



Háskólinn
á Akureyri

**Cruise tourism in the Arctic –
sustainability issues and
protection of the marine
environment in international law**

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60 ECTS thesis submitted in
partial fulfillment of the degree of
Master of Arts in Polar Law (MA)

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Akureyri, April 2016

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Bibliographic information:

Ulrika Nordblom, 2016, Cruise tourism in the Arctic –sustainability
issues and protection of the marine environment in international law,
Master's thesis, Faculty of Law, University of Akureyri, pp. 99

Printing: 1
Akureyri, May 2016

Abstract

Climate change has made the Arctic famous, drawing attention to it both as a source of non-renewable natural resources and as an area in need of environmental conservation. The physical accessibility of the region has increased together with this rising interest, and a growing number of tourists are keen to get a glance at its icy scenery and unique wildlife while they are still there to be explored. Increased traffic in the region, however, brings with it increasing pollution, the threat of invasive species, the risk of accidents and a demand for up-to-date infrastructure. These factors create stresses upon the local environment and on economies that are highly dependent on natural resources, while also accelerating global climate change. Some tourists choose to travel by cruise ships that make them a contributor to the changes facing the Arctic, but also isolate them from the local markets as all service is provided on board. Arctic cruise tourism can therefore be said to be degrading the conditions at its destination but making little contribution to financially compensate for the environmental damage it causes.

The international law of the sea concerns cruise vessels just as it does all marine traffic. Yet existing environmental standards fail to provide a sufficient level of protection and enforcement to guarantee the sustainability of cruise shipping in the Arctic. While the principles of international environmental law should lead the prescription of norms, economic pressures affect the political process. The Antarctic has environmental characteristics and faces challenges for the enforcement of regulations similar to those in the Arctic, but has for a long time enjoyed a better standard of conservation under its own treaty system. The Polar Code adopted in 2015 is the first step towards uniform regulation of both polar regions and provides the first set of environmental standards for the Arctic that take into account the special features of the region. The development of environmental standards and surveillance systems is a key issue for the sustainability of cruise tourism in the Arctic.

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Acronyms / Abbreviations

AECO	Association of Arctic Expedition Cruise Operators
ATCM	Antarctic Treaty Consultative Meeting
AHTS	Anchor Handling Tug Supply
ATS	Antarctic Treaty System
BWM	International Convention for the Control and Management of Ships' Ballast Water and Sediments
CEE	Comprehensive Environmental Evaluation
CLCS	Commission on the Limits of Continental Shelf
EEZ	Exclusive economic zone
EIA	Environmental Impact Assessment
HFO	Heavy Fuel Oil
IISD	International Institute for Sustainable Development
IMO	International Maritime Organization
London Convention	Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter
MARPOL	International Convention for the Prevention of Pollution from Ships
OSPAR Convention	Convention for the Protection of the Marine Environment of the North-East Atlantic
Polar Code	International Code for Ships Operating in Polar Waters
Rio Declaration	Rio Declaration on Environment and Development
SOLAS	Convention for the Safety of Life at Sea
Stockholm Declaration	Declaration of the United Nations Conference on the Human Environment
UNCLOS	United Nations Convention on the Law of the Sea

Acknowledgements

I want to thank my friends and family, and especially my mother Ursula Nordblom, for the mental support they have given me during the time I was writing this thesis. Thanks also to my superiors at the University of Turku, who have allowed me to arrange my vacations according to the schedule of my study project. Their flexibility has given me the chance to complete my thesis while working full time and made it possible to enjoy some free time as well. Special thanks belong to my thesis instructor Alyson Bailes who has been giving me encouraging and constructive feedback throughout the process. I also want to thank my dog Liinu who seems to remain my friend despite my rather boring behaviour in spending great amounts of time on something other than her. This is already the second thesis that Liinu and I have written together, and it has been good to have her around to remind me about taking regular breaks and getting a bit of fresh air.

1 Introduction

This thesis is focused on the environmental impacts of cruise tourism in the Arctic, the connected sustainability issues, and the relevant international law concerning the sea and shipping. The legal status of environmental protection in the Arctic is compared with that of the Antarctic, and special attention is paid to the introduction of the International Maritime Organization (IMO) Polar Code, the first international polar-specific agreement regulating marine traffic in both polar regions.

The topic was chosen because of its strong current relevance: the numbers of tourist cruises made to the Arctic are rising substantially, and this trend is expected to continue. A similar development is seen in the Antarctic. Also, recent developments in maritime law such as the introduction of the Polar Code make the legal aspect interesting, for both polar regions. The topic further lends itself to an interdisciplinary approach, given the diverse environmental, social and cultural issues raised by cruise tourism in the Arctic. For the purposes of this thesis Arctic cruise tourism is defined as occurring within the boundary where the Polar Code, once in force, will apply. The area of application of the Polar Code is mostly to the area North of 60° North, with exceptions that lift the line of application further to the North as illustrated in figure 1. This definition of the area allows future comparison of legal frameworks that apply to cruise tourism in the Arctic. Antarctic tourism is defined as tourism occurring South of 60° South, which is the area of application of the Antarctic Treaty.



Figure 1. The area of application of the Polar Code in the Arctic.¹

The main text of the thesis begins with chapter two, which aims to answer the question of why cruise tourism in the Arctic is growing by discussing both the tourists' own interests and the political motivations behind promoting ship-borne tourism in the region. Chapter three outlines the main environmental effects of cruise tourism. The issues are addressed from ecological, economic, and social points of view. Chapter four discusses the different definitions of sustainable development and sustainable tourism, and the sustainability issues raised by cruise tourism in the Arctic. After clarifying these aspects of the challenge, the thesis goes on to address the law regulating the protection of the marine environment. Chapter five deals with the main principles of environmental law, first defining each principle and then exploring how it bears upon the environmental issues arising from

¹Lawson Brigham 'IMO Polar Code for Ships Operating in Polar Waters' (Arctic Climate Change Economy and Society, 2015)

Arctic cruise tourism. The following chapter six seeks to identify the laws that more particularly provide protection for the marine environment in the Arctic, pending entry into force of the Polar Code. For the purposes of narrowing the topic, liability issues have intentionally been left out. Chapter seven makes a comparison between the two polar regions and introduces the Antarctic Treaty System as the legal framework designed to protect the Antarctic environment. In the last chapter of the thesis, the Polar Code is introduced and an assessment is made of the code's implications for the level of environmental protection in polar regions.

The thesis is based on a literature survey. The sources were selected from the books and articles judged to be most relevant and up-to-date. The challenge of a literature review is to find the most recent sources, and a natural limitation is that new findings on the topic may have been made after the publication of a given source. Such information may not have been published at all, or not reliably analysed. Also, books and articles, although based on research, always reflect the views and values of their author which makes them biased to some extent.

2 Growing marine tourism in the Arctic

The first tourist expeditions to the Arctic were carried out in the early 19th century, although back then the region was widely considered to be merely a distant pile of floating ice unattractive and inaccessible for tourists.² Since then the popular view has changed as the region has become more accessible and has drawn increasing scientific and political interest as a result of the economic opportunities it offers, but also because of its natural beauty and fascinating wildlife. It is no wonder that an increasing number of people want to go and experience the Arctic themselves.³ Today, typing “Arctic cruise” into a online search engine will produce about 15,500,000 results in 0.22 seconds.⁴ Countless companies are offering cruises to Arctic destinations and it seems that the only thing setting limits to what one can explore in the North is one’s own wallet. Total numbers of cruises made to the Arctic are hard to obtain as some of the most significant tourist ports offer no data. However, it is clear that the industry is expanding and there is willingness to invest in facilitating Arctic tourism.⁵

The Association of Arctic Expedition Cruise Operators (AECO) has 33 international members, 21 of which operate cruises in the Arctic using a total of 25 vessels. AECO statistics reveal that the numbers of passengers on expedition ships in the Svalbard area show a rising trend, reaching over 10 000 passengers in 2015. The number of passengers on conventional cruises seems to have declined after reaching a peak of over 40 000 passengers in 2012. The statistics on passenger numbers in Nunavut only cover conventional cruises. The numbers reached a peak of little over 1600

² John M. Snyder and Bernard Stonehouse, *Prospects for Polar Tourism* (2007, CABI Publishing) 6

³ John M. Snyder and Bernard Stonehouse, *Prospects for Polar Tourism* (2007, CABI Publishing) 3

⁴ Google ‘Arctic cruise’ 7th of February 2015

⁵ C. Michael Hall ‘Tourism and Environmental Change in Polar Regions’ in C. Michael Hall and Jarkko Saarinen (eds), *Tourism and Change in Polar Regions: Climate, Environment and Experience* (1st edition 2010, Routledge) 30-31

passengers in 2013 and have remained steady until 2015. For Greenland, also, only data on conventional cruises are available. The statistical curve shows a peak of about 30 000 passengers in 2010 with an irregular decline to about 20 000 passengers in 2015. The data on cruises in the Russian Arctic show the number of voyages instead of numbers of passengers. According to this source, the number of voyages has risen from 7 in 2011 to 15 in 2015.⁶ The figure below displays the types of ships operating in the Northwest Passage in 2009-2013 which gives an idea of the volumes of different types of shipping making use of the area. It clearly shows that a significant proportion of vessels in the region represent various types of passenger ships.

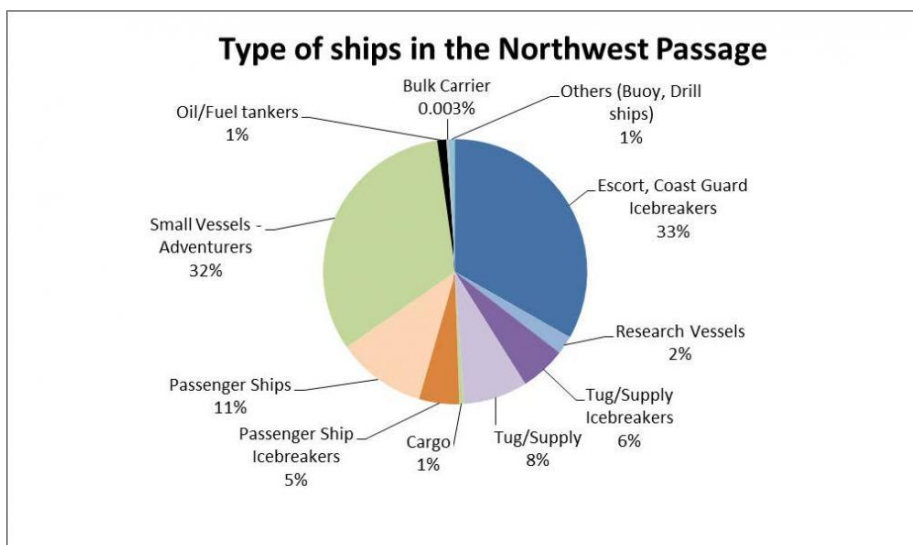


Figure 2. Type of ships in the Northwest Passage in 2009-2013.⁷

⁶Frigg Jørgensen 'Arctic Shipborne Tourism' <<http://www.imo.org/en/MediaCentre/HotTopics/polar/Documents/Arctic2014/9.%20Ms.%20F.%20Jorgensen.pdf>> accessed 28 February 2016

⁷ Northwest Territories 'Trends in Shipping in the Northwest Passage and the Beaufort Sea' (Northwest Territories, May 2015) <<http://www.enr.gov.nt.ca/state-environment/73-trends-shipping-northwest-passage-and-beaufort-sea>> accessed 3 March 2016

2.1 Accessibility of the Arctic

In recent years the extent of Arctic sea ice has been declining at an accelerating rate in both extent and thickness. The effects of climate change are more dramatically visible in an environment dominated by ice than anywhere else as the rise in temperature becomes clearly visible. In the Arctic the average temperature has risen at twice the global rate⁸ and satellite surveys show alarming images of the diminishing ice cap around the North Pole⁹. In January 2015 the sea ice extent was at its third lowest point for that season in recorded history - 5.83 million square kilometers - while the lowest record is from 2012 when the ice cap shrank to 3.41 million square kilometers. Overall, between January 1979 and January 2015 the decline of sea ice has been 3.2 % per decade. Experts predict that if this development continues, the Arctic might already be completely free of ice during the summer by the middle of the 21st century.¹⁰

The retreating ice opens the way for navigating new sea routes making places that used to be icebound accessible by sea. The rising temperature has not only opened new routes but also lengthened the Arctic tourist season as the routes stay free of ice for longer than before. With the simultaneous technical development of ships and equipment navigating in the harsh Arctic conditions has become considerably more feasible than it used to be: the ships are built more strongly, communication systems and improved maps provide safety and clothing materials give better shelter than before from the cold and wind.¹¹ It can therefore be said that within the few last decades travelling the Arctic has become much safer and far more comfortable than it

⁸ C. Michael Hall 'Tourism and Environmental Change in Polar Regions' in C. Michael Hall and Jarkko Saarinen (eds), *Tourism and Change in Polar Regions: Climate, Environment and Experience* (1st edition 2010, Routledge) 89

⁹ Climate.gov 'Old ice in the Arctic vanishingly rare' (*Climate.gov*, 20 January 2015) <<http://www.climate.gov/news-features/videos/old-ice-arctic-vanishingly-rare>> accessed 10 February 2015

¹⁰ National Snow & Ice Data Center, 'Arctic Sea Ice News & Analysis' <<http://nsidc.org/arcticseaicenews/>> accessed 3 February 2015; Denise Chow "Shrinking Arctic Ice Will Lead to Ice-Free Summers" <<http://www.livescience.com/39147-arctic-sea-ice-melting.html>> (*Livescience*, August 2013) accessed 11 February 2015

¹¹ John M. Snyder and Bernard Stonehouse, *Prospects for Polar Tourism* (2007 CABI Publishing) 8-10

ever was before and this development can be expected to continue with further advances in technologies and with the continuance of climate change.

Along with the physical accessibility of the Arctic, other factors that affect the region's accessibility from a tourist's point of view are the cost of travel and the time that the journey takes. The economic development brought by industrialization has substantially lifted living standards in Western countries and lowered the relative price of travelling for a private person. Also, together with technological improvements, the investments that the public sector has been able to make in infrastructure such as harbors and airports have helped to bring down the price of reaching places as remote as the Arctic. Faster and cost-effective transport systems also shorten the time it takes to reach the destination, while personal wealth allows a higher proportion of people to take longer leaves and choose destinations that require several days of travel. Last but not least, the bulk of the generation born after the World War II are now retiring. Many of these pensioners are highly educated and wealthy people with travel experience and interest in what the world still has to show them. Given the increasing number of people with leisure time and the money to travel, it is likely that there will be more tourists willing to head to the Arctic in the future.¹²

2.2 Diminishing ice, increasing attention

The environmental change going on in the Arctic has brought the region into the media headlines and made it literally a hot topic, for a number of reasons. The retreating ice cap is opening new routes not just for tourist cruises but also for commercial shipping. It is exposing the vast resources of oil and natural gas that used to be blocked by ice but are now gradually becoming accessible for utilization. These economic opportunities draw continuous attention and interest from parties that see themselves as possible beneficiaries.

¹² John M. Snyder and Bernard Stonehouse, *Prospects for Polar Tourism* (2007 CABI Publishing) 11-12

The discussion about climate change and the debate over the region's natural resources has definitely brought the Arctic closer to everyone, and given it a level of publicity that makes it better known to potential tourists as well. Surely everyone remember the uproar that arose when a Russian submarine planted the Russian flag on the seafloor at the North Pole?¹³ The tour operators need little advertising as the headlines provoked by the climate change discussion and the politics around it provide more than enough publicity for the region. From a tourist's point of view the diminishing ice is a drawing factor that has two sides: on one hand the Arctic conditions are becoming more hospitable for tourism, but on the other hand the change might ultimately be leading to a point where attractions based on the existence of ice will disappear. Therefore, one should hurry to see the Arctic while there is still more than just an ocean to be seen. The most exotic sights the Arctic has to offer are without a question the majestic ice bergs. While a milder climate could bring some more colour to the region by allowing more flowering plants to survive, it is unlikely that any new species would be able to replace the emblem of the Arctic climate change discussion: the polar bear.

Polar bears are highly dependent on ice. They travel long distances on ice to find food and to nurse their cubs. They mainly feed on ringed seals that also depend on ice to breed and raise their pups.¹⁴ The declining ice causes the habitats of these animals to shrink in size, and for polar bears the decreasing number of seals also means that there is less to eat. The rising temperature means that less and less ice survives the melt during the summer after it has first formed in the winter, and the more durable multi-year ice forms over smaller areas. Satellite pictures show a downward trend in perennial ice: it is estimated that in the 1980s 26 % of the Arctic ice pack consisted of four-year -old or older ice but the proportion dropped to 10 % in

¹³ Richard A. Lovett 'Russia Plants Underwater Flag, Claims Arctic Seafloor' (*National Geographic News*, August 2007) <<http://news.nationalgeographic.com/news/2007/08/070802-russia-pole.html>> accessed 12 February 2015

¹⁴ Jackie Dawson, Emma Steward and Daniel Scott 'Climate Change and Polar Bear Viewing' in C. Michael Hall and Jarkko Saarinen (eds), *Tourism and Change in Polar Regions: Climate, Environment and Experience* (1st edition 2010, Routledge) 93-94

March 2014.¹⁵ Therefore it is unlikely that the Arctic sea ice will recover from the changes that are going on. On the contrary, it is more likely that the ice will disappear completely during the summers earlier than it has been predicted.¹⁶ If the Arctic is soon to be free of ice, the fascinating sceneries and wildlife will be gone. Bearing this in mind, it might well be that the last chance to see the Arctic as we imagine it is not far away.

Although Arctic tourism could well experience its rise and fall within a relatively short time as the ice continues to melt, not all seafaring in the Arctic is tied to tourism. As mentioned before the newly opening sea routes are tempting for commercial shipping as they considerably shorten the distances between trading continents. For example taking the Northwest Passage would shorten the distance for container ships sailing from Rotterdam to Yokohama by 25 % and the Northeast Passage would make a reduction of 40 % on their journey. Of course, being able to sail straight through the North Polar Route would shorten the distances even more and this would be likely to increase the traffic.¹⁷ Therefore the investments that states are making to build harbours and other facilities in the Arctic are not only supporting tourism, but rather building up the infrastructure for a much broader economic development that is widely expected to accelerate in the near future.¹⁸

¹⁵ Climate.gov 'Old ice in the Arctic vanishingly rare' (*Glimete.gov*, 20 January 2015) <<http://www.climate.gov/news-features/videos/old-ice-arctic-vanishingly-rare>> accessed 10 February 2015

¹⁶ C. Michael Hall and Jarkko Saarinen 'Last Chance to See? Future Issues for Polar Tourism and Change' in C. Michael Hall and Jarkko Saarinen (eds), *Tourism and Change in Polar Regions: Climate, Environmnet and Experience* (1st edition 2010, Routledge) 303

¹⁷ Jonas Gahr Støre 'Perspectives on current and future challenges in the High North' in Rose Gottemoeller and Rolf Tamnes (eds), *High North: high stakes* (first published 2008, 2nd edition, Fagbokforlaget 2009) 16

3 Environmental impacts of Arctic marine tourism

All human activity has a tendency to leave traces in the environment. Whether the question is about physical, ecological or social alterations, the resulting impact on the local society depends on the target area's characteristics. Some effects may be more welcome, or more feared, than others and some of them may be hard to predict or more difficult to prepare for. In the far North there is still little experience of tourism and the area has until now remained fairly isolated from the rest of the world. The cultural and ecological invasions and pollution carried in by visitors elsewhere used to be blocked by ice. In a region that has been immune from tourism's effects, the changes brought by the new industry can be dramatic. The Arctic is already undergoing a change that is altering the region's environment and calling in question the future of local species and human populations. The rapid changes now proceeding make the Arctic vulnerable to further environmental disruptions. In this chapter I look into what kind of risks cruise tourism poses for the Arctic environment, and what are the potential impacts on the local economy and society.

3.1 Pollution from cruise ships

The opening of the Northern sea routes is leading to increased shipping in the Arctic region and with it come growing emissions of different pollutants from the vessels navigating the waters. The wastes produced on ships consist of sewage, grey water, solid and hazardous wastes, oily bilge water and air

pollution.¹⁹ Air pollution from cruise ships is similar to that from cargo vessels, but the volume of other wastes is significantly larger because cruise ships carry a great number of passengers and a considerably larger crew than a cargo ship with only a few people on board. Cruise ships also offer a great variety of services to their customers, adding to the amount of waste produced during the voyage. Cruise ships can be said to be like floating cities as they provide everything needed for the people on board for trips that can take several weeks. Poor waste management on cruise ships can have significant impacts on the local environment as the ships typically visit the same places repeatedly, causing the effects to accumulate.²⁰

Air pollution

Air pollution from ships results from the engines, which typically burn bunker fuel oil or diesel. The emissions consist of water vapor, carbon dioxide, nitrogen oxide, sulphur oxide and black carbon. The gases are linked to different environmental effects that impact upon both the regional and the global atmosphere. These gases degrade air quality and thus affect human respiratory health, but they also have direct impacts on climate change. Nitrogen oxides contribute to tropospheric ozone formation; sulfur dioxides form particles that create acid rain; and black carbon and other small particles affect air quality, visibility, and climate change processes. It is clear that the levels of all such emissions are going to grow with the increase of shipping. Seasonal increases in nitrogen oxides and ozone levels have already been linked to seasonal increases in shipping. Ozone has been shown to have harmful effects on plant growth and human health.²¹

Another cause of concern for the Arctic environment is the growth of black carbon emissions that have been proven to accelerate climate change.²² When black carbon settles down it covers snow and ice and darkens their

¹⁹ Oliver G. Krenshaw *Cruise Ship Pollution* (1st edition 2009, Nova Science Publishers Inc.) vii

²⁰ Oliver G. Krenshaw *Cruise Ship Pollution* (1st edition 2009, Nova Science Publishers Inc.) 147

²¹ Arctic Council *Environmental Considerations and Impacts*, Arctic Marine Shipping Assessment 2009 Report, 140

²² Arctic Council *Environmental Considerations and Impacts*, Arctic Marine Shipping Assessment 2009 Report, 140

surface, reducing their ability to reflect sunlight and making the ice melt faster. The accelerated melting results in more open water areas that further reduce the surface's reflective capacity. In 2004 an estimated 1,180 metric tonnes of black carbon was released in the Arctic. This is a small fraction of the global annual release - estimated somewhere between 71,000 and 160,000 metric tonnes - but in ice-covered areas, the regional effects on temperature may be disproportionate. More research is needed to determine how black carbon emissions from ships operating in ice-covered areas should, and can, be limited.²³

Sewage and sewage sludge

Cruise ships use biological treatment or maceration and chlorination for sewage treatment. The biological treatment is similar to normal municipal wastewater treatment systems that filter out the solids, use aerobic treatment to remove nutrients and a biological oxygen process or chlorine for disinfection and destroying pathogens. A maceration system removes debris from the water and mashes it to cut down the size of solids. Chlorine is used for disinfection. Despite these cleaning processes, some of the environmentally harmful substances contained in sewage end up in natural waters through discharge as a result of low efficiency and possible mechanical failure.²⁴ It has been estimated that one person produces about 31 liters of sewage water in a day²⁵. Vessels that use biological treatment produce waste sludge as a side product of the process as the bacteria multiply in the reactors while consuming the biological matter in the waste. Waste sludge therefore contains large amounts of bacteria and viruses and may be used in the ship's bioreactors to keep up the biological processes. Although the bioreactors need the bacteria for the process to work, the amount of the bacteria can rapidly accumulate to unacceptable levels. The excess sludge needs to be removed from the system, and is then discharged into the waters after further treatment - but sometimes even without it.²⁶

²³ Arctic Council *Environmental Considerations and Impacts*, Arctic Marine Shipping Assessment 2009 Report, 142

²⁴ Oliver G. Krenshaw *Cruise Ship Pollution* (1st edition 2009, Nova Science Publishers Inc.) 15-17

²⁵ Ibid 9

²⁶ Ibid 33

Sewage water and sewage sludge discharges contain varying amounts of chlorine, organic matter, nutrients, metals and bacteria. As the ships' sewage water contains human body wastes, the discharged water may contain fecal coliform bacteria such as salmonella, shigella and hepatitis. These bacteria are a threat to human health if the contaminated water is used for bathing or if marine fauna harvested in the area is eaten raw.²⁷ Chlorine is also problematic, however: it has its benefits in reducing the harmful effects of viruses and bacteria but is toxic to aquatic organisms. Exposure to even low levels of chlorine can cause behavioural alterations, respiratory problems and even lethal effects in some species. There is scientific evidence that continuous exposure to chlorine can have devastating effects on marine organisms and fish stocks.²⁸ Like chlorine, metals are also toxic to many marine species. They can also have effects on human health through consumption of contaminated fish.²⁹ Further, the biodegradation of organic material in the water can create stress on the marine ecosystem as it increases oxygen demand in the water column and causes the water temperature to rise. This can affect the ability of organisms to survive and reproduce.³⁰ Nutrients have a similar effect when it comes to oxygen demand, as they accelerate the growth of plants and algae. Eutrophication can cause oxygen levels to drop so low that marine fauna and flora choke and die out. Some algae can also be toxic to other marine organisms.³¹

Gray water

Gray water originates from sinks and showers, dishwashers and laundry containing bacteria, hot water, food particles, soaps, oil and grease and organic matter. It is estimated that one person produces 130 – 450 litres of gray water in a day. Depending on the ship, gray water is either treated with sewage water or released to the sea without treatment. The environmental effects are similar to the effects of sewage water, while the level of the

²⁷ Ibid 40

²⁸ Ibid 44

²⁹ Ibid 46

³⁰ Ibid 43

³¹ Ibid 49

impact varies according to whether the gray water is treated before discharge or not.³²

Solid and hazardous wastes

Solid waste generated on cruise ships resembles typical household waste. The waste consists of paper, glass, metal, plastic, cardboard, food waste, cans and bottles that originate from the daily activities of crew and passengers. Around 80 % of solid waste can be treated on the ship by incineration, after which the ash is released to the sea. Recyclable waste like cans and bottles and hazardous waste that cannot be incinerated is taken ashore for treatment or disposal.³³

It has been estimated that during a cruise one person produces about one kilo of solid waste in a day. As there are far more people on board a cruise ship than a cargo ship, the amount of waste produced is greater as well.³⁴ Even when waste management is well handled on a ship, some of the wastes generated on board can end up in the sea by accident or due to carelessness. Littering can create serious pressure on the environment and the increase in plastic rubbish that has ended down on the sea floor can already be seen in the Arctic. The retreat of the icecap that used to block marine traffic has opened access not only for an increasing number of vessels but unfortunately, for rubbish too. Pictures taken of the sea floor of the Arctic Ocean show that the amount of plastic trash has doubled within the last ten years. As there is little sunlight or wave action in the Arctic waters, such plastics can persist in the environment for a long time before breaking into smaller particles. Plastic covering the ocean floor can affect the natural gas exchange processes and cause oxygen depletion in the area, making it harder for living organisms to survive. Plastic waste can also prevent species living on the seafloor from absorbing food, or may be ingested by fish and prawns. Birds and fish can also suffer serious injury by getting entangled in rubbish. These harmful effects are not only affecting the marine environment but also the people who

³² Ibid 62-64

³³ Ibid 112

³⁴ Ibid 115

pursue commercial fisheries in the area.³⁵ Some of the trash ending up in the ocean can also stay afloat and strand ashore, degrading the scenery.³⁶

Some solid wastes are characterized as hazardous waste because of their chemical or physical qualities such as corrosiveness, ignitability, toxicity or reactivity. This kind of waste can cause threat to the environment if not properly treated, which is why it needs to be stored on board until it can be off-loaded and taken to a waste management facility.³⁷ To minimize the risk of harming the fragile marine ecosystems by hazardous waste, the crew and the passengers of a ship need to be educated to recognize hazardous waste and to manage it properly.³⁸

Oily bilge water

Oily bilge water is a mixture of fluids that accumulate to the lowest part of a vessel from different sources, containing oil, crease, cleaning fluids, lubricants and sometimes small amounts of other wastes such as organic matter, metal shavings, glass and detergents.³⁹ The bilge water is either collected in holding tanks and discharged to a reception facility, or treated on board with an oily water separator. Before treated water is released to the sea, it is passed through a monitor that detects oil concentrations and stops the discharge if unacceptable levels are reached.⁴⁰ If some part of the bilge water management fails due to technical or human error, there is a risk that a cruise ship could discharge oily water into the waters where it is sailing.⁴¹ The environmental effects of oily discharge are explained in the next chapter oil spill risks are discussed.

³⁵ Lindsey Blomberg ‘The Arctic Ocean’s Pollution Problem’ (Daily News, 5 November 2012) <<http://www.emagazine.com/daily-news/the-arctic-oceans-pollution-problem>> accessed 11 May 2015

³⁶ Oliver G. Krenshaw *Cruise Ship Pollution* (1st edition 2009, Nova Science Publishers Inc.) 123

³⁷ Ibid 127

³⁸ Ibid 138

³⁹ Ibid 99

⁴⁰ Ibid 106

⁴¹ Ibid 109

3.2 Risk of an oil spill

The increasing marine traffic in the Arctic poses a growing risk of marine accidents. Not only is this a risk for the passengers but also for the environment, as a ship's collision with ice could potentially cause an oil spill. Although the accessibility of the region's waters has improved greatly in recent years, navigation remains challenging due to incomplete maps and weather conditions that are hard to predict. Especially in the autumn when sea ice starts to form, the circumstances can change rapidly, increasing the chance of ships' being struck by ice.⁴² In addition to the difficult climate conditions and lack of navigational aids, the infrastructure for emergency response in the Arctic is undeveloped; given the remoteness of the region, a vessel involved in a collision might have to wait for help for a long time. Because of the limited availability of emergency support, even a small leak in a ship's hull could develop into a large spill.⁴³

In the Antarctic, with its longer history of cruise tourism, there has been considerable experience of tourism-related marine accidents. In 2007 the cruise ship M.S. Explorer sank after being struck by ice on its 19-day voyage. The crew and the passengers survived uninjured and were rescued after waiting in life-boats for about five hours. When the accident occurred, the vessel was carrying altogether over 56,500 gallons of diesel, gasoline and lubricants, most if not all of which were consequently spilled to the ocean. The spill caused great concern about the possible effects on the local wildlife because it took place in an area with high biodiversity, and bad weather postponed the process of cleaning up the site. It was feared that the oil would contaminate the nearby penguin breeding grounds and possibly affect other species important for the Antarctic food chain.⁴⁴

⁴² Christina Nunez 'What Happens When Oil Spills in the Arctic?' (National Geographic, 24 April 2014) <<http://news.nationalgeographic.com/news/energy/2014/04/140423-national-research-council-on-oil-spills-in-arctic/>> accessed 21 March 2015

⁴³ National Oceanic and Atmospheric Administration 'Preparing for Oil Spills in the Future Arctic' (11 January 2013) <<http://oceanservice.noaa.gov/news/features/jun09/arctic.html>> accessed 21 March 2015

⁴⁴ NBC News 'Sunken Antarctic cruise ship left oil spill' (30 November 2007) <http://www.nbcnews.com/id/22039975/ns/world_news-

The Explorer's fate is an example of a situation where difficult navigational circumstances cause an initial accident and the harsh weather conditions make it difficult to repair the damage. The same could well happen in the Arctic. Besides the lack of necessary search and rescue infrastructure, there are also gaps in knowledge about how to combat an oil spill in polar waters. Most of the research in spill response technologies has been done in warmer regions and some of the information might prove inappropriate for application in cold environments.⁴⁵ Detecting and reaching a spill site in dark and icy conditions is a challenge that requires more research, as do the technologies required to recover the spilled oil.

Further experience is also needed on how oil acts in a cold environment. Although ice may be blamed for blocking access to spill sites, it can also prevent a spill from spreading. Ice may therefore be considered both an asset and a challenge. In cold conditions oil spreads more slowly and is absorbed in snow, limiting the spill from reaching further than the local ice moves. Thus the oil does not get diluted over an exponentially growing area, but stays concentrated in small pools.⁴⁶ On the other hand, being encapsulated in the ice and snow, the oil may stay in the environment for a long time before it can be recovered, thereby increasing the risk of contaminating the region's fauna and flora. As the Arctic is home to several endangered animals such as the polar bear and ringed seals, special attention needs to be focused on ways of protecting the fauna from being exposed to spill sites. Keeping the animals away from the spilled oil is crucial for their protection, as cleaning an oiled polar bear might prove to be a hopeless mission.⁴⁷

world_environment/t/sunken-antarctic-cruise-ship-left-oil-spill/#.VQ6KuPmsUbh> accessed 23 March 2015

⁴⁵ Christina Nunez 'What Happens When Oil Spills in the Arctic?' (National Geographic, 24 April 2014) <<http://news.nationalgeographic.com/news/energy/2014/04/140423-national-research-council-on-oil-spills-in-arctic/>> accessed 21 March 2015

⁴⁶ Arctic Response Technology 'Spill Response in the Arctic Offshore' <<http://www.arcticresponsetechnology.org/wp-content/uploads/2012/11/FINAL-printed-brochure-for-ATC.pdf>> accessed 23 March 2015

⁴⁷ Christina Nunez 'What Happens When Oil Spills in the Arctic?' (National Geographic, 24 April 2014) <<http://news.nationalgeographic.com/news/energy/2014/04/140423-national-research-council-on-oil-spills-in-arctic/>> accessed 21 March 2015

To become contaminated by oil, the person or the animal does not necessarily need to be in direct contact with the spill. Most exposure to oil happens through consumption of contaminated food or water. Sea birds and mammals feeding on fish can accumulate high concentrations of oil compounds in their livers where the metabolism takes place. The by-products of this metabolic disruption can be more dangerous for health than the original compounds. The fish usually become contaminated either by also feeding on contaminated fish; through their gills, absorbing droplets of oil; or through physical contact.⁴⁸

People's physical responses to oil exposure differ according to age, health status, reproductive state and the length of exposure⁴⁹. As human exposure can be limited to a degree by spreading information on the spill, the main concern about impacts on the region's population relates to economic effects. Tainted fish or even the fear of contamination makes people reluctant to fish and consume fish products, which will inevitably have negative effects on local fishery sectors as well as on subsistence economies that rely on the environment as a resource for food.⁵⁰

Limiting the environmental effects of an oil spill depends crucially on detecting and cleaning up the spill. Animals have been found not to avoid spill zones, which makes them vulnerable to contamination. Also, the fauna species are closely linked together through the food chain, and in an ecosystem where the links are few, contaminated prey can result in high exposure rates for the corresponding predator. Predators of contaminated prey can also become threatened by the spill's impacts in the event that the species they rely on experiences lethal effects, making stocks plummet. Fish and invertebrates have been reported to be sensitive to oil exposure. The most sensitive invertebrates have been observed to disappear in the spill-affected areas and changes have been detected in rare species.⁵¹ Fish have been reported to show lethal and numerous sub-lethal effects such as deformations,

⁴⁸ Colin Macdonald et al. 'Effects of oil and Gas Activity on the Environment and Human Health' in *Assessment 2007 Oil and Gas Activities in the Arctic –Effects and Potential Effects* (Arctic Monitoring and Assessment Program 2010) 5_5

⁴⁹ Ibid 5_6

⁵⁰ Ibid 5_13

⁵¹ Ibid 5_54

tumours and genetic effects.⁵² These effects, impacting upon the size of fish populations, have both ecological effects and adverse impacts on fisheries as well as tainting the fish as a food source.

In the event of an oil spill, the marine mammals most vulnerable to effects are sea otters and seal pups. Once their coats become coated with oil they easily die of hypothermia because they lack an efficient amount of blubber to keep themselves warm without the fur. Seal pups have also been reported to lose their ability to swim and consequently drown when their coats have become heavily coated with oil. Other marine mammals may suffer from an oil spill if they inhale volatile compounds or feed on contaminated prey. Luckily, the levels of accumulated hydrocarbons in marine mammals are usually low because they metabolize them quickly.⁵³

Affects on sea birds vary according to the time they spend in the water and on their diet and feeding habits. Birds that spend most of their time in water either looking for food, resting or even diving for prey, become much more heavily contaminated than birds that spend their time mostly on land or flying and only make contact with water when catching food from the sea. The scale of the oil spill's impact on a bird population is magnified if the spill is located at an area that a colonial or semi-colonial species uses for nesting or hunting. In some species the impacts of an oil spill have been shown to last for as long as nine years, as oil contamination affects their fertility and hatching and birds with oiled feathers are likely not to survive the long migration that is often crucial for them. When researching an oil spill's impacts on birds, it has been found that small but continuous discharges of oily waste from ships can cause impacts on the same scale as a large spill.⁵⁴

⁵² Colin Macdonald et al. 'Effects of oil and Gas Activity on the Environment and Human Health' in *Assessment 2007 Oil and Gas Activities in the Arctic –Effects and Potential Effects* (Arctic Monitoring and Assessment Program 2010) 5_44, 5_56

⁵³ Ibid 5_10-5_11, 5_57

⁵⁴ Ibid 5_10-5_11, 5_57-5_58

3.3 Invasive species carried by the cruise ships

A species is considered invasive when it has moved to a new habitat where it has damaging effects on the local ecology and consequently creates stress on the economy and human health in the region. As a species comes to a new kind of environment, its future depends on its ability to adapt to the changed conditions. It might die out right away, survive for a while without creating a self-sustaining population, or stay in its new habitat and succeed in creating a self-sustaining population. A self-sustaining population is a sign of a successful invasion, indicating that the species is able to find food and reproduce in its environment and thus to become a permanent part of the ecosystem.⁵⁵

The warming of the Arctic waters is making the region vulnerable to invasive species for two reasons. First, the rising temperature is making the marine environment more hospitable for species adapted to warmer waters. Secondly, the diminishing ice will lead to increased commercial shipping and growing cruise tourism in the region, which must inevitably result in an increasing risk of introducing new species to the Arctic⁵⁶. Most of the world's marine invasive species have been transported to their new habitats accidentally by ships.⁵⁷ The species travel either attached to the ships' hulls or in their ballast water. Ballast water is water that is taken into the ship's ballast tanks to stabilize the ship and to ensure good steering in different weather conditions if the ship is not fully loaded or its hold is empty. The water is then discharged when the ship reaches its destination and cargo is taken aboard the vessel. As the water is taken in, the organisms living in it follow with the water mass. Similarly, as the water is poured out in another harbor, the biota in the ballast water are released. The ballast water may

⁵⁵ A. Whitman Miller 'Melting Sea Ice, Accelerated Shipping, and Arctic Invasions' in *Marine invasive species in the Arctic* (Nordic Council of Ministers 2014) 36

⁵⁶ Joan Nyman Larsen 'Marine invasive species: Issues and challenges in resource governance and monitoring of societal impacts' in *Marine invasive species in the Arctic* (Nordic Council of Ministers 2014) 25

⁵⁷ Christopher Ware 'Arctic at risk from invasive species' (Ecologist 25 November 2013) <http://www.theecologist.org/News/news_analysis/2173097/arctic_at_risk_from_invasive_species.html> accessed 18 March 2015

contain viruses and bacteria, plankton and larval stages of invertebrates and fishes.⁵⁸

The second way that ships spread species is through hull bio-fouling. Bio-fouling happens on the ship's underwater surface where microorganisms develop microfilm to attach themselves to the ship. The microfilm not only helps to transfer one organism but also makes it easier for other fauna and flora to cling to the ship's hull. In this way the ship may carry several kinds of species to new areas, as crabs, algae, mussels and sponges accumulate on the ship's surface. Both vector mechanisms can carry species to considerable distances from their original habitats, introducing them to new environments far beyond their usual range.⁵⁹

Since the Arctic used to be isolated from invaders by climatic barriers and the local species are already struggling with the need to adapt to changing conditions, they may be especially vulnerable to any alterations in their environment. Invasive species can bring about new disease and growing competition for habitat resources that may be fatal for the native species. The invasive species can also cause the depletion of a native species by direct predation. Disrupting the life of one species can cause dramatic impacts on the Arctic ecosystem where the native species depend on relatively few ecological linkages.⁶⁰

The approximately 4 million people who live in the Arctic mostly live in coastal communities and about 10 % of them represent indigenous populations.⁶¹ For the people in the Arctic it is characteristic to live in close contact with nature, and many of them rely on the environment for at least a share of their livelihood as the economic structure is a mixture of formal and informal economies. Because of these economic and cultural ties to nature, the environmental changes going on in the Arctic are strongly felt by the local people. Invasive species can have devastating effects on the Arctic

⁵⁸ A. Whitman Miller 'Melting Sea Ice, Accelerated Shipping, and Arctic Invasions' in *Marine invasive species in the Arctic* (Nordic Council of Ministers 2014) 38

⁵⁹ Ibid 38-39

⁶⁰ Mike Gill 'Meeting the Challenge of a Changing Arctic' in *Marine invasive species in the Arctic* (Nordic Council of Ministers 2014) 17

⁶¹ Joan Nymand Larsen 'Marine invasive species: Issues and challenges in resource governance and monitoring of societal impacts' in *Marine invasive species in the Arctic* (Nordic Council of Ministers 2014) 23

economies and food security by impacting the resource base and by the possible introduction of new disease and parasites. The formal economy might experience a shock if commercial fisheries were to lose one of the important native species. Changes in biodiversity could also have impacts on the resilience of traditional livelihoods and on indigenous cultures as the inhabitants would have to adapt their ways of resource use to changed conditions. The combination of these threats has potential to generate a conflict of interest between the shipping and tourism industry on the one side, and the traditional subsistence economies on the other. The risk of invasive species also has the potential to impact upon tourism, as travelling might become more expensive and restricted as a result of demands for clean-up, control and monitoring of the environmental impacts.⁶²

3.4 Economic and cultural effects of marine tourism in the Arctic

Cruise tourism's effects on employment and income

Cruise tourism is on the rise and can be expected to expand further in the Arctic as conditions become more favorable. From the economic point of view, it would be good to think that cruise tourism offers a great opportunity for the local economy. Bringing in a growing industry that floats wealthy tourists to the region should be expected to create new jobs and economic growth.⁶³

To facilitate cruise tourism in an area where the industry is relatively new and rapidly growing in volume, and where infrastructure is limited, a great deal of investment is required to build up new ports and to offer support services for the ships. In an area as remote as the Arctic, the supply of construction materials is limited and much of the equipment need to be

⁶² Joan Nyman Larsen 'Marine invasive species: Issues and challenges in resource governance and monitoring of societal impacts' in *Marine invasive species in the Arctic* (Nordic Council of Ministers 2014) 23-25

⁶³ John M. Snyder and Bernard Stonehouse, *Prospects for Polar Tourism* (2007) 54

imported, which makes building costly, while access to credit can also be difficult. In the case of cruise tourism, the same infrastructure built for tourist vessels can of course be utilized for other shipping industries as well. In some cases a port suitable for tourist ships may even already exist if other shipping industries are already present.⁶⁴ The improved infrastructure and marine rescue services introduced to support the cruise vessels also support the safety of the local people and can help to provide better services such as a faster postal service. How far the new or improved services will be welcomed by the local community depends, however, on how valuable the locals consider the services for themselves. Investing funds normally available for local purposes in infrastructure that is rather seen to support visitors from outside the region might provoke more resentment than satisfaction.⁶⁵

The employment opportunities that come with construction projects are temporary as they only offer jobs during the period that a facility is being built. What is worse, as such building projects are often new and unique for their given location, the workforce needs to be imported as the locals do not have the expertise to complete the task. In such a situation, a lot of the jobs and income created by the project leak out of the region where the work is being done. In an isolated location such as the Arctic there is often little to spend much money on, and people who only come to the region because of the employment opportunities often work long days and save the earned income to be spent elsewhere when the project ends.⁶⁶

A similar phenomenon of profit leakage happens with the income that is brought by tourists visiting the Arctic on cruises. As pretty much all the services the tourists need are offered to them on board, they barely leave the ship to visit souvenir shops at the ports. This creates tough competition for the local businesses, and easily leads to a situation where most of the profits gained from the tourism go to a foreign company organizing the cruise rather than to the communities visited during the cruise. This might leave the local community in a situation where a great deal of public funding is invested in

⁶⁴ John M. Snyder and Bernard Stonehouse, *Prospects for Polar Tourism* (2007) 56

⁶⁵ R. W. Butler, 'The Social Implications of Tourist Developments' in Stepen Page and Joanne Connel (eds.) *Sustainable Tourism, Volume II Impacts of Tourism* (Routledge 2008) 246

⁶⁶ Joan Nymand Larsen lecture on Development Economics spring 2012

supporting an industry that creates little income for the local economy.⁶⁷ This problem of income distribution between the cruise company and the visited region is illustrated by a study that showed that on average, each of the 1.2 million passengers taking a polar cruise in 2004 spent US\$ 2000–20,000 on their cruise but only US\$ 82 in each port that they visited.⁶⁸

Most of the money that cruise tourists spend ashore is likely to be spent on visiting local museums or buying souvenirs. The sale of traditional handicrafts is a growing business in the Arctic and brings important earnings to the indigenous communities. Tourists and art collectors are the most frequent buyers of Inuit art, so the growing number of tourists sounds promising for the branch. Unfortunately, however, no data are available on the shares of how much is bought by different groups of tourists. Along with cruise tourism, other tourist business is also growing in the Arctic and it seems likely that people on adventure, culture, and nature study tours will spend far more time exploring the local settings on land than a regular cruise tourist. They might consequently spend more money on local souvenirs as well. The growth of marine tourism may not, therefore, be reflected in the numbers of sold handicraft items to the same degree witnessed in other organized trips.

In any event, even if cruise tourists contribute to buying local crafts, much still needs to change before selling souvenirs to tourists can become a profitable business in the Arctic. Currently most of the arts are crafted as a part-time occupation by women who are of 60 years of age or older. The average wage of an artisan is so low that it does not even exceed the official poverty line.⁶⁹ An important factor affecting the profitability of souvenir business is that season during which the sales must be made remains rather short, due to the region's difficult accessibility outside the summer months⁷⁰. This makes it understandable that young people prefer to find employment in other businesses where they have a possibility for a steady income around the year. As the profits from cruise tourism gained by the local communities are

⁶⁷ John M. Snyder and Bernard Stonehouse, *Projects for Polar Tourism* (2007) 56, 103

⁶⁸ John M. Snyder and Bernard Stonehouse, *Projects for Polar Tourism* (2007) 53

⁶⁹ Lee Huskey, Ilmo Mäenpää and Alexander Pelyasov 'Economic Systems' in *Arctic Human Development Report, Regional Processes and Global Linkages* (Nordic Council of Ministers 2014) 167

⁷⁰ John M. Snyder and Bernard Stonehouse, *Projects for Polar Tourism* (2007) 56

arguably rather small, it remains a question whether they can ever be sufficient to cover the costs that marine tourism causes to the region.

Arctic economic and environmental stress caused by cruise tourism

The Arctic economy is primarily based on three pillars: the formal economy, the informal economy, and public sector jobs and social welfare benefits funded by government. The formal economy is based on large-scale resource production such as mining, oil and gas extraction and fisheries. The informal sector consists of traditional ways of subsistence harvest that remain an important source of income especially for the indigenous communities.⁷¹

Most of the income provided by the formal sector of the Arctic economy comes from non-renewable resources. This is alarming for the future of the region, as it means that a large share of the money income from local activities is on an unsustainable basis and will at some point be depleted.⁷² While climate change might make it easier to access some of the non-renewable resources in the Arctic, warming can also have the opposite effects. Access to land-based resources in the Arctic mostly depends on roads built on permafrost. When the permafrost starts thawing, it may destroy current industrial infrastructure such as roads and pipelines and increase production costs.⁷³ Simultaneously, climate change is threatening the only part of the formal economy that can be considered to be on a renewable basis: the fishing industry. Changing temperatures and increasing pollution of marine areas may cause species to move from their usual habitats, or even result in stock numbers falling so low that fishing them becomes unsustainable⁷⁴. Cruise tourism is of course not alone causing the environmental problems in the Arctic but is undeniably a contributor to them.

⁷¹ Lee Huskey, Ilmo Mäenpää and Alexander Pelyasov 'Economic Systems' in *Arctic Human Development Report, Regional Processes and Global Linkages* (Nordic Council of Ministers 2014) 163

⁷² Ibid 163

⁷³ Ibid 176

⁷⁴ Timothy Heleniak 'Arctic Populations and Migration' in *Arctic Human Development Report, Regional Processes and Global Linkages* (Nordic Council of Ministers 2014) 90

Cruise tourism can therefore be argued to have indirect negative effects on the Arctic economy as it aggravates pollution, contributes to accelerating climate change, and has the potential to carry invasive species to the region's waters.

The informal economy is also highly dependent on environmental conditions as it is based on hunting, fishing, herding and gathering. Although no international data are available on how large of a share of average household income consists of traditional harvest, it is clear that the subsistence economy is an important source of livelihood for the indigenous people. Most aboriginals create their total income by mixing formal and informal sources of income. Subsistence harvest is known to provide at least one fourth of the meat consumed by the Inuit population in the Arctic, which represents a considerable share of the real income.⁷⁵

Another climate change-related threat that may have costly impacts on Arctic communities is coastal erosion caused by reduced sea ice. Thawing of the permafrost does not only affect industrial infrastructure but could also destabilize buildings, while warming could cause increased flooding. Together with the changes in resource availability, these effects might build up to an intolerable situation for many of the Arctic communities and could force settlements to move.⁷⁶ Ironically, as a result, the same cruise tourism that helps accelerate climate change might also suffer from the consequences. Having to move a town that would have served as a port for tourist ships would mean that a scheduled destination would be gone. The same can be said about endangered animal species that draw keen spectators to the Arctic. Polar bear viewing, for example, is popular among tourists but tourism is also one of the factors narrowing the species' habitat.⁷⁷ On the other hand there is a possibility that tourism could also help in protecting endangered species, provided that tourists become aware of their impacts on the environment.

⁷⁵ Lee Huskey, Ilmo Mäenpää and Alexander Pelyasov 'Economic Systems' in *Arctic Human Development Report, Regional Processes and Global Linkages* (Nordic Council of Ministers 2014) 166

⁷⁶ Timothy Heleniak 'Arctic Populations and Migration' in *Arctic Human Development Report, Regional Processes and Global Linkages* (Nordic Council of Ministers 2014) 90-91

⁷⁷ Michael Hall, 'Tourism and Environmental Change in Polar Regions' in C. Michael Hall and Jarkko Saarinen (eds), *Tourism and Change in Polar Regions: Climate, Environment and Experience* (1st edition 2010, Routledge) 95-97

Environmentally responsible tourists have the potential to promote conservation measures and the establishment of protected nature reserves.⁷⁸

Effects on culture and cultural identity

The cultural and social effects on the local community depend on how often and for how long the community is visited by people from outside the region. The effects also vary according to the cultural and ethnical differences between the tourists and the local people, and what kind of activities the tourists take part in during their stay. As noted before, cruise tourists are likely to spend little time within the local community. Therefore it can be expected that their direct impact on the culture stays rather minimal. Cruise tourists are unlikely to import new habits to places they visit or to alter the existing local culture, as the contact between the visitors and the locals is very short-term. Also, the season during which the Arctic communities are exposed to the impacts of visitors from different regions is short, so the communities will continue to be isolated from other cultures for most of the year.⁷⁹

While the direct effects of tourism can be expected to be small when it comes to cruise tourism in the Arctic, the indirect effects caused by the environmental changes that tourism contributes to are of a greater concern. The Arctic indigenous peoples live in a close contact with the environment, and the traditional economy - highly dependent on natural living resources - is not only a source of income for them but also a great part of their cultural identity. Many indigenous customs and traditions are connected to old harvest patterns and subsistence economy.⁸⁰ Cruise tourists are unlikely to go fishing and hunting or otherwise compete for the bio-resources directly, but

⁷⁸ M. Orams, 'Impacts of Marine Tourism' in Stephen Page and Joanne Connel (eds.) *Sustainable Tourism, Volume II Impacts of Tourism* (Routledge 2008) 221

⁷⁹ R. W. Butler, 'The Social Implications of Tourist Developments' in Stephen Page and Joanne Connel (eds.) *Sustainable Tourism, Volume II Impacts of Tourism* (Routledge 2008) 247

⁸⁰ Peter Schweitzer, Peter Sköld and Olga Ulturgasheva 'Cultures and Identities' in *Arctic Human Development Report, Regional Processes and Global Linkages* (Nordic Council of Ministers 2014) 135

emissions from their ships contribute to the environmental change and to the possible transfer of invasive species that threaten the Arctic fauna and flora.

Landscape and places are also important for indigenous communities as they play a significant role in history and oral tradition. Indigenous people feel especially strong ties to their environment as the surroundings have importance for culture and life-style.⁸¹ The new infrastructure built for the use of tourism and the appearance of big cruise vessels will have immediate implications for the landscape. At the same time, the warming climate will gradually alter the physical environment and as discussed before, may even result in some areas in becoming inhabitable. Such major changes are likely to impose stress on both the economy and the culture of the local communities, and may be hard to accept. If the locals perceive the environmental change as being strongly linked to the effects of tourism, it may understandably generate serious feelings of resentment towards the incoming visitors.

3.5 Tourism and climate change

The effects of Arctic marine tourism are not just local but also have an impact on the global environment. The air travel required to reach the ports from which the ships depart for the Arctic contributes to aerial pollution and causes noise disturbance. The increased traffic in Arctic waters accelerates the melting of the ice, speeding up global warming. The diminishing amount of ice and the increased area of water surface lead to more heat being absorbed, rather than being reflected back to the atmosphere. The gradual temperature rise is reflected in further melting of the Arctic sea ice and a warmer ocean temperature, which can eventually start disrupting ocean currents that are vital for global weather patterns. The rising temperature of Arctic waters can also be linked - through the global warming process - to new weather extremes in other parts of the world, causing flooding and

⁸¹ Peter Schweitzer, Peter Sköld and Olga Ulturgasheva 'Cultures and Identities' in *Arctic Human Development Report, Regional Processes and Global Linkages* (Nordic Council of Ministers 2014) 139

desertification and increasing the likelihood of weather-connected natural disasters such as hurricanes. Moreover, the effects of oceanic pollution from ships extend further than the region where it originates, as the oceanic waters mix. Through the inbuilt linkages of the global environment, these effects contribute to loss of habitats, clean air and water in ways that are hard to predict but unarguably exist.⁸²

From a single tourist's point of view, talking about the far-reaching environmental impacts of traveling may sound dramatic and absurd. Nonetheless, as travelling has become cheaper, greater masses have the possibility to travel and together their impacts accumulate. The current price level is clearly encouraging people to travel more, without being sufficient to cover the cost of environmental damage from tourism. There is an obvious conflict here between economic and environmental interests, as tourism has become an industry of great financial value offering profits to a wide range of companies involved. It is therefore understandable that there is reluctance to reverse the trend towards increasing tourism. However, the refusal to recognize the environmental effects of tourism is gradually backfiring against the industry as the most visited natural destinations become degraded and thus less attractive for visitors. It could further be argued that there is a conflict of interest between human generations, as it seems that our generation is not ready to compromise on its desire to travel the world in the interest of conserving the global environment and sustaining its ecosystems for coming generations.⁸³

⁸² Erik Solheim 'The Arctic and the environment' in Rose Gottemoeller and Rolf Tamnes (eds) *High North: high stakes* (first published 2008, 2nd edition, Fagbokforlaget 2009)

⁸³ E. Mishan 'The Costs of Economic Growth' in Stephen Page and Joanne Connell (eds), *"Sustainable Tourism"* (Routledge 2008) 196-197

4 Arctic marine tourism and sustainable development

The growing public debate over climate change and global environmental problems has raised awareness and concern, and promoted environmental values. Tourism can be seen as a luxurious way of spending one's time, but also as an unnecessary source of pollutants and a drain on scarce environmental resources. This has forced the tourism industry to change its practices. Terms like "eco-tourism" and "sustainable practices" are used to market tours for tourists who demand "green" services. But what does sustainability mean when it comes to tourism? Is sustainable tourism something that can exist in the Arctic, or is it merely a term used for clearing a tourist's conscience?

4.1 The definition of sustainable development

Sustainable development is a fashionable term used by people representing all industries and sectors of employment - politicians, activists, businessmen, advertising, to name but a few – which raises its head in conversation whenever the talk turns to the environment. But what does sustainable development mean? The most-cited and widely accepted definition of sustainable development is without a doubt the Brundtland Commission's definition, presented in Chapter 1, para. 27 of the Report of the World Commission on Environment and Development: Our Common Future: *"Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs..."*⁸⁴ This definition is, however, rather ambiguous and leaves much room for speculation on what it implies. On the

⁸⁴ World Commission on Environment and Development: Our Common Future (1987) Chapter1, art 27

one hand, the openness of the definition can be considered a strength, as its flexibility allows it to evolve and be adapted to different contexts. Regardless of time or space, industry or institution, the Bruntland Committee's definition of sustainable development can be interpreted to fit every situation. On the other hand, the definition has also been criticized for its lack of precision: if anyone can adapt it to fit their own purposes, the term might become meaningless in practice and be hypocritically used for "greenwashing" unsustainable policies. The definition has also been criticized for being fundamentally contradictory, as it is arguable that development – indicating economic growth – in the end always depends on finite natural resources, and thus cannot continue forever, calling in question whether it can ever be truly sustainable.⁸⁵

The Bruntland Committee's definition of sustainable development puts a focus on satisfying human needs, while the environment is mostly seen as source of economic development and a provider of ecosystem services. The report recognizes the limits that the concept of sustainability sets on development "*- not absolute limits but limitations imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities*"⁸⁶. The report also admits that economic development depends on natural resources and the state of the environment,⁸⁷ and underlines that over-exploiting such resources threatens the ability of future generations to fulfill their needs.⁸⁸ Even so, the environment is not given value in itself in the report but is rather seen as a set of limited resources that human beings use to meet their aspirations.

The report does not define the concept of "needs", but indicates that priority should be given to meeting the basic needs of the world's poor and people living in development countries so that they are enabled to adopt more

⁸⁵ Robert W. Kates, Thomas M. Parris, and Anthony A. Leiserowitz, 'What is Sustainable Development? Goals, Indicators, Values, and Practice' *Environment: Science and Policy for Sustainable Development*, Volume 47, Number 3 (April 2005) 20

⁸⁶ World Commission on Environment and Development: *Our Common Future* (1987) Chapter 1, art 27

⁸⁷ World Commission on Environment and Development: *Our Common Future* (1987) Chapter 3, art 2

⁸⁸ World Commission on Environment and Development: *Our Common Future* (1987) art 8

sustainable life-styles instead of battling for scarce environmental resources⁸⁹. The report points out that when the environment's carrying capacity decreases as an ecosystem reaches its ecological limits, the poor suffer greater losses in their ability to sustain livelihoods than do the rich⁹⁰.

The Bruntland Commission's definition of sustainable development also brings up the concept of time. The definition seems to set an indefinite time-frame for sustainability by basing the idea on inter-generational equity, rather than tying it to certain goals or deadlines. The timelessness of the definition gives it a powerful ring, but makes it sound so ambitious that one starts to wonder if sustainable development as expressed in the definition is even possible to achieve. For the earth to be able to meet the needs of the generations to come into an indefinite future, the consumption patterns that exist today would have to change dramatically. As the use of resources is unevenly divided, some people live far beyond the earth's carrying capacity, arguably consuming much more than could be considered necessary for maintaining a reasonable standard of living or a good life. Meanwhile, those who live in poverty unwillingly contribute to depleting environmental resources as they have no capacity to use resources more efficiently while striving to survive. As it is, humans are over-exploiting the earth's resources at a rate that is far removed from being sustainable. Scientists estimate that people are using up resources and creating emissions at a rate 44 % faster than the environment is able to produce and reabsorb. This means that to support one year of the current lifestyles of people on the planet, the earth needs 18 months to produce the required ecosystem services.⁹¹ If the claim is true, it just shows how far away humankind still is from becoming sustainable in the way that natural resources are managed.

The International Institute for Sustainable Development (IISD) also mentions the Bruntland Commission's formulation of sustainable development as the most quoted definition. The IISD defines sustainable development as a holistic view, seeing the world is seen as a system in which the far-reaching effects of each action and the interconnections of things are

⁸⁹ World Commission on Environment and Development: Our Common Future (1987) Chapter 1, art 27

⁹⁰ World Commission on Environment and Development: Our Common Future (1987) Chapter 2, art 25

⁹¹ Phys.org 'Mankind using Earth's resources at alarming rate' (November 2009) <<http://phys.org/news178269435.html>> accessed the 28 February 2015

recognized. The idea is illustrated through examples of how pollution spreads in the environment, affecting areas far away from where it was first emitted, and of how the decisions of previous generations affect the possibilities available today. The IISD's definition also highlights the linkages that affect people's ability to address development issues and their experience of their own quality of life. For example, a healthy and capable person can be largely blocked from making the most of the possibilities at hand if he or she has poor access to education. Also, having a good education becomes worthless if there are no jobs and no chance to achieve a proper income.⁹² These cases clearly show what a complex issue sustainable development is. For any person to be able to pursue a sustainable lifestyle, many different prerequisites of sustainable development need to exist at the same time. John Robinson outlines the imperative factors simultaneously needed to make sustainable development possible:

- "The ecological imperative is to stay within the biophysical carrying capacity of the planet,
- the economic imperative is to provide an adequate material standard of living for all, and
- the social imperative is to provide systems of governance that propagate the values that people want to live by."⁹³

Robinson points out that sustainable development is not an end-state but rather a process that evolves in society through combining scientific information and values supported by the community⁹⁴. Therefore, to make it possible for development to become sustainable, sustainability needs to be integrated into the different sectors of economy and society. Fundamental changes in consumption patterns and ways of life are only possible on the basis of a common understanding of what is desirable, which is something that cannot be forced on people by governments in a democratic society.

⁹² International Institute for Sustainable Development 'What is Sustainable Development? Environmental, economic and social well-being for today and tomorrow' (2013) <<https://www.iisd.org/sd/>> accessed 28 February 2015

⁹³ John Robinson 'Squaring the Circle? Some thoughts on the idea of sustainable development' in Stephen Page and Joanne Connell (eds), *"Sustainable Tourism"* (Routledge 2008) 167-168

⁹⁴ John Robinson 'Squaring the Circle? Some thoughts on the idea of sustainable development' in Stephen Page and Joanne Connell (eds), *"Sustainable Tourism"* (Routledge 2008) 168

According to Robinson, the key to sustainable development lies in activating the scientific community and teachers to educate people about the effects of their actions.⁹⁵ In this respect, sustainable development is clearly seen as a formulation of social values.

Another way to define sustainable development relates to how it is measured. The United Nations has compiled a comprehensive list of indicators of sustainable development, identifying different elements that the definition should contain. The indicators are set out under different categories that include governance, health, natural hazards, atmosphere and biodiversity, to name but a few. Each of the indicators is separately defined with a description explaining how it measures the gains made in a particular respect of sustainable development. The indicators provide a clear and detailed insight into the kind of aspects policy-makers should take into account when pursuing sustainable decisions, and they also provide a tool for measuring how development goals have been accomplished.⁹⁶

4.2 Sustainable tourism

Nature tourism has been expanding in recent years as the growing environmental concern has made people aware of and interested in the threatened wildlife and the beauty of natural sights. An increasing number of people have the opportunity to travel to enjoy the nature's wonders thanks to better salaries, cheaper travel, more leisure time and improved transport and access. Unfortunately, the increased tourism has impacts on the very resource it is based on. The growing masses of visitors often cause unbearable stress to sites with vulnerable ecosystems, which start degrading at an accelerating rate if the impact exceeds their carrying capacity. Ironically, a popular sight can be destroyed by its visitors. Noise, pollution, littering and new infrastructure can all have irreversible effects on the environment exposed to them. Further, tourism often affects the human population living close to the

⁹⁵ John Robinson 'Squaring the Circle? Some thoughts on the idea of sustainable development' in Stephen Page and Joanne Connell (eds), *"Sustainable Tourism"* (Routledge 2008) 164

⁹⁶ United Nations "Indicators of Sustainable Development: Guidelines and Methodologies" (3rd edition 2007)

visited area, altering the cultural and economic conditions as it challenges the traditional ways of land and resource use.⁹⁷

Due to the vulnerability of the attractions, nature tourism calls for careful management in order to make it sustainable. To avoid the destruction of visited sites, their ecological, economic and social carrying capacity should be evaluated and taken into account when deciding the intensity and duration of human impact that each destination can survive without too many damaging effects. The ecological carrying capacity refers to the maximum number of tourists that can be accommodated without irreparable damage to the value of the given attraction. The economic carrying capacity measures the limit within which the destination remains attractive for visitors. Social carrying capacity refers to the volume of tourists that can visit the area without having adverse effects on its main social and economic characteristics.⁹⁸ Not surprisingly, the evaluation process has proven to be challenging because information is often lacking on the conditions preceding the start of extensive tourism; on the effects that are caused solely by tourism and not by other activities; and on the sensitivity of different parts of the ecosystem.⁹⁹

What kind of tourism can then be considered sustainable? Sustainable tourism could be defined as follows:

*“Sustainable tourism development meets the needs of present tourists and host regions while protecting and enhancing opportunities for the future. It is envisaged as leading to management of all resources in such a way that economic, social and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity and life support systems.”*¹⁰⁰

Or:

⁹⁷ Gerardo Budowski ‘Tourism and Environmental Conservation: Conflict, coexistence or symbiosis?’ in Stephen Page and Joanne Connell (eds), *“Sustainable Tourism”* (Routledge 2008) 200-201

⁹⁸ Bryan H. Farrell and Dean Runyan ‘Ecology and Tourism’ in Stephen Page and Joanne Connell (eds), *“Sustainable Tourism”* (Routledge 2008) 221

⁹⁹ S. J. Page and R. Dowling ‘Tourism and the Environment’ in Stephen Page and Joanne Connell (eds), *“Sustainable Tourism”* (Routledge 2008) 256-258

¹⁰⁰ Zhenhua Liu ‘Sustainable Tourism Development’ in Stephen Page and Joanne Connell (eds), *“Sustainable Tourism”* (Routledge 2008) 547

*“Sustainable tourism involves seeking a more productive and harmonious relationship between the visitor, the host community and the place (thereby achieving) a situation which can be maintained without depleting the resource, cheating the visitor or exploiting the local population.”*¹⁰¹

To make tourism sustainable, the environment affected by tourism must be preserved to the degree that it can persist in a satisfactory condition while a growing number of visitors can enjoy its nature. If tourism is successfully managed, it can benefit environmental conservation by helping to raise awareness of environmental issues and may even promote the establishment of new nature reserves¹⁰². Bad environmental management and environmental degradation caused by tourism, on the other hand, can cause social pressure and create inequalities within society. Poor nature conservation often triggers environmental activism and can lead to protests against the activities causing the damage. Also, the rise of a new economic activity can have adverse impacts on other sources of income in the area, creating social instability. For example, extensive fishing tourism can have negative effects on the profitability of professional fishing that must compete for the same stocks. It is understandable that the local fishermen might not want to welcome the tourist companies and their guests if it means that their source of livelihood will be diverted to someone else's use. In terms of social and economic sustainability, it is very important that the economic gain from tourism should cover the costs of the services provided for the visitors, whether it be the construction of infrastructure or an environmental asset that is given over to their use. Economic profitability should nonetheless not be used as an excuse to justify environmental damage, but rather as a component of sustainability that mitigates the social effects of tourism. Local participation in providing services for tourists is a key element of economic and social sustainability. Tours organized by local operators keep the earned income from leaking outside the community and also offer the locals a chance to affect the course of development of tourist activities in the area. From a tourist's point of view, having a local guide provides a much closer

¹⁰¹ Brian Carrod and Allan Fyall ‘Beyond the Rhetoric of Sustainable Tourism’ in Stephen Page and Joanne Connell (eds), *“Sustainable Tourism”* (Routledge 2008) 515

¹⁰² M. Mowforth and I. Munt ‘Tourism and Sustainability’ in Stephen Page and Joanne Connell (eds), *“Sustainable Tourism”* (Routledge 2008) 367

look at the destination and also a chance to support the local economy, both of which may be highly appreciated by environmentally aware visitors.¹⁰³

To work towards more sustainable tourism, it is also important to provide both the tourists and the local population with information on each other's interests regarding their activities in the area where tourism is concentrated. Educating the tourists about the local environment and culture both gives them a deeper understanding of the visited area, and has the potential to make them appreciate it more and thus act accordingly to promote sustainability. When tourists show they are trying to minimize the environmental impacts of tourism, it will be easier for the local community to accept and welcome them. It is also easier for the locals to provide good service to the tourists when they can predict what is expected of them. Mutual education thus helps to prevent possible misunderstandings and promotes better and more sustainable practices on both sides.¹⁰⁴

4.3 Can cruise tourism in the Arctic be sustainable?

Tourism constitutes the biggest single human presence in the Arctic.¹⁰⁵ It is therefore inarguable that it has the potential for tremendous effects on the region's sustainability. Cruise tourism is of course only a part of the whole tourism industry, but while the number of voyages is increasing, the significance of its effects can also be expected to grow. To determine whether ship-borne tourism may result in a sustainable business in the Arctic,

¹⁰³ M. Mowforth and I. Munt 'Tourism and Sustainability' in Stephen Page and Joanne Connell (eds), *"Sustainable Tourism"* (Routledge 2008) 368-376

¹⁰⁴ M. Mowforth and I. Munt 'Tourism and Sustainability' in Stephen Page and Joanne Connell (eds), *"Sustainable Tourism"* (Routledge 2008) 374-375

¹⁰⁵ John M. Snyder and Bernard Stonehouse, *Prospects for Polar Tourism* (2007, CABI Publishing) 6

one must reflect on the industry's impacts on the different components of sustainable development: environmental, economic and social effects.¹⁰⁶

The environmental risks related to cruise tourism described in chapter three include pollutants from the ships, possible introduction of marine invasive species and the risk of an oil spill. The only one of these threats certain to become real with increased shipping in the Arctic is increased air pollution. An oil spill implies an accident which might never happen, although it is highly unlikely that no accident would ever occur in such difficult navigation circumstances as exist in the Arctic. The risk of introducing invasive species to the region can be limited by using techniques that prevent species from clinging onto the ship or remove them from the ballast tanks. With good luck, no species need succeed in moving to the Arctic waters and establishing a population there. Even the ecological disturbances caused by ships' waste waters could be erased by limiting their disposal to harbours with waste management facilities. This would of course require the infrastructure to be available and might necessitate a surveillance system, both of which would be expensive.

Even if all the ecological disturbances aside from air pollution could be strictly controlled, this would not eliminate the risk of an accident or misuse occurring. Also, the air pollution adding to carbon emissions and darkening the surface of ice, making it melt faster, could be enough on its own to accelerate environmental change in the Arctic and make the region inhospitable for the local species and human settlements. As we have seen, since cruise tourists spend little time on land, they are not expected either to have a direct impact on the visited region's culture or to compensate the negative effects of their travel by boosting the economy. Cruise tourism's environmental effects are thus focused on ecological effects that have indirect impacts on the local culture and economy.

The net magnitude of cruise tourism's impacts on the Arctic environment and local people is hard to predict. Nonetheless, it is clear that the region is already under great environmental stress and vulnerable to further disruptions. Considering this and the risks related to cruises in the Arctic, the question can hardly be avoided of whether taking tourists to the Arctic is

¹⁰⁶ John Robinson 'Squaring the Circle? Some thoughts on the idea of sustainable development' in Stephen Page and Joanne Connell (eds), *"Sustainable Tourism"* (Routledge 2008) 167-168

really worth all the harm it may potentially cause. The following chapters will focus on exploring what kind of protection the system of international environmental law has to offer to the Arctic environment when it comes to marine tourism. The aim is to discover whether the legislation can be considered effective in protecting the Arctic from unnecessary environmental disturbances and creating a basis for sustainable cruise tourism development in the region.

5 Principles of international environmental law and cruise tourism in the Arctic

This chapter introduces the environmental principles of international environmental law. The principles originate from instruments of international law such as treaties, state practice and soft law instruments that refer to them. The principles are general and may therefore be applied to anyone who carries out actions with environmental implications.¹⁰⁷ The difference between a legal rule and a principle is that a rule is binding and can be enforced as such whenever it applies to the situation in question. A principle does not necessitate a certain outcome, but rather, guides decision making in the preferred direction. Principles are, so to say, like glasses through which one reads and interprets the law. So even though principles are not binding, they have the potential to affect the outcome of legal decisions. While not precisely formulated, principles are applicable to a broad range of situations whereas a legal rule is more specific.¹⁰⁸

Thus far, no instrument creating legally binding environmental norms with global application has been adopted. This makes it necessary to adapt general disciplines from other sources of international law.¹⁰⁹ Given the lack of a ratified list of environmental rights and obligations, the applicable principles play an important role in promoting environmental values by directing the way legal rules are being executed. The principles that are often reflected and spelled out in current legal acts are:

1. the obligation reflected in Principle 21 of the Stockholm Declaration and Principle 2 of the Rio Declaration, namely, that states have sovereignty over their natural resources and the responsibility not to cause transboundary environmental damage;

¹⁰⁷ P. Sands, J. Peel, A. Fabra and R. MacKenzie, *Principles of International Environmental Law* (3rd edn, Cambridge University Press 2012) 187

¹⁰⁸ Ibid 189

¹⁰⁹ Ibid 190

2. the principle of preventive action;
3. the principle of co-operation;
4. the principle of sustainable development;
5. the precautionary principle;
6. the polluter pays principle; and
7. the principle of common but differentiated responsibility.¹¹⁰

Sovereignty over natural resources and responsibility not to cause transboundary environmental damage

Principle 21 of the Stockholm Declaration states that:

“States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.”¹¹¹

The Arctic can from a tour organizer’s point of view be thought of as a natural resource that the company exploits by showing it to tourists. While a cruise ship is entitled to navigate in Arctic waters, at the same time it is responsible for not causing environmental damage to the visited area or to other states that could potentially be affected by the damage done. The difficulty is the lack of definition regarding what is meant by “causing damage”. If a cruise ship respects the flag state’s jurisdiction and the environmental standards set thereby for navigation, can it with clear conscience be considered not to cause environmental damage? If the Stockholm Declaration Principle 21 is interpreted strictly, the answer should be “no”. Even when a ship follows strict environmental standards, the cruise still creates impacts on the environment that add to the impacts that are causing climate change and thus have more than purely local effect. Climate change is a global environmental problem and changes happening in one part

¹¹⁰ P. Sands, J. Peel, A. Fabra and R. MacKenzie, *Principles of International Environmental Law* (3rd edn, Cambridge University Press 2012) 187

¹¹¹ Declaration of the United Nations Conference on the Human Environment 1972

of the world may affect others in unpredictable ways. Say for example that ice melts in the Arctic, which causes the temperature and sea levels to rise. In the Arctic this is seen as reduced ice and accelerated melting. In other parts of the world it may cause flooding in low land areas, and drought in other areas where there is little rainfall and the rising temperature accelerates evaporation.

As a counter-argument one could say that Arctic cruise tourism is only a drop in the ocean of human actions that are causing the current climate change. How could we ban it altogether while we simultaneously allow other industries to pollute the atmosphere? In response, it may be pointed out that the necessity or otherwise of doing something should be taken into account when making decisions on when it is justifiable to impose new burdens on the environment. Industries that produce goods for our daily use and transportation, but contribute to polluting our atmosphere, are vital for the function of our modern societies. It is arguable that taking a cruise to the Arctic is not vital for anyone, but rather an exciting luxury voyage for keen travelers. Worse, such unnecessary trips take place in an environment that is acutely vulnerable to changes and also a central element of the global climate system.

Unfortunately, precisely because cruise tourism is only one of the industries contributing to environmental change in the Arctic and not the sole source of pollution, invasive species and so forth, it is really difficult to show which exact changes the ships are responsible for. Also, the arbitral tribunal decision on the *Trail Smelter* case is still widely accepted as the formulation of what kind of situations the principle applies to. It states that “*no state has the right to use or permit the use of territory in such a manner as to cause injury by fumes in or to the territory of another of the properties or the persons therein, when the case is of serious consequence and the injury is cause by clear and convincing evidence*”.¹¹² It is of course mandatory to be able to prove the causality and the extent of the damage when someone is held responsible for environmental damage. It is a sad observation that so long as the environmental deterioration happens gradually as a result of

¹¹² United States vs. Canada, 3 RIAA 1907 (1941); P. Sands, J. Peel, A. Fabra and R. MacKenzie, *Principles of International Environmental Law* (3rd edn, Cambridge University Press 2012) 196

accumulating small changes, those involved apparently need have no fear of being called to account for the damage caused.

Principle of preventive action

The principle of preventive action requires states to minimize the risk of environmental damage by reducing, limiting and controlling activities that pose a danger to the environment.¹¹³ The principle of preventive action differs from the responsibility not to cause transboundary environmental damage in two ways. Firstly, its main objective is to protect the environment rather than to respect territorial sovereignty, and secondly, it obligates states to protect the environment under their own jurisdiction as well. The principle requires preventive measures before the damage occurs. It can be supported by national legislation that establishes standards for environmental protection and procedures for authorization. The standard can also be supported by offering access to information about the environment and by requiring environmental impact assessments before certain activities are granted a license.¹¹⁴ Barak Obama's administration's decision to tighten the environmental standards for drilling oil in the U.S.'s Arctic territories is a good example of taking preventive action before environmental damage is caused. The new standards set the level of environmental protection high enough to practically ban drilling in the Arctic.¹¹⁵ This can be viewed as great progress in the conservation of the Arctic environment, and it would be good to see a similar development in the regulation of other industries exploiting the Arctic. Of course, the implementation of the precautionary principle does not guarantee that no environmental damage will occur. For example, if oil companies managed to follow the new environmental standards and were thus allowed to drill in the Arctic, there could still be an oil accident. Nonetheless, the high standards set should have the effect of limiting the

¹¹³ P. Sands, J. Peel, A. Fabra and R. MacKenzie, *Principles of International Environmental Law* (3rd edn, Cambridge University Press 2012) 200

¹¹⁴ *Ibid* 201-202

¹¹⁵ S. Goldenberg, "Obama administration blocks new oil drilling in the Arctic" (The Guardian 16 October 2015) <<http://www.theguardian.com/world/2015/oct/16/obama-blocks-new-arctic-oil-drilling-cancels-leases>> accessed 6 November 2015

number of companies with the potential to start drilling for oil in the Arctic. Also, the high environmental standards will force the companies to operate in a manner that minimizes the risk of an accident. Together, these effects of the new regulation might considerably decrease the number of oil accidents that could otherwise have occurred.

Principle of co-operation

The principle of co-operation obligates states to establish good relations for sharing information and common decision making as well as for notifying each other in matters related to the environment's condition and its protection. This principle is supported in all international environmental agreements.¹¹⁶ The agreement reached in October 2015 on coast guard co-operation between the Arctic states, Russia, Canada, USA, Denmark, Finland, Sweden, Norway and Iceland, is a great example of following the principle of co-operation. This historic agreement aims for continuing co-operation and regular negotiations to guarantee safety and security in the increasingly accessible Arctic waters.¹¹⁷ It strongly signals the Arctic nations' motivation to co-operate and has great potential to decrease the effects of accidents that may occur when navigating in the Arctic. Good co-operation is likely to enhance the efficiency of emergency response, always challenging to arrange in the Arctic where distances are long and conditions difficult. From the environmental point of view the coast guard agreement sounds promising for the development of navigational aids and emergency preparedness that can both prevent ship accidents from occurring, and help clean up possible oil spills.

¹¹⁶ P. Sands, J. Peel, A. Fabra and R. MacKenzie, *Principles of International Environmental Law* (3rd edn, Cambridge University Press 2012) 204

¹¹⁷ S. Levon 'Arctic nations agree on coast guard cooperation' (Arctic Newswire, 29 October 2015) <<http://www.adn.com/article/20151029/arctic-nations-agree-coast-guard-cooperation>> accessed 6 November 2015

Principle of sustainable development

The concept of sustainable development has been discussed in detail in chapter 4. The central ideas of the Bruntland Commission's definition are that:

- social, economic and environmental decision making should be based on equitable use of resources in respect both of place and time, with special emphasis on the world's poor; and
- sustainability is challenged by social structures, the state of technological development, and the environment's carrying capacity¹¹⁸

There are strong grounds to suggest that marine tourism in the Arctic goes against the principle of sustainable development. Tourism exploits the visited areas for entertainment, not for necessity, and higher priority ought to be given to preserving the area for future generations than to fulfilling the present generation's thirst for adventure. In this context, preserving the Arctic does not mean preserving it for later generations to explore. Rather, the Arctic should be preserved because that helps to preserve the global climate system. Protecting the climate is vitally important for the world's poor, who are most strongly affected by the warming climate that causes desertification, flooding and weather extremes. Also, the quicker the change, the faster it will impact upon coming generations.

Precautionary principle

The precautionary principle is relatively new as it only started to appear in international legal instruments in the mid-1980s. Because the concept is so young, there are differing views on its meaning. The most widely accepted formulation is the one of Rio Declaration Principle 15¹¹⁹:

"In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall

¹¹⁸ P. Sands, J. Peel, A. Fabra and R. MacKenzie, *Principles of International Environmental Law* (3rd edn, Cambridge University Press 2012) 206-207

¹¹⁹ Ibid 217-2018

not be used as a reason for postponing cost-effective measures to prevent environmental degradation."¹²⁰

The traditional view suggests that the burden of providing scientific evidence that environmental damage is being caused lies with the side that opposes a certain activity. The more recent approach is that the actor planning to carry out a certain activity must provide evidence that no irreversible harm will be caused to the environment. This interpretation has not yet achieved sufficient support to be applied as a general rule, but there are examples of it being expressed in state practice.¹²¹ There is also dispute over whether there actually needs to be scientific evidence of "serious" and "irreversible" damage, or whether the threat of such damage is enough to trigger application of the precautionary principle.

The question of how to interpret the principle affects the way it should be applied in the case of marine tourism in the Arctic. The situation would differ substantially if the burden of providing scientific evidence lay on the tour operators' side instead of the concerned environmentalists' side. If tour operators were responsible for providing evidence that their actions caused no serious damage to the environment, they would have to apply policies and technologies designed to minimize the amount of pollution and the risk of accidents. From the environmental point of view this would be much more effective than leaving it to the opposing side to collect enough evidence on the effects of marine tourism to prove that it was causing damage and that preventive measures were needed. Such evidence is difficult to obtain because of the difficulty, already mentioned, in showing exactly which activity brought about a certain change in the environment. The effect might be to create a situation where the damage was already done and became hard, if not impossible, to reverse once the evidence was there.

The preamble to the 1984 Ministerial Declaration of the International Conference on the Protection of the North Sea stated that "*states must not wait for harmful effects before taking action*", *since damage to the marine environment can be irreversible or remediable only at considerable expense and over a long period.*"¹²² This statement should also be taken into account

¹²⁰ The United Nations, Rio Declaration on Environment and Development 1992

¹²¹ P. Sands, J. Peel, A. Fabra and R. MacKenzie, *Principles of International Environmental Law* (3rd edn, Cambridge University Press 2012) 222-223

¹²² *Ibid* 219

when discussing marine tourism in the Arctic. Considering the vulnerability of the Arctic ecosystem and the consequent effects for local societies, the precautionary principle should be applied in order to minimize the potential effects of marine tourism.

Polluter pays principle

The polluter pays principle indicates that the one causing the pollution should also bear the costs of pollution. The principle is widely supported, but the scope of situations that it applies to and the extent to which the costs of environmental damage should be covered remain open to interpretation.¹²³

The 1972 OECD Council Recommendation on Guiding Principles Concerning the International Aspects of Environmental Policies states that the costs of environmental control and pollution prevention should be paid for by the polluter. The costs should be allocated to the costs of the services that pollute, which would help encourage environmentally friendly practices and rational use of resources. The Recommendation also states that polluting actions should not be granted subsidies that could distort international competition.¹²⁴ In 1973 the European Union referred to the polluter pays principle under its first programme for action on the environment, and two years later the European Council adopted a Recommendation according to which the EU and its member states must apply the polluter pays principle in their national environmental legislation. The recommendation provided the following definition of the principle: *“natural or legal persons governed by public or private law who are responsible for pollution must pay for the costs of such measures as are necessary to eliminate or to reduce it so as to comply with the standards or equivalent measures laid down by the public authorities”*.¹²⁵ The definition is broader than that used by the OECD, but the Recommendation is not legally binding. Subsequently, the member states of EU and EFTA softened the meaning of the principle by basing it on the idea that *“the polluter should pay”*. The principle was then referred to and reproduced in numerous international treaties such as the Rio Declaration,

¹²³ Ibid 228

¹²⁴ Ibid 230

¹²⁵ Ibid 231

The 1990 Oil Pollution Preparedness Convention and the OSPAR Convention, to name just a few.¹²⁶

In practice the application of the polluter pays principle means that those conducting activities with a potential threat to the environment should pay fees and taxes to cover the costs of the public authorities and services established to prevent pollution. However, the commonly supported view is that the costs of repairing environmental *damage* caused by an accident will not be collected from the polluter.¹²⁷ In the case of Arctic cruise business, the polluter pays principle means that the costs of environmental surveillance and emergency preparedness should be added to the prices of the voyages. This would both help finance the necessary public efforts to protect the environment, and also give the potential cruise ship customers an economic incentive to think carefully about the necessity for the trip, which might reduce the number of cruises made to the Arctic. Nonetheless, the economic burden of fixing any actual damage be caused to the environment would still not be transferred to the travelers. As a result, while the polluter pays principle does have potential to help limit environmentally hazardous activities in the Arctic, it does not seem to apply to situations where environmental damage has occurred. It would of course be impractical to measure the whole potential financial costs of environmental damage caused by a given action, which most likely explains why the current definition of the principle does not hold the polluter liable for all costs connected to the possible environmental harm. The fact remains, however, that limiting the polluter's liability in this way means that a great part of the costs of repairing pollution-related damage falls upon parties that may have nothing to do with causing the pollution. Unfortunately, these costs are likely to be much higher than the costs allocated to the polluter. In the Arctic, for example, pollution may result in loss of biodiversity and losses in livelihood. Pollution also adds to the effects of climate change in causing the Arctic permafrost to melt, which may force entire towns to relocate.

¹²⁶ Ibid 232

¹²⁷ Ibid 231

Principle of common but differentiated responsibility

The principle of common but differentiated responsibility emerges from the idea that states have a common responsibility to protect the environment, but different capabilities for preventing and reducing the damage. The principle also takes into account the state's contribution to creating a certain threat and its ability to control it. The idea behind this principle is that the special needs of developing countries must be recognized when addressing environmental problems. A developing state cannot be expected to follow standards that require the application of highly developed technology, but the developed states should be expected to do so - while also supporting the creation of capacities in developing countries.¹²⁸

This principle of common but differentiated responsibility *prima facie* has little to do with the issue of cruise tourism industry in the Arctic, since developing countries and their citizens are hardly likely to take part in expensive tourist operations. These countries are not the ones causing the potential risks, nor do they have a chance of influencing the industry in any way. Responsibility for the way cruise tourism may affect the Arctic squarely lies with the developed countries that pursue the expeditions. Further, looking at Arctic tourism from the climate change perspective, one may argue that as cruise tourism may accelerate the environmental changes in the Arctic contributing to global change, the developed countries are responsible to the whole world for minimizing the affects. As already stressed, climate change is a global phenomenon and changes in the Arctic can have adverse environmental effects in other parts of the world. Cruise tourism in the Arctic can be seen as a luxury industry that developed countries are supporting despite of its negative impacts on our common environment. It is unfair towards the developing countries that developed states should carry out actions that speed up climate change and contribute in aggravating the development countries' environmental situation while the latter have no way of protecting themselves against the possible indirect effects of the industry.

¹²⁸ Ibid 233

6 **The law of the sea and the Arctic**

All shipping, including cruise shipping, is international by nature. As such, a competitive industry requires regulation of navigational standards to ensure the safety of passengers and the environment, which might otherwise be compromised in order to reduce costs. A certain degree of harmonization in navigational standards helps to avoid differing norms that might become impractical for ships to fulfill and create unnecessary barriers for international shipping. When assessing the legal aspects of Arctic cruise tourism's sustainability, the questions that arise involve pollution prevention, prescription and enforcement of standards, and action in emergency situations. These questions will be addressed in this section. Recent advancements in the prevention of invasive species in marine environments are also addressed briefly.

Prescription and enforcement of navigational standards

States have differing interests and competences as regards exercising maritime jurisdiction. Some may be more interested in protecting the marine environment, while others are ready to compromise on other interests in order to create uniform rules of navigation and cut operating costs. Aside from such political choices, a state's juridical competence vis-a-vis a particular vessel depends on whether it is a flag state, coastal state or a port state. A flag state is the state under whose flag a ship sails. A coastal state is the state in whose waters the vessel sails, and a port state is the state in whose ports the vessel lies.¹²⁹ The Law of the Sea Convention (UNCLOS) balances between different viewpoints by establishing the general rule that "generally accepted international rules and standards" provide the minimum standard of

¹²⁹ R. R. Churchill and A. V. Lowe, *The Law of the Sea* (3rd edn, Manchester University Press, 1999) 344, 346

regulation for flag state jurisdiction, and the maximum standard for coastal states.¹³⁰ In this way the UNCLOS provides competence for port and coastal states to exercise environmental legislation, but also guarantees the freedom of navigation to flag states. The UNCLOS is considered a framework convention for ocean regulation. It includes general shipping regulations, leaving the more specific regulation to be made in other international agreements. The relevant legislative competence is given to ‘competent international organization(s)’, which generally refers to the International Maritime Organization.¹³¹

Under the UNCLOS a *flag state* is entitled to create legislative measures applying to its vessels regardless of where the vessel may be situated. The above-mentioned obligation in article 211 (2) of the UNCLOS for flag states to adopt “generally accepted international rules and standards” for their vessels leaves open to interpretation what those include. For example, annexes I and II of the MARPOL convention are widely ratified and can be considered generally accepted, but does the same apply to the other annexes as well? Can the UNCLOS in some cases make states exercise jurisdiction over their vessels by applying the terms of treaties that they are not parties to?¹³² The shipping standards prescribed by the flag state may, of course, be *more* stringent than those in international agreements but this is a matter of choice.

This openness to interpretation in the UNCLOS’s article 211 (2) is frustrating when considering the legislation applicable to vessels sailing in the Arctic waters. Much of the latter constitute “high seas” where the protection of the marine environment from the effects of shipping is in the hands of the flag states. When it is uncertain what regulations apply to a certain vessel, monitoring is made more difficult: some may try to benefit from the situation by using a vessel whose flag state is not party to agreements protecting to the marine environment, and thereby reducing operational costs. The vagueness of article 211(2) does not help to protect the

¹³⁰ Laura Boone, ‘International Regulation of Polar Shipping’ in Ronald R. Rothwell, Alex G. Oude Elferink and Erik Molenaar (eds), *Law of the Sea and the Polar Regions: Interactions Between Global and Regional Regimes* (Publications in Ocean Development 2013) 195

¹³¹ Ibid 194

¹³² R. R. Churchill and A. V. Lowe, *The Law of the Sea* (3rd edn, Manchester University Press, 1999) 347

high seas areas of the Arctic from such vessels sailing under a “flag of convenience”.¹³³

The UNCLOS includes an exception to the rule laid down in article 211 (2). According to article 234 a coastal state may adopt and enforce stricter regulations than “generally accepted international rules and standards” with a view to protecting the marine environment in its territorial waters.¹³⁴ The rules may not concern the “*design, construction, manning or equipment of foreign ships unless they are giving effect to generally accepted international rules or standards*”.¹³⁵ The rules must be duly publicized, non-discriminatory, and may not hamper the innocent passage of foreign ships.¹³⁶ Additional standards of environmental protection that follow the same principles may be applied to special areas of the coastal state’s exclusive economic zone (EEZ). Such regulation requires the consultation and approval of the IMO and a fifteen-month notice period before entry into force.¹³⁷ However, under article 234 a coastal state may apply non-discriminatory pollution standards to ice-covered areas that lie within its EEZ. The regulation of ice-covered areas does not need to follow generally accepted navigational standards and no special procedure needs to be followed to enact the legislation.¹³⁸

Article 234 thus provides the Arctic coastal states with the possibility of exercising strict protection of the marine environment in the ice-covered areas of their EEZs. However, even if coastal states are active in protecting the marine environment through strict pollution standards, their efforts might fail to change the overall condition of waterways. Imposing stringent rules for environmental protection in a certain area may in actuality not help the environment as a whole, as they might divert the polluting activities elsewhere. Even if a ship complies with the regulations applying within the

¹³³ R. R. Churchill and A. V. Lowe, *The Law of the Sea* (3rd edn, Manchester University Press, 1999) 258

¹³⁴ Laura Boone, ‘International Regulation of Polar Shipping’ in Ronald R. Rothwell, Alex G. Oude Elferink and Erik Molenaar (eds), *Law of the Sea and the Polar Regions: Interactions Between Global and Regional Regimes* (Publications in Ocean Development 2013) 195

¹³⁵ United Nations Convention on the Law of the Sea art. 21(2)

¹³⁶ United Nations Convention on the Law of the Sea arts. 21(3), 24, 211(4)

¹³⁷ United Nations Convention on the Law of the Sea art. 211(6)

¹³⁸ R. R. Churchill and A. V. Lowe, *The Law of the Sea* (3rd edn, Manchester University Press, 1999) 348

territorial waters and the EEZ of the coastal state, it might relax its attitude towards environmental protection once it reaches an area where the rules no longer apply. Thus, regulations that seem to protect the environment in one area may worsen the situation in others.¹³⁹

A *port state* may enforce legislation on foreign ships that can be shown to have violated its pollution regulations within its territorial waters, its EEZ, or its ports.¹⁴⁰ Under the MARPOL convention the port state may also inspect a ship that is suspected of environmental violations before entering the port state's waters. The vessel may be detained by the authorities until it can continue its voyage without serious harm to the marine environment. If the inspection finds evidence of a violation of the MARPOL convention, the flag state must be notified and must then take legal action and inform the IMO of its proceedings.¹⁴¹

Under the UNCLOS, the flag state must enforce its anti-pollution laws upon its vessels regardless of their location. The flag state must ensure that its vessels satisfy the international navigational standards and carry the required certificates. It must inspect its vessels regularly and investigate claims of violation of pollution regulations by its vessels.¹⁴²

In ice-free waters the enforcement powers of coastal states are limited. Article 220 of the UNCLOS entitles the coastal state to carry out inspections on foreign ships that are suspected of having violated the state's pollution standards within its territorial waters. The coastal state may arrest the vessel if the violation is 'willful and serious' and take legal proceedings. A coastal state may only inspect a foreign vessel suspected of violating its pollution regulations in its EEZ in the event that the violation "has resulted in a substantial discharge causing or threatening significant pollution to the marine environment" and if the vessel fails to provide adequate information on its identity, port of registry, or the previous and coming ports on its voyage. The coastal state may arrest the vessel if the violation has caused "*major damage or threat of major damage to the coastline or related interests of the coastal State, or to any resources of its territorial sea or exclusive economic zone*". Such limitations on the enforcement power of the

¹³⁹ Ibid 342

¹⁴⁰ Ibid 345, 348

¹⁴¹ Ibid 345

¹⁴² Ibid 348

coastal state do not apply to ice-covered waters. Enforcing anti-pollution regulations in the territorial sea and the EEZ is thus simpler from the competence point of view when the claimed violation has occurred in an ice-covered area.¹⁴³

Under the UNCLOS the port state not only has the competence to take legal action against a ship that has violated pollution standards in the state's territorial waters or EEZ, but also if the vessel has violated 'applicable international rules and standards established through the competent international organization or general diplomatic conference'. The port state may also prevent a ship from sailing if it offends against international rules for seaworthiness in a way that causes a threat to the marine environment, unless the vessel is on its way to be repaired.¹⁴⁴ This rule broadens the port state's enforcement competence to violations committed in another state's waters or in the high seas. Articles 223 to 232 of the UNCLOS set out limitations upon the port state's power to enforce its jurisdiction on foreign vessels, but according to article 234 these safeguards do not apply to violations of pollution standards occurring in ice-covered waters of the state's territorial waters or EEZ. However, they do apply to cases where the accused violation has taken place in another state's waters or on the high seas, and so may become applicable to incidents occurring in Arctic waters as well.

The port or coastal state must suspend its proceedings in the event that the flag state starts proceedings on the same case. However, there is no obligation to suspend proceedings if the accused violation of pollution standards occurred in the territorial sea or if it caused 'major damage to the coastal state'. Also, the port or coastal state may continue with its proceedings if the flag state does not take enforcement action within six months of the coastal or port state instituting action, or if it repeatedly fails to effectively impose its jurisdiction on its vessels. If the flag state does not complete its proceedings, the port or coastal state may lift the suspension and continue the case.¹⁴⁵

The enforcement authority provided to port and coastal states by the UNCLOS ensures that another juridical instance may step in to exercise jurisdiction in cases where the flag state fails to enforce pollution regulations

¹⁴³ Ibid 349

¹⁴⁴ Ibid 350

¹⁴⁵ Ibid 350-351

on its vessels. While the legal authority of port and coastal states in such cases has been established, however, it remains up to these states whether they make use of their competence. Especially in situations where it is uncertain which regulations apply to a vessel accused of a violation possibly far away from the state's waters, one may doubt how far port and coastal states would be motivated to take action in the case. The uncertainty over what constitutes a 'generally accepted international rule or standard', in a situation where the flag state of the vessel in question is not party to the agreement that might otherwise be applicable to the case, has the potential to leave pollution regulation violations unresolved.

Another problem concerning the enforcement of environmental standards in the Arctic is the shortage of ports in the region and their limited accessibility. Port state jurisdiction simply cannot be exercised if a vessel never reaches a port.¹⁴⁶ Also, the competitiveness of the cruise industry may result in poor compliance with environmental standards. Building reception facilities for ships' discharges is expensive and ports may be reluctant to provide such services unless they turn in a profit. Having to pay expensive charges for using up-to-date facilities, however, can drive ships towards less equipped and cheaper ports, and some vessels may even decide to discharge illegally at sea, thus frustrating the purpose of conventions that aim to protect the marine environment.¹⁴⁷

Prevention of pollution by ships

The most relevant instrument for regulating vessel-based pollution is the International Convention for the Prevention of Pollution from Ships (MARPOL)¹⁴⁸ which was adopted under the International Maritime

¹⁴⁶ Laura Boone, 'International Regulation of Polar Shipping' in Ronald R. Rothwell, Alex G. Oude Elferink and Erik Molenaar (eds), *Law of the Sea and the Polar Regions: Interactions Between Global and Regional Regimes* (Publications in Ocean Development 2013) 206

¹⁴⁷ R. R. Churchill and A. V. Lowe, *The Law of the Sea* (3rd edn, Manchester University Press, 1999) 342

¹⁴⁸ Laura Boone, 'International Regulation of Polar Shipping' in Ronald R. Rothwell, Alex G. Oude Elferink and Erik Molenaar (eds), *Law of the Sea and the Polar Regions: Interactions Between Global and Regional Regimes* (Publications in Ocean Development 2013) 196

Organization (IMO) in 1973.¹⁴⁹ The MARPOL Convention contains regulations for preventing pollution by shipping from both operational and accidental causes. The MARPOL Convention consists of six annexes, the first two of which are mandatory for contracting parties and the remaining four are optional.¹⁵⁰ All the eight Arctic states are party to the MARPOL Convention and most of them have ratified all of the annexes. The only exceptions are Iceland, not having ratified annexes IV and VI, and the United States which has not ratified annex IV.¹⁵¹

Annex I of the MARPOL Convention contains provisions for oil pollution prevention. The regulations define regulations for the design of ships and required equipment. The annex also requires the parties to provide oil discharge facilities in their ports.¹⁵² Annex II regulates the discharge of residues containing noxious liquid substances. All discharge is forbidden within 12 miles from land and specific limitations are placed upon the concentrations and conditions over which discharge is permitted only to reception facilities.¹⁵³ Annex III contains provisions for “*packing, marking, labelling, documentation, storage, quantity limitations, exceptions and notifications*”¹⁵⁴ of harmful substances carried by sea. Annex IV contain regulations for prevention of pollution of the sea by sewage. Sewage may not be discharged at sea unless the vessel is equipped with an approved sewage treatment plant, or the sewage is comminuted and disinfected and the

¹⁴⁹ International Maritime Organization, ‘Convention on Prevention of Pollution from Ships (MARPOL)’ (IMO, 2015) <[http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-\(MARPOL\).aspx](http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-(MARPOL).aspx)> accessed 6 January 2016

¹⁵⁰ R. R. Churchill and A. V. Lowe, *The Law of the Sea* (3rd edn, Manchester University Press, 1999) 340

¹⁵¹ International Maritime Organization ‘Status of Conventions, Excel chart listing ratifications by state’ (IMO, 2015) <<http://www.imo.org/en/About/Conventions/StatusOfConventions/Pages/Default.aspx>> accessed 6 January 2016

¹⁵² R. R. Churchill and A. V. Lowe, *The Law of the Sea* (3rd edn, Manchester University Press, 1999) 340

¹⁵³ International Maritime Organization, ‘Convention on Prevention of Pollution from Ships (MARPOL)’ (IMO, 2015) <[http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-\(MARPOL\).aspx](http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-(MARPOL).aspx)> accessed 6 January 2016

¹⁵⁴ Ibid

discharge happens more than three nautical miles from land. Untreated sewage can only be discharged at sea when more than 12 nautical miles away from land. Annex V regulates the disposal of garbage into the ocean. A special feature of this annex is the complete ban on the disposal of all kinds of plastics into the ocean. Finally, annex VI of the MARPOL Convention sets exhaust emission standards for ships, and provides regulations specifying technical and operational energy efficiency measures aimed at further reducing emissions.¹⁵⁵

The provisions of the MARPOL Convention are generally designed for all shipping and do not take the special conditions of the Arctic ocean into consideration.¹⁵⁶ The stipulations concerning the distance from land at which sewage and certain amounts of noxious liquid substances may be discharged into the ocean give cause for concern when considering the future of the Arctic marine environment. As the Arctic is mostly ocean, vessels that take tourists for polar cruises sail further than 12 nautical miles from land during much of their voyage. This means that even when the flag state of the ship is party to the MARPOL Convention, the regulations under the Convention do not prohibit such discharges.

Prevention of pollution by dumping

All the eight Arctic states are parties to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention) that has been in force since 1975. Canada, Denmark, Sweden, Norway and Iceland have also ratified the Protocol to the Convention that came into force in 2006. The Protocol is meant to modernize the convention and eventually replace it.¹⁵⁷ The purpose of the London Convention is to

¹⁵⁵ International Maritime Organization, 'Convention on Prevention of Pollution from Ships (MARPOL)' (IMO, 2015) <[http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-\(MARPOL\).aspx](http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-(MARPOL).aspx)> accessed 6 January 2016

¹⁵⁶ Laura Boone, 'International Regulation of Polar Shipping' in Ronald R. Rothwell, Alex G. Oude Elferink and Erik Molenaar (eds), *Law of the Sea and the Polar Regions: Interactions Between Global and Regional Regimes* (Publications in Ocean Development 2013) 196

¹⁵⁷ International Maritime Organization, 'London Convention and Protocol, Their Role and Contribution to the Protection of Marine Environment' (IMO, 2012)

engage parties to take effective measures to control and prevent pollution of marine environments by dumping. The Convention applies to “*vessels, aircraft, platforms or other man-made structures at sea*”. The annexes to the Convention list wastes that are prohibited from dumping and wastes that may only be dumped into the sea with a permit from a national authority. The Protocol goes further than the Convention by adopting a precautionary approach. According to its terms, all dumping is prohibited unless it is explicitly allowed. A list of items that are allowed to be dumped is included in the Protocol.¹⁵⁸

Prevention of accidental pollution

Accidents occurring at sea have the potential to cause pollution, as oil and other substances harmful to the marine environment may enter the sea in case of hull failure, collision or stranding. To prevent accidents from happening, international rules have been adopted to regulate the seaworthiness of ships, crew qualifications and the establishment of navigational aids.¹⁵⁹

The IMO Convention for the Safety of Life at Sea (SOLAS) is the most important international agreement containing regulations for the seaworthiness of ships. It creates standards for the construction of vessels, navigational equipment, fire safety, life saving appliances and other measures to improve safety at sea.¹⁶⁰ Enforcement of the standards is mainly the responsibility of the flag state, but port states are entitled to make sure that vessels flagged by other contracting parties carry the certificates required by the SOLAS Convention. In the event that a certificate has expired or there are justifiable reasons to believe that the ship’s condition does not comply with the standards set in SOLAS, a port state can prevent the ship from sailing

<<http://www.imo.org/en/OurWork/Environment/LCLP/Documents/2012%20LCLP%20leaflet%20Web.pdf>> accessed 7 February 2016

¹⁵⁸ International Maritime Organization, ‘Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter’ (IMO, 2016) <<http://www.imo.org/en/OurWork/Environment/LCLP/Pages/default.aspx>> accessed 7 February 2016

¹⁵⁹ R. R. Churchill and A. V. Lowe, *The Law of the Sea* (3rd edn, Manchester University Press, 1999) 353

¹⁶⁰ *Ibid* 265

until the issues have been addressed or unless it can head to the nearest repair yard without danger to the ship or the people on board.¹⁶¹

Regulations designed to prevent collisions at sea are set out in the Convention on the International Regulations for Preventing Collisions at Sea. The convention contains standards for the conduct of vessels in relation to other vessels and establishes standards for the sound and light signals to be used for communication. Further, the IMO Collisions Regulations Convention that has been in force since 1977 has been successful in reducing collisions by introducing mandatory traffic separation schemes. States may prescribe traffic separation schemes in accordance with IMO regulations, and may enforce this legislation upon foreign vessels. In practice, the coastal state may request an offending vessel to follow such a scheme and may notify the flag state in case the vessel does not comply. A port state may prosecute a vessel offending against the traffic separation scheme.¹⁶²

An adequately trained crew has a key role in preventing accidents at sea. According to the SOLAS Convention, all ships shall be '*sufficiently and efficiently manned*', while the UNCLOS requires states to ensure that an officer with appropriate qualifications is in charge of their vessels and that the crew is '*appropriate in qualification and numbers for the type, size machinery and equipment of the ship*'. The International Convention on Standards of Training Certification and Watchkeeping for Seafarers contains detailed requirements for officers' minimum qualifications and gives instructions on arranging engineering and navigational watches. Enforcement of the standards is mostly flag states' responsibility, with the exception that port states may inspect the certificates required of ship officers.¹⁶³

Lighthouses, radars, lightships and buoys are navigational aids that are essential for navigational safety. The SOLAS Convention obligates state parties to establish and maintain such aids to the extent required by the local conditions and traffic volumes, and to make them available to all seafarers. The UNCLOS also requires states to publicize the known navigational dangers in their waters.¹⁶⁴ Providing navigational aids for ships sailing in the Arctic is a challenge that needs to be addressed jointly by the Arctic states, as

¹⁶¹ Ibid 266

¹⁶² Ibid 267-268

¹⁶³ Ibid 269-270

¹⁶⁴ R. R. Churchill and A. V. Lowe, *The Law of the Sea* (3rd edn, Manchester University Press, 1999) 270-271

the waters are currently mostly high seas. With the coast guard agreement now in place and signed by the eight Arctic states¹⁶⁵ one could expect similar cooperation in the matter of establishing and maintaining navigational aids. This will be a demanding task in the Arctic where distances are long and the conditions change constantly. Drifting icebergs create a navigational hazard that is hard to predict and requires constant monitoring of the conditions.

Actions to mitigate pollution in case of emergency

If an accident occurs despite the measures taken to prevent one, action must be taken to minimize the effects of potential spilling of oil and other substances harmful to the marine environment. If the accident occurs in a state's coastal waters, the coastal state may react to the situation in the way it considers best. This is because the accident has interrupted the ship's voyage and it no longer enjoys the right of innocent passage. According to the International Convention relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, beyond the territorial sea a coastal state may take action to prevent pollution of sea by oil or danger to the coastline or related interests, but the measures need to be proportionate to the potential damage. The flag state must be compensated for any damage caused by excessive measures. If the case is not of extreme urgency, the flag states and other states potentially affected by the event should be consulted before taking action. After taking action to mitigate the danger, the other states and the IMO must be informed.¹⁶⁶ The obligation to inform other states that may be affected by the casualty is also spelled out in the MARPOL Convention and LOS Convention. The UNCLOS further states that states should create action plans for pollution event preparedness and cooperate in emergency

¹⁶⁵ S. Levon 'Arctic nations agree on coast guard cooperation' (Arctic Newswire, 29 October 2015) <<http://www.adn.com/article/20151029/arctic-nations-agree-coast-guard-cooperation>> accessed 6 November 2015

¹⁶⁶ R. R. Churchill and A. V. Lowe, *The Law of the Sea* (3rd edn, Manchester University Press, 1999) 353-354

situations.¹⁶⁷ This is exactly what the eight Arctic states have engaged themselves to by signing a regional agreement on coast guard cooperation.¹⁶⁸

Additionally, special measures to combat oil spills are set out in International Convention on Oil Pollution Preparedness Response and Co-Operation to which all the eight Arctic states are parties.¹⁶⁹ The Convention obligates parties to create national action plans for oil pollution preparedness and share scientific information on response technology. The parties must also make sure that their ships and ports have action plans for pollution prevention and that all discharges of oil at sea will be promptly reported to the nearest coastal state. The coastal state must then inform all affected parties and the IMO. The states may take action according to the severity of the situation and assistance must be provided to a state that requests help. The convention also obligates its parties to create regional and bilateral agreements for oil pollution preparedness and response.¹⁷⁰

An example of a regional agreement is the Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic that was signed by the eight Arctic states on the 15th of May 2013 under the auspices of the Arctic Council.¹⁷¹ The Arctic Council is a circumpolar forum for political discussion on Arctic issues, in which all the eight Arctic states are permanent members.¹⁷² The agreement aims to tackle oil spills by setting

¹⁶⁷ R. R. Churchill and A. V. Lowe, *The Law of the Sea* (3rd edn, Manchester University Press, 1999) 355

¹⁶⁸ S. Levon 'Arctic nations agree on coast guard cooperation' (Arctic Newswire, 29 October 2015) <<http://www.adn.com/article/20151029/arctic-nations-agree-coast-guard-cooperation>> accessed 6 November 2015

¹⁶⁹ International Maritime Organization 'Status of Conventions, Excel chart listing ratifications by state' (IMO, 2015) <<http://www.imo.org/en/About/Conventions/StatusOfConventions/Pages/Default.aspx>> accessed 6 January 2016

¹⁷⁰ R. R. Churchill and A. V. Lowe, *The Law of the Sea* (3rd edn, Manchester University Press, 1999) 356

¹⁷¹ Nunatsiaq News 'Arctic Ministers Sign New Agreement to Tackle Oil Spills' (Nunatsiaq News, 2013) <http://www.nunatsiaqonline.ca/stories/article/65674arctic_ministers_sign_new_agreement_to_tackle_oil_spills/> accessed 30 January 2016

¹⁷² Arctic Council 'Frequently Asked Questions' (Arctic Council, 2015) <<http://www.arctic-council.org/index.php/en/about-us/arctic-council/faq>> accessed 30 January 2016

guidelines for monitoring, cooperation in exchanging information and joint training programs and the coordination of equipment and personnel.¹⁷³

The aim of these agreements is clearly that all oil discharges should be reacted to according to the situation and in good cooperation between states. The political will to apply these ideas to oil pollution prevention in the Arctic seems to be there, but the harsh environmental characteristics of the region are a challenge that may create barriers for pollution control. Although the technology to combat spills is being researched and is advancing, the best way of protecting the marine environment from an oil spill would be to prevent one from happening in the first place. Especially the Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic has been criticized because it focuses solely on combating a spill that has already occurred instead of promoting measures to prevent spills.¹⁷⁴ In such demanding circumstances as exist in the Arctic, the primary emphasis should be placed on safety of shipping and minimizing the risk of accidents.

When considering the practicality of such agreements in protecting the marine environment, the difficult conditions that characterize the Arctic region are not the only issue that raises questions. A more political view should also be considered as the Arctic states differ from each other substantially in their capacity to combat spills. Establishing and providing equipment for emergency situations is much more cost effective for states such as Canada and Russia that already have a well equipped military powers rather than for example Iceland that has no military at all. Therefore, in case of big an oil spill the costs of collecting the spill may be unevenly distributed among contracting parties which may cause tension between them and also create reluctance to call for help in an emergency situation. It remains to be seen how these questions will be resolved although one should hope that no oil accident would ever happen.

¹⁷³ Arctic Council 'Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic' (Arctic Council 2013) <https://oaarchive.arctic-council.org/bitstream/handle/11374/529/MM08_agreement_on_oil_pollution_preparedness_and_response_%20in_the_arctic_formatted%20%282%29.pdf?sequence=1&isAllowed=y> accessed 30 January 2016

¹⁷⁴ Nunatsiaq News 'Arctic Ministers Sign New Agreement to Tackle Oil Spills' (Nunatsiaq News, 2013) <http://www.nunatsiaqonline.ca/stories/article/65674arctic_ministers_sign_new_agreement_to_tackle_oil_spills/> accessed 30 January 2016

Prevention of invasive species

In March 2015 the IMO announced that the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM) would enter into force on the 24th of November 2016.¹⁷⁵ The agreement is the result of more than 14 years of negotiations, and had been waiting since 2004 to collect enough ratifications to cover 35 % of the world commercial shipping fleet before it could enter into force.¹⁷⁶ Of the eight Arctic states, Canada, Denmark, Sweden, Russia and Norway have ratified the convention,¹⁷⁷ and Finland has announced its intention of doing the same.¹⁷⁸ The BWM Convention sets standards for ballast water treatment systems that are to be installed in vessels to prevent the transfer of potentially harmful organisms and pathogens.¹⁷⁹ While this success in bringing international standards for ballast water management into force is good news for the protection of the Arctic's vulnerable marine ecosystem, there are still issues over the effectiveness of the convention. Firstly, there is the uncertainty already noted over whether the conventions of the IMO can be considered as 'generally accepted rules or standards' that apply to all vessels when they enter into force, or whether the standards provided by the convention only apply to parties that have ratified it. Secondly, the United States is not a party to the BWM Convention, and there is uncertainty over the standards that the United States Coast Guard will recognize and enforce. The potentially

¹⁷⁵ The Maritime Executive 'ICS Wants IMO to Act on Ballast Water' (The Maritime Executive, 26 November 2015) <<http://maritime-executive.com/article/ics-wants-imo-to-act-on-ballast-water>> accessed 6 January 2016

¹⁷⁶ International Maritime Organization 'Ballast Water Management' (IMO, 2015) <<http://www.imo.org/en/OurWork/Environment/BallastWaterManagement/Pages/Default.aspx>> accessed 6 January 2016

¹⁷⁷ International Maritime Organization 'Status of Conventions, Excel chart listing ratifications by state' (IMO, 2015) <<http://www.imo.org/en/About/Conventions/StatusOfConventions/Pages/Default.aspx>> accessed 6 January 2016

¹⁷⁸ Lloyd's List 'Finland to become 45th signatory of the ballast water convention' (Lloyd's List, 20 November 2015) <<http://www.lloydslist.com/ll/sector/ship-operations/article473882.ece>> accessed 6 January 2016

¹⁷⁹ International Maritime Organization 'Ballast Water Management' (IMO, 2015) <<http://www.imo.org/en/OurWork/Environment/BallastWaterManagement/Pages/Default.aspx>> accessed 6 January 2016

conflicting standards for ballast water treatment systems could create a situation where a ship with an IMO approved treatment system might not be able to operate in the United States' waters once the BWM Convention enters into force.¹⁸⁰

¹⁸⁰ The Maritime Executive 'ICS Wants IMO to Act on Ballast Water' (The Maritime Executive, 26 November 2015) <<http://maritime-executive.com/article/ics-wants-imo-to-act-on-ballast-water>> accessed 6 January 2016

7 **Cruise tourism and the Antarctic**

Looking from the Arctic, at the opposite pole of the globe lies the Antarctic. Together the two polar regions, both with harsh climatic conditions and yet fragile ecosystems, represent the world's most untouched and remote wildernesses. Their spectacular views, unique fauna, and people's never-ending quest for new adventures - together with increasing accessibility - are drawing growing numbers of tourists to see the attractions. This chapter outlines the similarities and differences between the polar regions and introduces the legal framework that has already been built to protect the Antarctic environment from challenges connected *inter alia* with cruise tourism.

7.1 **Two Polar Regions – differences and similarities**

At first glance, the polar regions of the Arctic and Antarctic look quite similar. Both are remote, ice-covered regions with austere climatic conditions, and their fauna and flora are highly endemic. The key geographical difference between the two regions – apart from their locations - is that the Arctic is an ocean surrounded by sovereign states while the Antarctic is a continent surrounded by sea. Therefore there is undisputed sovereignty over large parts of the land areas and coastal waters in the Arctic zone. There are outstanding claims for extended jurisdiction over the sea-bed in some additional parts of the Arctic Ocean, but as long as they are not recognized, the ocean around the North Pole retains the status of high seas. Further, due to geo-strategic factors, there is a strong military presence at the Arctic.¹⁸¹

¹⁸¹ C. Michael Hall and Margaret E. Johnston 'Introduction: Pole to Pole: Tourism Issues, Impacts and the Search for Management Regime in Polar

The Antarctic, by contrast, is a demilitarized area that is to be used for peaceful purposes only. The region has its own legal regime and while there are existing claims for sovereignty over parts of the Antarctic, it remains *res communis*¹⁸² as all claims have been placed under a moratorium by the Antarctic Treaty System (ATS).¹⁸³ For cruise vessels, these different legal regimes mean that in the Arctic a ship may become subject to several states' jurisdictions along its journey, and the flag state's jurisdiction applies solely only when the ship is in a high seas area. In the Antarctic, the ship is subject solely to flag state jurisdiction throughout as there is no state present in the region to prescribe and enforce laws. In both cases, the enforcement of navigational rules and standards is challenging in practice given the sheer size of the regions.¹⁸⁴

A further substantial difference between the two polar regions concerns population. The land areas of the Arctic are inhabited by indigenous peoples who have strong cultural identities and actively seek political self-determination. In the Antarctic there is no indigenous population and the only human habitats of the region are made up of researchers and scientists who stay in scientific bases for fixed periods of time. For cruise tourism, this means that in the Antarctic the tourist activities are even more heavily focused on viewing landscapes and wildlife than in the Arctic, where some may be interested in the local culture as well. Consequently, the effects of cruise tourism in the Antarctic are limited to environmental effects including implications for wildlife. Oil accidents, poor waste management and pollution have a similar potential for disrupting the local ecosystem as they do in the Arctic, but the economic and cultural effects of tourism do not need

Regions' in C. Michael Hall and Margaret E. Johnston (eds), *Polar Tourism, Tourism in the Arctic and Antarctic Regions* (John Wiley & Sons 1995) 4-6

¹⁸² C. Michael Hall and Mariska Wouters 'Issues in Antarctic Tourism' in C. Michael Hall and Margaret E. Johnston (eds), *Polar Tourism, Tourism in the Arctic and Antarctic Regions* (John Wiley & Sons 1995) 160

¹⁸³ Secretariat of the Antarctic Treaty 'Peaceful use and Inspections' (ATS, 2011) <http://www.ats.aq/e/ats_governance.htm> accessed 31 January 2016

¹⁸⁴ C. Michael Hall and Margaret E. Johnston 'Introduction: Pole to Pole: Tourism Issues, Impacts and the Search for Management Regime in Polar Regions' in C. Michael Hall and Margaret E. Johnston (eds), *Polar Tourism, Tourism in the Arctic and Antarctic Regions* (John Wiley & Sons 1995) 4-5

to be taken into account when considering the impacts of tourism in the Antarctic.¹⁸⁵

Although advances in ship technology and the melting of the ice cap in the North have made the polar regions more accessible than before, both are still typified by harsh climate conditions that limit the tourist season to summer months. In the Arctic the summer is rather mild when compared to the Antarctic where the conditions remain rigorous also during the lighter months. The accessibility of the Antarctic is not only limited by the weather conditions, but also by its remoteness from any normally inhabited lands. The Arctic can be accessed by air, sea and land, but to the Antarctic one can only travel by air or sea, which both makes the travel more costly and lengthens the duration of the trip.¹⁸⁶

7.2 Cruise tourism in the Antarctic

The first commercial tourist expeditions to the Antarctic were organized in the late 1950s by the Chilean and Argentinean governments, and since then the cruise tourism industry has grown steadily.¹⁸⁷ In the summer of 2007–2008 a total of about 46.000 tourists were reported to have visited the Antarctic on expeditions made by airplane or ship.¹⁸⁸ The majority of the trips are made by ships, as flights are more prone to weather disruptions and safe landing sites are difficult to find. The vessels typically depart from South American ports, from which the Antarctic Peninsula can be reached after a 48-hour voyage. The Peninsula has the mildest weather conditions found in the Antarctic, and is relatively easy to navigate as there is little pack ice

¹⁸⁵ C. Michael Hall and Margaret E. Johnston 'Introduction: Pole to Pole: Tourism Issues, Impacts and the Search for Management Regime in Polar Regions' in C. Michael Hall and Margaret E. Johnston (eds), *Polar Tourism, Tourism in the Arctic and Antarctic Regions* (John Wiley & Sons 1995) 4-5

¹⁸⁶ Ibid 4

¹⁸⁷ C. Michael Hall and Mariska Wouters 'Issues in Antarctic Tourism' in C. Michael Hall and Margaret E. Johnston (eds), *Polar Tourism, Tourism in the Arctic and Antarctic Regions* (John Wiley & Sons 1995) 148

¹⁸⁸ Secretariat of the Antarctic Treaty 'Tourism and non Governmental Activities' (ATS 2011) <http://www.ats.aq/e/ats_other_tourism.htm> accessed 1 February 2016

compared to the rest of the Antarctic shore-line. The peninsula also has diverse wildlife and there are several research bases located in the area that can be visited during the tours. These features make the Peninsula the most visited Antarctic destination.¹⁸⁹

7.3 The Antarctic Treaty and environmental protection

The Antarctic Treaty was first signed in December 1959 in Washington by 12 countries. It entered into force in 1961 and as of 2016, has collected 53 signatories. The Antarctic Treaty covers the entire area south of 60° South. The main purpose of the treaty is to ensure that the Antarctic will be used only for peaceful purposes and that the continent will not become the object of international disputes.¹⁹⁰ To secure these aims, the treaty imposes a moratorium on all territorial claims over Antarctic areas; bans all military action; and guarantees freedom of access to all areas and installations situated in Antarctica.¹⁹¹

Antarctic Treaty Consultative Meetings (ATCM) were held every two years between 1961 and 1994, since when the meetings have occurred annually. The meetings bring together the representatives of consultative parities, non-consultative parties, working groups with observer status, and invited experts on Antarctic issues.¹⁹² The protection of the Antarctic environment has been a key issue at the ATCMs and since the Antarctic Treaty came into force, it has been supplemented with several documents that, together with it, now form the Antarctic Treaty System (ATS). The

¹⁸⁹ C. Michael Hall and Mariska Wouters 'Issues in Antarctic Tourism' in C. Michael Hall and Margaret E. Johnston (eds), *Polar Tourism, Tourism in the Arctic and Antarctic Regions* (John Wiley & Sons 1995) 148-149

¹⁹⁰ Secretariat of the Antarctic Treaty "The Antarctic Treaty" (ATS 2011) <<http://www.ats.aq/e/ats.htm>> accessed 1 February 2016

¹⁹¹ Secretariat of the Antarctic Treaty 'Peaceful use and Inspections' (ATS, 2011) <http://www.ats.aq/e/ats_governance.htm> accessed 31 January 2016

¹⁹² Secretariat of the Antarctic Treaty 'The Antarctic Treaty Consultative Meeting ATCM' (ATS, 2011) <http://www.ats.aq/e/ats_meetings_atcm.htm> accessed 1 February 2016

supplementary documents to the Antarctic Treaty are: The Convention for the Conservation of Antarctic Seals (1972), The Convention on the Conservation of Antarctic Marine Living Resources (1980), and The Protocol on Environmental Protection to the Antarctic Treaty (1991).¹⁹³

The Protocol on Environmental Protection

The Protocol on Environmental Protection to the Antarctic Treaty was signed in Madrid in October 1991 and came into force in 1998.¹⁹⁴ It designates Antarctic as “a natural reserve, devoted to peace and science”.¹⁹⁵ It highlights the intrinsic value of the region and its ecosystems, sets out a comprehensive list of principles to be followed when planning and conducting activities in the Antarctic,¹⁹⁶ and commits parties to act in cooperation for the purposes of the ATS i.a. by exchanging information among each other.¹⁹⁷ The protocol imposes a moratorium on all mineral extraction activities except for scientific purposes,¹⁹⁸ a measure that both protects the environment from the effects of potential mining operations and excludes the risk of a political conflict over the ownership of mineral finds. Also, the protocol obligates parties to make environmental impact assessments in accordance with the procedures set out in annex I,¹⁹⁹ and provides guidelines for action in emergency situations.²⁰⁰

The Environment Protocol has six annexes. Annex I (Environmental Impact Assessment) Annex II (Protection of Fauna and Flora), Annex III (Waste Management and Waste Disposal), and Annex IV (Prevention of Marine Pollution) were accepted together with the Protocol in 1991 and came

¹⁹³Secretariat of the Antarctic Treaty ‘Key documents of the Antarctic Treaty System’ (ATS, 2011) <http://www.ats.aq/e/ats_keydocs.htm> accessed 1 February 2016

¹⁹⁴Secretariat of the Antarctic Treaty ‘The Protocol on Environmental Protection to the Antarctic Treaty’ (ATS, 2011) <<http://www.ats.aq/e/ep.htm>> accessed 1 February 2016

¹⁹⁵The Protocol on Environmental Protection to the Antarctic Treaty (1991), Environmental Impact Assessment, Art 2

¹⁹⁶Ibid, Art 3

¹⁹⁷Ibid, Art 6

¹⁹⁸Ibid, Art 7

¹⁹⁹Ibid, Art 8

²⁰⁰Ibid, Art 15

into force in 1998. Annex V (Area Protection and Management) entered into force in 2002; Annex VI concerning Liability Arising from Environmental Emergencies was adopted in 2005 and will enter into force when it has been approved by all Consultative Parties.²⁰¹ The Environment Protocol also includes guidelines for tourist expeditions, designed to protect the Antarctic environment from adverse impacts caused by tourism.²⁰²

Annex I, Environmental Impact Assessment (EIA), to the Protocol on Environmental Protection obligates treaty parties to evaluate the environmental impacts of any activity planned to take place in the Antarctic. EIA is considered unnecessary only in cases where the activity is determined to have “less than a minor or transitory impact”.²⁰³ The annex gives detailed instructions on how to prepare an Initial Environmental Evaluation and a Comprehensive Environmental Evaluation (CEE), and what these evaluations shall include.²⁰⁴ The decision on whether the planned activity should proceed in its original or modified form is to be taken based on the evaluations’ findings.²⁰⁵ The environmental effects of an activity that takes place after a CEE are to be monitored²⁰⁶ and the results shall be “*circulated to the Parties, forwarded to the Committee and made publicly available*”.²⁰⁷ The obligation to carry out an environmental evaluation when planning activities in the Antarctic forces treaty parties to consider the effects of their actions in the region. Monitoring and reporting the results of activities helps to produce information on the actual environmental impacts and to evaluate the success of the processes. If the information produced is utilized effectively, it can help to develop future activities in a more sustainable direction. No similar obligation to evaluate the environmental effects of different activities is currently in force for the Arctic region.

²⁰¹ Secretariat of the Antarctic Treaty ‘The Protocol on Environmental Protection to the Antarctic Treaty’ (ATS, 2011) <<http://www.ats.aq/e/ep.htm>> accessed 1 February 2016

²⁰² Secretariat of the Antarctic Treaty ‘Tourism and non Governmental Activities’ (ATS, 2011) <http://www.ats.aq/e/ats_other_tourism.htm> accessed 1 February 2016

²⁰³ Annex I to the Protocol on Environmental Protection to the Antarctic Treaty, Art 1

²⁰⁴ Ibid, Art 2-3

²⁰⁵ Ibid, Art 4

²⁰⁶ Ibid, Art 5

²⁰⁷ Ibid, Art 6

Annex II, Conservation of Antarctic Fauna and Flora, prohibits harmful interference with Antarctic wildlife without a permit. The taking of animals or plants may only be permitted for scientific purposes and when the losses can be made good by natural reproduction.²⁰⁸ Animals or plants not native to the Antarctic may not be introduced to land, water, or ice shelves in the region except if permitted by the authorities.²⁰⁹ Plants and animals that may be permitted are domestic plants and laboratory plants and animals.²¹⁰ To make sure their importation does not harm the Antarctic fauna and flora, the imported species are required to be carefully controlled so that they do not interfere with the local species. Imported fauna and flora must be removed or disposed of prior to the expiration of the permit by means that exclude any risk to native species.²¹¹

Annex III, Waste Disposal and Waste Management, regulates waste disposal in the Antarctic, gives guidelines for waste management planning, and lists products that are prohibited from being introduced to the region. The general obligations of the annex include principles for minimizing the amount of waste produced in the Antarctic; for the storage, disposal and removal of waste in the region; and for the clean-up of disposal and work sites. The regulations aim to minimize the environmental impacts of Antarctic operations and to avoid waste products dispersing into nature.²¹²

Annex IV to the Protocol on Environmental Protection prohibits all discharge of oil within the Antarctic Treaty area. Discharges of any oily residues are to be made outside the treaty area or in reception facilities. Exceptions to the regulation are listed in Annex I of MARPOL 73/78.²¹³ The discharge of noxious liquid substances is forbidden without exceptions.²¹⁴ Strict and detailed regulations are provided on waste disposal,²¹⁵ and sewage discharge is prohibited within 12 nautical miles from land or ice shelves.

²⁰⁸ Annex II to the Protocol on Environmental Protection to the Antarctic Treaty, Conservation of Antarctic Fauna and Flora, Art 3

²⁰⁹ Ibid, Art 4

²¹⁰ Ibid, Appendix B, Importation of plants and animals

²¹¹ Ibid, Art 4

²¹² Annex III to the Protocol on Environmental Protection to the Antarctic Treaty, Waste Disposal and Waste Management

²¹³ Annex IV to the Protocol on Environmental Protection to the Antarctic Treaty, Prevention of Marine Pollution, Art 3

²¹⁴ Ibid, Art 4

²¹⁵ Ibid, Art 5

Interestingly, the distance from land at which sewage may be discharged into the sea is no greater than that generally foreseen in MARPOL regulations. However, a considerable difference is made by applying the same standard to cover ice shelves as well. As the Antarctic continent is surrounded by ice-covered waters, delaying discharge until a ship has reached 12 nautical miles from the nearest ice shelves means in practice that the vessel is far more than 12 nautical miles from the actual land before it can discharge its sewage. No similar rule applies in the Arctic where, consequently, a ship can be far away from land but still surrounded by ice when it discharges its sewage. Also, the ATS regulation for the discharge of noxious liquid substances is far stricter than the corresponding general standards of MARPOL.

Annex V to the Protocol on Environmental Protection, Area Protection and Management, offers an opportunity to designate areas of Antarctica as specially protected or specially managed areas. Actions in such areas may be prohibited, restricted or managed according to the corresponding management plans.²¹⁶ Entering a specially managed area does not require a permit, but entering a specially protected area does. The annex lists the characteristics on the basis of which an area can be designated as a protected area, and points to be included in management plans for specially managed areas.²¹⁷

The regulations set out in the annexes of the Environment Protocol do not apply to cases of emergency where measures need to be taken for the safety of human life, equipment of high value or environmental protection.²¹⁸ Such actions taken in cases of emergency are to be reported, and the information circulated to the Treaty Parties and to the Committee for Environmental Protection, in cases regulated by the Annex IV Prevention of Marine Pollution.²¹⁹

²¹⁶ Annex V to the Protocol on Environmental Protection to the Antarctic Treaty, Area Protection and Management, Art 2

²¹⁷ Ibid, Art 3-5

²¹⁸ Annexes I-V to the Protocol on Environmental Protection to the Antarctic Treaty

²¹⁹ Annex IV to the Protocol on Environmental Protection to the Antarctic Treaty, Prevention of Marine Pollution, Art 7

Guidelines for planning non-governmental activities and for visitors to the Antarctic Treaty area

The ATCM has issued Guidelines on Contingency Planning, Insurance and Other Matters for Tourist and Other Non-governmental Activities in the Antarctic Treaty Area. The guidelines are attached to the Environment Protocol Recommendation XVIII-1 (1994). They state that the organizer of such activities should make plans for search and rescue, medical care and evacuation before the start of the activity, and that the plans should not depend on the support of national rescue services without a written agreement. The organizer of the activity is also responsible for the potential costs of search and rescue and medical care. In addition, the guidelines contain requirements for the equipment to be used in Antarctic operations and competence standards for persons taking part in the activities.²²⁰

The ATCM has also issued General Guidelines for Visitors to the Antarctic. The guidelines contain detailed instructions on what to take into account when visiting the region and how to minimize the impact of the activity. Visitors are, for example, advised to clean all equipment carefully before the visit to make sure that no seeds or soil are accidentally carried to the Antarctic. Tourists are also advised on how to behave around wildlife, and instructions are given on safety issues and avoiding interference with scientific operations.²²¹

The ATCM's guidelines express and concretize regulations set out in the Environmental Protocol and its annexes. They illustrate the difficult environmental characteristics of the Antarctic that need to be considered when planning operations, but also point out the actions necessary to protect the fragile ecosystems of the region.

Additional environmental agreements by the ATCM

A good example of ATCM measures for protecting the Antarctic environment, based on the ATS regulations, is Decision 8/2005 which asks the IMO to devise mechanisms to restrict the use of heavy fuel oil (HFO) in

²²⁰ Guidelines on Contingency Planning, Insurance and Other Matters for Tourist and Other Non-governmental Activities in the Antarctic Treaty Area

²²¹ General Guidelines for Visitors to the Antarctic

the Antarctic. The wished-for restriction is based on Article 3 of the Environmental Protocol, which requires activities “*to be planned and conducted so as to limit adverse impacts on the Antarctic environment*”, and the obligations of Annex IV on preventing marine pollution. The case for the restriction is justified by the special characteristics of the region that make navigation difficult, and by the hazardous effects of a potential spill.²²²

A further example of ATCM’s work to protect the Antarctic environment is provided by the Practical Guidelines for Ballast Water Exchange in the Antarctic Treaty Area. These guidelines are connected to the IMO BWM Convention and apply to vessels covered in BWM Article 3. The regulations do not replace the BWM regulations, but provide a regional ballast water management regime for the Antarctic. The guidelines require a ballast water exchange plan to be made for vessels with ballast tanks entering the Antarctic waters, and stipulate that ballast water operations should be recorded. They provide recommendations on ballast water exchange for ships arriving in the Antarctic Treaty area that may need to change their ballast water during their Antarctic voyage. The guidelines prohibit the release of ballast water sediments in the Antarctic, and suggest that tanks should be cleaned before entering the treaty area if the vessel has spent significant time in the Arctic before its Antarctic voyage. Again, however, the regulations do not apply to emergency situations. When correctly followed, these guidelines offer an easy way to protect the Antarctic wildlife from invasive species. Both of the represented agreements are unique to the Antarctic and show the potential of the ATS for effective environmental protection.

7.4 Challenges of the Antarctic Treaty System

The ATS provides a uniform system of regulation for the whole Antarctic region, making the juridical situation much simpler than in the Arctic where, as noted, a ship may become subject to several different jurisdictions along its route through the region. The ATS creates the opportunity to prescribe laws that cover the whole region once they are in force. The great challenge with the ATS is how to enforce the regulations. As there are no states present

²²² Decision 8/2005, Use of Heavy Fuel Oil (HFO) in Antarctica

in the Antarctic, vessels sailing in the region are subject only to their flag state jurisdiction. Moreover, the Antarctic Treaty is binding only for those who have ratified it, and its enforcement relies solely on the flag state. It can sometimes be difficult to distinguish when the Treaty obligations apply, as a tourist vessel, its crew, and the tourists themselves may all represent different nationalities. As there is no single authority enforcing the regulations, obeying them remains a question of self-discipline and trust, a situation that hardly guarantees the effectiveness of the regulations.²²³ The size of the Polar regions and the distances within them create their own challenges for monitoring and enforcement of regulations.

In sum, in the Antarctic an appropriate region-wide legal regime exists, but it lacks both a juridical framework and practical capacity for effective enforcement. In the Arctic, by contrast, there are functioning states present with considerable capacity to enforce legal standards, but they lack common regulations that could be enforced. Two regional agreements on the specific issues of search and rescue and oil spill response have, indeed, been enacted to start filling the gap: but as both of them are still quite new at the time of writing this thesis, there is no actual experience on how these agreements will affect developments in practice.

²²³ C. Michael Hall and Mariska Wouters 'Issues in Antarctic Tourism' in C. Michael Hall and Margaret E. Johnston (eds), *Polar Tourism, Tourism in the Arctic and Antarctic Regions* (John Wiley & Sons 1995) 156

8 The Polar Code –a common legal regime for the Polar Regions

As we have seen, navigation in the Arctic and Antarctic is challenging due to the unique characteristics of the regions. Harsh weather, changing ice conditions, the limited availability of maps and other navigational aids, and the remoteness of the regions all pose risks for the safety of the people on board and also for vulnerable polar environments. Climate change is expected to make conditions even less predictable and extreme events more frequent. As shipping volumes are expected to grow in both polar regions, there is an increasing need for regulation of shipping to ensure the safety of life at sea and environmental sustainability.

In 2009 the IMO adopted Guidelines for Ships Operating in Polar Waters that took into account the special conditions of the regions and were intended to provide standards for safety of navigation and environmental protection. The guidelines were recommendatory and thus not legally binding. In 2010 detailed negotiations started on The International Code for Ships Operating in Polar Waters (Polar Code), leading to its conclusion in May 2015 as the first binding international agreement that applies to both polar regions. The Code consists of two parts that both contain mandatory and recommendatory sections. It will enter into force on the 1st of January 2017 and is mandatory for all parties to the SOLAS and MARPOL conventions, both of which are widely ratified.²²⁴ In Antarctic waters, the Polar Code applies to the area South of 60° South. In the Arctic it applies mostly to the area North of 60° North, with exceptions that lift the line of application further to the North as illustrated in figure 1 in the introduction.

²²⁴ International Maritime Organization ‘Shipping in polar waters’ (IMO, 2016) <<http://www.imo.org/en/MediaCentre/HotTopics/polar/Pages/default.aspx>> accessed 21 February 2016

The Polar Code includes standards for ship structure and design, fire safety and safety of navigation, as well as life-saving appliances, manning and training, and operational regulations for the prevention of pollution from ships. Ships operating in polar waters are required to apply for a Polar Ship Certificate that classifies vessels in three different categories according to the ice conditions in which the ship is able to operate. To be certified, the vessels need to go through an assessment to define the possible navigational hazards or limitations that the ship may face in polar waters and to examine the plans or procedures in place to mitigate the possibility of incidents and their environmental impacts. For example, more advanced ice sensor technology and communication systems are required from vessels aiming for high latitudes than from vessels designed to operate mostly in open water areas and areas with less severe ice conditions.²²⁵ In addition, the ships are required to carry a Polar Water Operational Manual that provides information on the ship's operational capabilities and limitations as the basis for decision-making for the people operating the ship.²²⁶

The AHTS *Magne Viking* owned by Danish Viking Supply Ships became the first ship to be classified as compliant with the Polar Code in February 2016. As the ship was built to operate in cold conditions, it already met most of the Polar Code requirements in its original condition. Some updates were made on the vessel and its equipment and in order to provide the required documentation.²²⁷ This early case of application of the Polar Code's standards is a sign of interest in the polar shipping business and connected legal developments. Applying the Code to a real ship provides practical experience on the implementation process that is valuable for ship-owners when extending compliance measures to the rest of their fleet. Also, *Magne*

²²⁵ Jodie Knox 'IMO Polar Code background and update from Arctic Symposium' (Coast Guard Maritime Commons, 2015) <<http://mariners.coastguard.dodlive.mil/2015/07/28/7282015-imo-polar-code-background-and-update-from-arctic-symposium/>> accessed 21 February 2016

²²⁶ International Maritime Organization 'Shipping in polar waters' (IMO, 2016) <<http://www.imo.org/en/MediaCentre/HotTopics/polar/Pages/default.aspx>> accessed 21 February 2016

²²⁷ Eric Haun 'First Vessel Secures IMO Polar Code Compliance' (MarineLink.com, 2016) <<http://www.marinelink.com/news/compliance-secures-vessel405421.aspx>> accessed 21 February 2016

Viking and its crew are the first ones to gather operational experience of working under the new standards.

8.1 Evaluation on the Polar Code

The Polar Code takes a risk-based approach to the regulation of shipping. The same standards do not apply to every ship, but vary according to the area in which the vessel operates. The requirement to make a kind of case analysis concerning the area where a certain vessel is planned to operate, and the equipment that it consequently needs to fill in safety regulations, obliges shipping companies to consult experts before their ships may enter polar waters. This should foster growing expertise in risk analysis and the collection of information on the polar regions' specific conditions. Applying the Polar Code's standards to ships that already have experience of operating in the region is not a big step, as they are familiar with local conditions and will already have been obliged to meet most requirements. For newcomers, however, applying the standards will require greater effort, which will hinder inexperienced ship operators from accessing the regions and thus help prevent unnecessary accidents.²²⁸

Considering the risk-based approach of the Polar Code regulation, it is disappointing that standards are set for the construction and equipment of the vessel itself but no special training is expected of the crew. The regulations speak only of "advanced" or "basic" training required for a ship's personnel according to ice conditions in the area where the ship operates.²²⁹ There is no requirement for polar-specific training, and the standards have been criticized for being too loose and for potentially jeopardizing the safety of the environment and the people on board.²³⁰ Another source of criticism has been

²²⁸ Wendy Lausen 'Mapping the Polar Code' (The Maritime Executive, 2015) <<http://www.maritime-executive.com/features/mapping-the-polar-code>> accessed 26 February 2016

²²⁹ International Code for Ships Operating in Polar Waters, Annex 10, 12.3

²³⁰ Vadim Astrein 'The future of the Polar Code and the environmental issues of the Arctic region will be in the hands of the new IMO secretary-general' (Ministry of Transport of the Russian Federation, 2015) <http://www.klyuev.pro/en/news/IAA_PortNews_has_published_the_analysis_of_programs_of_the_candidates_for_the_post_of_IMO_Secretary-

the fact that the Polar Code was finalized without including provisions to ban the use of HFO in the Arctic.²³¹ In the Antarctic the use and carrying of HFO has been forbidden since 2011 under MARPOL convention.²³²

A positive mention should, nevertheless, be made of the Polar Code's articles covering prevention of pollution from ships. The standards they set are in accordance with MARPOL, with additional regional requirements. The standards now defined for both polar regions appear stricter than the equivalent norms in ATS, which means an advance in environmental protection for both of the regions. The Polar Code's pollution prevention standards are particularly important for the Arctic as they specify the distance from ice at which the discharge of garbage and sewage may take place. Prior to the Polar Code, as noted above, the distance from ice was only taken into account in the ATS, while regulations applying to the Arctic only spoke of distance from the nearest land.²³³ The Polar Code also takes into consideration the age and category of ships when considering the applicable environmental standards. Any discharge of sewage is prohibited - with certain exceptions – for A and B category vessels and passenger ships that are built after the Polar Code enters into force.²³⁴ For some reason, however, some of the stricter regulations concerning prevention of pollution by garbage from ships only apply to the Antarctic.²³⁵ This leaves one wondering, once again, why the Arctic does not seem to deserve the same level of environmental protection.

The Polar Code makes no direct reference to tourism, which is surprising considering the expected growth in tourist cruises in both polar regions. Applying strict sewage pollution control to all passenger ships is, however, a

General_in_the_part_of_the_Polar_Code_and_the_environmental_issues_of_the_Arctic_region_> accessed 26 February 2016

²³¹ Wendy Lausen 'Mapping the Polar Code' (The Maritime Executive, 2015) <<http://www.maritime-executive.com/features/mapping-the-polar-code>> accessed 26 February 2016

²³² International Maritime Organization 'Shipping in polar waters' (IMO, 2016) <<http://www.imo.org/en/MediaCentre/HotTopics/polar/Pages/default.aspx>> accessed 26 February 2016

²³³ International Code for Ships Operating in Polar Waters; Annex IV to the Protocol on Environmental Protection to the Antarctic Treaty, Prevention of Marine Pollution

²³⁴ International Code for Ships Operating in Polar Waters, Annex 10, 4.2.2

²³⁵ International Code for Ships Operating in Polar Waters, Annex 10, 5.2.2

good start in terms of controlling tourism's environmental effects. Incorporating specific visitor guidelines for polar regions under the Code, as has been done under the ATS, could help promote the conservation of local species and culture in the Arctic. AECO has published guidelines for visitors to the Arctic region²³⁶ that could, together with the Antarctic Tourist Guidelines, be used to develop common visitor guidelines for both zones. As the enforcement of guidelines is always an area of difficulty, applying a degree of mandatory obligations for visitors to the polar regions could be something to consider in the future.

Despite the remaining gaps in regulation and the legal inequalities between the two polar regions, the Polar Code can be greeted as an important step towards better regulation of navigational and environmental safety in polar waters. Creating over-strict regulations would have been likely to hamper the development of the Code because of the burden for operators of complying with the standards. For example, in Russia much local transport of food and other necessities relies on ships that consume HFO, and a ban on it would have stopped the fleet from functioning.²³⁷ It should also be recognized that producing legal standards for the Antarctic is simpler in important ways than for the Arctic, as commercial shipping is virtually non-existent in the former. Developing new international standards is always a matter of consensus that can be hard to reach. Thus, bringing the Polar Code into force is already a significant achievement. Its entry into force can be seen as a first step that lays the foundation for regulation and will allow further improvements to be added in the future.²³⁸

²³⁶ Association of Arctic Expedition Cruise Operators 'Visitor Guidelines' <<http://www.aeco.no/guidelines/visitor-guidelines/>> accessed 28 February 2016

²³⁷ Wendy Lausen 'Mapping the Polar Code' (The Maritime Executive, 2015) <<http://www.maritime-executive.com/features/mapping-the-polar-code>> accessed 26 February 2016

²³⁸ Ibid

9 Conclusions

The reasons behind the growth of tourism in the Arctic include increased access and growing publicity for the region. Technological advances and increased wealth and leisure time, together with the retreating ice, have made the Arctic more accessible for tourists. The retreat of the ice cap covering the Arctic Ocean is a sign of a changing climate, but also a factor that is accelerating the change. Concern over the environment and the increasing accessibility of the region's natural resources has drawn both scientific and political interest and drawn considerable public attention. Unfortunately tourism, like all human activity, has impacts on the environment in which it happens. Arctic cruise tourism thrives upon the natural characteristics of the region: its pristine landscapes and its unique fauna. Yet if not managed in a sustainable way, tourism might be depleting the very resource it emerged to enjoy. This is a legitimate concern, given the vulnerability of an Arctic ecosystem that has long remained isolated from disturbance thanks to the natural barriers created by its harsh climate conditions. Now, the region is undergoing an environmental change that is re-shaping its scenery and placing local ecosystems and economies under stress. Outside disturbances such as increased shipping in the Arctic are creating extra pressure on the environment, and the magnitude of the effects is difficult to predict.

The most immediate environmental effect of increased shipping in the Arctic is increased pollution from vessels. Pollutants affect air and water quality and may result in health problems for people and wildlife. Air pollution also has an accelerating effect on climate change as particles of black carbon descend on snow and ice, darkening their surface and reducing their ability to reflect sunlight. The melting of the ice narrows down the habitats of local fauna, and has already brought the polar bear under a spotlight as a species threatened by the warming climate and a symbol of the icy region. The poor management of waste and sewage on ships may also cause littering and spread harmful bacteria, toxins and eutrophication nutrients in the marine environment.

Probably the most feared single threat to the environment posed by shipping is the possibility of an oil accident. Navigating in icy waters is challenging, especially due to the lack of mapping and other navigational aids. In a cold and dark environment where ice is present, distances are long and the weather is harsh, cleaning up a spill can turn out to be impossible. These same characteristics connected to the Arctic environment make potential search and rescue operations risky and difficult. Cruise ships only carry their own fuel, making the potential spill considerably smaller than in case of an oil tanker: but the local effects of the spill could be just as harmful if it happened close to an important habitat of a certain species. Cruise ships often do wildlife viewing and tend to visit areas with dense populations of animals. A relatively small spill occurring next to such an area like can cause a lot of harm quickly, whereas a larger spill occurring further away may be less harmful if successfully recovered. In addition to pollution, ships coming from outside the region may carry foreign species of fauna and flora that cling to their hulls or wind up travelling in their ballast water tanks. If an invasive species persists in its new environment, it may be a threat to the survival of the local fauna and flora.

All of shipping's environmental effects - accelerated climate change, pollution and invasive species - have effects on the local people. The warming climate makes the permafrost thaw and can cause flooding. These impacts may destabilise infrastructure and disrupt transport, forcing whole villages to be moved. Changes in environment also affect the local culture and economy. Both the formal and informal economies in the Arctic are highly dependent on natural resources such as fish. The indigenous cultures also have strong ties to the environment and are inseparable from traditional ways of harvesting from nature.

Unfortunately, the impacts of cruise tourism on the local economy and cultures seems to be exclusively of this indirect and negative kind. The cruise tourists usually spend little time on land, which minimizes their direct effect on local culture but also the amount of money spent on the local market. Further, the seasonality of Arctic tourism makes it difficult for the locals to create steady income from the industry. Most of what the cruise tourists need is provided for them on board, so that most of the income created by tourism flows towards foreign trip providers. While the tourists bring little income to the local economy, however, the infrastructure needed for facilitating the

industry requires high investment. Construction projects also only offer short-term employment, and some of the work-force may need to be imported which again makes money leak out from the local economy. If the locals do not consider that the investments made on infrastructure are benefiting the community, they might feel exploited and become resentful towards the tourists. All these issues, and their management in international law, need to be considered when evaluating the sustainability of Arctic tourism.

Sustainable development is a multi-dimensional concept that connects the social, environmental and economic aspects of providing for peoples' needs, together with time. Achieving sustainable development requires that all the prerequisites be fulfilled simultaneously. Modern tourists are environmentally aware, and people travelling to natural destinations such as the Arctic often look for companies with environmentally friendly practices. Advertising particular tourist options as green does not, however, always guarantee that the company acts accordingly.

For truly sustainable tourism, the following features need to be present. The tourists should be offered a satisfactory experience of the destination's attractions. The environmental characteristics of the destination should be taken into consideration when planning and conducting the trip in order to sustain the locale's value. Tourism should respect the local culture and the local economy should be compensated for the services provided. Educating both local people and the tourists about each others' needs and expectations is a key factor in promoting sustainable tourism. Providing information on the local environment and visitor guidelines for the tourists enables them to follow sustainable practices during their trip. Education may also help to focus tourists' interest on environmental protection programmes and promote conservation projects. Informing the locals about efforts made to mitigate the visitors' impact on the local nature can help prevent prejudice and fear of losing environmental assets. Information on the tourists' interests may also provide the locals with ideas on what kind of services the tourists might be interested in buying, and so increase economic profitability on a local level.

Comparing the potential environmental effects of cruise tourism with the prerequisites for it to be sustainable, it is clear that not all conditions for success are filled at present. Pollution, the possible introduction of new species to the region, and the risk of an oil spill threaten the vulnerable environment of the Arctic. The environmental changes that shipping

provokes can have far-reaching effects on all sectors of the local economy, and may also threaten the survival of indigenous cultures that depend on the environment. The local economies are further threatened with costly building projects designed to facilitate tourism, but offering no profit for the local service industry as cruise tourists spend most of their time and money on board ship.

By aggravating such risks for the human and natural environment, cruise tourism may be putting its own future at risk and contributing to destroying the Arctic as a destination. Even if steps are taken as suggested above to educate the locals and the tourists, thus increasing environmental awareness and ensuring that more local goods and services are bought, the income generated is most unlikely to compensate for the economic and environmental losses caused by building projects and added pollution. The greatest threat to the sustainability of Arctic cruise tourism lies precisely in the environmental consequences of increased shipping. Therefore, the shipping industry needs to act responsibly and apply the precautionary principle by cutting down emissions and reducing the risk of accidents. In the case of competitive industries such as the cruise industry, environmentally aware practices can only be ensured by the enactment, recognition and enforcement of legal rules and standards.

The principles of international environmental law provide guidelines and embody fundamental values that should be followed when drafting detailed environment protection measures. According to the principle of common but differentiated responsibility, the developed countries carry a greater responsibility for the fate of global environment than the developing countries. The Arctic environment can undeniably be considered valuable for the whole climate system, not only as a local resource asset, and this should be kept in mind when assessing the case for using it in different ways. Shipping goods though the Arctic might be defended by the argument that it cuts global pollution when using a shorter route than the alternatives, but tourism can hardly be considered a necessity. Cruise tourism is, rather, a leisure activity that does not seem capable of producing sufficient positive environmental effects - to compensate for the negative ones - to become sustainable. The principle of responsibility not to cause trans-boundary environmental damage supports the idea of bearing the global consequences of a local or regional action in mind. The wording of the principle and the

legal practice based on it appear to require precise evidence of the environmental problems caused by a certain action. Although collecting exact information about cruise tourism's impacts might appear impractical, the evidence of accumulating and possibly irreversible effects on the fragile environment is there to support arguments against the promotion of redundant shipping in the region.

The principle of sustainable development also draws constant attention to the limits on the environment's carrying capacity. According to the 'polluter pays' principle, the polluter should bear the costs of pollution. Unfortunately, allocating the full cost of the potential damage caused by tourists visiting the Arctic is quite impossible. The cost of any given environmental insult is just as difficult to calculate and prove as is the evaluation of the environmental effects of a certain action. The principle of preventive action suggests that in cases where there is a serious threat of environmental damage, decision-makers should not wait for scientific evidence on the matter before taking action. This is a principle that could well be applied when deciding what kinds of actions are allowed in vulnerable environments such as the Arctic. The principle of preventive action could be applied similarly, and a practice is already developing of applying appropriate standards to protect the Arctic marine environment. The Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic in May 2013 between the Arctic states is a good example of applying the principle of co-operation. Unfortunately, however, this is not the case with all agreements that have been created for the protection of marine environments. The IMO Ballast Water Management convention is unlikely to be ratified by all Arctic states, and substantial inconsistencies exist in regulating ballast water management in different parts of the region. While the environmental principles are there to guide decision-making, the content of international laws is always a compromise between different kinds of political, economic and environmental motivations.

Shipping is an international industry by nature and as the ships move between different territories they become subject to different legal regimes. A degree of uniformity is important to guarantee the ships' international mobility and to make it possible to monitor and enforce their compliance with legal regulations. Competence to enforce legal norms on vessels is ascribed to flag, coastal and port states. The flag state is responsible for its

vessels wherever they may be, but in practice monitoring a vessel in the Arctic waters is a challenge given the long distances within the region and the fact that the flag state may lie far away. The states present in the Arctic could make use of their coastal and port state rights to enforce anti-pollution regulations, but the capacity of these states in their remote and thinly populated Arctic provinces is limited and few ports exist in the area. If a ship never reaches a port, enforcing port state jurisdiction is not possible. Even if more ports are built in the Arctic in future, vessels might choose not to use them if the fees charged there are considered too high. Construction projects are expensive in remote places where conditions are difficult and states may be reluctant to make the investment if it seems unlikely to turn a profit. This is an example of a situation where economic logic clearly undermines environmental protection. Ports are not built or used because they are expensive, and the lack of ports results in a situation where environmental legislation becomes difficult to enforce.

In the Antarctic, the size of the region creates similar handicaps in monitoring the actions of vessels as exist in the Arctic. Since there are no states present in the Antarctic, vessels in those waters are only subject to flag state jurisdiction. Under Antarctic Treaty the vessels are obliged to make Environmental Impact Assessments but this can hardly be considered as an effective system of surveillance and enforcement of regulations. While the ATS lacks effective enforcement, however, the Antarctic region enjoys a higher standard of environmental protection on the normative level. Prescribing strict regulations for the Antarctic is simpler than for the Arctic because no human habitation exists in the Antarctic Treaty area, and thanks to the moratorium on mining for other than scientific purposes, no economic pressure is focused on the region. Also, the existence of the ATS makes it simple to apply a new regulation to the whole region at once. In the Arctic, state presence has advantages for the range of available legal measures and the chances of enforcing them, but the obverse is the lack of - and great difficulty in creating - any single and comprehensive region-wide regulatory framework.

The introduction of the Polar Code for shipping by the International Maritime Organization in 2015 has improved the level of anti-pollution regulations in both polar regions, but more particularly in the Arctic, which had previously not enjoyed region-specific regulation taking ice conditions

into consideration. The Code opens the possibility of creating a comprehensive set of laws for protecting the region at least in the maritime sphere, and it will be interesting to see how it develops. For the time being, pending the Code's entry into force, and despite the Arctic states having signed a general agreement on coast-guard cooperation in (2015?), the environmental standards designed to protect the Arctic marine environment still lack enforcement. Several important agreements covering conservation regulations, such as the BWM agreement, are separate from the Polar Code, and differing standards exist within the region. Moreover, some of the standards defined in the Code have already been criticized as being too loose to guarantee the effective protection of the Arctic environment and the safety of shipping.

To create a more sustainable legal basis for Arctic cruise tourism in the future, the environmental as well as safety standards for cruise vessels need to become more stringent. Prescribing strict environmental norms on *all* vessels used in the Arctic might well prove to be a political impossibility, and would hamper the everyday functions of local economies if it entered into force without allowing for implementation over a long adjustment period. Tourism, however, is by no means necessary for the function of local economies, so restrictions on cruise vessels would not have a negative effect on them. Tightening the regulations would not only set a higher standard for environmental protection but would also be likely to decrease the numbers of cruises made to the Arctic. Strict regulation cuts down the number of tour operators that are able to fulfil the standards, which in turn limits competition and makes the cruises more expensive, giving the potential tourist an economic incentive to think again before purchasing the tickets. The tighter regulations applying to cruise vessels could include more stringent discharge regulations, higher qualifications for staff and training, and a ban on heavy fuel oil. Coastal states might also re-consider whether they have made full and appropriate use of the Law of the Sea provisions allowing them to give special protection to certain sea areas under their jurisdiction.

Stringent discharge regulations would be fully justified by the fact that there are more people on board a cruise vessel than a typical cargo vessel. The cruise vessels' sewage tanks need to be emptied more often and the discharges have the potential to damage the environment if not properly managed. Requiring polar-specific training for the crew would create an

opportunity to include environmental education in the training, which could support the will to act according to regulations. Region-specific training would also help the crew in managing the ship in icy conditions and would improve the safety of people on board, helping to prevent accidents that might harm both the passengers and the surrounding environment. The ban on HFO already stands for the Antarctic, and as the Arctic shipping fleet is slowly renewed over the years, it will most likely be applied to the Arctic as well. For the time being, as argued above, imposing such stricter regulations on tourist vessels only would make no difference for the local economy. The ban would however help to cut down air pollution from the ships and again make the industry a little greener in practice. Also, establishing marine sanctuaries in the Arctic and making access subject to licence, as has been done in the Antarctic, would help preserve the most vulnerable wildlife habitats.

Finding a way to enforce environmental standards at the Arctic is a crucial part of actualizing environmental protection of the region. No matter how strict the norms are, they can help little if not effectively established in practice. Both polar regions share the same challenges for surveillance and enforcement of regulations, and these will need to be resolved in order to guarantee a high degree of compliance with regulations and a sufficient level of protection for the marine environment.

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