

Round-Table Discussion

Knowledge into action; development in the Arctic Region

Held at the Royal Society on 14th December, 2011

The Foundation is grateful for support for this meeting from the British Antarctic Survey, the Canadian High Commission and the Natural Environment Research Council Arctic Office.

Chair: **The Earl of Selborne KBE FRS**
Chairman, The Foundation for Science and Technology

Speakers: **Charles Emmerson**
Senior Research Fellow, Chatham House
Professor Peter Harrison
Director of the School of Policy Studies (SPS), Queen's University, Kingston, Ontario, Canada

MR. EMMERSON said that research in the Arctic had a threefold value - first, it should be done anyway; second, it was important for UK interests; third, it encouraged global cooperation through involving scientists from many countries. We know that the Arctic was experiencing an environmental state of change, and that there were new opportunities for business development. But the relationship between environmental change and the opening of opportunities was complex. Some projects, which seemed promising - such as offshore gas fields in the Barents Sea offshore Russia, and Cairn's exploration off Greenland are now uncertain; but others, such as Shell in Alaska, Russian onshore gas and Norwegian northern gas field developments are going ahead. Northern shipping routes would undoubtedly develop, although there were significant problems in financing ships which might only be used for a few months a year, and where sea ice conditions vary from year to year. There is large scope for UK companies in oil and gas exploration and production, mineral extraction, services, insurance and finance, consultancy, development and research. We should not see the Arctic as a battlefield of competitive nations; it was an area where there was much consensus and cooperation between nations, where development takes place in sovereign territory or on the basis of agreed treaties and arrangements such as the UN Convention on the Law of the Sea (UNCLOS), with organizations such as the Arctic Council as a place for Arctic rim nations and others to discuss the special issues of Arctic development. He welcomed the UK position as set out in by the Foreign & Commonwealth Office paper prepared for the meeting (Annex 1 to this report), but still more could be done to assess UK interests in the region.

PROFESSOR HARRISON outlined the programme and objectives of the close out conference of the International Polar Year (IPY) research programme¹ to be held in Montreal in April next year. While the 2007 to 2008 IPY research programme had followed the trajectory of earlier IPYs, which had concentrated on exploration, geography and climate, it had also included new areas of research in biological research and research into the human dimension of the polar regions. We need to know where our existing knowledge leads to; what does it mean to policy makers,

business leaders, and, above all, to those who live in the area. The emphasis of the conference will be on inter-disciplinarity, and the sharing and application of knowledge. There will be sessions on data gathered, shipping, hydrocarbons, healthy communities, infrastructure, outreach and education. Adaptation to change, and the interaction of ecosystems will be central to the conference. He expected leading politicians and researchers to attend.

Among the points made in discussion were:

1. There was an inevitable tension between development and preservation of the fragile environment of the region. Development would not take place, or would be hindered, unless environmental concerns had been fully addressed - to the satisfaction, not only of international NGOs, but more important, of the local communities. It was only then that the vital trust between local communities and developers could be achieved, and a licence to operate obtained. This trust must rest on a belief that developers fully understood fears about accidents and the potential for oil pollution, and had adequate response measures in place. Failure to deal effectively with a disaster, would affect not only the developer, but all subsequent development activities.
2. Countries should have national strategies to deal with their Arctic areas. Canada had one, based on encouraging development, devolving authority to inhabitants, preserving national interest and safeguarding the environment. Central to this strategy was the interests and needs of the 100,000 or so people who lived in the Arctic region. They must be involved and involved in understanding what changes were possible. They were well aware that the modern Arctic was different from the past and offered them new opportunities. Indeed, they pressed for development to come forward, in the context of cooperative national treaties and conventions. They know there are risks, but wanted to make their own properly informed choices. In Canada their interests are secured legally through the Canadian constitution.
3. Understanding integrated ecosystem systems was essential if natural resources were to be exploited sustainably. There had been successes in the Antarctic in

¹ International Polar Year research programme 2007 to 2008 – www.ipy.org

managing fisheries as an integrated system; this experience could be applied in the Arctic.

4. Any company undertaking development in areas such as the Arctic must understand the reputational risk they have if something should go wrong. Their licence to operate must be built on an exhaustive study of possible problems, and convincing displays about how they would mount a rapid and effective response. Companies should take note of the problems facing developers of coal bed methane or shale gas in Australia and the UK; public opinion was not readily convinced of operational safety, and so developments may be held back. Companies must convince local communities that they are there to help to build the skills in communities in the long run. Any suggestion that they would “fly-in and fly-out” rather build up local capacity would be fatal.

5. It must be recognized that exploitation of Arctic hydrocarbons was very likely if we are to meet future energy demands. Global energy use is forecast to rise by 100%; it is estimated that by some that only 30% of new demand can be met through renewables and nuclear. The rest is likely to come from fossil fuels. New production will need to be found from new and difficult developments in offshore areas such as in the Arctic Region. It will not be easy to develop such resources; it will not only be the challenging physical conditions - cold, ice, remoteness, but also the need to match the wishes and aspirations of the local population. Nor can we be sure of easily finding accessible and exploitable reservoirs – cf. Cairn Energy’s recent drilling campaign offshore Greenland. Shell was seeking a permit to explore offshore in the Chukchi Sea, with strong support from the US government who saw the advantages in tax revenue and employment. The way forward for successful development was close working with the local communities, with the national regulatory and support systems, and taking decisions supported by scientific evidence. At the top of any risk register must be dealing with an oil spill. More research was needed to know how to deal with oil where the sea surface is covered by ice. Energy companies were working together to manage such problems, not only to share existing knowledge but fund new research. The OGP (International Association of Oil & Gas Producers) was working with the Arctic Council to ensure that necessary work was done.

6. Effective regulatory regimes were essential, and they would not be effective unless there was a common structure and standards between states. This would enable the scientific community to engage with companies on what research is needed to support the drafting, implementing and meeting of regulations.

7. There was wide agreement that cooperation between Arctic nations was essential and it was encouraging that the Arctic Council seemed to be working well, although it could be more effective. But, there were doubts about its ability to restrain individual countries from developing opportunities which in some way might affect other States. There were still many issues to be settled, and this process would take a long time. There were issues too over national boundaries for example the offshore boundary between the US and Canada in the Beaufort Sea.

8. Lessons learned from past accidents such as the oil spill from the Exxon Valdez grounding and the Macondo well blow-out in the Gulf of Mexico need to be heeded. BP had committed to meeting valid claims from the Macondo well spill - but this was only possible because BP is a very large company. If the operator had been a smaller company it might have failed, and the national government would have had to step in to compensate those affected. So governments have a clear incentive to engage in the domestic and international regulatory regimes that would set out the requirements for licences to operate. This could be based on strict “Safety Case” principles.

9. There were a number of conflicting interests at play in the Arctic – security of supply issues did not always chime with commercial or local needs. There were many logistical and other problems to be solved - how would equipment be delivered to a site without environmental damage, how much energy would be consumed in the development, how would facilities be decommissioned and how would waste be managed? Such questions could be resolved through research and development, but much collaborative effort was required by industry and governments to study these issues.

10. The public sometimes romanticize the polar regions, and, indeed, confuse the Arctic and Antarctic, without realizing that they were fundamentally different (e.g. the Arctic has an indigenous population). An important issue for the public for example was how to preserve polar bears. This perception was not only false, but dangerous, as it did not take account either of the inevitable consequences of climate change, or the wishes and needs of the indigenous population. It could put major impediments in the way of developments that were essential for energy supplies, cheaper transport routes and exploitation of fisheries. The indigenous population, were seen as creatures of nature who, whatever their wishes, should be left in their pristine state. To see them as such was demeaning and insulting. Even more enlightened public opinion had not recognized that the Arctic of today was quite different from the Arctic of 30 years ago.

11. Long term monitoring of developments and long-term thinking by business was essential. There was a danger that existing databases and monitoring arrangements would not continue. The time scales of business and research necessary to understand issues such as climate change are different. Business might need an assessment of conditions for a development very quickly, but long-term issues demand lengthy data gathering and knowledge that outcomes will not appear for considerable time, and, even then, are uncertain. Environmental base line studies were essential to measure the changes caused by development.

12. There was further scope for developing knowledge transfer between industry and academia. The UK government’s efforts to encourage, through the Research Councils, research which was of benefit to business and knowledge transfer, was acknowledged. The Natural Environment Research Council itself had a very wide spread of interests. However, it was difficult to meet them all; funding decisions had been forced to focus on selected areas of research, but these included Arctic research questions.

13. It was important to maintain research over time, and not react to cuts by stopping pieces of long term observations or research which underpinned other research - the worst form of salami slicing.

14. More imaginative ways of encouraging research which was meaningful to business was suggested such as prize competitions. For example Lloyds of London had set up an annual prize awarded to investigators for peer reviewed papers on the science of risk. This had helped to identify who in the UK was doing research on risk and who was interested in applying their knowledge to interesting problems of the insurance market.

In conclusion, MR EMMERSON said that we knew how the model of the Arctic worked 30 years ago. We know it does not work now; but we are not sure how the new model works.

Annex 1 – A Foreign & Commonwealth Briefing Paper prepared for the Round-Table Discussion and Annex 2 – Science Presentations and Useful URLs follow.

PROFESSOR HARRISON agreed that things have changed and it was essential we understood how and why. Long term monitoring was vital, and it was a public good that it should continue. Government should support it, as it would be unlikely to continue if left to others.

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Annex 1 – Foreign & Commonwealth Briefing Paper prepared for the Round-Table Discussion

UK and the Arctic: Summary of UK Government Policy

Compiled for The Foundation for Science & Technology Round Table: 14 December 2011

The Arctic is changing rapidly primarily as a result of climate change already built into the global system. It is not the Arctic of twenty years ago and it will likely be different again twenty years from now. Global Arctic policy must be ready for and take account of these changes.

The Government is working bilaterally and multilaterally to ensure a stable, peaceful Arctic, well governed by Arctic states working in collaboration with international partners. The Arctic needs a sustainable future. Increasing activity should be balanced with robust environmental protection, which enables resilience to the rapid changes facing the region.

The Arctic represents a critical region for the global environment. Although the UK is not an Arctic state, it is a close neighbour with a long history and strong interests in the region. Today, the speed of climate change in the Arctic and the associated impacts and opportunities mean that developments in the region will affect the UK's interests more than ever.

The Government will continue to develop an effective and evidence-based policy response to these challenges and to promote UK interests in the Arctic. The Government recognises the huge breadth of interest and expertise in Arctic matters amongst UK organisations and welcomes ongoing and open dialogue.

The following summarises current UK policy in a range of Arctic matters. To demonstrate the cross-Government engagement on Arctic issues, the primary lead Department for each of these issues is highlighted. The Polar Regions Unit of the Foreign & Commonwealth Office works closely with these, and other relevant Departments, to ensure an overall co-ordinated Arctic policy approach.

Arctic governance (*primary lead in Foreign & Commonwealth Office*)

The Government recognises and respects the sovereign jurisdiction of the Arctic states and supports the work of the Arctic Council as the primary regional forum for discussing Arctic issues. The UK has been a permanent State Observer to the Arctic Council since its inception in 1996, sending representation from the Foreign and Commonwealth Office's Polar Regions Unit.

The Government does not support calls for an Arctic Treaty. Governance of the Arctic rests with the sovereign states supplemented and complemented by international agreements and treaties, in particular the UN Convention on the Law of the Sea (UNCLOS). The current arrangements are working and at the present time the Government does not consider neither it necessary nor that there are benefits in moving towards a specific Arctic Treaty.

Working in partnership (*primary lead in Foreign & Commonwealth Office*)

The Government will continue to constructively engage with the Arctic Council, as the primary regional forum for Arctic issues, as well as other international forums.

Additionally the Government places great importance on constructive bilateral and multi-lateral engagements with Arctic states and other countries with an active interest in Arctic issues. The Government is keen to build upon the successful

relationships and arrangements it already has in place, such as the Memoranda of Understanding on scientific co-operation with Canada and Norway, and sees these as particularly effective in promoting UK interests and effective practical collaboration.

We note, however, there is growing international, indeed global, interest in the Arctic and the UK is keen to promote dialogue amongst all countries with a legitimate interest in order to meet common objectives and challenges.

Arctic science (*primary lead in Department for Business Innovation & Skills*)

The UK strongly believes that sound science should underpin global Arctic policy and this is reflected by the fact that the UK has a large and active Arctic science community. The Government will continue to promote UK Arctic science and encourage more international collaboration and co-ordination between scientific communities and encourage feedback into decision making mechanisms.

The Government's commitment to Arctic science is highlighted by NERC's (Natural Environment Research Council) announcement earlier this year of a new £16m Arctic Research Programme to investigate environmental and climate issues in the region.

Understanding climate change (*primary lead in Department for Energy & Climate Change*)

The entire Arctic region is warming faster than the global mean with the disappearance of sea ice entirely by the end of this century possible. The question as to how long the Arctic can hang onto its summer ice is debatable, but climate modellers predict that the benchmark of an "iceless summer" could come as early as 2030 or sooner under worst case scenarios. The overarching aim of NERC's Arctic Research Programme is improve our capability to predict changes in the Arctic, particularly over the next 50-100 years, including regional impacts and the potential for feedback on the global Earth System.

Limiting climate change (*primary lead in Department for Energy & Climate Change*)

The Government's goal, shared by the EU and now recognised by all countries following the 2010 UN climate summit in Cancun, is to limit the global average temperature rise to below 2°C, noting that the temperature rise in the Arctic would likely be considerably higher than this. Achieving this goal will require the mitigation of greenhouse gas emissions at a global scale. Existing pledges are significant and could take us to halfway towards achieving this but the Government is pressing for more to be done. The Government is leading by example having committed to reducing UK emissions by 34% on 1990 levels by 2020 and by 80% by 2050 through the 2008 Climate Change Act.

Resilience to climate change (*primary lead in Department for Environment, Food & Rural Affairs*)

The Government wants to see an Arctic resilient to change. Some change is unavoidable as it is already built into the global Earth System and further change is highly likely. The Government supports moves to improve understanding of how to build resilience into Arctic eco-, social- and economic systems.

Shipping (*primary lead in Department for Transport*)

The Government continues to view both the Northwest Passage and the Northern Sea Route as international straits, which should afford freedom of navigation, and the UK will work with other States with a view to achieving international consensus.

The Government will do its part in ensuring that shipping operations in the Arctic, like shipping operations in all other parts of the globe, are safe and environmentally sound. It will continue to effectively enforce the provisions of international maritime conventions that relate to safety and preventing pollution – such as the Convention for the Safety of Life at Sea (SOLAS) and the International Convention for the Prevention of Pollution from Ships (MARPOL).

In particular the Government is committed to playing an active and influential role in the development of the Polar Shipping Code currently being negotiated in the International Maritime Organisation.

Energy and mineral resources (*primary lead in Department for Energy & Climate Change*)

The Arctic is considered to contain large, untapped hydrocarbon and mineral reserves but further research and analysis is required to predict with any degree of certainty whether and when extensive Arctic mineral exploitation, complete with necessary environmental safeguards, could be viable. Additionally, given the hostile Arctic environment, it is likely that in the short term at least, it will remain more profitable and less technically challenging to tap energy resources elsewhere.

The UK does not have jurisdiction for authorising or permitting activities in the region. However, the Government will advocate for a well-governed process of mineral exploitation in the Arctic region, with transparent market principles and fair access for British companies.

The UK will still be dependent on sources of hydrocarbon energy for some time to come as it moves to a low carbon economy. The Government promotes diversity of supply to increase UK energy security.

There are clear environmental and reputational risks to operating in such inhospitable and pristine environments as the Arctic. The Government will continue to promote and encourage the highest safety standards for mineral exploration and exploitation in the Arctic and will influence the Arctic states to impose and enforce strict environmental protection rules.

Indigenous peoples (*primary lead in Foreign & Commonwealth Office*)

The Government recognises and supports the rights of indigenous peoples in the Arctic and values the local knowledge and memory within indigenous communities of the Arctic, its environment and the effects of the changes taking place.

The Government strongly supports the role of the Permanent Participants in the Arctic Council and welcomes their unique input into the Council's discussions.

The UK has had constructive and useful discussions with permanent participants on issues of mutual concern and benefit and promotes such interaction. For example, the UK-Canada Memorandum of Understanding will allow a greater amount of interaction between UK scientists and indigenous populations in the Canadian High North.

Environment and biodiversity (*primary lead in Department for Environment, Food & Rural Affairs*)

The Arctic is one of the World's most pristine and biologically rich environments. Due to its geographic location the UK shares a common marine and avian biodiversity with much of the Arctic and is thus intrinsically linked to the region with a significant stake in protecting the area's ecosystem.

The Government's overriding principle towards the management of any new fisheries, including in the Arctic, will continue to be the precautionary and ecosystem approaches based on best available scientific information. The Government will continue to work with and through the EU on discussions on sustainable management of Arctic fishing and fisheries.

Protection of the Arctic environment and ecosystem is a high priority for Government Arctic policy. Environmental considerations will continue to form an important pillar of *all* UK policies affecting the Arctic, from science and understanding climate change to safe navigation to management of resources.

Polar Regions Unit Foreign and Commonwealth Office December 2011

Annex 2

Science Presentations

The Round-Table Discussion was preceded by six science presentations chaired by Dr Cynan Ellis-Evans (Arctic Office, Natural Environment Research Council) – click on the underlined link to go to the presentation or the organisation web site.

Dr Edward Hanna (University of Sheffield)
Arctic atmospheric processes and our changing weather
www.foundation.org.uk/events/pdf/20111214_Hanna.pdf

Professor David Vaughan (British Antarctic Survey)
Ice2Sea: a co-ordinated activity to reduce uncertainty in future sea-level rise
www.foundation.org.uk/events/pdf/20111214_Vaughan.pdf

Dr Sheldon Bacon (National Oceanography Centre)
Why should the UK care about the Arctic? A climate perspective
www.foundation.org.uk/events/pdf/20111214_Bacon.pdf

Dr Jeremy Wilkinson (Scottish Marine Biological Association)
Arctic sea ice dynamics
www.foundation.org.uk/events/pdf/20111214_Wilkinson.pdf

Dr Julian Murton (University of Sussex)
Permafrost thaw impacts on Arctic landscapes, greenhouse gases and infrastructure
www.foundation.org.uk/events/pdf/20111214_Murton.pdf

Dr Tara Marshall (University of Aberdeen)
Projecting impacts of climate change on Arctic fisheries
www.foundation.org.uk/events/pdf/20111214_Marshall.pdf

Background Presentation

Presented at the UK/Canada Colloquium, Iqaluit, Baffin Island, Canada on 5th November, 2010
Dr Dougal Goodman – Should UK companies invest in Arctic projects?
www.foundation.org.uk/events/pdf/20101105_Goodman.pdf

Useful Links – Click on the underlined link to go to the site

Anglo American
www.angloamerican.com

Arctic Climate Change, Economy and Society – EU 7th Framework Research Project
www.access-eu.org

Arup
www.arup.com

Atkins
www.atkinsglobal.co.uk

BMT Group
www.bmt.org

BP
www.bp.com

British Antarctic Survey
www.antarctica.ac.uk

Cairn Energy
www.cairnenergy.com

Canadian High Commission in London
www.canadainternational.gc.ca/united_kingdom-royaume_uni/

Catlin Arctic Survey
www.catlinarcticsurvey.com

Centre for Polar Observation & Modelling, University College London
www.cpom.org

Charles Emmerson, Chatham House
www.chathamhouse.org/about-us/directory/70769

Clyde & Co
www.clydeco.com

Conoco Phillips
www.conocophillips.co.uk

Energy Industries Council
www.the-eic.com

Foreign Commonwealth Office, Polar Regions Unit
www.fco.gov.uk/en/global-issues/polar-regions/

GeoMission
www.geomission.com

GL Noble Denton
www.gl-nobledenton.com

Halcrow
www.halcrow.com

Institute of Marine Engineering, Science and Technology
www.imarest.org

International Polar Year Conference
www.ipy2012montreal.ca

Inuit Tapiriit Kanatami (Native Group Representative Body)
www.itk.ca

Lloyd's of London
www.lloyds.com

Lloyd's Register of Shipping
www.lr.org

National Oceanography Centre
www.noc.ac.uk

Natural Environment Research Council
www.nerc.ac.uk

Natural Environment Research Council, Arctic Office
www.arctic.ac.uk

OGP (International Association of Oil & Gas Producers)
www.ogp.org.uk

Polar Ocean Physics Group, DAMPT, University of Cambridge
www.damtp.cam.ac.uk/research/pop/

Queen's University, Professor Peter Harrison,
www.queensu.ca/sps/people/faculty/harrisonp/

Research Councils UK
www.rcuk.ac.uk

Rolls Royce Plc
www.rollsroyce.com

The Royal Society
www.royalsociety.org

RPS Group
www.rpsgroup.com

Scott Polar Research Institute
www.spri.cam.ac.uk

Scottish Marine Institute
www.smi.ac.uk

Shell
www.shell.co.uk

Sovcomflot.ru
www.sovcomflot.ru

Technology Strategy Board
www.innovateuk.org

UK/Canada Colloquium held in Iqaluit, Baffin Island in November, 2010
<http://ukincanada.fco.gov.uk/en/about-us/working-with-canada/canada-uk-Colloquia/2010-colloquium/>