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GLOSSARY

Best Available Techniques	BAT	The latest stage of development (state of the art) of processes, of facilities or of methods of operation which indicate the practical suitability of a particular measure for limiting discharges, emissions and waste. (*OSPAR*)
Best Environmental Practice	BEP	The application of the most appropriate combination of environmental control measures and strategies. (*OSPAR*)
Environmental Impact Assessment	EIA	Environmental impact assessment procedures should be used to determine the potential impacts of offshore oil and gas exploration, development, transportation and infrastructure on the environment and human communities so as to inform decision-making. (*Arctic Oil and Gas Guidelines, 2009*). Environmental assessment is a procedure that ensures that the environmental implications of decisions are taken into account before the decisions are made. EIA are undertaken for individual projects. "The effects of a project on the environment should be assessed in order to take account of concerns to protect human health, to contribute by means of a better environment to the quality of life, to ensure maintenance of the diversity of species and to maintain the reproductive capacity of the ecosystem as a basic resource for life." (*EU EIA Directive, 2011/92/EU, Preamble, 14*)
Polluter Pays Principal		The polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment. (*Principle 16 of the Rio Declaration*)
Precautionary Approach		Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost. To achieve this, such policies and measures

		should take into account different socio-economic contexts, be comprehensive, cover all relevant sources, sinks and reservoirs of greenhouse gases and adaptation, and comprise all economic sectors. Efforts to address climate change may be carried out cooperatively by interested Parties. (*Article 3, paragraph 3 of the UN Framework Convention on Climate Change*)
Preliminary Environmental Impact Assessment	PEIA	A PEIA (or similar process) is a screening level review that should contain sufficient detail to permit assessment of whether a proposed activity may have a significant impact. (*Arctic Oil and Gas Guidelines, 2009*)
Strategic Environmental Assessment	SEA	A Strategic Environmental Assessment is a systematic process for evaluating the environmental consequences of a proposed policy, plan or program initiative in order to ensure they are included and appropriately addressed at the earliest appropriate stage of decision making. An SEA involves an integrated approach. (*Arctic Oil and Gas Guidelines, 2009*). An environmental assessment of certain plans and programmes which are likely to have significant effects on the environment. The objective of the EU SEA Directive is to provide for a high level of environmental protection, to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes and promote sustainable development. (*EU SEA Directive, 2001/42/EC, Article 1)*
Transboundary Environmental Impact Assessment	TEIA	“Transboundary impact" means any impact, not exclusively of a global nature, within an area under the jurisdiction of a Party caused by a proposed activity the physical origin of which is situated wholly or in part within the area under the jurisdiction of another Party (*ESPOO EIA Convention, 1991, Article 1, viii*). “Environmental impact assessment" means a national procedure for evaluating the likely impact of a proposed activity on the environment (*ESPOO EIA Convention, 1991, Article 1, vi*).

ACRONYMS

AMAP	Arctic Monitoring and Assessment Programme
AOOGG	Arctic Offshore Oil and Gas Guidelines
AU	Assessment Unit
BAT	Best Available Techniques
BEP	Best Environmental Practice
CBD	Convention on Biological Diversity
BBO	Billion Barrels of *Oil*
BBOE	Billion Barrels of Oil Equivalent
CLC	International Convention on Civil Liability for Oil Pollution Damage
EEA	European Economic Agreement
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EPPR	Emergency Prevention, Preparedness and Response
EU	European Union
FEC	Fuel and Energy Complex (Russian Federation)
HOCNF	Harmonised Offshore Chemical Notification Format
HSE	Health and Safety Executive
IMO	International Maritime Organization
ISO	International Organization for Standardization
JAMP	Joint Assessment and Monitoring Programme (JAMP)

MARPOL	International Convention for the Prevention of Pollution from Ships
MLSA	Bureau of Minerals and Petroleum (Greenland)
MODU	Mobile Offshore Drilling Unit
MPC	Maximum Permissible Concentration
NGL	Natural Gas Liquids
OIC	Offshore Industry Committee (OSPAR)
OIS	Offshore Industry Strategy (OSPAR)
OPRC	International Convention on Oil Pollution Preparedness, Response and Cooperation
OSCOM	Oslo Convention
OSPAR	The Convention for the Protection of the Marine Environment of the North-East Atlantic (The OSPAR Convention)
OSPR	Oil Spill Prevention and Response
PAME	*Protection of the Arctic Marine Environment* Working Group (Arctic Council)
PARCOM	Paris Commission
PEIA	Preliminary Environment Impact Assessment
QSR	Quality Status Report (OSPAR)
SAR	Search and Rescue
SEA	Strategic Environmental Assessment
TEIA	Transboundary Environmental Impact Assessment
UNCLOS	United Nations Convention on the Law of the Sea
U.S. DoI	United States Department of the Interior
WEF	World Economic Forum

INTRODUCTION

There is a perception that marine resources, and in particular oil and gas, are a wealth in the Arctic region which is readily available for development. In fact, as recent informed assessments (World Economic Forum, WEF) have shown[1], this is one of several myths which commonly circulate in discussions of governance needs. In fact, as WEF point out, "*many technological, infrastructural, economic and environmental challenges impede natural resource development in the Arctic. Extracting resources is never a simple operation in polar environments, and resource development will require high levels of investment, including development of specialized technologies. The region is not homogenous with regard to development potential; strong distinctions exist between onshore and offshore environments, and between different regions and countries with regard to existing levels of infrastructure, population, environmental sensitivity and accessibility*"(WEF, 2014).

Notwithstanding this reality check, reduction in sea ice coupled with improving technologies, ship design, drilling gear and logistics have made access to Arctic waters easier for the purpose of hydrocarbon exploration and extraction. As well as the newly available access to previously unexploited resources, further drivers for offshore oil and gas activities in the Arctic are the political stability of the area and transparent regulatory systems, providing additional consistency and reducing uncertainty for industry. This view is also held by WEF, who note that the region is under the jurisdiction of eight countries (the Russian Federation, Finland, Norway, Sweden, Iceland, Greenland/Denmark, Canada and the US), with few territorial border disputes among them. Even offshore in the Arctic Ocean, most coastal waters fall within existing Exclusive Economic Zones, with further seafloor sovereignty extensions pending or likely under Article 76 of UNCLOS. There will be areas beyond national jurisdiction, which will fall under the regulatory auspices of the International Seabed Authority, but these will be relatively small in size. In Canada, Greenland and the US, local control by aboriginal communities and regional business corporations can be substantial. In short, the Arctic is neither an unclaimed, contested region nor a closed military zone; it is governed under similar national structures and international frameworks to those in other areas of the world. Balanced against this positive perspective, it is not a coincidence that many non-Arctic states are showing increasing interest in the region, and pressing for the opportunity to have their opinions on how long-term governance should develop in the region[2].

Despite the remoteness and harsh climate these factors of stability and published regulatory systems make large, long-term investments in exploration and infrastructure comparatively more attractive in the Arctic (AMAP, 2007).

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[1] 2014. World Economic Forum - Global Agenda Councils "Demystifying the Arctic".

[2] 12 current states are: France, Germany, The Netherlands, Poland, Spain, United Kingdom, People's Republic of China, Italian Republic, State of Japan Republic of Korea Republic of Singapore Republic of India

While extensive oil and gas activity has already occurred in the Arctic this has been predominantly terrestrial. A number of onshore areas in Canada, Russia and the Unites States (Alaska) already have been explored for petroleum. By 2007 more than 400 oil and gas fields containing more than 40 billion barrels of oil, 1136 trillion cubic feet of natural gas and 8 billion barrels of natural gas liquids (NGL) had been discovered – mostly in the West Siberian Basin and on the North Slope of Alaska (Gautier et al., 2009). These figures account for approximately 240 billion barrels of oil (BBOE) and oil-equivalent natural gas, which is almost 10 per cent of the world's known conventional petroleum resources (cumulative production and remaining proved reserves) (Bird et al., 2008). Nevertheless, most of the Arctic, especially offshore, is essentially unexplored with respect to petroleum (Bird et al., 2008). The United States Geological Survey (USGS) has assessed the area north of the Arctic Circle and conclude that about 30% of the world's undiscovered gas and 13% of the world's undiscovered oil maybe found there, mostly offshore under less than 500 metres of water (Gautier et al., 2009). Bird et al (2008) estimate that 84% of the Arctic undiscovered oil and gas occurs offshore (Figures 2 and 3)

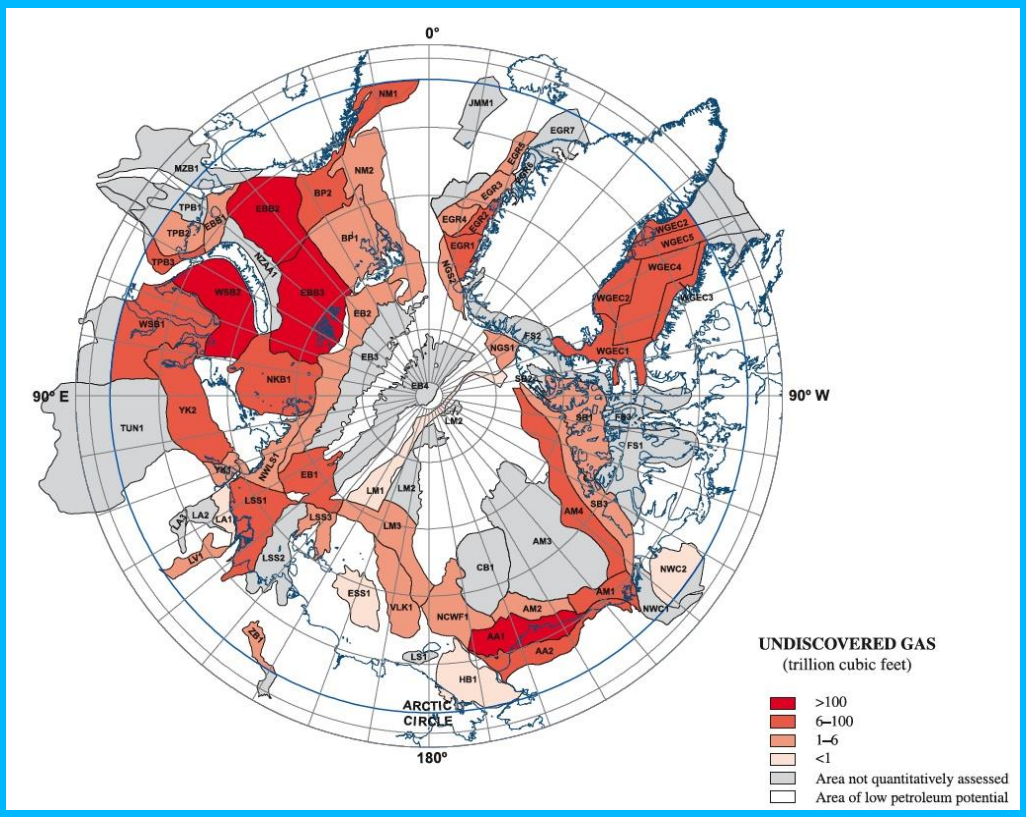

Figure 1. Map showing the Assessment Units (AUs)[3], colour-coded for mean estimated undiscovered gas. Only areas north of the Arctic Circle are included in the estimates. Black lines indicate AU boundaries (Source: Gautier et al., 2009).

[3] Assessment Units (AUs) are mappable volumes of sedimentary rocks that share similar geological properties (Gautier et al., 2009).

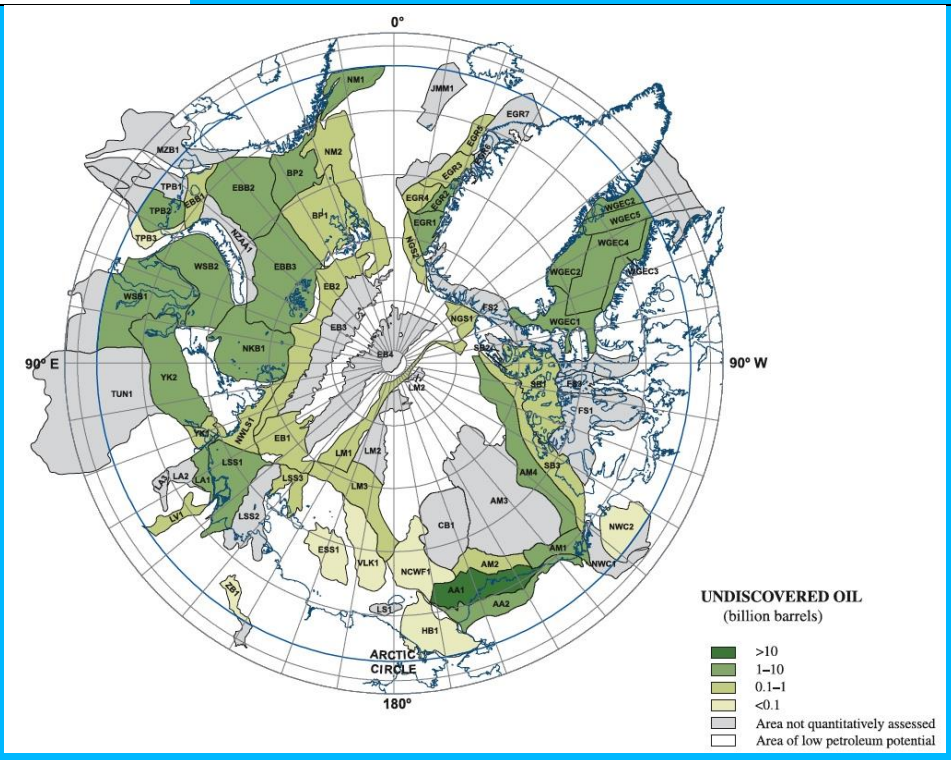

Figure 2. Map showing the AUs, colour-coded for mean estimated undiscovered oil. Only areas north of the Arctic Circle are included in the estimates. Black lines indicate AU boundaries (Source: Gautier et al., 2009).

Despite the extensive potential resources and the political stability of the area and transparent regulatory systems, Budzik (2009) points out that the long lead-times required for Arctic projects can add considerable risk as the business environment may change dramatically between a project's initiation and completion dates. For example, oil and natural gas prices may be considerably lower when an Arctic project begins producing than was anticipated at the planning stage. Also, at a given level of capital investment, longer lead-times can reduce the return on that investment, if all else remains unchanged. In the Arctic, oil and natural gas projects can exacerbate this problem by requiring considerably larger investments than projects that are comparably productive elsewhere in the world. Under these circumstances the financial pressure to progress quickly is in direct conflict with the environmental and safety needs to proceed with extreme caution in the Arctic. We speculate that such pressures may in part explain the finding of the U.S. Department of the Interior review of Shell's 2012 activities in the Arctic, which described the results of the complete loss of control over a towed drilling rig which eventually ran aground (See Box 1), in which they... "*confirmed that Shell entered the drilling season not fully prepared in terms of fabricating and testing certain critical systems and establishing the scope of its operational plans. The lack of adequate preparation put pressure on Shell's overall operations and timelines at the end of the drilling season*" (U.S. DoI, 2013). One observation has been that even though Shell had in place both the requisite national operational legislation, as well as its own, they were either inadequate, or poorly implemented, or both.

Box 1

Case Study: The *Kulluk*

The *Kulluk* is a 266 foot diameter circular drilling unit built in 1983. Shell bought the *Kulluk* in 2005. Since its purchase it has been upgraded and refurbished to work in the U.S. Arctic. It has a 160 foot high derrick and a funnel-shaped, reinforced steel hull designed to operate in ice. The vessel was specifically designed and constructed for extended season drilling operations in Arctic waters and is rated to work in weather conditions historically occurring throughout the open water season (July-October).

During the 2012 open water season the *Kulluk* performed top hole work, a preliminary step in exploratory drilling, at a site in the Beaufort Sea. At the end of the drilling season the vessel was towed to Dutch Harbor in the Aleutian Islands.

In December *Kulluk* began its voyage to a Seattle shipyard. However, during December 2012 in rough water in the Gulf of Alaska the tow ship, the new 360-foot anchor handler *Aiviq*, lost all four engines and the *Kulluk* broke free. After four days of efforts to reattach the vessel to the *Aiviq* or other tugs, the *Kulluk* ran aground on 31 December in shallow water near Kodiak Island. The *Kulluk* was eventually refloated 6 January 2013 and towed to a "safe harbour". The vessel was taken for repairs to a Singapore shipyard. Damage to the rig played a role in Shell's decision not to drill in Arctic waters in 2013. The nine day formal accident investigation, carried out by the US Coast Guard, was completed in August 2013 but the report is not due for publication until sometime in 2014.

Following the accident environmental groups, including the Natural Resources Defense Council and The Wilderness Society, called on the Obama administration to immediately put a hold on all current and future approvals for offshore oil exploration in America's Arctic Ocean and in addition called on Congress to immediately enact the basic safeguards for offshore drilling that were recommended by the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling.

As a result of the accident the Department of the Interior and other agencies reviewed permit applications for future Arctic Ocean drilling. Along with Shell, Conoco Phillips had also applied for permits to begin drilling in the Chukchi Sea in 2014.The US Department of the Interior also announced a review of Shell's Arctic plans in January 2013, after the *Kulluk* grounding, and issued its report in March. That review found "*that Shell entered the 2012 drilling season not fully prepared in terms of fabricating and testing certain critical systems and establishing the scope of its operational plans. The lack of adequate preparation put pressure on Shell's overall operations and timelines at the end of the drilling season*" (U.S. DoI, 2013). As well as the lost tow and grounding of the *Kulluk* the report also noted other problems encountered by Shell—including significant violations identified during United States

Coast Guard's inspection of the *Noble Discoverer* drilling rig and violations of air emission permits issued by the Environmental Protection Agency — which *"indicate serious deficiencies in Shell's management of contractors, as well as its oversight and execution of operations in the extreme and unpredictable conditions offshore of Alaska*". The Department of the Interior's report required Shell to "*develop and submit a comprehensive and integrated operational plan describing in detail its future drilling programme*" and "*commission a full third-party audit of its management systems*". The report also "*defines important principles for government oversight*" of offshore Arctic drilling activity that "*must be carried forward and further developed*", including "*the importance of continued close coordination among government agencies in the permitting and oversight process*", and the "*need to continue to develop and refine standards and practices that are specific to the unique and challenging conditions associated with offshore oil and gas exploration on the Alaskan Offshore Continental Shelf*" (U.S DoI, 2013).

A number of key principles were indentified in the Report:

- All phases of an offshore Arctic program – including preparations, drilling, maritime and emergency response operations – must be integrated and subject to strong operator management and government oversight.
- Arctic offshore operations must be well-planned, fully ready and have clear objectives in advance of the drilling season.
- Operators must maintain strong, direct management and oversight of their contractors.
- Operators must understand and plan for the variability and challenges of Alaskan conditions.
- Respect for and coordination with local communities.
- Continued strong coordination across government agencies is essential.
- Industry and government must develop an Arctic-specific model for offshore oil and gas exploration in Alaska.

There are other self-regulating factors. For instance, due to the high expense associated with Arctic infrastructure development many large Arctic fields remain undeveloped. In one example, 35.4 trillion cubic feet (6.3 billion barrels of oil equivalent) of the discovered Alaska North Slope natural gas resources remain unexploited due to the absence of transportation infrastructure (Budzik, 2009).

The legal instruments relevant to protecting the Arctic's marine environment are numerous, and despite the WEF's optimism, have often been found to be wanting, and in some cases, both "*incoherent and incomplete*" (Koivurova and Molenaar, 2009). Koivurova and Hossain (2008) commented that inadequate international legal frameworks increased the risks of hydrocarbon activities in the Arctic marine area. While national legislation for the prevention and mitigation of pollution incidents in relation to oil and gas activities exists in the five Arctic coastal states, such legislation

has often been assessed as less than robust. An important point is that environmental risks in connection with Arctic oil and gas activities, especially offshore - such as spills, are transboundary in character (Keil, 2014). The differences in the national laws, regulations and regulatory regimes and their implementation among oil and gas producing countries in the Arctic pose a regulatory challenge to Arctic oil and gas exploitation (AMAP, 2007). ACCESS has directed significant effort to clarify the oil spill threat and the effects on it of climate change (for example, D 4.41). Encouragingly, as discussed below, the Arctic Council has recently provided a robust framework of binding regulations/guidelines in an effort to standardise regulations across the region (EPPR, 2013)[4].

Effects of climate change on oil and gas activities in the Arctic Ocean

According to Mr Efthymios Mitroppulos, the former IMO Secretary General, offshore oil exploitation is characterised by the four "Ds": Deep, Distant, Dangerous and Difficult[5] (Chabason, 2011). In the Arctic environment this is further compounded by the harsh operating conditions.

The most important physical effects of climate change in the Arctic with respect to offshore oil and gas exploitation are lateral ice reduction, increased ice mobility (iceberg movements) and extreme weather focusing. These, in combination with the already existing difficulties such as seasonal darkness, fog, subzero temperatures, high seas, strong winds and frequent storms, present an exceptionally harsh and challenging environment in which to operate. Such conditions not only increase the likelihood of accidents but are also likely to limit the effectiveness of the response measures.

Governance of Arctic offshore oil and gas activities, in particular, exploitation

A previous ACCESS assessment of regulations relevant to offshore hydrocarbon exploitation was completed in 2012 (D5.11, Benn et al)[6]. This provided a comprehensive listing of conventions, agreements and guidelines. We here summarise the most specific. Where appropriate, a more detailed description of specific legislation is provided in Annex 1 to this report.

[4] http://www.arctic-council.org/eppr/agreement-on-cooperation-on-marine-oil-pollution-preparedness-and-response-in-the-arctic/

[5] From a speech to the IMO Legal Committee on15th November 2010

[6] ACCESS report D5.11 - 2012. Benn, A. & Parson, L.M., et al ACCESS: Arctic Climate Change, Economy and Society. D5.11 – Analysis and synthesis of extant and developing frameworks. 99pp.

Global Instruments

Offshore oil and gas activities take place in areas under sovereignty or jurisdiction of individual states and it is therefore with caution that international law addresses the obligations of states (Chabason, 2011). Nevertheless the Arctic Council's working group on Protection of the Arctic Marine Environment Working Group (PAME) in their 2013 Arctic Ocean Review Project final Report maintains that states should encourage full participation and implementation (Arctic and non-Arctic alike) of four key global agreements applicable to specific aspects of maritime activities associated with of offshore oil and gas exploration and production:

- The 1982 United Nations Convention on the Law of the Sea (UNCLOS)
- The 1973/78 International Convention for the Prevention of Pollution from ships (MARPOL)
- The London Convention and its 1996 Protocol.
- The 1990 International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC)

However, PAME (2013) points out that these agreements fail to relate to or provide a comprehensive regulatory regime for offshore hydrocarbon activity. For example, none deals specifically with the prevention of marine pollution from industrial mineral exploration and production activity, such as the operation of fixed stations, or Mobile Offshore Drilling Units (MODUs) when they are on station. The OPRC is the basis upon which the new Arctic Council's 2013 *Agreement on Cooperation in Marine Oil Pollution Preparedness and Response in the Arctic*[7] is built.

Other global conventions that concern oil and gas industry activities concern the shipping aspects of the operations through the use of oil as fuel or through the transport of fuel. These include:

- The International Convention on Civil Liability for Oil Pollution Damage (CLC Convention)
- The Intervention Convention
- The Fund Convention

United Nations Convention on the Law of the Seas (UNCLOS)

With the exception of the United States, all Arctic Ocean states are party to UNCLOS. While applying to the Arctic, UNCLOS does not set up a specific regime for the region. UNCLOS defines maritime zones and outlines the range of sovereign rights that can be exercised by a coastal state within these areas of the sea as well

[7] http://www.arctic-council.org/eppr/agreement-on-cooperation-on-marine-oil-pollution-preparedness-and-response-in-the-arctic/

as the rights that can be exercised by other countries when they wish to undertake activities in these areas. Sections relevant to offshore oil and gas activities are Parts V (The Exclusive Economic Zone), VI (Continental Shelf) and XI (The Area) and Part XII (Protection and Preservation of the Marine Environment. (See Annex 1 for more detail.)

Although providing a general framework for protecting the Arctic environment from pollution UNCLOS does not provide detailed provisions specifically applicable to offshore oil and gas activities. While providing the legal basis for the creation of international regulations relating to pollution arising from offshore oil and gas activities it has yet to do so. Chabason (2011) observes that the conventions adopted within the International Maritime Organization and the regional seas agreements have, so far, proved insufficient.

1991 Convention on Environmental Impact Assessment in a Transboundary Context[8] (the Espoo Convention) and the 2003 Protocol to the Convention

The Espoo Convention has been signed by all Arctic Ocean coastal states but the United States and the Russian Federation (and Iceland) have yet to become parties. However, Koivurova and Hossain (2008) speculate that since these three states have not withdrawn their signatures, it is expected that at some point in time they will become parties to the Convention. They further observe that the Convention seems to have become a global standard for how to conduct Transboundary Environmental Impact Assessments (TEIA) and is increasingly being used by states, even where they are not legally obligated to do so. The Espoo Convention establishes a legal basis for a TEIA between those Arctic states that are party to it. (See Annex 1 for more detail.)

Koivurova and Hossain (2008) point out that the Protocol has far less potential in the Arctic. The United States, Canada and the Russian Federation are not signatories. However, the authors also state that, via the European Economic Agreement (EEA), the European SEA Directive[9] currently applies also to Iceland and Norway. However, since Greenland opted out of the then EEC and Svalbard Islands were excluded from the EEA agreement these areas are not governed by the SEA directive.

In addition to the Espoo Convention other global treaties, containing TEIA requirements, apply throughout of the Arctic (with the exception of the United States).

[8] Convention on Environmental Impact Assessment in a Transboundary Context, Espoo, 25 February 1991. Available at: http://www.unece.org/fileadmin/DAM/env/eia/documents/legaltexts/conventiontextenglish.pdf. Accessed: 24 January 2014

[9] European Union SEA Directive. Available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2001:197:0030:0037:EN:PDF. Accessed 21 January 2014

However, Koivurova and Hossain (2008) note that the lack of specificity in the wording renders the legal obligations of the Parties uncertain. Such an example is the Biodiversity Convention, in which Contacting States are "*as far as possible and as appropriate*" to promote and encourage conclusion of multilateral and bilateral arrangements on TEIA.

IMO Conventions

The IMO, in principle, deals with maritime shipping and not fixed installations – even though some IMO conventions lay down rules that apply or could apply to oil platforms. This is complicated by the fact that some platforms are made up of floating structures, unable to navigate independently (Chabason, 2011). In 2012 the Legal Committee of the International Maritime Organization (IMO) declined to extend to offshore installations coverage of the IMO Strategic Direction 7.2 under which focuses on mitigating and responding to environmental impact of shipping incidents and operational pollution from ships[10]. Instead it opted for further analysis of the issues with the aim of developing guidance for states interested in bilateral or regional responses to liability and compensation issues related to transboundary pollution damage from offshore exploration and exploitation activities (PAME, 2013).

International Convention for the Prevention of Pollution from ships, and its 1978 Protocol (MARPOL 73/78)

The aim of MARPOL is the elimination of marine pollution by oil, chemicals and other harmful substances that may be discharged into the sea and the air in the course of operating seagoing vessels. All five Arctic coastal states are party to MARPOL 73/78 and five of the six annexes (Annex I: pollution by oil; Annex II: noxious liquid substances in bulk; Annex III: harmful substances, packaged; Annex V: pollution by garbage from ships; Annex VI: sulphur oxide, nitrogen oxide and ozone depleting substances). Nowhere in MARPOL 73/78 is the Arctic mentioned specifically.

MARPOL 73/78, Annexes I, II, IV and V offer the possibility of establishing Special Areas. Within these areas, for technical reasons relating to their oceanographical and ecological conditions and to their sea traffic, the adoption of special mandatory methods for the prevention of sea pollution is required. Under the Convention, these special areas are provided with a higher level of protection than other areas of the sea. To date no Special Areas have been designated within the Arctic Ocean. (See Annex 1 for more detail.)

[10] IMO. 2011. Legal Committee 98th session, Agenda item 13, LEG98/13 (18 February 2011) Information relating to liability and compensation for oil pollution damage resulting from offshore oil exploration and exploitation, Note by the Secretariat.

IMO. 2012. Legal Committee, 99th session, Agenda item 14, LEG 99/14 24 April 2012 Original: Report of the Legal Committee on the Work if its Ninety-Ninth Session, §13, pp.23-28.

1972 Convention on the Prevention of Marine pollution by Dumping of Wastes and other Matter (the London Convention) and Protocol

Norway, Denmark and Canada have ratified both the 1972 Convention and 1996 Protocol, while the USA and Russian Federation have ratified the Convention but not the Protocol.

The London Convention and Protocol exclude the disposal of wastes related to offshore seabed mineral exploration, exploitation and associated processing activities (for example, Convention, Article III(c) and Protocol Article 1.4(c). (See Annex 1 for more detail.)

Regional Instruments

A number of regional agreements exist that are of relevance to Arctic offshore oil and gas activities. Two entities stand out as being of particular importance in relation to regional instruments – the Arctic Council and OSPAR.

Arctic Council

The Arctic Council is not an international organisation (i.e. not a treaty organisation) but a 'high level intergovernmental forum' with three levels of participation:

1. Members, the eight states with territory north of the Arctic Circle;
2. Permanent participants, the six groups representing indigenous peoples of the north; and
3. Observers, either *ad-hoc* (admitted for each meeting) or permanent (admitted for multiple meetings, although still subject to review under the 2011 Nuuk observers rules), represent states and organisations which, although lacking any territorial claims in the Arctic do have a discernible interest there.

In May 2013 the addition by the Arctic Council of six new states, China, India, Italy, Japan, Singapore, and South Korea, to join the six states, nine intergovernmental organisations, and eleven non-governmental organisations that already had permanent observer status could be viewed as strengthening the position of the Arctic council in the global scene (Carl Bildt, Swedish Minister OF Foreign Affairs, *The New York Times* (16 May 2013)[11]. He considered the addition of the new observers "*demonstrates the broad international acceptance of the role of the Arctic Council, because by being observer, these organizations and states, they accept the principles and the sovereignty of the Arctic Council on Arctic issues*". The Council

[11] http://www.nytimes.com/2013/05/16/world/europe/arctic-council-adds-six-members-including-china.html

has deferred a final decision on EU observer status until the concerns of members are resolved. Ongoing negotiations are taking place between the European Commission and the Council over the seal products

There is a danger that such exclusivity will cause fragmentation between the entities involved in discussing / developing governance options. The observation that "*the (Arctic) Council is failing to adequately accommodate rising interest from outside the region. As a result, it is no longer the only Arctic forum in town*".[12] An alternative forum emerged in October 2013 with the inaugural meeting of the Arctic Circle[13]. In contrast to the Arctic Council, the Arctic Circle will be open to any country or organisation that wishes to participate and will provide a global forum for debate on Arctic issues.

In 2007 the Arctic Council, Arctic Monitoring and Assessment Programme (AMAP) produced a series of reports on oil and gas in the Arctic[14]. Recommendations include:

> Oil and gas activities and their environmental and human consequences should be given increased priority in the future work of the Arctic Council. Focusing on:
>
> Research, assessment and guidelines:
>
> - to support prevention of oil spills and reducing physical disturbances and pollution;
> - leading to improved management of social and economic effects on local communities
> - in relation to the interactions between oil and gas activities and climate change.
>
> *"Arctic oil and gas activities should be conducted in accordance with the precautionary approach, as reflected in Principle 15 of the Rio Declaration as well as in Article 3, paragraph 3 of the UN Framework Convention on Climate change; and with the polluter pays principal as reflected in Principle 16 of the Rio Declaration."*
>
> *"Recognizing the trans-boundary context of pollution hazards .... the Arctic Council should support improvements in bilateral (and multilateral) cooperation among the Arctic countries to institute or improve coordination of*

[12] Roderick Kefferpütz, Political Advisor at the European Parliament. http://www.euractiv.com/global-europe/arctic-council-needs-open-analysis-519365

[13] Arctic Circle: http://www.arcticcircle.org/

[14] http://www.amap.no/documents/doc/assessment-2007-oil-and-gas-activities-in-the-arctic-effects-and-potential-effects.-volume-1/776

http://www.amap.no/documents/doc/assessment-2007-oil-and-gas-activities-in-the-arctic-effects-and-potent http://www.amap.no/documents/doc/arctic-oil-and-gas-2007/71ial-effects.-volume-2/100

preparedness and response measures across the circumpolar region, in particular in the Barents, Chukchi and Bering Seas."

Since 2007 the Arctic Council have addressed some of these recommendations. This has been done principally, through the signing in May 2013, by the legally binding *Agreement on Cooperation in Marine Oil Pollution Preparedness and Response in the Arctic*[15] (The Marine Oil Pollution Agreement). This is the second major international agreement that has been developed under Arctic Council auspices, the first being the legally binding Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic (the Arctic SAR) concluded at Nuuk, Greenland, in 2011.

The 2011 Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic[16] (Arctic SAR)

The Agreement aims to strengthen aeronautical and maritime search and rescue cooperation, coordination and infrastructure across the Arctic. This Agreement encompasses the offshore activities of the fishery, hydrocarbon and minerals extraction, tourism and maritime transport sectors. It provides guidance for the coordination of international search and rescue (SAR) coverage and response in the Arctic, and establishes the area of SAR responsibility of each state party. In view of the conflicting territorial claims in the Arctic, the treaty provides that "*the delimitation of search and rescue regions is not related to and shall not prejudice the delimitation of any boundary between States or their sovereignty, sovereign rights or jurisdiction*"(Article 3.2).

While the Agreement is an important step towards closer and more effective SAR cooperation there are limitations. The Agreement does not establish institutional arrangements other than for the Meetings of the Parties and contains no provisions regarding decision making procedures. Kao et al., (2012) point out that SAR operations seem to mean different things to different Parties, as suggested by the competent Authorities of the respective Parties listed in the Appendix I. Some Parties designate their transportation or maritime agencies as the Competent Authority while others designate agencies with competency over national or civil defense or policing while others designate Ministries of the Interior.

Steinicke and Albrecht (2012) note that there are gaps in capability. The existing primary search and rescue capabilities are mainly designed and organized for littoral or coastal operations. Most of the rescue vessels are too small or weak to operate in the harsh conditions far from the coasts. They also note that many states will have to deploy military ships to operate on the high seas. As such ships cannot guarantee fast support as they do not operate in a primary search and rescue role in pre-defined stand-by areas far away from their homeports. A further problem is that many

[15] http://www.arctic-council.org/eppr/agreement-on-cooperation-on-marine-oil-pollution-preparedness-and-response-in-the-arctic/

[16] Arctic SAR: http://www.ifrc.org/docs/idrl/N813EN.pdf

warships are not constructed for operating under ice conditions. Although ships and helicopters can travel long distances in a relatively short time a large-scale evacuation would require additional ships. Additional infrastructure investments are necessary to enable the SAR agencies to access remote locations. Serious gaps still exist with regard to satellites and communications in the Arctic. However the high costs of improving the satellite and communication infrastructure presents a serious hurdle (Steinicke and Albrecht, 2012). (See Annex 1 for more detail.)

The 2013 Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic[17] (Arctic Oil Pollution Agreement)

The aim of the Arctic Oil Pollution Agreement and its associated Operational Guidelines is to strengthen cooperation, coordination and mutual assistance on oil pollution preparedness and response among the eight Arctic Council Member States. (See Annex 1 for more detail.)

2009 Arctic Offshore Oil and Gas Guidelines

In 2009, in conjunction with other Arctic Council Working Groups[18], the Protection of the Arctic Marine Environment (PAME) working group of the Arctic Council produced the *Arctic Offshore Oil and Gas Guidelines*[19]. These are aimed primarily at the authorities but "*may also be of help to the industry when planning for oil and gas activities* ..." (PAME, 2009). The transportation of oil and gas is not covered in the Guidelines. The Guidelines are intended to define a set of recommended practices and outline strategic actions for consideration by those responsible for regulation of offshore oil and gas activities. While not legally binding, they aim to encourage the highest standards and not to prevent States from setting equivalent or stricter standards (PAME, 2009).

The general principles underlying the Guidelines are:

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[17] http://www.arctic-council.org/eppr/agreement-on-cooperation-on-marine-oil-pollution-preparedness-and-response-in-the-arctic/

[18] Arctic Council working groups:

ACAP: Arctic Contaminants Action Program

AMAP: Arctic Monitoring and Assessment Program

CAFF: Conservation of Arctic Flora and Fauna

EPPR: Emergency Prevention Preparedness and Response

SDWG: Sustainable Development Working Group

[19] http://www.pame.is/images/PAME_NEW/Oil%20and%20Gas/Arctic-Guidelines-2009-13th-Mar2009.pdf

- The Precautionary Approach
- Polluter Pays
- Continuous Improvement
- Sustainable Development

(See Annex 1 for more detail.)

The Arctic Ocean Review (PAME, 2013) proposes opportunities for cooperative action. The Review suggests that effective intergovernmental venues for improving safety in the petroleum industry have been established outside international agreements or instruments. These include the International Standardization Organization (ISO) follow-up to the Barents 2020[20] project for developing Arctic technical standards, the Ministerial Forum on Offshore Drilling Containment, the work of the Performance Measurement Workgroup in the International Regulators Forum. Also included are the standards and best practices work by the industry, for example, the Oil and Gas Producers International. The Review proposes that, in order to ensure necessary support in the Arctic States, the Arctic Council engage with standards organizations and the industry as evaluation, modification or development standards and/or best practices in oil and gas activities in various parts of the Arctic are undertaken.

The opportunities identified by the Arctic Ocean Review (PAME, 2013) for improving safety in the petroleum industry include:

- Arctic Council members should be urged to support, as appropriate, efforts in the ISO and other processes to develop standards relevant to Arctic oil and gas operations.
- Arctic states should move toward circumpolar policy harmonization in discrete sectors such as, for example, environmental monitoring. This should be based on existing studies such as the Arctic Council‘s AOOGG and the EPPR Recommended Prevention Practices report.
- Arctic Council should promote interactions with the appropriate international treaty bodies on offshore oil and gas issues that address for example discharges, oil spill preparedness and response, and environmental monitoring. Such interactions could include coordinating information exchange on reporting, monitoring, assessment and/or other requirements under relevant entities, encouraging inclusion of science and traditional knowledge, and keeping abreast of Arctic-specific developments relevant to the appropriate instruments.

Arctic states should further engage industry and regulator involvement in PAME and EPPR initiatives on offshore oil and gas activity. To be done by utilizing existing

20 http://www.dnv.com/industry/oil_gas/publications/updates/arctic_update/2012/01_2012/barents2020.asp

industry forums or by convening an Arctic-specific oil and gas dialog for industry and contractor groups.

OSPAR

OSPAR is a regional convention covering the waters of the North East Atlantic. However, Region I encompasses Arctic Waters (Figure 3) - including a sector within the Arctic Ocean. The Nordic States that are Contracting Parties to the Convention are Denmark, Finland, Iceland and Sweden.

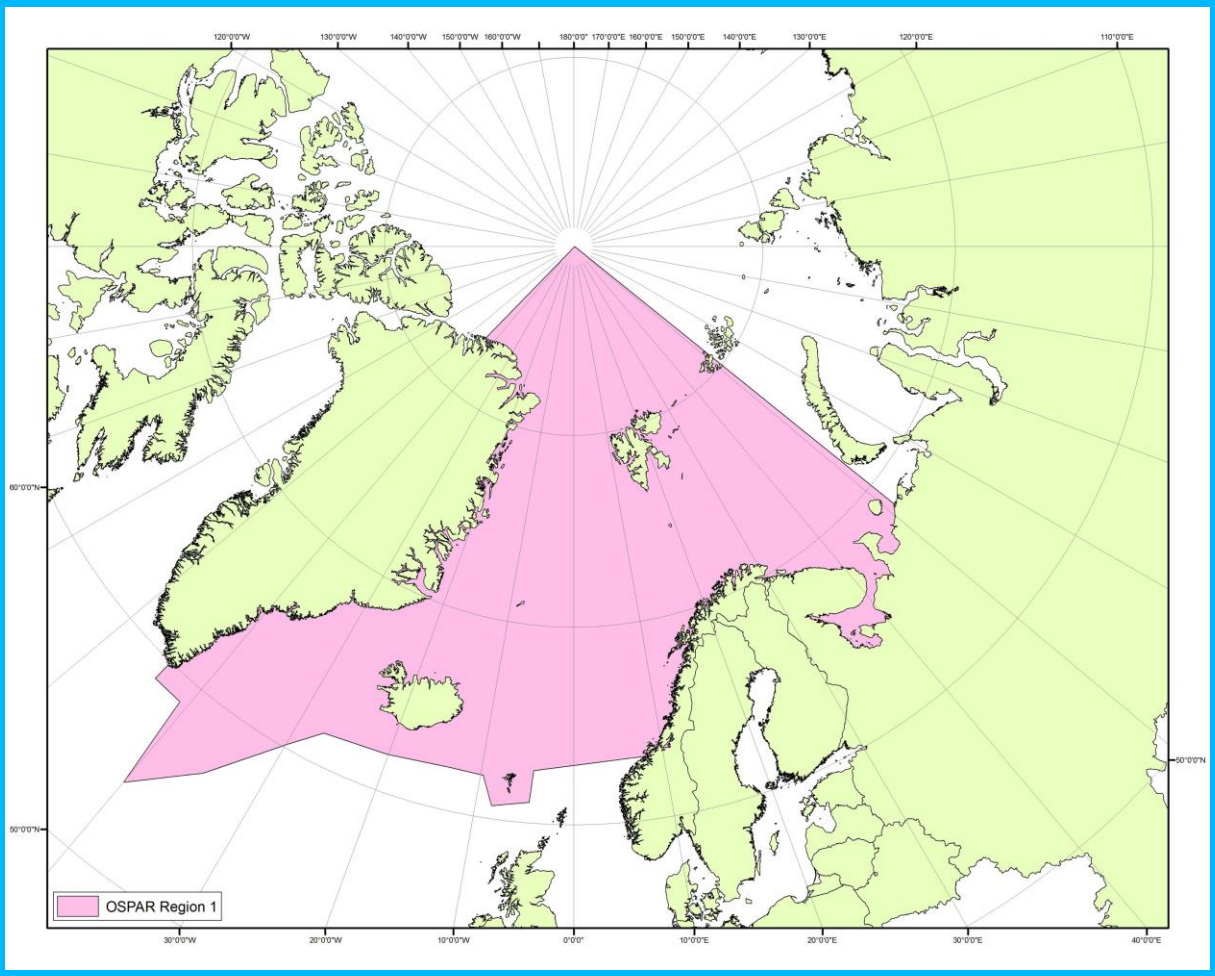

Figure 3. OSPAR Region I, Arctic Waters.

Implementation of the Convention and its strategies is done through the adoption of decisions, which are legally binding on the Contracting Parties, recommendations and other agreements. Decisions and recommendations set out actions to be taken by the Contracting Parties. These measures are complemented by other agreements setting out:

- issues of importance;

- agreed programmes of monitoring, information collection or other work which the Contracting Parties commit to carry out;
- guidelines or guidance setting out the way that any programme or measure should be implemented;
- actions to be taken by the OSPAR Commission on behalf of the Contracting Parties.

The OSPAR Offshore Oil and Gas Industry Strategy[21] sets out the development and implementation of programmes and measures in respect of all phases of offshore activities. The strategic objective of the strategy is to prevent and eliminate pollution and take the necessary measures to protect the OSPAR maritime area against the adverse effects of offshore activities by setting environmental goals and improving management mechanisms, so as to safeguard human health and to conserve marine ecosystems and, when practicable, restore marine areas which have been adversely affected. The strategy requires the OSPAR Commission to collect information about threats to the marine environment; establish priorities for taking action and develop and periodically review environmental goals. The oil and gas industry related work is implemented by OSPAR's Offshore Industry Committee (OIC).

In addition to the Offshore Oil and Gas Industry a further OSPAR work area concerns Assessment and Monitoring. In 2010 the Ministerial Meeting of the Commission adopted a renewed Strategy for the Joint Assessment and Monitoring Programme (JAMP) for the period 2010 to 2014. This Strategy provides a framework for work to develop OSPAR's monitoring and assessment programmes. The particular focus is on supporting work to implement the EU Marine Strategy Framework Directive that needs to be done by Contracting Parties that are EU Member States over this period. A further revision of the JAMP is anticipated in 2014. This will focus on the development of new general assessments of the quality status of the marine environment for 2018. Through this work OSPAR is co-ordinating measurements and assessments of the marine environment over a 10 – 20 year timeframe.

The OSPAR Convention requires Contracting Parties to apply Best Available Techniques (BAT) and Best Environmental Practice (BEP) including, where appropriate, clean technology, in their efforts to prevent and eliminate marine pollution.

PAME (2013) suggests that two of OSPAR's strategies offer potential avenues for cooperation between the OSPAR and the Arctic Council on offshore oil and gas activity:

The Offshore Industry Strategy (OIS) Strategic Directions: This comprises coordinated regional information collection, environmental monitoring and assessment, the progressive development of BAT and BEP, the sharing of information and experience between Contracting Parties and maintaining an inventory of offshore hydrocarbon installations.

[21] http://www.ospar.org/html_documents/ospar/html/10-03e_nea_environment_strategy.pdf#OIC

The Joint Assessment and Monitoring Programme (JAMP): This can be applied across several sectors of activity and includes offshore oil and gas, where it can be applied by Contracting Parties in the assessment of impacts of underwater noise from offshore oil and gas activity and in the development of appropriate guidance for mitigation measures. (See Annex 1 for more detail.)

Bilateral / Multilateral Instruments

There are a number of international agreements between various coastal states. These are aimed primarily at ensuring consistency in approaches and support as well as co-operation between states in the event of major disasters.

The Nordic Agreement Concerning Cooperation in Measures to Deal with Pollution of the Sea by Oil (The 1971 Copenhagen Agreement)

The 1971 Copenhagen Agreement (revised in 1993) between Denmark, Finland, Iceland, Norway and Sweden addresses marine oil pollution. The Contracting Parties agree to cooperate on surveillance, investigations, reporting, securing of evidence, combating and assistance in combating, as well as general exchange of information in order to protect the marine environment from pollution by oil or other hazardous substances.

The Agreement covers all sources (ships, installations etc. and the geographical scope is coastal waters, territorial waters and other waters within the respective fishing zones, continental shelf and economical zone. The Agreement provides powers to Contracting States to investigate alleged offences. The general provisions of the Agreement are on information sharing, surveillance, notification, request for assistance. A “Cooperation Manual” has been produced. Yearly meetings and regional exercises take place.

The 1994 Barents Sea Agreement between Russian and Norway

The regulatory framework for the cooperation in the field of joint oil spill response was established in 1994. The Barents Sea Agreement focuses on cooperation between the Parties in dealing with oil pollution in the Barents Sea. The Agreement covers all sources (ships, installations). General provisions of the Agreement are a common contingency plan and notification procedures. Yearly meetings of the joint planning group and a yearly exercise are held. The Joint Plan defines the main principles, mechanisms and procedures of the bilateral cooperation. The main function of the Plan is to provide coordinated and combined response to oil pollution in the Barents Sea.

The 2003 Canada-United States Joint Marine Pollution Contingency Plan[22]

The purpose of the Plan is to provide a coordinated system for planning, preparedness and responding to harmful substance incidents in contiguous waters.

The 1983 Agreement between Denmark and Canada for Cooperation Relating to the Marine Environment[23]

The Agreement between Canada and Denmark/Greenland aims at developing bilateral cooperation for protecting the marine environment of the waters lying between Canada and Greenland, particularly with respect to preparedness measures as a contingency against pollution incidents resulting from offshore hydrocarbon or shipping activities. The Agreement provides provisions to ensure appropriate measures in the engagement of installations for exploration and exploitation of natural resources of the seabed and subsoil to minimize the risk of pollution.

National Policies and implementation strategies - The struggle for standardisation

State regulatory authority can be invested in a single government body or, more commonly, divided between multiple ministries and departments. For the Arctic states, this varies from end-members such as Greenland, where the Bureau of Minerals and Petroleum (MLSA) is responsible for all aspects of offshore oil and gas regulation, to Russia where the involvement of multiple government departments makes deciphering the regulations a complex task. To ensure effectiveness of the regulatory regime, coordination is needed between the different authorities, particularly in areas such as oil spill and emergency response. A summary of the state regulatory authorities, and key legislation is provided in Annex 2.

State regulation for the five coastal states surrounding the Arctic can be placed at varying positions along the spectrum between prescriptive requirements and performance-based regulation. Most regimes contain a combination of both approaches. Performance-based regulation has advantages in promoting innovation and positive development, while a more prescriptive approach provides greater certainty regarding requirements and facilitates easier monitoring and enforcement. For the Arctic states, the US system can be considered the most prescriptive, while Norway's regulatory regime is mainly performance based; its regulations contain very few mandatory technical requirements, but establish objectives and performance levels to be attained. Greenland has a relatively new regime which is largely performance based and requires operators to adopt the best international practices.

[22] http://www.nrt.org/production/nrt/nrtweb.nsf/AllAttachmentsByTitle/A-403CANUSJCPEnglish/$File/CANUS%20JCP%20English.pdf?OpenElement

[23] http://www.treaty-accord.gc.ca/text-texte.aspx?id=101887

Variations exist between individual jurisdictions in the use of legally enforceable regulations or non-binding guidelines to provide a minimum reference point (derived from government, industry or best practices). Canada and Russia seldom reference standards; in the US industry standards are frequently incorporated into the regulations; while for Greenland and Norway guidelines are considered minimum requirements. For performance-based regulation the responsibility for proving compliance lies largely with the operator, rather than leaving inspection for non-compliance to the regulator.

For the Arctic, a performance-based regulatory system may achieve the best results as this is a newly developing area with many unknowns. Applying a prescriptive approach that has been designed for oil and gas exploitation elsewhere (e.g. the US Gulf of Mexico) will likely encounter problems simply due to the wide difference in operating conditions.

Within Canada and Norway there are clear distinctions between the agencies which issue licences and permits, and those which have responsibility for regulations and compliance. In Russia, Rosnedra issues licences, while Rosprirodnadzor and Roshydromet are the main authorities monitoring compliance. In October 2011 the US separated these roles as one of the recommendations following the Deepwater horizon blowout, with the newly formed Bureau of Ocean Energy management (BOEM) handling licensing, while the Bureau of Safety and Environmental Enforcement (BSEE) covers operations, inspections and enforcement. For Greenland these functions are handled by a single authority (MLSA, formerly Bureau of Mines and Petroleum, BMP). In 2013 the Inuit Circumpolar Council (ICC) published a review of Cairn's drilling offshore Greenland in 2011[24]. The review is critical of the BMP for non-disclosure of information which "suggest that the BMP has not been able to establish to ICC-Greenland that the oil exploration drilling regime in 2011 conformed in all aspects with the best international standards that apply to offshore drilling in Arctic regions". A lack of public consultation and engagement is also highlighted.

Regulatory requirements and standards vary significantly between states (see Annex 2). Oil spill prevention is a key area where significant regulatory differences are seen. The 2013 Arctic Council agreement on Cooperation on Marine Oil Pollution, Preparedness and Response in the Arctic provides a binding agreement on oil spill preparedness and response, but does not cover oil spill prevention. In 2013 the Arctic Council also issued Recommendations on the Prevention of Oil Pollution in the Arctic, but these are non-binding.

From the Arctic states, Greenland and Canada have issued requirements that a same-season relief well must be able to be drilled to provide well control in the event of a blowout. The US does not require same-season relief well capability but operators require well capping and containment systems located to provide immediate assistance. In Canada, some exploration leaseholders have successfully lobbied the National Energy Board (NEB) for a relaxation of the relief well

[24] http://inuit.org/fileadmin/user_upload/File/2013/Presse/ICC_cover_letter_to_Harvey_report_mar-2013_ENG.pdf

requirement, on the grounds that a same-season well would be a multi-year exercise in deep water areas, and this has resulted in a relaxation of the requirement which would now be examined on a “case-by-case” basis (Byers, 2013). Norway has some of the highest safety standards worldwide, and while same season control is not mandatory, there is a requirement for a relief well to be initiated within 12 days. Russia’s environmental protection record falls significantly short of the other Arctic states, highlighting the problems in achieving Arctic-wide consistent regulation and compliance.

Discussion and Observations on the oil and gas extraction sector: Governance and sustainable development

Governance options for the oil and gas extraction sector can be examined using the large number of existing regulations, guidelines, agreements and codes, some of which have been developed over considerable lengths of time and practice, and many referred to above in the opening section of this report. A minority of these instruments are specific to the Arctic region, but most are generic, derived from pan-Arctic, international, national and regional operations - although some carry polar or ice-related elements. A comprehensive collection of relevant instruments, agreements and guidelines has been provided in ACCESS report D5.11, which is a document which it is intended will be updated for the close of the project.

ACCESS deliverable D5.21, entitled "Current governance options for ACCESS sectors/themes", reviewed four potential action options (along with a fifth, non-action, option). These comprised: (a) the establishment of a single over-arching instrument, an Arctic Treaty, similar to that existing for the Antarctic; (b) the strengthening and augmenting of the powers of the Arctic Council to encourage this regional body to establish binding legislation over the Arctic Ocean; (c) the modification, enhancement and amendment of existing regulations and instruments to create a range of standardised regulations; (d) the specific targeting of areas of the regulations which do exist where chronic failure is predicted due to the effects of climate change; (e) retain the status quo and maintain without revision the existing complex and diverse panoply of regulatory systems.

These options fit within a spectrum of governance type extending between the extremes of "fully integrated" and "fully fragmented", and broadly corresponding to a level of intervention from option (a) to option (e), above, respectively. Following the report's review of current thinking and commentary, the authors of D5.21 deduced that a most pragmatic and actionable scenario would be that of a 'middle ground' of measured prescription and guidance to expand and strengthen existing instruments and agreements. Given that there are significant political pressures on how the resources of the region are developed in a sustainable way, this may well be the most pragmatic and practical way forward - and, in effect, this is what is occurring almost by default.

Since the date of release of ACCESS report D5.21, the Arctic Council has completed a major review of regulations relevant to the hydrocarbon industry in the offshore

Arctic - particularly relevant to oils spills and the environment. Its Emergency Preparedness Prevention and Response (EPPRR) working group has produced the a summary report entitled Recommended Practices for the Prevention Arctic Marine Oil Pollution[25]. This document is seen as a delivering comprehensive, and binding regulatory framework for oil spills and other hydrocarbon-based pollution. This set of recommendations is the second recent regulation / recommendation product of AC WG effort to be binding on States. The first "Agreement on cooperation on aeronautical and maritime Search and Rescue (SAR) in the Arctic" on Search and Rescue was delivered and agreed at the Nuuk Ministerial meeting in August 2011. Both of these documents bolster the overall body of regulation for offshore Arctic, but at the same time, strengthen the position of the Arctic Council in global recognition that it has a capacity and a capability to provide effective, region-specific, regulations. Non-Arctic States to date have welcomed these initiatives, since pragmatically it is recognised that the Arctic states and the Arctic Council are a welcome and key component in the of establishment - as well as the maintenance and monitoring - of emerging regulation in the Arctic Ocean. We observe that binding regulations such as the Arctic Council's SAR and Oil Spill documents have been produced and agreed in a relatively small number of years, as opposed to the rather protracted period of time taken by the IMO in its efforts to deliver a consensual Polar Code[26].

Earlier analyses on effectiveness of governance (many, but for example - Koivurova & Molenaar, 2009) have identified governance gaps and highlighted the lack of integrated management approach. Commonly these reviews have thrown a spotlight onto well-rehearsed observations, including: lack of competent international organizations to regulate, monitor, or legislate over various maritime activities; no default authority to carry this out, establish sanctions and carry these out; a limit on mandate for Regional Fisheries Management Organisations; sectoral, rather than integrated ocean governance; the imbalance between influence and input of user states and non-user states. With regard to oil and gas exploitation, none of them are as specific or as effective at demonstrating the inadequacy of extant regulations as a major incident would be. ACCESS, along with several other commentators (e.g. EPPR 2013), have used scenarios of recent large-scale oil spills and/or hydrocarbon industry equipment failures as if they had occurred of the Arctic to draw attention to the effectiveness of the current levels of polar ocean regulation. Notwithstanding the new binding regulations from the Arctic Council (among others), and the slowly emerging IMO Polar Code recommendation, the pattern of governance in non-polar regions, as evidenced by the Deepwater Horizon debacle, is seen by many to be characterised by inadequate regulatory control and management, implemented incorrectly or in an unintended way.

To put the concerns that insufficiently robust regulatory systems are not in place in the Arctic in perspective, the conclusions made by the US President-appointed National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling were clear, sobering and damning, including stating that among other things,

[25] http://www.arctic-council.org/index.php/en/document-archive/category/444-eppr#

[26] The Polar Code in part derives from IMO's voluntary guidelines for ships operating in Arctic ice-covered waters, completed in 2002.

• To assure human safety and environmental protection, *regulatory oversight of leasing, energy exploration, and production require reforms* even beyond those significant reforms already initiated since the *Deepwater Horizon* disaster. *Fundamental reform will be needed in both the structure of those in charge of regulatory oversight and their internal decision* making process to ensure their political autonomy, technical expertise, and their full consideration of environmental protection concerns. (Emphasis added)

• Because *regulatory oversight alone will not be sufficient to ensure adequate safety,* the oil and gas industry will need to take its own, unilateral steps to increase dramatically safety throughout the industry, including self-policing mechanisms that supplement governmental enforcement.

• *The technology, laws and regulations, and practices for containing, responding to, and cleaning up spills lag behind the real risks associated with deepwater drilling* into large, high-pressure reservoirs of oil and gas located far offshore and thousands of feet below the ocean's surface. Government must close the existing gap and industry must support rather than resist that effort.

(And most chilling, and specific to the ACCESS programme's goals)

• the report states that *"[s]cientific understanding of environmental conditions in sensitive environments in deep Gulf waters, along the region's coastal habitats, and in areas proposed for more drilling, such as the Arctic, is inadequate. The same is true of the human and natural impacts of oil spills*".

ACCESS's own commentary on an envisaged transposition of the Deepwater Horizon event to the Arctic (in report D5.31) summarised the areas with urgent need for close observance, review, revision, and implementation as:

(a) ensuring infrastructure is in place to deal with worst-case scenarios for each industry which operates in the Arctic;

(b) ensuring that human life, environment and indigenous communities are affected as little as possible;

(c) the emplacement of as standardised a series of regulatory systems and mandatory codes/controls on living and non-living resource exploitation as possible;

(d) the existence of monitoring procedures to ensure that appropriate implementation of legislation is maintained;

(e) the provision for regular, independent review and update of regulations in place.

The findings of the various commissions set up to review the effectiveness of regulations, guidelines, agreements, legislation, treaties and control systems in preventing and coping with events such as Deepwater Horizon were unanimous in criticising the way the regulations were not implemented appropriately as much as criticising what instruments were in place. For the Arctic Ocean, even more so than in other regions, the simple existence of regulations and guidelines will not be enough to ensure safety for the environment and the people who live and work in it, and the maintenance and the application of any regulatory systems in place in a coordinated and effective way is of paramount importance. Forward projection of, and continual revision and update of existing regulations, guidelines, agreements, legislation, treaties and controls has to be a part of any legislative system, and in particular in the Arctic environment. This continual process is essential.

The establishment and operation of a standard, continually updated and carefully maintained regulatory system for Arctic oil and gas extraction is an over-arching goal, but it is one of many examples. There is a basic need to review infrastructure in place and to reassess the needs to support of oil and gas activities in the region. SAR is underway with the new Arctic Council binding recommendations. Another area is safety for shipping - especially that carrying large volumes of hydrocarbons with a high potential to pollute in a disaster situation. One basic need among many would be for fully functional hydrographic charting to cover all areas to ensure navigation is as safe as it possibly can be. The Arctic Regional Hydrographic Commission is already addressing an assessment of the extent and effectiveness of the hydrographic surveying of the Arctic Ocean issue[27].

As far as possible, states should strive to apply a standard set of regulations for the operation of oil and gas exploitation within waters under their jurisdiction. From the analysis presented above, we can see that there are significant differentials within and between states in existing rules. There are clear contrasts in how they are maintained, monitored and implemented. To ensure as safe a working programme as possible, with as minimal impact on the environment and the maintenance of the highest level of integrity must be a challenge for all states operations in the offshore Arctic. The EPPR Oil Spill report states there is a " lack of consistency between standards and national requirements, and inconsistent enforcement of rules and regulation among Arctic Nations. The report recommends a "combination of prescriptive and functional (goal-based) requirements" as the solution. Where it reviews previous accidents, the report agrees that results provide experience and constructive observations, but warns that organization culture did not put safety first. Strong safety culture and commitment to management systems contribute to safe offshore drilling projects which do not unnecessarily damage the environment. A strong management system shall, for example, demonstrate that it has systematic, explicit, comprehensive, proactive, and documented processes for the development of annual safety objectives and targets and a means to measure them. Effective process and procedures are needed to identify, mitigate, or eliminate potential risks. In common with other observers, the report concludes that in some areas, rules and

[27] http://www.iho.int/srv1/index.php?option=com_content&view=article&id=435:arctic-hc-arhc&catid=64:4ircc&Itemid=690

regulations are lagging behind the development of the technology in some areas. Furthermore, enforcement of rules is not consistent among regulators and nations. Rules and regulations need to be robust.

Discussion and observations

- General provisions for Arctic offshore oil and gas operations are included in the UNCLOS, CBD etc. but these are general and not specific to the conditions encountered in the Arctic. In addition, we recognise that climate change effects will demand that even more specialised and directed regulations will need to be implemented.

- More detailed provisions in OSPAR (binding) Decisions and, for example, the Agreement between Canada and Denmark (Greenland). These set out preventative measures / obligations relating to offshore hydrocarbon exploitation in an environmentally safe manner. However, they are limited by the fact that they cover only defined areas of the Arctic Ocean.

- Gaps in transboundary assessment legislation – this is especially needed for the Russian Federation, who are not party to Espoo or its Protocol.

- Other than the Canada/Denmark agreement there is no Arctic-specific legally binding guidance for the performance of offshore hydrocarbon exploitation in the very harsh operating conditions experienced.

- The Arctic Council's 2009 Arctic Offshore Oil and Gas Guidelines are not legally binding, and therefore while providing helpful guidance, are difficult to assess in terms of impact / effectiveness.

- Legislation only as good as implementation and compliance, and it needs robust monitoring and regular review.

- The scale of potential environmental risks/ fragile nature of environment make legally binding Arctic-specific legislation essential, maybe through similar processes to the development of the Arctic Council's SAR and EPPR Agreements and binding regulations.

- Pressure due to limited seasonal time window for activities and financial pressures due to long lead times in the Arctic (Budzik, 2009) may lead to ‘short cuts’- increasing risks of accidents.

- Differences between state’s regulations make implementation of Arctic-wide legislation difficult. A performance based regime, rather than more prescriptive, would probably be more easily implemented.

There are many challenges ahead for the Arctic offshore region, even in today's early steps towards resource development, but as the industries mature with technological advances, there will be an inexorable movement to exploit the predicted oil and gas bonanza. The lessons of poor governance of non-polar operations, however, provide a warning that our efforts to achieve an effective and standardised system for the Arctic, using all the tools at our disposal, must bear fruit. As Oran Young summarised in 2009 "...*we should strive to frame issues of governance in the Arctic in terms of the discourse of ecosystem-based management and spatial planning and to grant all legitimate stakeholders, including a number of non-state actors, a seat at the table in addressing these issues. We should make every effort to maintain and even enhance the effectiveness of the Arctic Council, while not expecting the Council to turn into an organization with the capacity to make regulatory decisions on a variety of subjects, much less to implement and enforce them effectively*".

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ANNEX 1

DETAILS OF SPECIFIC INSTRUMENTS

Global instruments

United Nations Convention on the Law of the Sea (UNCLOS)

Article 60.4 enables states to establish drilling installations with safety zones.

Article 194.1 requires that states "*individually or jointly*" take "*all measures consistent with this Convention that are necessary o prevent, reduce and control pollution of the marine environment from any source* ...". Article 194.2 provides that States shall take all measures necessary to ensure, inter alia, "*that pollution arising from incidents or activities under their jurisdiction or control does not spread beyond the areas where they exercise sovereign rights ...".* Article 194.3(c) asserts that coastal states should limit "*pollution from installations and devices used for the exploitation or exploration of the natural resources of the seabed and its subsoil*" Article 197 requires that, in order to protect and preserve the marine environment, "*states shall cooperate on a global basis and, as appropriate, on a regional basis directly or through competent international organizations, in formulating and elaborating international rules, standards and recommended practices and procedures* ...". This Article also requires that States should take "*into account characteristic regional features*".

Similarly Article 208.1 stipulates that coastal states should adopt special regulations and take other necessary measures to prevent, reduce and control pollution "*arising from or in connection with seabed activities subject to their national jurisdiction*". Such regulations and measures "*should be not less effective that international rules, standards and recommended practices and procedures*" (Article 208.3). However, this lacks any real meaning as there are currently no international rules and standards – apart from possibly MARPOL. However, MARPOL relates to pollution from ships not seabed activities. Article 208.4 invites states "to *harmonize their policies ... at the appropriate regional level*" in relation to pollution from seabed activities and in Article 208.5 coastal states are invited to establish global and regional regimes to prevent pollution from offshore activities. Under Article 235.2 provides that states should provide "*prompt and adequate compensation or other relief in respect of damage caused by pollution* ...".

The issue of the "*Assessment of the potential effects of activities*" is approached by UNCLOS in Article 206. This requires that *" (w)hen States have reasonable grounds for believing that planned activities under their jurisdiction or control may cause substantial pollution or significant and harmful changes to the marine environment, they shall, as far as practicable, assess the potential effects of such activities .... and shall communicate reports of the results of such assessments* ...". Such reports are to be provided to "*competent international organizations" which in turn "should make them available to all States* (Article 204).

1991 Convention on Environmental Impact Assessment in a Transboundary Context[28] (the Espoo Convention) and the 2003 Protocol to the Convention

According to its Appendix I the Espoo Convention applies to "*large-diameter oil and gas pipelines*" (paragraph 8), "*offshore hydrocarbon production*" (paragraph 15) and "*major storage facilities for petroleum, petrochemical and chemical products*" (paragraph 16).

The Protocol to the Convention[29], signed on 21 May 2003 and by 35 states, including Norway and Denmark, entered into force on 11 July 2010. The Protocol focuses on the creation of national Strategic Environmental Assessment (SEA) procedures. Article 10 sets out procedures to be applied in particular cases of transboundary environmental effects. These arise "*where a Party of origin considers that the implementation of a plan or programme is likely to have significant transboundary environmental, including health, effects or where a Party likely to be significantly affected so requests*". In this case, "*the Party of origin shall as early as possible before the adoption of the plan or programme, notify the affected Party*".

International Convention for the Prevention of Pollution from ships, and its 1978 Protocol (MARPOL 73/78)

Concerning oil and gas activities MARPOL Article 2.3(b)(i) states that discharge does not include " *dumping within the meaning of the Convention of the Prevention of Marine Pollution by dumping of Wastes and other Matter* ...." while Article 2.3(b)(ii) states that, for the purposes of the Convention, "*discharge"* does not include *"release of harmful substances directly arising from the exploration, exploitation and associated offshore processing of sea-bed mineral resources*". Nevertheless, PAME (2013) points out that this did not prevent the Arctic Council's *Arctic Offshore Oil and Gas Guidelines*[30] (AOOGG) from recommending, for example, that certain MARPOL 73/78 requirements or their equivalent be applied with respect to production waste discharges from offshore industrial facilities.

PAME (2013) also notes that the exclusion of discharges related to seabed mineral activity also excludes discharges from Mobile Offshore Drilling Units (MODUs) directly arising from offshore exploration and production activities. An IMO voluntary

[28] Convention on Environmental Impact Assessment in a Transboundary Context, Espoo, 25 February 1991. Available at: http://www.unece.org/fileadmin/DAM/env/eia/documents/legaltexts/conventiontextenglish.pdf. Accessed: 24 January 2014

[29] Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context. Available at: http://www.unece.org/fileadmin/DAM/env/eia/documents/legaltexts/protocolenglish.pdf. Accessed: 22 January 2014

[30] http://www.pame.is/offshore-oil-and-gas/77-arctic-offshore-oil-and-gas-guidelines-2009

code, adopted in January 2010, applies to MODUs. With regards pollution from MODUs, section 14.5 states that "*Provision should be made such that the unit can comply with the requirements of international conventions in force*". PAME (2013) notes that differing views have been expressed within the IMO Legal Committee regarding whether IMO Conventions, as opposed to non-legally binding guidelines, accommodating both fixed and mobile drilling units in other respects.

Amendments to MARPOL Annex V, which came into force 1 January 2013, relate to *garbage* from fixed and floating platforms – as long as such discharges do not fall under MARPOL's exclusion of discharges arising directly from seabed mineral activities.

MARPOL 73/78, Annexes I, II, IV and V offer the possibility of establishing Special Areas. Within these areas, for technical reasons relating to their oceanographical and ecological conditions and to their sea traffic, the adoption of special mandatory methods for the prevention of sea pollution is required. Under the Convention, these special areas are provided with a higher level of protection than other areas of the sea. To date no Special Areas have been designated within the Arctic Ocean.

1972 Convention on the Prevention of Marine pollution by Dumping of Wastes and other Matter (the London Convention) and Protocol

Although excluding the disposal of wastes related to offshore seabed mineral exploration, exploitation and associated processing activities the Convention and Protocol do cover the deliberate disposal of "*platforms or other manmade structures as sea*" (for example, Convention, Article III.1(a)(ii) and Protocol Article 1.4.(a)(iv). PAME (2013) points out that the Arctic Council AOOGG list various instruments that relate to decommissioning provisions. Those Arctic States that are Contracting Parties to the OSPAR Convention have agreed to a binding package of measures (via OSPAR Decision 98/3) on the Disposal of disused Offshore Installations[31]. This prohibits the disposal of such installations at sea with any exceptions involving a lengthy consultation process with the final decision being left to the Contracting Party. Other Arctic states, not Contracting Parties to OSPAR, will have to take into account the provisions of the London Convention and Protocol. In addition to these agreements the IMO has adopted "Guidelines and standards for the removal of offshore installations and structures on the continental shelf and in the Exclusive Economic Zone" (Resolution A.672(16)[32])" which govern primarily safety of navigation.

[31] http://www.ospar.org/v_measures/browse.asp?preset=1&menu=00510416000000_000000_000000&v0_0=Decision+98%2F3&v1_0=title%2Creferencenumber%2Cdateofadoption&v2_0=&v0_1=&v1_1=referencenumber&v2_1=&v0_2=&v1_2=dateofadoption&v2_2=&order=&v1_3=&v2_3=

[32] http://www.imo.org/blast/mainframe.asp?topic_id=1026

Regional Instruments

Arctic Council

The 2011 Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic (Arctic SAR)

The Agreement was made in accordance with two existing and widely recognized international conventions, the 1979 International Convention on Maritime Search and Rescue (SAR) and the 1944 Convention on International Civil Aviation. The Agreement allocates to each state a specific Search and Rescue area (listed in Annex to the Agreement) for which it is responsible.

The main emphasis of the Agreement is to develop cooperation between the parties to ensure swift and efficient SAR measures are taken when accidents occur in the harsh Arctic region. Member states must nominate specific national institutions which will have full discretion in search and rescue. The named institutions, which include ministries, search and rescue agencies and rescue coordination centres (Appendices I, II and III) are required to take efficient measures and also to notify other relevant national institutions when appropriate.

The 2013 Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic[33] (Arctic Oil Pollution Agreement)

The areas of water to which the Agreement applies are defined for each State (Article 3). Parties are required to maintain a national system for responding to oil pollution incidents, including a national contingency plan or plans for preparedness and response to oil pollution incidents. Plans should include the organizational relationship of the various bodies involved - public or private - and take account of relevant laws and guidelines. Also required are a minimum level of pre-positioned oil spill combating equipment; a program of exercises for oil pollution response organizations and the training or relevant personnel; plans and communications capabilities for responding to an oil pollution incident; and a mechanism or arrangement to coordinate the response (Article 4).

Article 5 requires that each national response system must designate the competent national authority responsible for preparedness and response; a national 24-hour operation contact point responsible for receiving and transmitting oil pollution reports; and an authority entitled to act on behalf of the party to request assistance or decide to render it if requested. There are provisions on notification to be given by Parties on receipt of information about oil pollution or possible oil pollution, including an assessment of the incident and its possible consequences, and any action the

[33] http://www.arctic-council.org/eppr/agreement-on-cooperation-on-marine-oil-pollution-preparedness-and-response-in-the-arctic/

Parties have taken or intend to take in response (Article 6). Monitoring activities are required in order to identify oil pollution incidents and facilitate efficient and timely response operations and to minimize adverse environmental impacts (Article 7).

Parties are permitted to request assistance from one another, specifying the type and extent of assistance required and to respond to such requests by cooperating and providing assistance (advice, technical support, equipment or personnel) (Article 8). The movement of ships, aircraft and other modes of transportation engaged in response to oil pollution incidents or in transporting personnel, cargoes, materials and equipment required for that purpose, into, through and out of the territory of each Party, must be facilitated (Article 9). The Agreement establishes principles relating to the reimbursement of the costs of assistance by State Parties that request such assistance and also for those who provide it on their own initiative. These principles are subject to applicable international agreements and national law, particularly where concerning liability and compensation for oil pollution damage (Article 10). Article 12 calls for Parties to cooperate and exchange information serving to improve the effectiveness of oil pollution preparedness and response operations and to make such information publicly available. Article 13 required that Parties promote joint exercises and training. Parties are required to meet periodically to review issues related to its implementation (Article 14). Parties may cooperate with non-Parties where doing so contributes to activities envisaged in the Agreement (Article 17). Operational Guidelines are to be developed on specific matters, to assist in implementing the Agreement (Article 21).

2009 Arctic Offshore Oil and Gas Guidelines

The Guidelines, Section 1.3 on Sustainable Development require States to be mindful of their commitment to sustainable development and, inter alia, do not *"transfer, directly or indirectly, damage or hazards from one area of the marine environment to another or transform one type of pollution into another"* ; promote the use of "*best available technology/techniques and best environmental practices*" and are aware of "*the duty to cooperate on a regional basis for protection and preservation of the marine environment, taking into account characteristic regional features and global climate change effects*".

The Guidelines encompass seven aspects of oil and gas activities (Table 1).

Table 1. Areas of activity included in the Arctic Oil and Gas Guidelines 2009

Area of activity	
Arctic Communities, Indigenous Peoples, Sustainability and Conservation of Flora and Fauna	Living Resources Cultural Values Other human activity
Environmental Impact Assessment	Purpose Technique and Process Strategic Environmental Assessment (SEA) Preliminary Environment Impact Assessment (PEIA) Environmental Impact Assessment (EIA) Consultations and Hearings
Environmental Monitoring	Environmental Monitoring Methods Standards and Practices for Environmental Monitoring Following up Environmental Monitoring
Safety and Environmental Management	Management Systems: *Policy and Strategic Objectives* *Organization, Resources and Documentation* *Evaluation and Risk Management* *Planning* Compliance Monitoring, Auditing and Verification
Operating Practices	Waste Management The Use and Discharge of Chemicals Emissions to air Design and Operations Human Health and Safety Transportation of supplies and Transportation of Infrastructure

	Training
Emergencies	Preparedness Response
Decommissioning and Site Clearance	

The opportunities identified by the Arctic Ocean Review (PAME, 2013) for improving safety in the petroleum industry include:

- Arctic Council members should be urged to support, as appropriate, efforts in the ISO and other processes to develop standards relevant to Arctic oil and gas operations.
- Arctic states should move toward circumpolar policy harmonization in discrete sectors such as, for example, environmental monitoring. This should be based on existing studies such as the Arctic Council‘s AOOGG and the EPPR Recommended Prevention Practices report.
- Arctic Council should promote interactions with the appropriate international treaty bodies on offshore oil and gas issues that address for example discharges, oil spill preparedness and response, and environmental monitoring. Such interactions could include coordinating information exchange on reporting, monitoring, assessment and/or other requirements under relevant entities, encouraging inclusion of science and traditional knowledge, and keeping abreast of Arctic-specific developments relevant to the appropriate instruments.
- Arctic states should further engage industry and regulator involvement in PAME and EPPR initiatives on offshore oil and gas activity. To be done by utilizing existing industry forums or by convening an Arctic-specific oil and gas dialog for industry and contractor groups.

OSPAR

A number of decisions and recommendations relate to offshore activities in the OSPAR area (Table 2).

Table 2 OSPAR Decisions and Recommendations relating to the Offshore Oil and Gas Industry Strategy[34]

[34] http://www.ospar.org/v_measures/browse.asp?menu=01110305610124_000001_000000

OSPAR Recommendation 2011/8 amending OSPAR Recommendation 2001/1 for the Management of Produced Water from Offshore Installations	Adopted: 2011, London Ref. No.: OSPAR Recommendation 2011/08
OSPAR Recommendation 2010/18 on the prevention of significant acute oil pollution from offshore drilling activities	Adopted: 2010, Bergen Ref. No.: Recommendation 2010/18
OSPAR Recommendation 2010/1 on the Strategy for the Joint Assessment and Monitoring Programme	Adopted: 2010, Bergen Ref. No.: Recommendation 2010/1
OSPAR Recommendation 2010/4 on a Harmonised Pre-screening Scheme for Offshore Chemicals (supersedes 2000/4 from 1 January 2011)	Adopted: 2010, Bergen Ref. No.: Recommendation 2010/04
OSPAR Recommendation 2010/3 on a Harmonised Offshore Chemical Notification Format (HOCNF) (supersedes Recommendation 2000/5 from 1 January 2011)	Adopted: 2010, Bergen Ref. No.: Recommendation 2010/03
OSPAR Recommendation 2006/4 amending OSPAR Recommendation 2001/1 for the management of produced water from offshore installations	Adopted: 2006, Stockholm Ref. No.: OSPAR Recommendation 2006/4
OSPAR Recommendation 2006/5 on a Management Regime for Offshore Cuttings Piles	Adopted: 2006, Stockholm Ref. No.: OSPAR Recommendation 2006/5
OSPAR Recommendation 2006/3 on Environmental Goals for the Discharge by the Offshore Industry of Chemicals that Are, or Which Contain	Adopted: 2006, Stockholm Ref. No.: OSPAR Recommendation 2006/3

Substances Identified as Candidates for Substitution	
OSPAR Recommendation 2005/2 on Environmental Goals for the Discharge by the Offshore Industry of Chemicals that Are, or Contain Added Substances, Listed in the OSPAR 2004 List of Chemicals for Priority Action	Adopted: 2005, Malahide Ref. No.:OSPAR Recommendation 2005/2
OSPAR Decision 2005/1 amending OSPAR Decision 2000/2 on a harmonised mandatory control system for the use and reduction of the discharge of offshore chemicals	Adopted: 2005, Malahide Ref. No.:OSPAR Decision 2005/1
OSPAR Recommendation 2003/5 to Promote the Use and Implementation of Environmental Management Systems by the Offshore Industry	Adopted: 2003, Bremen Ref. No.:OSPAR Recommendation 2003/5
OSPAR Recommendation 2001/1 for the Management of Produced Water from Offshore Installations	Adopted: 2001, Valencia Ref. No.:OSPAR Recommendation 2001/1
OSPAR Decision 2000/2 on a Harmonised Mandatory Control System for the Use and Discharge of Offshore Chemicals (as amended by OSPAR Decision 2005/1)	Adopted: 2000, Copenhagen Ref. No.:OSPAR Decision 2000/2
OSPAR Decision 2000/3 on the Use of Organic-phase Drilling Fluids (OPF) and the Discharge of OPF-Contaminated Cuttings.	Adopted: 2000, Copenhagen Ref. No.:OSPAR Decision 2000/3
OSPAR Decision 98/3 on the Disposal of Disused Offshore Installations	Adopted: 1998, Sintra Ref. No.:OSPAR Decision 98/3

PARCOM Recommendation 87/2 on Discharges from Reception Facilities and Oil Terminals	Adopted: 1987, Cardiff Ref. No.:PARCOM Recommendation 87/2
PARCOM Recommendation 86/1 of a 40 mg/l Emission Standard for Platforms. OIC 2011 agreed to include explanatory text regarding ballast water	Adopted: 1986, Madrid Ref. No.:PARCOM Recommendation 86/1
OSCOM Recommendation 77/1 on the Disposal of Pipes, Metal Shavings and Other Material Resulting from Offshore Hydrocarbon Exploration and Exploitation Operations	Adopted: 1977, Paris Ref. No.:OSCOM Recommendation 77/1

Two further Decisions deal with offshore carbon dioxide storage (OSPAR Decision 2007/2 on the storage of carbon dioxide streams in geological formations and OSPAR Decision 2007/1 to prohibit the storage of carbon dioxide streams in the water column or on the sea-bed).

OSPAR's 2010 North East Atlantic Environment Strategy[35] urges cooperation with the Arctic Council The Offshore Oil and Gas Industry Strategy asserts that the "*OSPAR Commission will keep under review and, where necessary, develop programmes and measures in respect of all phases of offshore activities, in accordance with the provisions of the OSPAR Convention and the findings in the Quality Status Report (QSR) 2010, taking into account the development of programmes and measures .... introduced by other international organisations. To this end, the OSPAR Commission will* (Section 4.2) *..... assess the suitability of existing measures to manage oil and gas activities in Region I and, where necessary, offer to contribute to the work on offshore oil and gas activities taking place under the Arctic Council, specifically under the Protection of the Arctic Marine Environment Working Group (PAME*)(Section 4.2(i)). Section 5.1 requires that Contracting Parties which participate in other forums should, if appropriate, endeavour to ensure that relevant programmes and measures developed within those other forums (including the Arctic Council), are compatible with programmes and measures adopted by the OSPAR Commission.

Article 2 of the OSPAR Convention requires Contracting Parties, inter alia, to "*cooperate in carrying out monitoring programmes*". The Joint Assessment and

[35] http://www.ospar.org/html_documents/ospar/html/10-03e_nea_environment_strategy.pdf

Monitoring Programme (JAMP) 2010 – 2014[36] emphasises the importance of integrated environmental assessments (for example Section 14 refers to coordination of the monitoring and assessment approaches ..... within the same marine region or sub-Region in order to achieve "*comparable assessment results*". Coordination activities within the frame of the JAMP include the "*joint development of methodologies and tools by Contracting Parties*", and "*exchange of information on methodologies and tools being used by Contracting Parties including, where appropriate, their cross calibration*" (JAMP 2010-2014, Section 14).

OSPAR's environmental monitoring of oil and gas activities are cited in the AOOGG as an example of guidelines (AOOGG, Section 4.3, "*Standards and Practices for Environmental Monitoring*"). OSPAR's practices are also cited in relation to toxicity [37] "(AOOGG, Section 6.2, "*The use and discharge of chemicals*"), Decommissioning (AOOGG, Section 8, "*Decommissioning and site clearance*") and the use of Best Available Techniques (BAT) and Best Environmental Practices[38] (BEP) (AOOGG, Annex B).

[36] http://www.ospar.org/content/content.asp?menu=00170301000000_000000_000000

[37] The AOOGG refers to OSPAR *Protocols on methods for testing of chemicals used in the offshore industry*

[38] The AOOGG refers to paragraph 3(b)(i) of Article 2 of the OSPAR Convention.

ANNEX 2: Key National Regulatory Bodies and summary of example areas of legislation at state level

Russia

Offshore oil and gas operations between 12 to 200 Nautical Miles offshore fall under the Continental Shelf Law (Exclusive Economic Zone Law).

Amendments to the Subsoil state that oil and gas deposits located on or extending into the continental shelf of the Russian Federation may be used only by Russian legal entities which have five or more years' experience developing continental shelf blocks in Russia, and in which the Russian Federation holds more than 50 percent of the total votes represented by the share capital. The Subsoil Law therefore essentially limits the development of offshore fields only to state-owned companies Rosneft, Gazprom and their affiliates.

Minprirody Ministry of Natural Resources and Environment	Federal executive authority performing policy making and statutory regulation. Minprirody coordinates and supervises the activities of Rosnedra, Rosprirodnadzor and Roshydromet.
Rosnedra Federal Subsoil Resources Management Agency (subordinate to the Ministry of Natural Resources and Environment)	Key functions include • Issuing subsoil licences and supervising compliance (*Federal Law on Subsoil*) • Decisions on termination or suspension of licences • Geological exploration by the State • Maintaining geological data • Organising tenders and auctions for right to use subsoil
Rostekhnadzor Federal Service for Environmental,	• Industrial safety certificates and operating licences (including hazardous industrial activities relating to oil & gas) • Safety declarations

Technological and Nuclear Supervision	• Also investigates accidents
Rosprirodnadzor Federal Service for Supervision of Use of Natural Resources/Federal Supervisory Natural Resources Management Service (subordinate to the Ministry of Natural Resources and Environment)	• Environmental Impact Assessment • Control and supervision of the observance of legislation of the Russian Federation and international rules and standards concerning the marine environment and natural resources of internal seas, the territorial sea, and exclusive economic zone • Issues licences for the creation, operation, and use of man-made islands, constructions, and units; conduction of drilling operations in connection with the geological study, mineral searches, exploration, and development, as well as laying of submarine cables and pipelines in the internal seas, the territorial sea of the Russian Federation, and the continental shelf of the Russian Federation within its authorities.
Roshydromet The Federal Service for Hydrometeorology and Environmental Monitoring	Environmental monitoring and pollution control including air and water
Minenergo The Ministry of Energy	Responsible for energy policy, including issues related to • Oil and gas production • Major pipelines • Hydrocarbon field development • Production sharing agreements

USA

Development of oil and gas on federal offshore property is handled by the Outer Continental Shelf Lands Act (OCSLA). The Outer Continental Shelf (OCS) extends from 3 - 200 Nautical Miles. In October 2011 the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE), formerly the Mineral Management Service (MMS) was replaced by BOEM and BSEE as part of a major reorganisation. The Environmental Protection Agency and the U.S. Coast Guard are also involved in specific aspects of offshore regulation and related issues.

Department of Interior (DOI)	Regulates extraction of oil and gas from federal lands.
Department of Energy (DOE)	Conducts energy research, gathers and analyses industry data
Environmental Protection Agency (EPA)	Oversight for environmental, health and safety issues; including air and water pollution and waste. National Environmental Policy Act (NEPA)
Bureau of Ocean Energy Management (BOEM)	BOEM oversees the Alaska OCS. Functions include: • Offshore leasing • Resource evaluation • Review and administration of oil and gas exploration and development plans • Environmental Impact Assessments in accordance with NEPA • Air Quality Jurisdiction

Bureau of Safety and Environmental Enforcement (BSEE)	The BSEE is responsible for • safety and environmental oversight of offshore oil and gas operations • permitting and inspections • enforcement of regulations
US Coastguard (USCG)	Federal law enforcement in areas including • Search and Rescue • Marine Safety • Marine Environmental Protection

Canada

Arctic offshore drilling in Canada is regulated primarily under the *Canada Oil and Gas Operations Act (COGOA)* and regulations under that Act. Other legislation of general application governs some related topics, such as environmental assessment, oil spill response, emergency planning and employment standards.

National Energy Board (NEB)	Responsible for regulating northern and offshore oil and gas exploration and development under the *Canada Oil and Gas Operations Act (COGOA)* Focus on safety, environmental and technical issues
Department of Aboriginal Affairs and Northern Development (AANDC)	The management of oil and gas resources on Crown lands north of latitude 60°N in the Northwest Territories, Nunavut and the northern offshore is a federal responsibility carried out by the Northern Petroleum and Mineral Resources Branch of Aboriginal Affairs and Northern Development Canada. Responsibilities include: • Governing the allocation of Crown lands to the private sector for oil and gas exploration • Developing the regulatory environment • Setting and collecting royalties • Approval of benefit plans before development takes place in a given area

Norway

Norway's primary regulator is the Petroleum Safety Authority (PSA), which administers the application of multiple statutes to offshore drilling, but there are two other regulators with independent authority over aspects of health, safety, and environmental regulation of the industry. The PSA does not have responsibility for leasing or royalty and revenue collection.

Ministry of Petroleum and Energy (MPE)	Awarding of licences
Petroleum Safety Authority (PSA)	Regulatory responsibility, supervision and enforcement for safety, emergency preparedness and the working environment in the petroleum sector. PSA is the key coordinator for other regulatory authorities. The PSA has five key sets of regulations: • Framework Regulations • Management Regulations • Facilities Regulations • Activities Regulations • Information Duty Regulations
Norwegian Petroleum Directorate (NPD)	Regulations related to: • Resource Management • Reporting • Measurement including CO_2 tax NPD has responsibility for data from the Norwegian Continental Shelf and undertakes data compilation and

	mapping
Norwegian Environment Agency	Nature management and pollution control. Responsibility for: • Waste • Pollution • Air pollution • Noise
Climate and Pollution Agency	Responsibilities include following up on the Pollution Control Act. Provide advice and technical information to the Ministry of the Environment

Greenland

In 2013 Greenland's previous agency, the Bureau of Minerals and Petroleum (BMP), was replaced by the Mineral Licence and Safety Authority (MLSA). In 2010 the *Mineral Resources Act* gave Greenland full control over development of their mineral and petroleum industries. The MLSA (BMP) issued Exploration Drilling Guidelines in May 2011. The Greenland regulatory regime is still emerging as the hydrocarbon industry develops.

Mineral Licence and Safety Authority (MLSA)	Administrative authority for: • Licensing • Safety including supervisions and inspections
Ministry of Industry and Mineral Resources	Responsible for: • Strategy and policy making • Legal issues • Marketing of mineral resources • Socioeconomic issues • Royalty schemes
Environmental Agency for Mineral Resources Area (EAMRA)	Administrative authority for environmental matters including: • Protection of the environment and nature • Environmental Liability • Environmental Impact Assessments

Legislation summary for key exploration activities

Environmental Impact Assessment

Russia	Oil and gas construction projects require an EIA by an independent environmental expert. Documents presented to Rostechnadzor. Once subsoil licence is awarded, compliance is supervised by Rosnedra and Rosprirodnadzor. State supervision of compliance with technical standards and rules conducted by Rostechnadzor. Environmental Impact Assessment (EIA) study completed in accordance with environmental protection law and mandatorily including the assessment of the potential environmental impact on aquatic biological resources, measures for the prevention and mitigation of the above impact, compensation of unavoidable losses, drilling waste disposal plans, determination of the maximum permissible concentration levels of drilling fluids and cement slurries in water areas of fishery value.
Canada	Regulations under the *Canada Oil and Gas Operations Act* (*Canada Oil and Gas Drilling and Production Regulations*) when a company applies for authorization to drill in the Arctic offshore, they must provide an Environmental Protection Plan, that describes the procedures, practices, resources, and monitoring necessary to manage hazards and protect the environment from the proposed work or activity. *Canadian Environmental Assessment Act* – offshore drilling in the Beaufort Sea within the Inuvialuit Settlement Region (also require review under the *Inuvialuit Final Agreement*). Also applied to projects outside of the *Nunavut Land Claims Agreement* area (beyond the Land Fast Ice Zone). Nunavut Impact Review Board screens proposals within the *Nunavut Land Claims Agreement* area.
Greenland	Applications submitted to the Mineral Licence and Safety Authority to conduct offshore hydrocarbon exploration activities with an expected significant impact on the environment, must be accompanied by an environmental impact assessment (EIA). The EIA is forwarded to the Environment Agency for the Mineral

	Resources Area (EAMRA) under the Ministry for Nature and Environment. EAMRA draws on the expertise of the scientific institutions Danish National Environmental Research Institute and Greenland Institute for Natural Resources when assessing submitted EIAs. Prior to opening up new areas for hydrocarbon exploration and exploitation licensing rounds, a Strategic Environmental Impact Assessments (SEIA) for the region is prepared. The SEIA reports and research related hereto have been conducted as a co-operation between National Environmental Research Institute, Greenland Institute of Natural Resources (GINR) and Mineral Licence and Safety Authority (formerly the BMP).
USA	EIA required under NEPA (National Environmental Policy Act) The Outer Continental Shelf Lands Act requires the Secretary of the Interior to conduct environmental studies to obtain information pertinent to sound leasing decisions as well as to monitor the human, marine, and coastal environments. •The Environment Program Office's two Environmental Analysis sections conduct environmental impact assessments that consider the best available scientific information to inform Bureau and Departmental decisionmakers of the potential environmental and socioeconomic risks and benefits of proposed OCS activities, such as lease sales, exploration plans, and applications to conduct seismic surveys. The sections' analysts review proposals for compliance with relevant Federal regulations and laws, such as the National Environmental Policy Act, Marine Mammal Protection Act, Clean Air Act, and the Clean Water Act.
Norway	Provisions related to offshore oil and gas activities are contained in the petroleum legislation, administered by the Ministry of Petroleum and Energy. The most recent EIA provisions were adopted in 1999, when the field of application was expanded and a corresponding devolution of tasks to local authorities was introduced. The present EIA provisions implement the EU Directive on Environmental Impact Assessment and the requirements of the UN ECE Convention on Environmental Impact Assessment in a Transboundary Context (the Espoo Convention). Klif issued "Guidelines for Offshore Environmental Monitoring" in 2011.

Environmental and Compliance Monitoring

Russia	Federal Service for Environmental, Technological and Nuclear Supervision (Rostekhnadzor) is the state agency for extraction supervision and environmental protection (including waste management and air quality), monitoring compliance. Issues permits for emissions and licences waste management (including hazardous waste).
Canada	National Energy Board (NEB) focus on safety, environmental, and technical issues. The *Canada Oil and Gas Drilling and Production Regulations* outline the requirements for drilling and production activities. The *Canada Oil and Gas Certificate of Fitness Regulations* require all installations at an offshore production or drilling site to have a valid Certificate of Fitness. The Certificate of Fitness is issued by an independent expert organization called a certifying authority. A list of recognized certifying authorities is provided in the *Canada Oil and Gas Certificate of Fitness Regulations.* The certifying authority independently conducts the work that is necessary to determine that the drilling rig and drillship, and the associated equipment such as blowout preventers and well control equipment, have been designed, constructed, transported, installed, operated, and maintained in accordance with the regulations. By issuing a Certificate of Fitness, the certifying authority states that it has verified that the installation can be operated safely, without polluting the environment, and that it is fit for the purpose for which it is intended, such as drilling in offshore Arctic waters. The operator must ensure that the Certificate remains in force for as long as the equipment or installation is used. In addition, once a Certificate of Fitness has been issued, the operator cannot modify any of the drilling equipment without authorization. The equipment must be certified and used according to the design.
Greenland	There is a statutory requirement that all activities must be conducted in accordance with best international practice. The

	MLSA supervise licensee's activities, and activities are only approved if the company can document that the environmental and safety aspects as well as the technical and emergency response procedures and equipment are at the very highest level. Operators must supply a "Certificate of Fitness" for all drilling installations, and demonstrate both HSE and Safety Management Systems covering all significant possible hazards and corresponding contingency plans. Reporting requirements are outlined in the Exploration Drilling Guidelines. The MLSA will supervise licensee's activities under a Licence and may appoint other parties to carry out such supervision; see section 25(2) of the Mineral Resources Act.
USA	EPA enforces environmental laws, can take civil or criminal enforcement action through US Department of Justice. EPA can authorise State agencies to conduct enforcement activities.
Norway	The Petroleum Safety Authority Norway (PSA) has regulatory responsibility for safety, emergency preparedness and the working environment for all petroleum-related activities. The PSA Issue "Acknowledgement of Compliance" for mobile installations. Also monitor compliance by audits and inspections, checking annual reports, by assessing plans and incidents and monitoring programs. The PSA also issues enforcement notices and can impose sanctions.

Waste Management, Use and discharge of chemicals, Emissions to air

Russia	Flaring: Government resolution 01/01/2012 – companies prohibited from flaring more than 5% of associated petroleum gas without penalty. This value was still significantly exceeded (24% in 2011) and not expected to be met until 2014. Waste: Fees for pollution above maximum permitted discharge levels. Compensation required. Waste classified depending on

	level of hazard. Decree of the Government of the Russian Federation of 03.10.2000 # 748 On the Approval of the Maximum Permissible Concentration and Conditions of Discharge of Harmful Substances in the Exclusive Economical Zone of the Russian Federation. Decree of the Government of the Russian Federation of 24.03.2000 # 251 On the Approval of a List of Harmful Substances Prohibited to be Discharged from Ships and Other Floating Crafts, Aircrafts, Artificial Islands, Units and Facilities in the Exclusive Economical Zone of the Russian Federation.
Canada	Flaring: Flaring or venting of gas and burning oil prohibited unless conducting an approved formation flow test or in an emergency. Discharges and waste: *Canada Oil and Gas Drilling and Production Regulations* and the *Environmental Protection Plan Guidelines* require Environmental Protection Plan (EPP). Discharges covered under EPP or separate Waste Management Plan (WMP). No substance to be discharged unless determined acceptable by NEB.
Greenland	Operators have to take measures to minimize the risk of pollution and the risk of harmful effects on health and environment, both in and outside the Licence area. Waste management, flaring and discharges to sea all require prior approval, and subsequent inspection. Best environmental practice should be followed. The Environmental Protection Plan sets out guidelines to be followed by companies in their daily operations, ensuring that the impacts on the environment are reduced and kept within the limits approved by the authorities. The plan describes the manner in which sewage, waste, chemicals, fuel, drilling mud etc. are to be managed. The plan also presents procedures for cleaning up minor spills of fuel and oil related to operations, for remedying damage to the terrain, and for protecting vulnerable areas and animal life etc.
USA	Federal statutes not limited to oil and gas, include; Endangered

	Species Act, Fishery Conservation and Management Act, Marine Mammal Protection Act, Natural Marine Sanctuaries Act. Impact oriented; The Solid Waste Disposal Act (resource Conservation and Recovery Act – RCRA), The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), The Clean Air Act (CAA), The Clean Water Act (CWA). The Oil Pollution Act (OPA) is an amendment to the CWA. The principle enforcement agency is the EPA. However, the Consolidated Appropriations Act, 2012, effectively transferred jurisdiction to regulate air emissions associated with oil and gas activities on portions of the Alaska OCS from EPA to BOEM. Companies seeking to operate facilities on the Chukchi Sea OCS and/or Beaufort Sea OCS no longer require an air permit from the EPA. Rather, their proposed facilities' emissions will be reviewed and, if necessary, controlled by BOEM. BOEM's existing regulations are perceived to be less strict than the EPA, leading to concern amongst environmentalists.
Norway	The Norwegian Environment Agency sets strict requirements for the industry to use less harmful chemicals, reduce releases of pollutants, and at the same time develop new technology. This has brought about reductions in discharges and emissions to the environment. Mandatory environmental monitoring programmes ensure that a watch is kept on the impacts of the oil and gas activities. Permits are issued on the following principles - the polluter pays - the best available techniques - the precautionary principle. The zero-discharge goal, that was introduced in the late 1990's, states that no new petroleum installations on the Norwegian continental shelf can release oil or potentially harmful substances to the sea. On existing fields, steps to achieve this goal were to be taken by the end of 2005. However, there have been delays on some fields. Strict restrictions on flaring under the Petroleum Act contribute to keeping the general flaring level on the Norwegian shelf low, compared with the international level. As one of the first countries in the world, Norway introduced a CO_2 tax in 1991. The tax has led to technological development and triggered measures that have yielded considerable emission reductions.

Marine Oil Pollution Preparedness and Response (EPPR)

Russia	Polluter-pays regime administrated by Rostechnadzor. Any company exploring oil fields, producing oil, as well as processing, transporting and storing oil and petroleum products shall be obligated to have an Oil Spill Prevention and Response (OSPR) Plan in place. An OSPR plan specifies measures and actions required to prevent, discover in a timely manner, respond to and mitigate potential emergency situations at facilities damaged by accidental oil spills. An OSPR plan also provides for the protection of personnel, communities and environment. System of prevention of and response to accidents resulting from offshore oil and petroleum products spills. Within the framework of the applicable legislation, the Government of the Russian Federation, the Ministry of Natural Resources and Ecology, the Ministry of Civil Defence, Emergencies and Disaster Relief and the Ministry of Transport of the Russian Federation as well as other relevant federal executive authorities adopted a series of key legal acts. These acts related to the prevention of and response to accidents resulting from offshore oil and petroleum products spills and other negative environmental impacts to the continental shelf of Russia.
Canada	Emergency shutdown system required. *Canada Oil and Gas Drilling and Production Regulations* – Contingency Plan required, must demonstrate capability to drill same season relief well to kill an out of control well. NEB Same Season Relief Well Policy. Spill Contingency Plan required for drilling unit, support craft, supply vessels etc. There are requirements for oil spill planning and preparedness

	under the *Canadian Environmental Protection Act*, the *Canadian Environmental Assessment Act*, the *Emergencies Act* and the *Emergency Preparedness Act*.
Greenland	In 2011, the Government of Greenland, Bureau of Minerals and Petroleum established very specific requirements for relief well rigs in its approval of Cairn Energy's Exploration Program drilling off the west coast of Greenland. The Government of Greenland requires offshore drilling operations to be supported with two drilling rigs to ensure that one of the drilling rigs can provide relief well drilling services in the event that a blowout occurs while drilling with the other rig. The two-rig policy also requires that drilling through hydrocarbon zones must stop, with sufficient time to drill a relief well in the same drilling season before ice and harsh Arctic weather sets in that could preclude relief well drilling operations. The operator shall present the application to drill with a dual drilling rig vessel presence policy which allows for fast contingency response in case of severe well control issues. If more than one operator applies for drilling, a co-operation between the operators may be granted by BMP in sharing the responsibility for the dual rig policy by entering into rig sharing agreements. If such agreement is proposed, BMP shall review such an agreement prior to a potential approval.
USA	The Oil Pollution Act (OPA) is an amendment to the CWA. Principle enforcement agency is the EPA, covers clean-up and damage assessment from large oil spills in navigable waters, coastlines and EEZ. The United States, Department of Interior, requires offshore drilling operations to have two-rigs operating offshore at the same time to ensure that at least one rig is available and capable of drilling a relief well. The US also requires that Arctic offshore drilling operations also be equipped with a well capping and containment system.
Norway	Contingency plans are required for activities that have risk of pollution. Plans are subject to approval from the regulator. Plans are based on a risk analysis, which takes into account season, type of oil, and efficiency of equipment.

	Operators are required to develop emergency preparedness plans based on a quantitative environmental risk analysis. The results from the environmental risk analysis are to be used by the operator to select the best emergency preparedness measures for the plan and to inform the regulator, who can require further emergency preparedness conditions in some cases. The regulations require that emergency preparedness plans must contain action plans for hazard and accident situations. Guidelines state that the emergency preparedness plans should include a description of emergency preparedness measures and decision criteria; response times; plans to remotely monitor the dispersal of oil; rationale for the choice of action based on minimising the environmental damage; plans for shore clean-up; and environmental surveys. Operators are also required to have an action plan that describes how lost well control can be regained.

Decommissioning and Site Clearance

Russia	On expiration/termination of a licence company must (at own expense): • Ensure wells are brought to a safe condition not hazardous to health or environment • Restore land to adequate condition • Submit geological and other documentation
Canada	Suspended or abandoned wells must provide isolation of all oil & gas bearing zones and prevent any formation fluid from escaping. The well must be monitored to prevent pollution and the seafloor cleared of any equipment that might interfere with other users.
Greenland	A well termination program must be consistent with the drilling regulations. Approval of the program is required prior to terminating any well. Approval for suspension of a well may only

	be given for 1 year, thereafter the well has to be permanently abandoned. Prior to the abandonment of a well the hole must be plugged according to approved procedure in the well termination submission. When a well is abandoned the original state of the well site shall be re-established. No obstacles that can cause damages to fishing equipment may be left on the seabed. Any wells suspended for future potential additional operations shall be adequately covered and protected in order to avoid disturbances and hazards to other activities in the area.
USA	Plans for decommissioning must be approved by the BSEE. Regulatory procedures vary depending upon the type of decommissioning involved (definitive or temporary well plugging or site clearance), but all types have two stages in common. First, applicants for a Development and Production Plan (DPP), must provide “a brief description of how you intend to decommission your wells, platforms, pipelines and other facilities, and clear your sites.” Second, as site usage nears its end, the owner or lessee must submit an initial decommissioning plan or application. The leaseholder must demonstrate that it has the financial ability to ensure that wells can be plugged and abandoned, platforms removed and the drilling and platform sites, including pipeline corridors, cleared of all obstructions.
Norway	Before the production is shut down on a field, the operator must submit a decommissioning plan to the Ministry of Petroleum and Energy. The decommissioning activity will need licences and consents in line with other petroleum activities.

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