Furthermore, the Danish Defence has stated that it has not been tested whether the equipment for marine environmental emergency response can deal with environmental tasks in the Arctic. The Admiral Danish Fleet is considering which equipment can be used for environmental tasks in the Arctic. However, it is undeniable that the Danish Defence's environmental protection ships, which are capable of collecting oil spills, cannot be deployed in the Arctic because they are not classified to travel in Arctic waters.

91. The Arctic Command has stated that the crew on its ships and aircraft have not been trained to use environmental response equipment or handle marine environment tasks except for taking samples of pollution in the marine environment. Furthermore, the Arctic Command has failed to provide training in the use of the specialised equipment concerned.

The Arctic Command has set up a marine environment unit, and the unit personnel are expected to be trained in the course of 2013. The Danish Defence has stated that the Arctic Command staff planned to be in charge of any pollution control should complete, at a minimum, a marine environment specialist course.

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