ENVIRONMENTAL EMERGENCIES AND RISK MANAGEMENT[1]

by

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Introduction

The Emergency Prevention Preparedness and Response (EPPR) Working Group was established to provide a framework for cooperation in responding to the threat of environmental emergencies in the Arctic (http://eppr.arctic-council.org/). The Working Group exchanges information on best practices for preventing spills, preparing to respond to spills should they occur, and practical response measures which could be used when a spill occurs. The Working Group is not a response agency. The response to a particular incident lies with individual countries or international organizations, depending on the magnitude of the spill and its aerial extent.

At the first meeting of experts (Sweden, 1992) the work focused on the hazards associated with the transportation of oil and other hazardous materials. However, one of the first projects of the Working Group was an "Environmental Risk Analysis of Arctic Activities" (1998) (http://eppr.arctic-council.org/risk/riskcover.html). Countries identified and assessed the potential environmental hazards in their country and ranked them on a scale of 1 - 4, from their country perspective. The hazards were then assessed on a circumpolar scale. The results of the analysis were presented in a qualitative risk matrix.

Included for each country is a list of domestic and international instruments in place to address the hazards identified. The perceived effectiveness of these agreements often influenced the assessment of the threat associated with a particular activity

The results of the analysis have helped to inform the work of the EPPR Working Group collectively and offered a focus for individual country priorities. In looking to the future, it will be necessary to examine predicted changes and the influence of these changes on the type and magnitude of major environmental emergencies which could occur in the Arctic because of these changes.

Current State of Affairs

The risk of potential environmental emergencies to the environment was assessed on a scale of 1 to 4 depending on the probability of the event occurring and the magnitude of the threat. Level 1 indicates that both the probability of occurrence and the magnitude of the threat are high. Level 2 is used when the probability is low and the magnitude is high. Level 3 denotes events which have a high probability of occurring but represent a low magnitude of threat. Level 4 indicates that both the probability and the magnitude of the threat are low.

The "Risk Analysis Report No. 2" found that "the greatest threat to the Arctic from a release of pollutant requiring emergency response is from the transportation and storage of oil". The report went on to say that: "the threat from oil is more local in nature for any one activity. Nuclear sites, although assessed as less of a threat overall, pose the potential of impacting larger areas."

As a follow up to the risk analysis, the EPPR undertook a more formal assessment of the effectiveness of existing agreements. Countries were asked to identify any gaps which might require new agreements. The conclusion of the Working Group was that "the international agreements and arrangements currently in force, agreed to, or under consideration appear to address the present needs for trans-Arctic cooperation in the field of emergency prevention, preparedness and response" (Barrow, 2000). In addition, some countries identified gaps in existing bi-lateral agreements, and these countries were reviewing and updating these documents.

Tools for Dealing with the Risks

Progress has been made in developing tools and sharing information to deal with a number of these risks. This section focuses on the work of EPPR but some issues have also been addressed by other working groups such as PAME and AMAP.

Oil and Gas Transportation

The "Arctic Guide" (http://eppr.arctic -council.org/arctic-guide.html) informs on EPPR arrangements in the each Arctic country and gives information on contact persons, contact points and available resources. The Guide also contains a brief description of risks, existing agreements, and information sharing required in the event of an emergency.

The "Field Guide for Oil Spill Response in Arctic Waters" (http://eppr.arctic -council.org/fldguide/index.html) was developed to provide circumpolar countries with oil spill response guidance specific to the unique climatic and physiographic features of the Arctic environment. The Guide focuses on practical oil spill response strategies and tools for open water, ice and snow conditions.

The "Circumpolar Map of Resources at Risk from Oil Spills" (http://www.akvaplan.niva.no/eppr/) presents a large scale perspective of the resources at risk from oil spills. The maps are based on a database containing important natural and human features, and activities which could result in a major release of oil in the Arctic. The EPPR Working Group, in cooperation with others, is currently examining the feasibility of expanding the maps to consider other types of hazards.

The "Shoreline Cleanup Assessment Technology" (SCAT) Manual" is under preparation. It builds on existing material and will include a new chapter on physical shoreline characteristics and processes for Canadian and Alaskan shorelines and a glossary of arctic shoreline types with a description.

Areas remaining to be addressed: training under actual arctic conditions and damage assessment/ compensation. Attempts were made to provide training in emergency response under arctic conditions. The University of Svalbard prepared a course curriculum but there was insufficient registration to allow the course to proceed. While this remains a concern, it is not immediately obvious how the gap can be closed. With regard to damage assessment and the issue of compensation, this will most often be dealt with at the local or national level. However, it would be useful to have an approach which is acceptable on the circumpolar stage.

Oil and Gas Production and Storage

The "Arctic Offshore Oil and Gas Guidelines" (http://www.pame.is/) developed by PAME with input from EPPR, address prevention, preparedness and response in the Arctic on the basis of the unique cold water, heavy ice and harsh weather conditions.

EPPR will participate in the review of the "Oil Transfer Guidelines" currently under preparation by PAME.

Areas remaining to be addressed mainly relate to the lack of uniform implementation of the existing Guidelines and the potential for strengthening the content of the current and future guidelines.

Radioactivity and Other Hazardous Chemicals

Activity has been focused on Source Control Management at selected facilities. Phase I, involved the development of a "Risk Assessment Methodology at Hazardous Industrial Facilities" which was applied to reduce the risk associated with the use of chlorine at the Apatityvodokanal (Apatity Water Utility). During Phase II, the working draft of the methodology will be applied to a fuel research department.

The areas remaining to be addressed include: completion of the 'risk assessment methodology' and its subsequent application to additional facilities. Plans are in progress to offer a series of ISO 14001 training sessions.

Mining

Little work has been undertaken within EPPR due to low ranking of these activities in the Risk Analysis and the more localized nature of these activities

Natural Disasters

The EPPR Working Group is currently examining the possibility of expanding the mandate to include natural disasters. The work will continue with an 'Inventory of Past Natural Disasters'. Inherent in the discussion, and recommendation, will be an assessment of the resources required to undertake such a change in mandate and the availability of those resources.

Additional Considerations

In conducting the risk analysis, the question of the adequacy of existing agreements was addressed. Integrated approaches offer an effective and cost-efficient way to address existing and emerging challenges. However, these integrated approaches need to also recognize that guidance in the form of conventions and international agreements is present but has not been clearly applied or implemented.

One of the key elements in linking the ecosystem management approach to the need to address "implementation gaps" is regional cooperation. The UN Secretary General's Report on Oceans and Law of the Sea reveals that to advance ocean management, existing instruments must be better implemented and adhered to. The Consultative Process on Oceans supports this observation and has called for increased compliance and improved coordination and collaboration, particularly at the regional level.

What is Likely to Change in the Next 10 – 50 Years?

The ocean around the circumpolar Arctic and its biota are generally clean in relation to other oceans and marginal seas. However, emerging issues, such as the potential impacts from climate changes, increased transportation and economic activities, threaten this balanced state. Further, a combination of several factors makes the Arctic more vulnerable to long-range air and sea transport of contaminants and certain human impacts. This is mainly due to characteristics such as low temperatures, short growing season and fewer species to undertake degradation. The result is slower chemical and biological processes and thereby the slower degradation of contaminants.

Temperature and Precipitation Change

The general pattern of recent Arctic temperature change and (at least to some extent) changes in precipitation appear to be related to shifts in the large-scale atmospheric circulation, also reflected in observed decreases on sea level pressure over the central Arctic, as well as a tendency for more frequent high-latitude cyclone activity.

Ice Change

With the change in temperature there will be change in ice coverage and thickness as an increase in temperatures accelerates the melting cycle.

The Arctic ice cap is decreasing in thickness and area of coverage. Vessels and aircraft operating in the Arctic have reported diminished summer ice coverage and scientific models consistently suggest that seasonal sea lanes through the formerly ice-locked Arctic may appear as soon as 2015. It is postulated that summertime disappearance of the ice cap could be possible by 2050 if this trend continues.

A conservative scenario is that by 2050 the observed trend will reduce summer minimum ice extent by 15 percent. By 2050, the end-of-summer volume can be expected to be down by about 40%, of which about 15% would be due to decreased extent and the remaining 25% would be seen in an end-of-summer thickness reduced by 25% to about 1.5 m.

In terms of the Arctic regions this means that during winter, the central Arctic and all peripheral seas including the Greenland Sea, Bering Sea, and Gulf of St. Lawrence will continue to have significant ice cover. Extent and, in most areas, ice thickness will be reduced. The Sea of Okhotsk and Sea of Japan will be ice-free for the entire year. In late summer, the entire Russian coast will be ice-free, allowing navigation through the Barents, Kara, Laptev and East Siberian Seas along the entire Northern Sea Route. The Northwest Passage through the Canadian Archipelago and along the coast of Alaska will be ice-free and navigable every summer by non-icebreaking ships. Ice will be present all year along the eastern and northern coasts of Greenland. Ice will also remain throughout the summer within and adjacent to the northern Canadian Archipelago. Significant ice will remain in the central Arctic Ocean, though the mean thickness will be about 1.5 m, and it will be less compact.

Physical impacts on sea and land processes are also considerable. As water evaporates it leaves behind salt. This heavier saltwater sinks into the deep ocean currents. An increase in meltwater alters this cycle, affecting the circulation of water around the world's oceans. More land will thaw each year, increasing percipitation and areas of land will be more saturated causing river flows to change. With increases in precipitation will come potential increase in snow, rain, sleet, fog and icy drizzle.

Weather Change

With the change in ice coverage and thickness there will be a change in weather potential. Arctic ice will significantly reduce in area and volume or possibly disappear during summer months as a result of increased greenhouse gases. A favorable scenario of Arctic climate change is one with a shorter-term (years to decades) natural variability superimposed on the long-term warming trend due to greenhouse gas and other human-related emissions.

Terrestrial Change

With the change in temperature, there will be changes in terrestrial characteristics which will change the marine environment as well.

The effects of a warming climate on the terrestrial regions of the Arctic are already apparent; some subsequent impacts to the hydrologic system are also evident. It is expected that the effects and consequences of a warming climate will become even more pronounced within the next 10 to 50 years, at first primarily through atmospheric and near-surface-processes-and-later through geomorphological evolution and hydrological responses to permafrost degradation. These changes will affect the Arctic Basin through impacts on regional weather, oceanic circulation patterns, salinity and temperature gradients, sea ice formation, and water properties. It is difficult to quantify the long-term effects of a changing climate, but it is possible to envision many of the changes that we should expect.

These changes in the hydrological regime should improve productivity of terrestrial aquatic and marine ecosystems. Increases in winter base flow will markedly improve winter habitat in streams and rivers for freshwater and anadromous fishes. There is a possibility that these rivers could eventually support commercial fishing industries. There are numerous economic and natural barriers constraining potential marine industrial development, however if the sea ice degradation does allow civilian vessels to work in the Arctic Ocean during at least the summer months, then we should expect a fishing industry will develop.

Socio-economic Change

Changes in temperature, ice, weather, terrestrial character and marine character will foster and support socio-economic change.

There is one overriding reason for increased operations in the Arctic in 2015-2020: increased access. Today, most of the Arctic is inaccessible for all or most of the year because of the ice coverage. As the icecap recedes and more of the Arctic becomes ice-free for a longer period each year, more and more vessels (and aircraft) from many nations will operate in the region. This increased accessibility to a variety of vessels will in turn require increased economic activity with increased associated environmental protection activities to exploit the natural resources available and access through the region to save transit time.

In the 2005 to 2010 period, in the summer the Canadian Islands may warm up and allow strengthened ships to pass. Seagoing ships can travel for as much as a month. During this period, in the summer strengthened ships may sail along the Russian coast to Alaska and seagoing (non-icebreaking) ships can travel for two months by 2005. In the same time frame, in the winter strengthened ships can sail from Russian to Norway. Ice-free travel along the Northwest Passage and the Northern Sea Route may increase from 41 days to 100 days in the 2050s. In the 2050s winters, strengthened ships may sail year around along the Canadian-Alaskan coastline. Summers, the Northwest Passage may be ice free from June through September. In the future, the duration of open waters in the Beaufort Sea may increase from 60 to 150 days. In the 2050s winters strengthened ships will be able to navigate farther west on Russian's coast. In the late summer the entire coast may be ice free. In the 2050s summers, strengthened ships may travel across the ocean, dramatically reducing the length of travel by thousands of miles. Seagoing ships may sail all along the arctic coastlines.

The longer summer season will increase trading, fishing, tourism and the use of natural resources. Ships which can expect contact with even minor abundance of sea ice require increases in stiffeners and plate thickness in the affected region. Underwater installations including propellers, rudders, fin stabilizers, sea chests must be redesigned for Arctic operations. Icing of ships and aircraft will require accommodation in ship/aircraft design and operation.

In addition to changes at sea, climate change will affect marine infrastructure in the coastal zone. Permafrost degradation, increases in sea level (due to thermal expansion as deep water warms and to the melting of Arctic glaciers) changes in river flood patterns and timing can be expected to have negative effects on port structures such as docks, bulkheads, cargo handling facilities, airports and roads in the Arctic. If resource exploitation in the Arctic increases, greater demands for sea transport may occur as new and replacement facilities are required for resource acquisition, processing and transportation.

In addition to these potential changes, the search for and development of offshore petroleum resources is bound to come to the Arctic. Climate warming can only accelerate the process. The petroleum industry is already moving into deeper water in other regions. A decrease in the problems associated with drilling and producing oil offshore as sea ice extent and thickness diminishes will expand exploration and production opportunities in the Arctic. Plans are already being made for offshore drilling for oil in the US Arctic. The Russian and Canadian sectors are also strong potential sites for offshore development. These developments will bring seismic exploration ships, mobile drilling platforms of various types and offshore supply vessels into the region with the concomitant development of shore-based facilities. Further, changes in the Arctic ocean and sea ice circulation are important to dispersion of nuclear contamination and biological productivity.

The exploration, development, production and transportation of petroleum in the Arctic will expand with or without climate change as prices continue to rise due to the decreasing rate of discovery of reserves elsewhere. Climate warming and reduction in ice cover will facilitate and perhaps accelerate the process.

The Future – Will These Changes, Change the Risk?

Any scenario development for the purpose of identifying strategic challenges to the Arctic region must include increased temperature continuing with the loss of sea ice which rendered the Arctic by 2050 as essentially accessible to economic trade, resource exploration and production and the intensified economic exploitation of the marine environment found elsewhere in the world.

Further, terrestrial changes which include land drying with the prospect of fires, river flow increases, coastal and port siltation and coastal degradation due to loss of ice protection must be considered.

Human habitation and impact beyond those of indigenous, survival activities must be contemplated, including major industrial, commercial and transportation activities previously known only to the more southerly latitudes.

Abundant natural resources, increasing transportation and economic activity, and significant changes due to climatic processes, are resulting in increased use and threats to the Arctic marine environment. Measures to control and reduce these impacts exist but are / have largely been reactive and developed on a sector-by-sector basis resulting in a patchwork of policies, legislation and programs. A more coordinated and strategic approach to managing the Arctic marine and coastal environment is needed.

Infrastructure and Resource Development in the Arctic

Similar to the 1970s there is again high interest in pipelines, oil tankers, liquefied natural gas systems and gas to liquid plants. With the large number of projects being discussed there is little doubt that some, if not many, will come to pass. A great deal was learned about how to mitigate the effects of resource development on ecosystems and there is still a good deal to be learned. This is an area where research money, both public and private, will be available and where a high degree of coordination will be necessary between these efforts.

Continued research in oil spill response, especially in areas impacted by ice, should remain a high priority. We have gone about as far as we, can with mechanical recovery through use of skimmers and with in-situ burning techniques. A serious effort needs to be undertaken again on chemical responses for those spills where weather and or ice makes the present systems unusable. In some areas where oil development is contemplated this may be 50% of the time. In this context spill response research includes any initiative with a high potential to significantly improve the effectiveness of a response to a spill in ice. Response includes all related activities, or example: detection, tracking and monitoring, physical recovery, in situ burning, dispersion, storage and disposal. Research is not limited to technical projects, but can include legal issues, regulatory reforms, education, public outreach, capacity building, and training. Simplifying and streamlining the political and management process (decision making, permitting and approvals) could be as important as technology improvements in spill response. Nor should the focus be oil, since hazardous materials and radiological materials, as well as the results of mining and industrial processes, will also be issues.

In the present situation where changes in permafrost temperatures are being noted at a rate never observed before, The methods used to protect permafrost from degradation will require even more stringent application and monitoring. Design standards must be prepared to deal with a greater range of possibilities in soil stability. Communities will not have the resources to deal with permafrost changes to the same degree that major developments will, and systems must be in place to transfer technological advances rapidly where appropriate. Airstrips and local road systems will need attention as much as major highways and railroads.

Integrated Infrastructure Management

Degradation of the marine environment can also result from a wide range of activities on land. Human settlements, land use, construction of coastal infrastructure, agriculture, forestry, urban development,

tourism and industry can affect the marine environment. Coastal erosion and siltation are of particular concern.

Marine pollution is also caused by shipping and sea-based activities. Approximately 600,000 tons/year are released as a result of normal shipping operations, accidents and illegal discharges. With respect to offshore oil and gas activities, currently machinery space discharges are regulated internationally and six regional conventions to control platform discharges have been under consideration. The nature and extent of environmental impacts from offshore oil exploration and production activities generally account for a very small proportion of marine pollution but is expected to increase as these resources are more aggressively exploited.

Marine Transportation Integrated Infrastructure

The Norwegian Snap Shot Analysis (Norwegian Maritime Directorate, 2000) estimated waste generated in the Arctic from icebreakers/tugs, cargo ships, and fishing vessels and reported staggering cumulative statistics such as: sludge, 26,882 m3/yr; bilge, 55,44bm/yr; sewage, 105,842 tons/yr; garbage,1,607 m3/yr; and solid waste, 1,033 tons/yr.

Activities such as oil and gas exploration/production in the Barents Sea, North Atlantic, and Arctic Ocean, cruise ship tourism, and other activities are expected to expand; likely bringing an increase in ship transportation and resulting pollution. Concerns include the potential for increased air pollution and garbage. Emerging issues which may be influenced by the effects of climate change include a potential increase in ship traffic as well as additional risk of introducing exotic species and pathogens in Arctic waters through the discharge of ballast water. This work was built on and coordinated with other organizations involved in Arctic marine transportation such as IMO (Guidelines for Ships Operating in Arctic Ice Covered Waters), Northern Sea Route (INSROP the International Northern Sea Route Programme, Northern Maritime Corridor), the Sustainable Development Working Group, and the Emergency Prevention, Preparedness and Response Working Group on accident-related issues and other existing work related to this issue. Against this background a marine transportation integrated infrastructure should address:

- Supporting wider ratification and implementation of relevant shipping conventions and protocols;
- Cooperating in monitoring marine pollution from ships, especially from illegal discharges, (e.g. aerial surveillance) and enforcing MARPOL discharges, provisions more rigorously;
- Assessing the state of pollution caused by ships in particularly sensitive areas identified by IMO and taking action to implement applicable measures, where necessary, within such areas to ensure compliance, with generally accepted international regulations;
- Taking action to ensure respect of areas designated by coastal States, within their exclusive economic zones, consistent with international law, in order to protect and preserve rare or fragile ecosystems and species habitat;
- Considering adoption of appropriate rules on ballast water discharge to prevent the spread of non-indigenous organisms;
- Promoting navigational safety by adequate charting of coasts and ship routing, as appropriate;
- Assessing the need for stricter international regulations to further reduce the risk of accidents and pollution from cargo ships (including bulk carriers); and

- Initiating the development of draft set of state standards for marine operations. The possibility of using appropriate International Standards Organization (ISO) standards should also be considered.

Off Shore Integrated Infrastructure

Off shore dumping and emission continue to be a source of concern with the expansion of off shore mineral exploration, the development of ports and expanded off shore operations. Existing offshore oil and gas safety and environmental laws and standards are largely misapplied or outdated, containing many gaps, overlapping authorities, and contradictions. Certain requirements and conditions hold special importance when developing a new regulatory regime for offshore oil and gas development including which include the necessity to legally define the norms and rules that would regulate the implementation of specific oil and gas development projects. This would include assessing guidelines for the discharges, emission, and operational releases, as well as accidental releases associated with off shore facilities.

Dumping continues to expand as an issue requiring work to support wider ratification, implementation and participation in relevant Conventions on dumping at sea, including encouraging the London Dumping Convention parties to take appropriate steps to stop ocean dumping and disposal of hazardous materials and radiological materials.

As ports increase in number and size the issue of facilitating establishment of port reception facilities for the collection of oily and chemical residues and garbage from ships, especially in MARPOL special areas, and promoting the establishment of smaller scale facilities in marinas and fishing harbors will become critical.

Finally, land-based activities will need to be reviewed, if as noted in the discussion of future scenarios, seaward carriage of pollutants occurs with changes in watershed behaviors.

Response Integrated Infrastructure

Extensive development will bring with it greater pressure to develop cooperative and integrated response regimes to the release on land, sea or air of oil, hazardous substances and radiological materials. In this regard, greater focus should be placed on intensifying international cooperation to strengthen or establish, where necessary, regional oil/chemical spill response centers and/or, as appropriate, mechanisms in cooperation with relevant sub-regional, regional or global intergovernmental organizations and, were appropriate, m industry based organizations. This effort should include:

- Assistance to industries in identifying and adopting clean production or cost-effective pollution control technologies;
- Planning development and application of low-cost and low-maintenance sewage installation and treatment technologies for developing countries;
- Identification of appropriate oil and chemical spill control materials, including low-cost locally available materials and techniques, suitable for pollution emergencies in developing countries;
- Review of current threats, new information and adequacy of existing measures related to land based sources of pollution and marine based sources of pollution;
- Assess the environmental risks from accidents associated with increased maritime transportation and new shipping activities;

- Improve reporting functions and promote collaboration on a regional basis in pollution response;
- Address emergencies associated with terrestrial pollution from floods and other natural disasters;
- Participation in the development of prevention techniques such as risk analysis to prevent and prepare for potential pollution incidents from land or sea;
- Establishment of a clearing house on marine pollution control information, including processes and technologies to address marine pollution control and to support their transfer to developing and other countries with demonstrated needs; and
- Contingency plans for human induced and natural disasters, including likely effects of potential climate change and sea level rise, as well as contingency plans for degradation and pollution from anthropogenic origin, including spills of oil and other materials.

Public Information Integrated Infrastructure

Arctic Council initiatives should have as a component of each initiative a focus on public information and education to ensure:

- Provision of training for critical personnel required for the adequate protection of the marine environment;
- Promotion of the introduction of marine environmental protection topics into the curriculum of marine studies programs;
- Establishment of training courses for oil and chemical spill response personnel, in cooperation with oil and chemical and radiological industries;
- Workshops are conducted on environmental aspects of port operations and development; and
- Through bilateral and multilateral cooperation, support and supplement national efforts as regards human resources development in relation to prevention and reduction of degradation of the marine environment.

Principles for Consideration in a Strategic Plan from the Emergencies Perspective

The guiding principles which merit consideration are based on recognition of the past achievements of the Arctic Council, realization of the need for further development, and the requirement for greater integration of these efforts.

The guiding principles to be used to develop a strategic plan should include:

- Involvement of indigenous people and incorporation of traditional knowledge;
- Promotion of cooperation and collaboration with the Arctic Council working groups, as well as other relevant international, regional and non-governmental organizations to ensure coordinated and cost-effective approach;
- Recognition of the need to improve working relationships and seek decisions that meet the needs and interests of all parties.

- Move towards integrated approaches to address the challenges of coastal as well as marine environments;
- Recognition of the need to prevent marine pollution form land-based activities as well as prevent marine pollution form maritime activities;
- Recognition of the need to protect the Arctic environment and conserve its biological resources.
- Recognition of the need to involve the Arctic' s indigenous people in decisionshat affect them.
- Recognition of the need to enhance scientific monitoring and research on local, regional, and global environmental issues.
- Recognition of the critical emerging issues of climate change, oil and gas development, and increased shipping in the Arctic region; and
- Recognition of the "precautionary principle" in all deliberations
- Questions for Consideration in Developing a Strategic Plan from the Emergencies Perspective
- In addition, a number of questions arise which must be addressed:
- Are we ready for the greater level of activity likely to result from ' opening up' of the arctic to transportation (marine and air)?
- Will the nature and/or magnitude of the activities change?
- Are we ready/ do we have the will to collectively protect the ecosystem at the circumpolar scale?
- Do we have the financial resources to respond to environmental emergencies when necessary?
- Do we have a mechanism for assigning costs/compensating northern inhabitants?
- Do we understand the growing need to prevent the greater range/number of events in order to protect the environment/ecosystem?
- Do we realize, and act as if, prevention is cheaper both in terms of impact and financially?
- Are we prepared to develop high standards for activities in the arctic (not just the lowest common denominator)?
- Are we prepared to implement agreements and standards not just have them?
- Will there be better cooperation between countries both within and outside the Arctic? (as the arctic opens up, more countries have access)