ARCTIC FUTURES SYMPOSIUM

EXECUTIVE SUMMARY

In conjunction with the Prince Albert II of Monaco Foundation and the Aspen Institute, the International Polar Foundation (IPF) hosted the first Arctic Futures Symposium in Brussels on the 14th and 15th of October 2010.

As an opportunity for various stakeholders in the Arctic to come together to discuss their needs and positions as well as share their know-how in this vitally important region of the world, the symposium brought together high-level representatives of the Arctic Council countries, the EU and other interested parties to discuss issues related to the future of the Arctic and how it is to be managed in the coming years.

The symposium's objectives were to:

- Foster open and frank dialogue among Arctic stakeholders on environmental, economic and social issues facing the Arctic;
- highlight examples of practical cooperation in research and governance and analyze the potential to build upon successful examples;
- examine the different positions of the various stakeholders in the Arctic and promote closer cooperation regarding vital strategic issues;
- intensify the link between the legacy of the International Polar Year (IPY) 2007-08 and governance issues by bringing together scientists, policymakers and stakeholders to discuss how to integrate the knowledge scientists have accumulated into policymaking and investigate ways to institutionalize this;
- give an opportunity to the scientific community to present their research with a view to better managing the Arctic, its environment and its resources (both living and non-living) while preserving the traditions and livelihoods of the indigenous peoples of the Arctic;
- discuss how to make the best use of scientific information, research infrastructure and technology (especially satellites) to develop management schemes or improve existing ones;
- promote an ecosystem-based management of living resources as well as make headway in establishing sound schemes for managing Arctic transportation and natural resource exploitation, examining not only at the challenges that need to be overcome but also at success stories in order to establish best practice and find potential areas of cooperation;
- provide the EU with an occasion to reiterate its case to participate in the Arctic Council as a neutral observer.
- Participation was open to all interested stakeholders, including politicians, scientists, those working in the fisheries, transport and energy industries, academics, students, representatives of indigenous organisations, NGOs, research institutes, and others with a genuine interest in

Arctic affairs. This mix of participants allowed for a free and at times lively discussion of the important issues facing the Arctic.

- The summary of the proceedings of the Arctic Futures Symposium in the following pages demonstrates that, to some extent or another, these objectives were met.

THURSDAY OCTOBER 14TH - OPENING STATEMENTS

H.E. BERNARD FAUTRIER (PRINCE ALBERT II OF MONACO FOUNDATION)

H.E. Bernard Fautrier gave a short overview of the challenges facing the Arctic region: the effects of global warming, the melting of the polar ice and the threat to ecosystems. H.E. Mr. Fautrier stated that these are the reasons Prince Albert II of Monaco Foundation first got involved in the issue in 2006. The Foundation is involved in several projects related to the Arctic, including research on the effects of global warming on ecosystems, to provide a better understanding of climate change as well as setting up partnerships (on the issue of marine protection, for example) in order to contribute to the international debate.

H.E. Mr. Fautrier also regretted that the peoples living in the Arctic seldom benefit from its full economic potential.

ALAIN HUBERT (PRESIDENT OF THE INTERNATIONAL POLAR FOUNDATION)

Alain Hubert hoped that the conference would contribute to the informal dialogue between the EU and the Arctic countries. He stated that the Arctic region is no longer isolated from the globalised world and is becoming increasingly important to the rest of the world. He welcomed to the symposium the invited stakeholders from the Arctic region, mentioning that the conference was an opportunity to hear their viewpoints and how they see their future in light of the challenges posed to the environment due to increased industrial and commercial exploitation of the region.

DAVID MONSMA (EXECUTIVE DIRECTOR OF THE ENERGY AND ENVIRONMENT PROGRAM, THE ASPEN INSTITUTE)

David Monsma said the Aspen Institute has brought together experts from various sectors representing civil society , and has set up the Dialogue and Commission on Arctic Climate Change <http://www.aspeninstitute.org/policy-work/energy-environment/our-policy-work/dialogue-commission-arctic-climate-change> in collaboration with the Prince Albert II Foundation of Monaco. Mr. Monsma emphasised that the science-policy interface will become increasingly important given the difficulties to reach global agreements on addressing climate change, as demonstrated in Copenhagen in December 2009.

The Dialogue and Commission on Arctic Climate Change focuses on the question of whether existing institutional arrangements are sufficient to address Arctic issues as the region changes due to global warming, stated Monsma. The working group will recommend actions to reduce carbon emissions, although without setting specific targets. The focus will also be on increasing cooperation among the Arctic states, which should build on the traditional knowledge and the culture of the indigenous peoples of the Arctic as well as openness to science and multilateral cooperation.

WORKSHOP 1:
"THE ARCTIC BASIN – KEY ENVIRONMENTAL MANAGEMENT APPROACHES FOR THE 21ST CENTURY"

RAPPORTEUR: LISA SPEER (DIRECTOR, INTERNATIONAL OCEANS PROGRAM, NATURAL RESOURCES DEFENSE COUNCIL, UNITED STATES)

ANDERS LEVERMANN (POTSDAM INSTITUTE FOR CLIMATE IMPACT RESEARCH)

Anders Levermann identified global warming patterns affecting the Arctic region. He mentioned that over the last century, levels of carbon dioxide (CO2) and other greenhouse gasses such as nitrous oxide (N2O) and methane (CH4) have risen. He also said that the average global temperature has risen by 0.7°C, which is faster than models have predicted.

The oceans are a natural carbon sink, and about a quarter of atmospheric CO2 emissions end up sequestered in the ocean. However this has been making the oceans more acidic, which can threaten the marine food web, in particular corals and various species of plankton which form the basis of the marine food web.

Levermann also discussed the extent and thickness of Arctic sea ice and the record sea ice lows in recent years. Even though the sea ice extent can recover in winter following a major summer melt season, only thin, first-year sea ice – which is more prone to melting during the following summer melt than thicker multi-year ice – grows back. Overall sea ice thickness has not recovered, with areas of older, thicker multi-year ice diminishing. This overall thinning process and decreased ability for winter sea ice formation to make up for summer sea ice melt might eventually lead to a situation where the Arctic Ocean is ice-free during the summer before the end of the 21st century.

The Arctic has been warming at twice the rate as the rest of the world due to feedback loops related to the loss of albedo, according to Levermann. When the ice melts, the dark ocean absorbs the sunlight and the warming creates a positive feedback loop. The Arctic system has the potential to eventually pass a tipping point and enter into a different state of equilibrium from its current one, and this can be dangerous. This could lead to disruptions to the thermohaline circulation (THC), which could mean a significant drop in temperature by 8°C in the northern Atlantic, rapid sea level rise over a ten-year period in the North Atlantic, and a shift in the Intertropical Convergence Zone. It would also have an effect on marine ecosystems and reduce the CO2 uptake potential of the oceans. The consequences of thermohaline circulation collapse would affect all parts of the globe, including West Africa and the Amazon Rainforest in particular.

Levermann concluded his presentation by discussing how melting land ice and the thermal expansion of the oceans are contributing to sea level rise. Over the past century, average global sea levels have risen 15-20 cm, according to the most recent estimates. The proportion of the contribution of thermal expansion of the ocean, melting of mountain glaciers and melting ice sheets to sea level rise has changed over the past half-century, with melting ice sheets in particular contributing more meltwater. From 1961-2003, the greatest contribution to sea level rise came from thermal expansion (40%) with mountain glacier melt (35%) and ice sheet melt

(25%) each contributing less. However in the period between 2003 and 2008, the contribution of mountain glacier melt (now 40%) and ice sheet melt (now 40%) to sea level rise have increased compared with the contribution of thermal expansion (now only 20%).

ØYSTEIN VARPE (NORWEGIAN POLAR INSTITUTE)

Øystein Varpe spoke of the dynamics, the changes and the projections for the Arctic region in terms of the interactions between the physics of the Arctic environment and biology of the biota that live there. Looking at parameters such as sea ice conditions, cloudiness, advection, sea ice coverage, temperature, wind, and sea ice extent helps to determine what might happen as the Arctic changes. He mentioned that while sea ice modelling is good at incorporating temperature changes, it is not very good at predicting wind, currents and other factors that can influence the extent of summer sea ice. This needs to be improved.

Changes in the sea ice are linked to most changes happening globally, including a change in the light regime, which comes with diminishing sea ice, said Varpe. The loss of summer sea ice extent has obvious and not so obvious consequences for ice dependent species, including polar bears, seals, ice-dependent algae and zooplankton. Each species' ability to adapt may depend on minor genetic differences between populations. This highlights the importance of maintaining biodiversity as a way to ensure resilience.

Loss of ice thickness also has potentially profound ecological consequences. For example, older sea ice has greater variation on its underside. The little nooks and crannies underneath older multi-year ice provide a more diverse habitat for algae and zooplankton than the bottom of newly formed ice. Those planktonic organisms are key food sources for polar cod, which in turn is a main source of food for birds, seals, narwhals and other species.

Varpe also looked at how changes can alter population sizes and distribution areas of certain species. A changing physical environment will alter competition for food and predator-prey dynamics, and will also affect the phenology of flora and fauna. The tipping points from the biological perspective may be changes in the fluxes of biomass and changes in spawning habitats. Some examples already being seen include some commercial species of fish moving north, which means fishermen are likely to follow. The polar bear population has been affected, although longer time series are needed to get a better idea of what might happen to them. Populations are likely to be reduced and their natural distribution area will change.

Varpe pointed out that evidence of the changes are currently stronger on land than in marine ecosystems. Our understanding of existing ecological relationships in the Central Arctic Ocean as well as what may happen as the ocean warms and acidifies needs to be improved.

WILLIAM EICHBAUM (WORLD WILDLIFE FUND)

William Eichbaum presented a number of efforts to enhance and improve the governance of the Arctic. He stressed that the Arctic has changed more rapidly than predicted during the summer melt season and emphasized that it is not just the science but the economics of that change which is crucial. The most valuable fisheries resources in the world are located in the Arctic, and changes in the Arctic could leave a dramatic and economically significant impact not only in the Arctic, but also elsewhere on the planet.

Changes in the Arctic are critically important for the rest of the world and not simply an issue for Northern inhabitants, continued Eichbaum. These changes – which include the melting of sea ice, the melting of the Greenland Ice Sheet, sea level rise and changes to ocean circulation – will have significant economic impacts. Due to the melting sea ice, the Arctic is now more accessible to use for economic purposes, and there is the prospect of establishing commercial shipping routes via the northern passages. Those prospects bring a range of concerns from pollution to emergency search and rescue – which are currently not being addressed, yet need to be.

Eichbaum mentioned that oil and gas development is set to increase, as 13% of world's undiscovered petroleum and 30% of the world's undiscovered natural gas are located in the Arctic, according to a United States Geological Survey (USGS) study. However Eichbaum stated: "Some may think we should make the transition to a low-carbon economy and leave those hydrocarbons where they are." Oil and gas exploration is rapidly expanding, according to Eichbaum. The initiation of production could have significant knock-on effects, he warned. Four million people live in the Arctic, and of these, 400,000 are indigenous Arctic peoples. There is a need to help them maintain their lifestyle as well as profit from the economic opportunities.

As he continued, Eichbaum pointed to what he characterized as the oil spill response gap: as hydrocarbons are being pursued in more technologically challenging environments (not just in terms of depth but also remoteness) there needs to be specific guidelines that are applied in the event of an oil spill. This must be addressed in a governance system for the Arctic. The Arctic Council has issued many guidelines on activities in the Arctic, but these are neither mandatory nor binding.

Countries are concerned about sovereignty issues in the Arctic, and when countries assert their point of view, it could lead to tensions, Eichbaum argued. In terms of existing agreements, he mentioned the United Nations Convention of the Law of the Sea (UNCLoS) as a means for addressing these claims. With the potential for increased shipping, many countries have strong economic and security interests in this region and feel it is vital to protect transportation routes. Eichbaum said it is likely that countries will also assert their right to transit via the Northwest and Northeast Passages. He also spoke of a "domain awareness" evolving as countries, including the US, are talking of increasingly projecting their military capacity in the region. This will not necessarily lead to conflict, but the Arctic is unlikely to be the "benign" place it has been in the past, he warned, and it articulates the growing governance gap in the Arctic.

The impact of human activities in the region extends beyond nations exercising sovereign power, Eichbaum stated, and preservation efforts, cooperative planning, management of marine resources and responsibility for environmental quality need to be addressed. Eichbaum re-iterated that the present governance structures are inadequate to meet this challenge. The Arctic wildlife, habitat and people there and elsewhere depend on a governance solution for their well-being, he concluded, and while there may be a concept evolving for how to fill these challenges, political will is a prerequisite for any progress.

CHARLES N. EHLER (PRESIDENT OF OCEAN VISIONS, US)

Charles Ehler advocated marine spatial planning (MSP) as a way to manage maritime areas and ecosystems in the Arctic to avoid conflicts of use for different purposes as the ice melts and industrial activities increase. The approach would involve a public process of analyzing and allocating spatial and temporal uses of the ocean in order to make sure the Arctic and its

resources are managed in a sustainable manner. Ehler suggested that it would be easier to get this processes set up sooner rather than later since it will be more difficult to set up once economic activities have been established.

Ehler stressed that ecosystem-based management – which focuses on the entire ecosystem, including humans – should be based on an integrated approach across economic sectors with respect to the cumulative impacts of the different activities. He stated that the approach must be flexible and adaptive, that decision-making must be based on scientific evidence, and that there must be a trans-boundary perspective with the involvement of local residents and stakeholders as well as commitment from national governments. Any first step in putting together an MSP regime would involve identifying ecologically and biologically significant areas of the ocean (EBSAs), which are important sources of biodiversity and thus resilience.

However Ehler lamented that there is a lack of financial commitment to make such a management scheme possible, not to mention methodologies and tools for its application. There is also the question of integrating the public sector (creating links between different authorities) and reducing investment uncertainty for the private sector. Ehler proposed that a scheme for the sustainable use of the Arctic region should be established through a step-by-step approach, which ultimately produces an overall "master plan" that addresses the heterogeneity of the different sectors, instead of planning sector by sector without taking into account the whole picture.

Ehler described how Norway and to some extent Canada have management schemes (in the Barents Sea and Beaufort Sea respectively) set up which integrate different sectoral needs (oil and gas, fisheries, transportation and ecosystems) under one regulatory regime that achieves sustainable use of resources over time. The US and Russia still need to devise a regulatory regime for their territorial waters but are starting to do so; Greenland lags behind. There are bilateral negotiations (Norway-Russia, US-Canada, US-Russia) regarding specific issues, however nothing resembling an Arctic-wide Systems Approach that could be established through the Arctic Council and implemented at a national level in each Arctic nation. Ehler mentioned that a precedent for this model exists for the Pacific. He concluded by saying that if governments do not take the lead, NGOs and the private sector should take initiative.

In his comments on the presentation, William Eichbaum urged for such planning to begin, as there is enough information available and it is important to get ahead of potential problems. He referred attendees to the UNESCO website that deals with the marine spatial planning initiative. < http://www.unesco-ioc-marinesp.be/ >.

- Lisa Speers, as rapporteur, led the following discussion, which touched upon the consequences for species and ecosystems of diminished ice extent and thickness. These consequences are likely to be quite significant. It was noted that healthier and more diverse ecosystems are likely to be more resilient to these changes, and that management mechanisms need to be put in place that maximize resilience, including through identifying and protecting ecologically important areas and marine biodiversity. The discussion focused on the capacity of the Arctic Council to deal with these matters and the need for greater understanding of how ecosystems function. There was agreement that international management arrangements that provide for integrated, ecosystem-based management are urgently needed, and that it is important to develop such arrangements before human industrial activity in the Arctic marine environment accelerates.

WORKSHOP 2:
"THE CHANGING ARCTIC - DEVELOPING ECONOMIC POSSIBILITIES: THREAT OR OPPORTUNITY?"

RAPPORTEUR: MANOUCHEHR TAKIN (CENTRE FOR GLOBAL ENERGY STUDIES)

Manouchehr Takin introduced the workshop by giving an overview of the oil and gas resources in the Arctic and the debate on the extension of the continental shelves, international borders and sovereign rights regarding natural resources, as well as the greater opportunities in the Arctic as global warming affects the region. He mentioned longer summer melt seasons could lead to increased exploration activity and open up new shipping routes such as the Northeast Passage and the Northern Sea Routes. The strategic military issues are of great importance; however the workshop was not going to treat that specific issue.

SERGEY V. PISAREV (SHIRSHOV INSTITUTE OF OCEANOLOGY, RUSSIAN ACADEMY OF SCIENCES)

Sergey Pisarev gave an historical overview of the Russian marine scientific presence in the Arctic. Russia has conducted systematic marine research in the Arctic for more than 100 years, in particular taking meteorological measurements. Pisarev mentioned two Russian weather stations, the Malie Karmakuli and the Sagastir, both of which were established in 1882 and from which data have been used to measure the effects of climate change.

Pisarev mentioned that the Russian government began funding research in the Arctic in 1900. Six hydrographic expeditions in the Arctic Ocean took place a century ago with the aim of discovering more islands and extensively measuring ocean currents. Ever since, Russia has systematically sent expeditions to explore the Arctic every six months.

He highlighted the continuity of Russia's Arctic exploration throughout history, even during the Russian Revolution. The decades after the Revolution saw further expansion of activities in the Arctic. Vladimir Lenin decreed that a "Floating Marine Institute" be established in 1921. Scientific measurements started by the Hydrographic Expedition of the Arctic Ocean were continued by the Northern Research Commercial Expedition, which was created in 1920. The Northern Research Institute was established in 1925, while the All-Union Arctic Institute started its activities in 1930 and the Main Administration of the Northern Sea Route was organized in 1932. Year-round oceanographic cruises to the Barents Sea began as early as 1929. Ice patrols to trace the ice edge and undertake oceanographic surveys began in 1936.

He also highlighted the expansion in airborne ice reconnaissance in the Arctic to assist ship navigation, which reached its peak between 1972 and the early 1990s, as well as the development of using drifting ice stations (with the Severny Polus being the first to be deployed in 1937).

Pisarev made a point that at the beginning, oceanographic investigations of the Russian Arctic Shelf Seas were focused on meeting practical needs. Providing information to help marine transportation and commercial fishing were the major focus of expeditions from early on, with geological exploration coming later. This means the Russians have collected a lot of data on

sea ice and large-scale currents, with less data on surface waves and icebergs.

The large amount of data the Russians have accrued over the last century is an asset now that the issue of climate change - and in particular how climate change is affecting the Arctic - is at the top of the global agenda, said Pisarev. He stressed that it is important to have a historical perspective based on these data collected over a century in order to identify long term trends and avoid exaggerations when discussing climate change today. Pisarev gave the example of melting points in the central Arctic region that were spotted already in 1969 at the Severny measuring station, but that scientists only recently acknowledged.

Answering a question on how Russia should share their data with the world, Pisarev pointed out that data could be shared with others when there is a clear scientific purpose.

ALEQA HAMMOND (MEMBER OF PARLIAMENT AND OPPOSITION LEADER, GREENLAND, FORMER MINISTER OF FINANCE AND FOREIGN AFFAIRS)

Aleqa Hammond underlined the fact that Greenland is home to only 56,000 inhabitants, despite the fact that it is geographically half the size of Europe. A unique feature of Greenland is its small settlements and isolated locations where each person knows most of his/her community by their first names. About 47,000 inhabitants live in 18 towns on the island.

The Greenlandic economy is based primarily on fisheries, with an annual grant from Denmark representing 30% of the island's GDP.

At the moment, Greenland is going through a transformation phase. In 2009, Greenland took yet another step towards independence, negotiating a self-governance agreement with Denmark, giving it the right to manage its own natural resources. Aleqa Hammond highlighted political priorities for Greenland: working towards independence from Denmark and developing its business sector. She indicated that the challenge Greenland faces is balancing an obligation to maintain prosperity and growth in Greenland and dealing with concerns related to climate change. Greenland is today at a crossroads between economy based on traditional hunting and fishing activities and its desire to move towards independence through exploiting economic opportunities.

Hammond stressed the need to involve traditional practices and use the traditional knowledge of hunters and fishers to monitor changes in the ice in Greenland. She recommended monitoring ice and water with the help of locals and creating pilot projects focused on fishing as well as research on the impacts of climate change on indigenous cultures and traditions.
Economic opportunities which have arisen as a result of climate change in Greenland include a longer fishing season as a result of longer ice-free periods, increased agricultural yield as the growing season is two months longer each year, and the potential to mine minerals such as gold, molybdenum and zinc as the ice melts. As lakes grow in size, so does the possibility to build hydropower plants. Drilling for oil also becomes safer as the ice retreats. An increase in interest to see Greenland and the melting ice has led to an increase in cruise ship tourism.

Hammond pointed out that Greenland is being "rediscovered" by the world, creating opportunities but also challenges for Greenland on how to keep its own culture, traditions and lifestyle alive while there is a fear that Greenlanders might become a minority in their own country and that international companies may put pressure on Greenlanders. She underlined the risks associated with high traffic through Greenland's waters as well as the high risks of pollution.

Aleqa Hammond said the Parliament of Greenland is prepared for the changes ahead. Taking inspiration from Norway, the parliament recently decided to establish an Oil Fund before allowing test drilling for commercial exploration to begin.

KNUT ESPEN SOLBERG (DNV RESEARCH & INNOVATION)

Knut Espen Solberg began his presentation by saying that the shipping industry has a shorter perspective than those looking at climate change. While climate scientists tend to focus on the next 50-100 years, the shipping industry focuses on much shorter time frames.

Solberg made a distinction between two types of trade: transit (e.g. between Europe and Asia via the Arctic) and destination (from outside the Arctic to the Arctic or vice versa). Today, almost all trade is "destination travel" to the Arctic and it will likely continue to be so in the coming years. Destination travel is driven by the quest for minerals, oil, gas, fisheries and tourism. All these activities take place in the summer. The concentration of summer ice has diminished in the past years; however Mr. Solberg said we sometimes forget that there still is a lot of ice during winter. An economically feasible presence in the Arctic would require a year-round presence, which is not the case today.

Ice is characterized by thickness, concentration, floe size, ridges, physical and mechanical properties. Equipping vessels for these conditions entails significant costs. Challenges of navigation in the Arctic include 24-hour darkness in the winter, fog, "freezing in", severe icing, ice and iceberg collision, and navigating uncharted waters.

The fastest-growing industry in the Arctic in the transport sector is commercial cruise tourism. This industry often uses the same type of vessels that are used for cruises in the Caribbean, which are not equipped to meet the harsh conditions of the Arctic. The fact that there have not yet been any serious accidents involving cruise ships is purely a matter of luck, said Solberg. So far, no escape, evacuation and rescue (EER) plans for the Arctic have been devised. It tends to be cheaper not to invest in proper equipment, and very few people have actually had any experience working in Arctic conditions. Another major challenge is the risk of an oil spill, for which no contingency planning has yet been devised.

Solberg warned of the risks transit shipping companies take when venturing into the Arctic region with crews of mixed nationalities and little experience in the Arctic. During the summer of 2010 there were six reported accidents or incidents. Fortunately, none were fatal. Given the relatively small number of vessels present in the Arctic six accidents/incidents is a relatively high number. The building cost for vessels that are operational only in summer conditions is much lower, and hence those same vessels are used more extensively during the year. The International Maritime Organization (IMO) sets no special equipment requirements for ships going to the Arctic via international waters, and following additional Arctic guidelines is voluntary. Solberg called for a revision of the existing rules within the IMO, for the Arctic guidelines to be made compulsory, and for a revision and harmonization of national rules adding that now is the time to react.

NIGHAT AMIN (THE INTERNATIONAL POLAR FOUNDATION)

Nighat Amin proposed that the study of the Arctic is an interconnected discipline and cannot be divided into isolated specialisations. She focused mainly on the scientific and economic

aspects of the Arctic, emphasising the impact of science and research and stressing the importance of having real-time or near-real time satellite images of the Arctic. On a separate note, she pointed to the limits of scientific models when it comes to estimating changes in ecosystems.

On the subject of Greenland's economy, she stressed the importance of action in rural areas where traditional sources of income are drying up. During the presentation, Aleqa Hammond indicated that the Greenlandic government is looking for ways to meet the needs of these communities and challenged the western idea of what is a "useful occupation".

Amin concluded her presentation by proposing that the economic benefits from the Arctic should to some extent be returned to the scientific community, as it is very expensive to conduct research in the Arctic.

- Manouchechr Takin summarized the main points of the workshop. The anticipation of commercial interests in the region and the estimates of undiscovered gas and oil have lead governments to collect further geological information on the extent of their continental shelf upon which to base future claims. Increased commercial and scientific activities in the Arctic region exacerbate the risks for shipping accidents and may have severe consequences for the traditional lifestyle of the indigenous peoples. Due to the complexity of the issue, Takin concluded that more research is needed. Coming back to the title of the workshop, Manouchehr Takin noted that developing the Arctic's economic possibilities is not a false dilemma between choosing threat or opportunity. Rather it is an opportunity that we should take which also involves threats that we could recognize, control and manage.

WORKSHOP 3 : "ARCTIC GOVERNANCE – IS THE EXISTING MODEL ADEQUATE FOR THE 21ST CENTURY?"

RAPPORTEUR: FRANCESCA CAVA (THE ASPEN INSTITUTE, UNITED STATES)

CHRISTIAN MARCUSSEN (SENIOR ADVISOR AT THE GEOLOGICAL SURVEY OF DENMARK AND GREENLAND)

The Arctic has made the headlines in the international press with regards to extended continental shelf issues and the United States Geological Survey (USGS) Assessment of undiscovered Arctic hydrocarbon resources.

Christian Marcussen spoke of the misunderstandings among the general public regarding the extension of the continental shelf and the perception of an ongoing "Arctic land grab" that the expedition of the two Russian mini submarines at the North Pole on August 2, 2007 and the planting of the Russian flag have given rise to. He pointed out that, as Sergei Lavrov, Foreign Minister of the Russian Federation explained in August of 2007, "the ownership of the shelf in the Arctic Ocean is defined on the basis of the United Nations Convention on Law of the Sea (UNCLoS)" - a statement the other four Arctic coastal nations have agreed to.

He highlighted the main findings of the USGS Assessment of undiscovered Arctic hydrocarbon resources released in the summer of 2008:

- About 13% of the world's undiscovered oil, 30% of undiscovered gas and 20% of undiscovered natural gas liquids may be found in the Arctic – thus 22% of undiscovered, technically recoverable resources equivalent to three years of world oil consumption and 20+ years of world gas consumption.
- 84% of the estimated resources are expected to be found offshore. Most of the resources are within the Exclusive Economic Zone (EEZ - Maritime area over which a coastal State exercises sovereign economic rights.) of the Arctic coastal states.
- Important resources areas include the West Siberian Basin (gas) and Arctic Alaska (oil). Other areas include Arctic Canada, the Barents Sea, and northeastern Greenland.
- The issues related to resource exploitation in the Arctic include very high costs (development and transport) and a very vulnerable environment.

As a consequence of the Russians planting a flag at the North Pole in 2007, the Danish and Greenland Governments called for a meeting in Greenland in 2008 between the five Arctic coastal states (Canada, Greenland, Norway, the Russian Federation and the USA) which led to the signature of the Ilulissat Declaration. The declaration stipulates commitment to international law (UNCLoS) and orderly settlement of any possible overlapping claims and close cooperation i.e. collection of scientific data concerning the continental shelf.

UNCLoS came into force in 1994. A total of 160 states have at present ratified UNCLoS. The USA has however not ratified the convention. Article 76 of the convention specifies the criteria for an extension of the continental shelf beyond 200 nautical miles (the Exclusive Economic Zone) and provides the coastal state with certain sovereign rights to living and non-living resources on and below the sea bed. Coastal states that have ratified UNCLoS have ten years after ratification to prepare a submission to request the extension of the 200 mile nautical zone limit if conclusive proof can be presented showing that the seabed beyond this limit is geologically an extension of the mainland to which it is attached. The submission has to be documented with a comprehensive set of data to the Commission on the Limits of the Continental Shelf (CLCS).

Marcussen pointed out the importance of data in preparing a submission including geodetic data, bathymetric data and seismic data. Other geophysical (seismic refraction, gravimetric and magnetic data) and geological data (sampling, drilling) can be used in a submission.

He drew attention to the number of cases yet to be resolved under the UN Law of the Sea Convention. There are currently over 40 pending decisions and a corresponding number of preliminary decisions to be handled which totals 80-100 claims. However the pace is slow, as only some three to five deliberations take place each year.

Marcussen summarized the status of submissions in the Arctic:

- A revised submission is expected from the Russian Federation in 2013 or 2014.
- A detailed agreement between Norway and the Russian Federation concerning "Maritime delimitation and cooperation" in the Barents Sea and Arctic Ocean was signed on September 15, 2010 in Murmansk.
- Canada's deadline for submission is at the end of 2013.
- Despite the fact that the USA has not ratified UNCLoS yet, the U.S. Extended Continental Shelf Project is actively acquiring data to establish the full extent of the continental shelf of the United States.

- Marcussen mentioned in particular the Danish case, which aims at settling claims in five areas around Greenland as well as north and south of the Faroe Islands. The area north of Greenland will be a major challenge in particular.

He underlined the importance of international logistical cooperation in data acquisition and of scientific cooperation for a better understanding of the geology of the Arctic Ocean leading to better supported submissions. This led him to title his presentation "Extended continental shelf issues in the Arctic Ocean – an example of cooperation between the Arctic coastal states.

PAUL NEMITZ (EUROPEAN COMMISSION, DG MARE)

Paul Nemitz stressed the EU's adherence to the concept of rules-based international politics. He wished for the application of the UN Convention of the Law of the Sea to be improved in order for the system not to be overburdened. He stated that "Governments and politicians should engage in real problem-solving." According to Nemitz, the policy on the Arctic should be an integrated maritime policy that achieves coherence and synergies between research, environmental and industrial policy. He pointed to the new challenges of reconciling the life of people in the region with the impacts of climate change and new economic opportunities.

Nemitz underlined the EU research funding and the contribution to the Arctic region that the EU achieves through international organizations. He pointed out that the EU is a full member of OSPAR and mentioned the Quality Status Report 2010 published by the OSPAR Commission which includes reporting on Arctic waters (OSPAR Region I). He also referred to the Northern Dimension. He indicated that the results of a study on the EU Arctic footprint were going to be released. Nemitz expressed the EU's commitment to continue contributing to the region through its experience and joint resources.

BROOKS YEAGER (EXECUTIVE VICE PRESIDENT FOR POLICY, CLEAN AIR-COOL PLANET)

Brooks Yeager said the Arctic population has to be recognized, as the region is not "an empty zone", but indeed one that is more likely to be a zone of conflicts than one where things work smoothly. He indicated that the Arctic Council is the first forum that recognised the participation of Indigenous Peoples. For the coastal Arctic, he reasoned that emphasis should be placed on local governance and management by administrative subdivision. National governance is still the primary source of regulation of extraction and development goals, whereas shipping, for example, is regulated internationally. The American misperception that the UN Law of the Sea Treaty (UNCLoS) will dictate the conditions remains an obstacle to international governance of the Arctic, as well as the fear in the environmental community that the extraction industry might fail to respect the environment.

In terms of resource development, Yeager believes there is interest for nations to maintain a certain degree of discretion. There is some coordination of possible policy responses to situations that may arise from commercial interests, such as unified rescue operations. There are a few formal agreements to institute local governance, however. The US and Canada are beginning negotiations on the Beaufort Sea, and the agreement Russia and Norway reached over the Barents Sea may serve as a model for reaching agreements in the Arctic. However each nation has its own idea of how international boundaries should look.

The United States is spearheading an Arctic observation network, which should be significant

as this is a key area for shipping. It is a clear US priority to look for solutions for the Arctic region, but the US policy still does not recognize the need for a new Arctic treaty. However, the US does not reject any new legal arrangements – they seem to be open to a variety of approaches that strengthen the US government's position in different ways. In the eyes of the US, the Arctic Council remains the most important means of cooperation.

In the ensuing debate, the participants first discussed the question of how the EU could engage in the region, not being a member or even observer of the Arctic Council. According to Paul Nemitz from the European Commission, the EU should be present in the discussions in areas where its exclusive competence applies, for example in fisheries policy and shipping under its transport policy. He called for the EU to be admitted as a permanent observer at the Arctic Council.

MICHAELA ENGELL (SENIOR ARCTIC OFFICIAL OF THE DANISH GOVERNMENT)

Micheaela Engell opened by speaking about the Chairmanship of the Arctic Council, which rotates every two years. The Arctic Futures Symposium 2010 took place during the Chairmanship of the Kingdom of Denmark, which began in April 2009 and will end with the 12 May 2011 Ministerial meeting in Nuuk (Greenland). Michaela Engell spoke on the perspectives of the Chairmanship of the Arctic Council on the issue of local and regional cooperation.

She pointed out the peoples of the Arctic are facing a number of challenges, the biggest one being climate change. Global warming is happening twice as fast in the Arctic as in the rest of the world. Arctic peoples also face new opportunities, including extraction of oil, gas and minerals and the possibility of new shipping routes. The question that this raises is "How do we safeguard ourselves against the risks involved for people and the environment that these opportunities also entail?" Engell stressed that international cooperation is a necessity in the Arctic to tackle these challenges.

She then asked: "Are we able to meet the challenges, building on the existing regimes? Do we have the right tools for the job?" She said the answer we often hear is "no." She mentioned some have proposed an international treaty for the Arctic while others have suggested a moratorium on the exploitation of resources in the Arctic. However, these proposals ignore the basic facts that "the Arctic is part of the land and sea areas of the Arctic states, and that the Arctic is inhabited by peoples who have the same right to sustainable development as everyone else in the world". Engell indicated that in fact "We do have the necessary and sufficient 'Governance' in the Arctic, we do have the necessary tools for the job. As any artisan knows good tools require a certain upkeep, and new tools sometimes need to be added if and when it proves necessary. But we have the toolbox - with content. The basic framework for cooperation is in place... The challenges are being met by the eight Arctic states and their peoples, including indigenous peoples, and the cooperation that exists between them in international fora, including UN agencies such as IMO and UNEP, but first and foremost in the Arctic Council."

She said that the Arctic Council is in many ways unique:

- The body includes six organizations of Arctic Indigenous Peoples;
- There is no common budget and no permanent secretariat;
- The Arctic Council is a decision-shaping forum, not a decision-making forum.

Over its 14 years of existence, the Arctic Council has produced results that have proved vital for

the special challenges we face in the Arctic. As examples, Engell mentioned three reports that have been delivered in support of Arctic governance: the Arctic Climate Impact Assessment (ACIA), the Arctic Council Oil and Gas Assessment and The Arctic Marine Shipping Assessment. Increasing interest in the Arctic has increased pressure on the Arctic Council. As a result, discussions have been started with a view to reaching a comprehensive plan for strengthening the Council and resolving the observer issue.

Concerning the much talked about fight for resources in the Arctic, Engell reminded the participants that the five Arctic Ocean coastal states met in Ilulissat (Greenland) in 2008, and agreed on a landmark declaration that, in the Danish Foreign Ministers words "eradicated all the myths about a race for the North Pole." The five countries agreed to base themselves on the United Nations Convention on the Law of the Sea and to solve any disputes via peaceful negotiations within that legal framework.

Engell noted the European Commission's rapidly increasing interest in the area. Denmark supports the EU's claim for observer status, but not all Arctic Council members support it. She indicated that "Some fear that observer status for the Commission would lead to European domination of the Council. Others are unwilling to admit an observer, which they feel has shown a lack of respect and understanding for indigenous peoples and their living conditions, for example by imposing an import ban on seal products" and that "The Danish Presidency is doing and will continue doing its utmost to find a solution to this important issue."

She ended her speech indicating that "none of the Arctic NATO countries want or see a need for a strengthening of NATO's role or presence in the Arctic" and that "There is, in our view, no evidence of a militarization of the Arctic in either the short or medium term".

KLAUS DODDS (PROFESSOR OF GEOPOLITICS, UNIVERSITY OF LONDON)

Klaus Dodds delivered a thought-provoking presentation looking at the "action, anticipation and anxiety" surrounding the Arctic region. There are many definitions of the Arctic (Arctic Circle, Arctic Ocean, north of particular temperature thresholds or north of the tree line) and the geographical and historical connections should not be taken for granted, said Dodds. The creation of the Arctic Council means a particular understanding of the Arctic in itself.

The EU's labelling of the Arctic as an outlying region is, according to Dodds, a tactical move, and "the EU is not all benign." The immediate EU context involves the legacy of the Northern Dimension, relations with Russia, Iceland, Norway and wider Arctic, and debates on climate change and energy security. If a treaty governing the Arctic similar to the one currently governing the Antarctic were to be drafted, it would raise the issue of the relationship between coastal claimant states and non-coastal states. Dodds warned against idealizing the Antarctic treaty.

According to Dodds, the coastal Arctic states claim importance by engaging in activities, such as the mapping of the Arctic seabed. These sovereignty exercises, or "performed actions" as Dodds put it, carried out by scientists and politicians, are meant to render territorial integrity meaningful. The anxiety prevailing in the debates points to the Arctic as a potential zone of instability. Dodds questioned whether the states involved are indeed confident about their sovereign rights, as it seems it is linked heavily to national pride. The status of Greenland is emblematic, as it decided to leave the EU. Dodds stressed that the EU should not lose sense of subsidiarity.

According to Dodds, the vision of the Arctic is full of mythology and narratives that persist in popular culture and boosts a sense of nationalism that resonates with domestic audiences when manipulated by politicians. Dodds concluded that the decisions on who and how to govern the Arctic remain unsolved. He put forward the question of how the EU might shape those governance mechanisms. He underlined that the EU is not the only actor and that the region is becoming globalised.

GILLIAN TRIGGS (DEAN OF THE FACULTY OF LAW AND PROFESSOR IN LAW, UNIVERSITY OF SYDNEY)

Gillian Triggs elaborated on the Antarctic Treaty System and looked at lessons to be learned from it. The Antarctic Treaty System is relatively strong and based on a science-driven diplomacy, strong environmental protection and enforcement mechanisms, said Triggs. The Antarctic Treaty regime evolved during the early days of the Cold War, and was meant to ensure that the Antarctic would be preserved for science. The regime has evolved through a number of conventions, and policy has shifted from an openness to allow exploitation of minerals towards protection.

She highlighted the similarities and the differences between the Arctic and the Antarctic.

Triggs underlined what the Antarctic Treaty system can offer: Article IV related to sovereign neutrality for activities in the Arctic Basin; science-driven diplomacy; common values and objectives; ecosystem approach to marine and fisheries; strong environmental protection and enforcement mechanisms; differing status for states, and associations with international organizations and committees eg. SCAR; and organizational structure, meetings, secretariat, Recommendations, Decisions, scientific committee.
She reviewed international law applicable to the Arctic and asked “What does the Antarctic Treaty regime and its resolution mechanisms mean for the Arctic region?” “What would the identified objective be?” She proposed including some form of sovereign neutrality clause in any sort of system, with a permanent secretariat and members of varying status, with some degree of judicial power to solve differences. No state will give up its “national sovereignty card”, Triggs said. However in the case of the Arctic, the important thing to remember is that it is “not a question of national sovereignty, but a response to global concerns.” Once established, a weak organization would be challenged to the extent the Arctic is subject to sovereignty claims as well as by the challenges of a fragile environment and the concerns of indigenous peoples.

In the ensuing debate, the participants commented on the jurisdiction of shipping in the Arctic, which Canada claims is routed through its internal waters. It was discussed that a system of governance may evolve around the inner circle of Arctic states that may choose to strengthen their cooperation with others. The Arctic Council has demonstrated some success in shaping decisions, studies and assessments; however the current situation developing is one in which states are striving to elevate their political interests vis-à-vis the region, which is managed by the need to adapt to climate change and global warming, where the Arctic is the focus of global interest. According to Triggs, Arctic nations’ anxiety about energy security and mobility dictates a lot of their behaviour, now that the natural barrier of ice is starting to retreat.

- Francesca Cava summarized the main points of the workshop and concluded that the Arctic is a place for collaboration, not conflict. The Arctic Council has been successful, but needs to be strengthened. Energy security will be a growing Arctic issue and the future of the Arctic will have global, regional and local implications and priorities. The workshop

showed that Arctic governance will be complex and require multilateral cooperation and that governance of the Arctic commons goes beyond national borders. Decisions on who and how to govern the Arctic remain unsolved.

WORKSHOP 4: "ARCTIC RESEARCH NEEDS AND THE SCIENCE-POLICY INTERFACE"

RAPPORTEUR: OLAV ORHEIM (THE RESEARCH COUNCIL OF NORWAY)

MANUELA SOARES (EUROPEAN COMMISSION DG RESEARCH)

Manuela Soares began her presentation by mentioning that climate change has become a more important topic within the EU, although there is still work to be done. She stressed the need to strengthen the links between science and policy, especially in the case of the Arctic.

She went on to mention the Arctic is extremely sensitive to climate change, with temperatures in the region rising twice as fast as the global level. In 2007, there was a record low extent of Arctic sea ice. Thus, the Arctic is opening up for more economical activities. Soares also proposed that the following questions should guide the future thinking about climate change and how it affects the Arctic region: "How do we best cope with the challenges? What steps are needed on policymaking and scientific levels? How can science help decision-making?"

Soares mentioned that the EU is formulating a policy on the Arctic. The 2008 Arctic communication from the European Commission marks the first step towards such an Arctic policy. It sets out three main policy objectives: the preservation and protection of the Arctic through managed human activity in the region, the promotion of the sustainable use of resources and the promotion of multilateral governance.

Diverse programs have addressed the issue of climate change and the Arctic region, within the Scientific Framework Programmes, for example. The European Commission has over the last 10 years supported more than 100 scientific projects on the Arctic, amounting to 200 million Euros in research funding. Soares mentioned a number of such projects, including DAMOCLES and the Ice2Sea project, which is measuring how much melting ice contributes to sea level rise. Other projects (for which 11 million Euros is budgeted) have a more socio-economic dimension on how man's actions change the face of the Arctic.

Looking ahead, she stated that the next steps will be funding long-term monitoring of the Arctic environment, international coordination in providing and sharing data, and developing climate and socio-economic scenarios. The Arctic region is a unique model to test this policy-science relationship.

JOHN FARRELL (US ARCTIC RESEARCH)

John Farrel gave an overview of the US policy structure on the Arctic region, outlining the major issues (trillion dollar issues) of concern for the US government. These are the questions of Arctic

ownership (sovereignty), resources (oil, gas, and fisheries), global trade (shipping), climate change mitigation/adaptation and the protection of shared values (culture and conservation).

The US Arctic Commission develops five-year research plans. Its budget is $400 million per year. Farrell points out that the Commission is in the unusual position of advising both the US President and Congress. The US Arctic Commission's research priorities relate to the environment, human health (e.g. looking into the higher suicide rates among indigenous groups), civil infrastructure research, natural resource assessment and indigenous languages, identities and cultures.

Farrell disagreed with the popular idea that there is a rush to claim the Arctic. Very little territory in the Arctic belongs to no one, he said, although he admitted that there was a minor on-going dispute between Canada and the US over their maritime border in the Beaufort Sea (however both countries are currently working together to map the continental shelf in this region). Farrell regretted that the US has not yet ratified the UN Convention on the Law of the Sea or the IMO conventions that govern the rules on international shipping.

He also pointed out that there were over 5,000 ships in the Arctic in 2004 alone, which means there is far more activity than people are aware of. He discussed the importance of the Arctic region for shipping, with the northern route between Asia and Europe being shorter and safer (especially in light of the threat of piracy). In terms of natural resources, USGS figures estimate that 13% of the world's undiscovered oil and 30% of its undiscovered natural gas resources can be found in the Arctic. However, he pointed out that before any drilling starts, much more research is needed on the prevention and handling of oil spills in ice-covered waters.

JÖRN THIEDE (ALFRED WEGENER INSTITUTE, GERMANY)

Jörn Thiede presented the development of the Aurora Borealis project, the name of a proposed 174-metre-long ship specifically equipped for Arctic conditions. The central part of the Arctic Ocean that is currently covered in ice year-round is completely unknown and requires more exploration. While there is some data, there is virtually no biological data, and a huge knowledge gap remains to be filled.

Thiede pointed out that today, 80 years after the advent of the first relatively "safe" polar expeditions of the Fram and Gauss – ships with hulls built specifically to stand up to the extreme polar environment – today's ships can still only sail during the summer, and thus proposed that icebreakers be on duty permanently. He also presented the Aurora Borealis as part of a long-term European perspective on Arctic Ocean research with the aim to do regular summer expeditions with experienced crews. In 2006, the project received a positive review from the German Wissenschaftsrat and it was recommended that the ship be constructed – with the obligation to find international partners, as Germany cannot be the sole owner of the ship.

With the aim of pooling the resources of scientific institutes large and small, the project's preparatory phase received funding under the EU's 7th research Framework Programme (FP7). The timeline has the final phase set for 2015. The goal is to have regular summertime operations in both hemispheres. The ship will have space for more than 30 laboratory containers and will be capable of collaborating with other research initiatives. It will have all-season drilling capabilities, which no other ship in the world currently has or plans to have. The "floating university", as Thiede called it, will have the potential to perform rescue operations.

Thiede said the challenges that remain will be to set up legal structures for the project and define ownership. He concluded that the underlying idea of the Aurora Borealis project is to think big, be innovative and do something completely new and courageous.

CLAUDIA FEDOROVA (CHAIR OF THE COUNCIL OF THE UNIVERSITY OF THE ARCTIC)

Claudia Federova presented the University of the Arctic, a network of universities and colleges which has an Arctic perspective. The university network shares resources and facilities, creates partnerships with indigenous peoples and promotes excellence in the field.

Stemming from an idea first presented in Norway in 1997, the University of the Arctic was launched in 2001 in Finland. Funded by the Nordic Council of Ministers and Denmark, the university has grown to 126 member institutions, including research institutions, indigenous organisations, and institutions of all sizes. Its structure is highly decentralized, with offices and services spread out among different contributing countries. This contributes to the regional northern perspective.

The goal of the University of the Arctic is to empower the North, improve access to education to Northern residents, serve local communities, create shared knowledge networks, build regional identity and strengthen the overall voice of the Arctic. Fedorova deplored the fact that there are no grants to non-Arctic students to come study in the north, despite the fact that there is great demand for them.

KONRAD STEFFEN (CHAIRMAN, WORLD CLIMATE RESEARCH PROGRAM, THE CLIMATE AND CRYOSPHERE PROJECT, UNIVERSITY OF COLORADO, BOULDER)

Konrad Steffen gave an overview of his studies of the Greenland Ice Sheet, showing that while the ice sheet was gaining thickness in the centre as normally happens when precipitation increases, it has been losing mass around its edges at an increasing rate, resulting in a net loss of ice mass. Using a wide variety of methods (satellite data and studies of energy reflection from the snow) he painted a picture of the changing Arctic, with average temperatures increasing and the ice melting. He also emphasized the need to have data collected over long periods of time in order to see global temperature anomalies.

Steffen mentioned many ways in which he and other researchers monitor the Greenland Ice Sheet. Tide gauges take long-term measurements of sea level, satellites measure ice loss down to a resolution of one centimetre, and the specialized GRACE satellite measures the gravity fields related to the ice sheet, which change as it loses mass. All show a decrease in Greenland's ice mass and an increase in sea level. Since 1993 sea level has risen 3.3 mm per year on average. He also pointed out that sea level rise is due not only to the melting of land ice but also to thermal expansion of the oceans as temperatures rise. The ice loss is accelerating on the ice sheet due to melt water on the glacier trickling down to the bedrock under the ice sheet via moulins in the ice sheet, lubricating the ice above and causing it to slide away and calve off at the ends of outlet glaciers on the periphery of the ice sheet faster.

Steffen stressed that it is difficult to know exactly how much sea levels will rise. He projected that sea levels could rise by up to a metre during the 21st century. He also made a point that sea level rise is not a uniform process and that different parts of the planet will be affected differently. The Southern Hemisphere will be much more affected than the Northern

Hemisphere, for example, due to how gravity distributes the water in the world's oceans.

DIRK GEUDTNER (EUROPEAN COMMISSION, GMES BUREAU)

Dirk Geudtner presented an overview of GMES (Global Monitoring for Environment and Security), an EU-led Earth Observation programme which works with the Galileo project. GMES has both a space component, coordinated by the European Space Agency (ESA), and an in-situ component, coordinated by the European Environment Agency (EEA).

The space component includes a sentinel for radar imaging that works in all weather and all times of the day, which is important when monitoring the Arctic. Member countries' national missions, including private-public partnerships, contribute to the GMES by providing data.

Geudtner stressed the importance of information from satellites when mapping the Arctic region for shipping safety and to monitor climate change (there was consensus on how important satellite images were in achieving these goals in the discussion that followed). Synthetic Aperture Radar (SAR) imagery from satellites is used to map glacier motion, ice motion and coastal change monitoring, not to mention mapping the surface deformation in permafrost areas.

The goal of the GMES services is to provide standardized information for Europe, link data to EU information needs and keep open-access and free licensing. The images will also be available for commercial services.

Geudtner mentioned two GMES projects which are relevant to the Arctic during his presentation: MyOcean, which is a unique ocean-based observation system which analyzes time series for monitoring and forecasting (for example producing forecasts of Arctic sea ice), and the Polar View project, a multinational consortium funded by ESA until 2012 that provides Earth Observation services focused on the needs of various end users including information on iceberg formation, sea ice, river ice, lake ice, glaciers and snow cover. Some of the Polar View and MyOcean services overlap.

In the ensuing discussion, rapporteur for the session, Olav Orheim, mentioned that through signing the UN Convention on the Law of the Sea (UNCLOS) the United States could strengthen their position in their border dispute with Canada due to the way UNCLOS defines the median line. Speaking on the Aurora Borealis project, he concluded that it looked like the project has a difficult road ahead moving forward. On the Arctic University, Orheim concluded that after a slow start 12 years ago, the project is now a success. Commenting on the presentations of ice melt in Greenland, as well as the GMES project that measures melting ice, he concluded that satellite technology is essential for Arctic management and that careful studies are needed to use the data they provide in climate research.

FRIDAY OCTOBER 15TH OPENING STATEMENTS

ISABELLE DURANT (VICE-PRESIDENT OF THE EUROPEAN PARLIAMENT, MEMBER OF THE GREENS/FREE ALLIANCE)

Vice-President Durant opened the plenary session by expressing the view of the Greens/ European Free Alliance. She stated that the first step towards an Arctic policy had been taken when the European Parliament adopted a resolution on the Arctic, and hoped the EU would make more efforts in this direction.

HERMAN VAN ROMPUY, PRESIDENT OF THE EUROPEAN COUNCIL

President van Rompuy spoke of the changing mentality of the concept of the Arctic. He mentioned that as a "layman" to Arctic issues, he had been taken aback by the fact that it is now possible to sail through the Northwest Passage in August, and by the increase in Arctic tourism. Citing the IPCC's report regarding the rise in temperature of some 2-3 °C since 1997 as well as the changes taking place in the Arctic such as the melting of glaciers and ice sheets, coastal erosion, threats to indigenous species and thawing permafrost, he mentioned that it is a global concern that the Polar Regions are changing and the future of the Arctic is part of the future for the entire planet.

Van Rompuy went on to emphasize that the EU is very active in combating climate change, being the only region in the world to have enacted binding climate legislation, which aims to reduce greenhouse gas emissions by 20% by 2020 compared to 1990 emission levels. He noted in particular the Danish and Swedish contribution to the 2009 Copenhagen Summit as part of the European ambition but expressed disappointment that other countries were not willing to set definite targets for reducing greenhouse gas emissions. He stressed the need to strike a balance between rights and duties as well as the need to have a constructive spirit for the December 2010 Cancun meeting and beyond. He also expressed concern over the potential disruptions increased natural resource exploitation and increased shipping could bring to a changing Arctic.
President van Rompuy then talked about the EU's position and role on a number of issues. He spoke about the EU's Arctic policy, which it has been developing since 2008 and focuses on protecting and preserving the Arctic and its populations, promoting sustainable development of natural resources and contributing to multilateral governance schemes for the Arctic region. He highlighted the 200 million Euros the EU has devoted to research in the Arctic including several International Polar Year 2007-08 projects and studies on how a changing arctic is impacting human health.

Van Rompuy ended his speech by re-iterating the EU's case for becoming a neutral permanent observer on the Arctic Council, as three of its member states, an acceding member, and its strategic partners all belong to the EU. He concluded by stating that the future of the Arctic depends on the actions we take to shape its future.

MARIA DAMANAKI, EU COMMISSIONER FOR FISHERIES

Commissioner Damanaki opened by re-iterating the EU's close ties to the Arctic via three of its member states and its strategic partners. She also repeated the EU's threefold Arctic policy of

protecting and preserving the Arctic and its populations, promoting sustainable development of natural resources and contributing to multilateral governance schemes for the Arctic region, citing specific actions the EU has undertaken to accomplish them:
Under protection and preservation, Damanaki highlighted the EU's strive to involve indigenous communities and NGOs and create opportunities for its indigenous people, the Sámi, under the Interreg Programme as well as the "First Arctic Indigenous Workshop", which took place at the EU Commission in March 2010.

In the area of resource development, she emphasized the EU's effort to have the highest environmental and safety standards while securing fair treatment for EU citizens and enterprises in accessing Arctic resources as well as funding research programmes such as the "Ocean of Tomorrow" programme, which addresses the socio-economic dimension of human activities in the Arctic.

Regarding governance, Damanaki re-iterated the EU's request to become a permanent observer at the Arctic Council, mentioning that while it is "...absolutely right to carefully scrutinize the contribution that a state or organisation could make to its work...the EU's links with the members of the Arctic Council and its role in such issues as fisheries, trade, research and environmental policy make it a natural partner for the Council." She also cited the EU's cooperation with the Arctic Council to enhance standards for the cruise ship industry, its contribution to the Arctic Council's ArcRisk Project (which studies the influence of climate change on the spread of contaminants in the Arctic), and the Northern Dimension partnerships and cross-border cooperation programmes such as "Kolarctic" and "Karelia", which fund projects in the Barents region.
An integrated approach to maritime policy has delivered "concrete results all across Europe," said Damanaki, insofar as coordinating economic activities via marine spatial planning, promoting sustainable growth and improving safety at sea. She cited the work of the EU and its member states on developing a new mandatory "Polar Code" being developed within the framework of the International Maritime Organisation, along with the EU's participation in the "Conference of Arctic Parliamentarians", which convened in Brussels in September 2010.

In her closing remarks, Damanaki stated that a "promising outlook for the Arctic" cannot be created by the Arctic Council or the EU alone; rather it lies "in the hands of global civil society."

HSH PRINCE ALBERT II OF MONACO

HSH Prince Albert II of Monaco recognized that politicians are sensitive to issues related to the Arctic and hoped that tangible progress could be made. The economic prospects opening up in the region entail risks that have to be dealt with responsibly, said the Prince. He considered the Arctic Futures Symposium to be a worthwhile undertaking, since the discussions allowed a chance to reflect on the ramifications of the changes facing the Arctic states and the EU countries. He said that decisions on the Arctic are essential for all humanity, as what happens in the Arctic region affects the whole planet.

The Prince continued by saying that the Arctic suffers as a consequence of the world's excesses, but that governments cannot act alone, requiring "arenas for talks and appropriate multilateral decision-making" such as the European Union, the United Nations, and other international organisations. He proposed "to use all the tools we have, whether legally binding solutions or more flexible incentive schemes."

The Prince noted that civil societies are demanding that governments act courageously and be more ambitious, as civil societies can already rely on the motivation of scientists, NGOs and private companies. He called for action to be taken at all levels, at both a collective and individual level, using "all the tools we have, whether legally binding solutions or more flexible incentive schemes." He also called for more research and innovation with a focus on economic and strategic interests – in particular on innovation which provides solutions to the environmental concerns.

Prince Albert stressed that we should not forget the Arctic populations and the direct threat a changing Arctic has on their way of life. He said that it is "a duty" to continue the discussions, to listen to stakeholders and to overcome differences. He stressed that knowledge and skills must be coordinated in order to arrive at solutions, since "solutions do exist." Agreeing on and setting aside sanctuaries for marine life on the high seas as well as marine reserves dedicated to science should be a priority.

The Prince concluded by stressing the importance of sharing the knowledge we gain with as many people as possible, saying that the public must "understand that the future of the Poles is also their future." Without a public opinion rallied in favour of taking action against climate change, there is not hope in achieving anything. Convincing the general public that its future depends on the developments in the Arctic would not be possible. He mentioned that progress has been made and concluded by stating that we are responsible, but are not allowed to despair (St Exupéry); therefore because we hope, we can act.

PLENARY SESSION:
THE ARCTIC - KEY CHALLENGES FOR THE 21ST CENTURY - CLOSING DISCUSSION

The four rapporteurs gave summaries of the four workshops over which they presided the previous day. The ensuing discussion produced the following points to take away from the Arctic Futures Symposium 2010:

- The EU along with other international organisations and countries without a current role in the Arctic Council would like to have some kind of role in the organisation.
- Funding instruments and research councils are improving their efforts to streamline international research projects. However, research councils need to better coordinate their calls for proposals.
- There is a need to have joint efforts to utilize icebreakers for scientific expeditions. The capacities of countries which have an interest in polar research should be combined.
- Economic opportunities entail both threats and possibilities; the key to success lies in finding ways to manage the threats.
- In parts of the Arctic, global warming might be seen as a good thing, as it has the potential to bring economic development to the Arctic. In devising a plan to manage the Arctic, we must include all stakeholders in the dialogue, especially those who live and work in the Arctic.
- Despite increased media interest in the region of late, which has a tendency to be sensationalist, there is no "gold rush" underway in the Arctic and no imminent risk of invasion by commercial interests.

- A number of important solutions which need to be explored include devising international schemes for managing resources and ecosystems. Ways to do this include establishing of marine protected areas (MPAs) and developing marine spatial planning networks.
- Satellite and other Earth observation technologies are essential tools for managing the Arctic and its resources, as they ensure safety of operations in the Arctic and safeguarding the environment and ecosystems.
- policy outcomes should not be based only on the actions of decision-makers, but rather on the outcome of collaborative efforts between all stakeholders living and working in the Arctic.