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Inquiry on

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Witnesses: Professor Mike Bradshaw, Dr Richard Powell and Professor Frances Wall

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Members present

Lord Soley (Chairman)
Lord Addington
Baroness Browning
Lord Hannay of Chiswick
Viscount Hanworth
Lord Hunt of Chesterton
Lord Moynihan
Baroness Neville-Jones
Lord Oxburgh
Baroness Symons of Vernham Dean
Lord Tugendhat

Examination of Witnesses

Professor Mike Bradshaw, Warwick Business School, Dr Richard Powell, University of Oxford, and Professor Frances Wall, Camborne School of Mines, University of Exeter

Q142 Lord Soley: I welcome you all. You have in front of you the declarations of interest by Members of the Committee. Lord Tugendhat has added that he is a shareholder in Rio Tinto. Otherwise, the hearing is being webcast, so you are now live. Thank you very much for coming.

If I may start, I want to know how robust you think the estimates are regarding the availability of oil, gas and mineral resources in the Arctic. I am aware of the United States Geological Survey, which is widely cited. I am not sure how robust those figures are and I would welcome any advice on that. Are there other estimates that you think are better or that we ought to be aware of? I am not quite sure who would like to start on that. Let us start with the mining issue, so perhaps Professor Wall could start. We will then go on to the oil and gas question.

Professor Frances Wall: To know how many minerals are in the ground is a notoriously difficult question for the longer term. If you read the numbers that are available, the amount
of resource that we know changes over time. The best figures come from dedicated exploration programmes. There are very strict rules on how those figures are reported because, if companies are raising money from investors, the investors have to be sure that those figures are robust. The term “reserve” applies to minerals that can be extracted economically. That term is the closest that you can get to money in the bank, if you like. Resources are less well known. When you see terms such as “deposits” then there are not necessarily any figures associated with those at all. So, how robust? Not particularly robust.

Lord Soley: Not very.

Professor Frances Wall: When you see figures that say “reserve” or “resource” that maybe state a standard such as JORC or the Canadian standard, National Instrument 43-101, and that is all signed off by a professional, responsible person who takes legal responsibility for that, then they are robust figures. They are the ones to look at.

Professor Mike Bradshaw: On oil and gas, the USGS figures, which you mentioned, are probabilistic assessments because there has not been much exploration activity. They are based on geological analogues: looking at similar geology elsewhere in the world and then extrapolating. They are also estimates of technologically recoverable resources. They make no assessment of the economic viability of their estimates of the resource base. They are an informed guess, if you like. It is only once we start to have much more detailed seismic surveys and drilling programmes that we can firm those up and get to the point where a company may declare it has proven reserves and want to book those resources. As we go through that process of firming up the resource base, so it becomes much more commercially important. The companies initially keep that to themselves, but then when they want to declare that they have a find they have to follow a set of rules and regulations. Rosneft’s recent declaration that it has found a billion barrels of oil in the Kara Sea is partly
for the markets but will require further drilling before it gets to a point that they are ‘bookable reserves’. Overall, these estimates should be treated with a good degree of caution. It is only once we have seen much more activity that we will get a better sense of what is actually available in the different areas.

**Lord Soley:** But not too robust again. Dr Powell, do you agree with that?

**Dr Richard Powell:** Yes, absolutely. I echo everything that was just said. The USGS 2008 Circum-Arctic Resource Appraisal is the famous one that is often cited. It took a very long time to be produced, for the reasons Professor Bradshaw mentioned. That is part of the reason why there is reluctance to try to attempt another such comparative probabilistic assessment on that level: it is so complicated and it becomes educated guesswork.

**Lord Soley:** Thank you. That is very clear. Viscount Hanworth, do you want to come in on your question, which follows on from that?

**Q143 Viscount Hanworth:** I want to ask the panel how important the Arctic reserves of oil and gas are likely to become within a global context. In particular, to what extent might the development of such resources be determined: first, by future prices; secondly, by the development of energy markets; and, thirdly, by geopolitical considerations? The final question is inspired by some remarks by Lord Tugendhat that highlighted the strength of geopolitical issues in determining these futures.

**Professor Mike Bradshaw:** Perhaps I could make a start on that one. The question of price comes back to the fact that when you look at the supply-cost curves for global oil resources, you see that offshore Arctic is right out there as being very expensive. One question that is being asked of these resources is whether they can be exploited, given a particular price of oil? Of course, none of us knows what the future price of oil is going to be; there is huge uncertainty about that. Obviously the oil companies tell us that demand will continue to
increase and the price will continue to go up, and that therefore we will need these resources. But another school of thought that is gaining attention suggests that we already have enough reserves and that, because of climate change and the constraints that it puts on burning carbon, we do not necessarily need these resources. One of the arguments is that these are not a good investment by the oil companies. I am sure you will hear this line of argument from NGOs: these are unburnable carbon resources and they are very expensive. The cost of oil is going to be critical in working out whether these are economically viable. Much depends on what happens in energy markets. The unconventional oil and gas revolution is a major new factor in this equation, because it gives countries alternative sources of production. So we see in the United States, for example, in a very short time, a rapid reversal of its fortunes in oil and gas production. We have to factor in the relative abundance of unconventional resources and what impact that might have on other high-cost sources such as Arctic. When it comes to geopolitics, you have to look at which countries are holding the resources and the role that those resources play in them. Russia is particularly significant here, because it is the major resource holder and it is running out of conventional onshore oil, not gas. But oil revenues are vital to the Kremlin’s coffers, and sustaining a large surplus to export is critical to the economic future of Russia. Putin sees this very much as the resource for the 21st century. Russia’s continued economic model is based on moving into these high-cost environments. Hence, you see that in Russia in particular sustaining exportable surpluses and maintaining oil production becomes critical, and the continental shelf and the Arctic become central to that. That is why you have seen in recent years Russia really getting behind a drive to develop offshore Arctic.

Viscount Hanworth: So are you saying Russia’s developments might be somewhat insensitive to price?
**Professor Mike Bradshaw:** As ever, nothing is transparent when it comes to these issues; it is a moot point. If it is producing resources that are value-subtracting—in other words, they are costing more to produce than they getting on the market—ultimately the Russian economy pays a price, as we saw in the late Soviet period. There is a school of thought that it does not make sense to pursue these high-cost resources because the return to the state is not significant enough. That is another factor to bear in mind.

**Lord Hannay of Chiswick:** You did not mention one other factor about Russia, which is that this is a country that interferes politically with the pricing policy certainly of gas, perhaps less so of oil, much more than other suppliers do. That is presumably another reason why geopolitics enters into the matter?

**Professor Mike Bradshaw:** Yes, there is a big distinction between the oil market and the gas market. Obviously gas is locked into pipeline infrastructures and the like, and, of course, we see that at the moment with the concerns about Ukraine, so I agree that one needs to distinguish between the two. The extent to which Russia can change the equation relates more to domestic changes in tax breaks to try to reduce to the cost of producing the oil, but once it has been produced and exported it has to take the world price. That is where the uncertainty lies.

**Lord Soley:** So you are saying that oil is less flexible for the Russians?

**Professor Mike Bradshaw:** Well, it is a fungible resource; there is a global price. Gas is very different: there are regional prices and we are locked into pipeline infrastructures, as we know to our expense at the moment in Europe.

**Dr Richard Powell:** Yes, I agree. The one thing that I would add from the geopolitics angle is that attention on hydrocarbons in the Arctic is always linked to other geopolitical developments, as was mentioned in the earlier session. That is also part of the pricing. In the
late 1970s, there was interest; in the late noughties, there was interest. Maybe some of that interest has cooled in very recent years because of these other geopolitical difficulties or consequences.

**Q144 Lord Hunt of Chesterton:** Vis-à-vis this question of shale gas and unconventionality, “unconventional” is a pretty polite way of describing what we are seeing in North America. Things are getting smaller and it is cheaper, but there are areas of America where you see flames coming out of the ground. We have had legislators here coming from American states having seen the most appalling situations with regard to water, and certain institutions in London are extremely concerned about these resources. Paradoxically, with Russia and maybe Canada, you have the possibility of methane gas coming out of the permafrost as it melts, so you will have a surplus of this kind of unconventional fuel. One question that people do not seem to be getting their minds around is how we will use this uncontrolled kind of fuel. How do you feel the authorities and the market are dealing with this? At the moment, I do not see or hear very much concern about that issue.

**Professor Mike Bradshaw:** Fugitive emissions of methane from shale gas and tight oil are an issue of huge debate in the United States. The scientists cannot agree with each other; the Obama Administration is developing policies to manage methane. It has actually focused minds on the broader issue that you raise, because it is not just the shale gas production but the pipelines that are leaking and so on. We are carrying out these lifecycle assessments and we need to look at all the energy sources in that light. So I think that is a factor.

It is quite clear that the operating conditions and the economic situation in North America are quite different from that in Europe. I think there is a consensus that we are not going to see a US-style shale gas revolution in Europe, partly because of environmental opposition but also because of the economics and the geology. I heard a presentation yesterday at
Chatham House from someone from the Department of Energy in the United States. They are incredibly gung-ho about shale oil and tight gas; they do not see it ending any time soon. If you look at the projections from the Energy Information Administration in Washington, you will see that they are going up and up and they are talking about the economic benefits. So I do not see any move to curtail that in the United States at the moment, although there is growing evidence of the negative environmental and health effects. Ironically, Russia has the largest reserves of tight oil or shale oil. That is an alternative to offshore Arctic for Russia. The issue of methane, which is a much more aggressive greenhouse gas, as something that we need to be concerned about when we are looking at fossil fuels.

**Lord Soley:** Lord Hunt, could you move on to the mining issue?

**Q145 Lord Hunt of Chesterton:** Yes. This is a question for Professor Wall. Mining that one sees in high-latitude areas in other parts of the world seems to have quite an environmental impact. How much of the cost is associated with whether it is easy to mine or mining when you clean it up afterwards? If you dig this stuff up, you have all this waste, and then some of it produces air pollution as well in areas that are very pristine. I just wondered to what extent that factor is part of the economics of mineral extraction in the Arctic.

**Professor Frances Wall:** The first thing I want to mention in that regard is the Kola peninsula in Russia, because it is somewhere that I have been to. That has been mined since the 1930s. It has the world’s largest apatite mines, which provided the phosphate for fertiliser for the Soviet Union. There is a mine there that provided niobium, a specialist metal that is essential in the steel industry, for the Soviet Union. There are nickel mines there, platinum elements are produced from there. It is a huge mining area that was tremendously important to the Soviet Union. They put resources there, they built the towns there, they moved people there since the 1930s and right up to the end of the Soviet Union. All efforts went into mining
and—you already know the next thing that I am going to say—very little effort went into environmental remediation. There is certainly some environmental damage there that everybody can see. You drive along the road past the smelter at Monchegorsk and there are tens of kilometres of black aureole around the town where acid mine drainage from the smelter has destroyed the forest, which is then destroyed by fires. The first thing to say is that the Arctic is not necessarily pristine. It would be a misunderstanding if you thought that it was a pristine environment. There are many beautiful places on Kola—do not think it is a brownfield industrial site either—but there has been mining there for a long time and it is already altered by mining activity. The challenge is to clean up some of the effects of that.

The big, exciting challenge is when new mines are opened—whether it is in Greenland or Canada. All those places have mines already, but now when you come to open a mine you must be able to protect the environment when you are mining—all the countries have standards for that—and you must understand how you are going to remediate the site when you close before you open. So a mine must have a closure plan before it can open. The standards have changed very much over that time.

Q146 Lord Soley: Can you say how important mining is in a global context? Do we have to have more mining in the Arctic? Could we be doing it elsewhere? What are the benefits to UK industry? Subsea mining and the subsea industry in the UK are quite advanced.

Professor Frances Wall: Do we need mining in the Arctic? I would say yes. That is an easy question. There is already mining there, it is the big industry there, so there would be no reason suddenly to change our mind and say that we do not want any mining in the Arctic. I think it is seen by all the Arctic countries as a very important economic activity. Something like 20% of Swedish taxes come from the iron ore mine in Kiruna. It is very important for countries individually. I have pointed out the importance of the apatite deposits on the Kola
peninsula. In the global context, I could pick out the phosphates, again, and nickel as substantial parts of world supply. These are major commodities mined in many places in the world, but there are substantial deposits throughout the Arctic.

Then there are critical metals, which is a different subject area. What we call critical metals are used and mined only in very small quantities—only 100,000 or 200,000 tonnes a year compared with millions of tonnes for base metals—but they are essential for technology such as fuel cells using platinum-group elements or catalytic converters in cars. Eighty per cent of the world’s deposits are in South Africa. The Arctic region across Russia and now a new mine in Scandinavia can also supply platinum-group elements, so if you suddenly took out the Arctic you would be creating an environment in which everybody was reliant on just one area in the world. That is a dangerous position to be in. It does not matter what that country is. It may be a very stable country, but to end up relying on just one place is a very bad position to be in. That could happen very easily with these small-quantity critical metals, so the Arctic is absolutely essential for that.

The other critical metals in that category are the rare earth elements, where China dominates supply. From the European perspective, there are some deposits in Greenland that are quite advanced in terms of exploration and development. Europe has almost no really world-class rare earth deposits, so the Greenland ones are very important in that scenario. Yes, mining definitely needs to be done in the Arctic.

**Dr Richard Powell:** On Greenland, and echoing that point, there have been claims that 25% of the world’s future supply of rare earth elements could be at Kvanefjeld near Narsaq, where there is a uranium mine belonging to Greenland Minerals and Energy, which is an Australian company. This relates to the earlier part of my colleague’s response: the history of mining is important in the Arctic, and because of the concern about the possibilities of
economic development and of environmental impact, the development of the mining is a very contentious issue in Greenland. In the past few days, it has essentially brought down the Greenland coalition Government and new elections have been called for the end of November. The possibilities for development are held within a wider political context of local decision-making, which needs to be factored in.

Lord Soley: I invite Lord Moynihan to ask the next question and I think Lord Addington wants to come in, although some of the environmental issues have been touched on already.

Q147 Lord Moynihan: I would be very grateful if you could concentrate on two issues: the technical and logistical challenges, particularly in oil and gas. First, there is a whole range of issues, such as the lack of infrastructure, supply bases, the challenge in the Arctic of complex logistics, the need for facilities to resist ice loads and how effective loss of well control could be managed. Perhaps you can add to those and give us your thoughts on them.

The second issue is equally large and important and is the legal and regulatory regimes. Dividing it into three, on the one hand regulation is principally by the Governments. I would be grateful if you could let us know whether you regard some states as more effective than others in managing those opportunities and risks. The second area of the legal and regulatory regime is the Arctic Council. While it is limited in its application of guidelines, we would be interested in your views on its current and potential role.

The third group that is directly affected by this is the operators themselves, the companies, not least the oil and gas companies, with their policies and procedures and operational objectives, particularly in the context of safety and environmental programmes. In closing, I would be interested whether there is any validity in Professor Bradshaw’s view that prolonged sanctions would impact work on research and development, particularly in safety
and environmental operations, for example the work that BP and Exxon are doing on the one hand and Rosneft on the other through the joint ventures there.

**Professor Mike Bradshaw:** I think you have identified the challenges. I will refer to my experience of watching the Sakhalin oil and gas projects develop over the past 20 years or so, because they are the most obvious analogue that we have for what conditions would be in, say, the Kara Sea. Talking to the operators there, they would say that the individual challenges that you have mentioned are not new. They have faced them in other projects. What is new is the combination of those challenges, the complexity and the fact that you have the problem of access and a very limited operating window. In the case of Sakhalin, much like the Kara Sea, it is about six months, but that varies from year to year. The logistical challenge of getting everything ready is substantial. It means, for example, that with the Kara Sea this year, if sanctions remain in place it will not take long before next year is compromised because they cannot get everything together. The combination and the complexity are clearly a challenge, and that adds cost. We see in the Sakhalin case that it has also pushed the technological frontier and that new solutions have been obtained in particular, for example, in the construction of production platforms with ice conditions and in understanding ice floes and designing the substructures so that they withstand them. In the case of Sakhalin, there is a large seismic risk, so you have the tsunami threat, which you probably do not have elsewhere, but you have high wave heights. All these things are putting new dimensions into the design and making it expensive, but we are learning by doing and the costs should come down.

The logistical challenges of, for example, towing out the substructures and superstructures and getting them in place in time are remarkable achievements by Shell and Exxon offshore at Sakhalin. It is this combination and multiplication of the challenges that is important. Of
course, it is not a single drilling platform out there in today’s Arctic: a whole flotilla has to go with that. I am sure you have heard more about that from the shipping companies.

There is also need to have oil spill response in place and, post-Macondo, to have the technology to cap the well if there is a problem of blow out. All these things require Arctic-class vessels, which are in short supply, and are adding to the complication, the cost and the timeframe. As a rule of thumb, it will probably take a lot longer and cost a lot more to develop these resources, which comes back to my earlier point about whether they are an economic prospect in the first place. We see, for example, that the Sakhalin-2 project was supposed to cost $10 billion but cost more than $20 billion. A lot of that was onshore cost, not offshore cost. I think that we are learning by doing. The cost of some elements will come down, but it is going to be complicated and a very long-term prospect.

In terms of the regulatory issues, I will defer to Dr Powell on the more state-orientated elements and the Arctic Council, but the Sakhalin projects forced the Russian Government to develop a legislative framework for offshore because they had not done it before. They are still learning. I remember talking to Marathon Oil at the time. It had had to get more than 1,000 licences from multiple agencies to install the first production platform. They are trying to streamline the process, but in streamlining it they might make it less effective. We have to wait and see.

When it comes to the international oil companies and the service companies that operate with them, there is a huge reputational risk associated with operating in the Arctic. Shell has already found that to its cost with its problems in Alaska and prior to that with Sakhalin, where there is the issue of the western great whale. It is interesting that Exxon has been less susceptible to those problems in Russia, and the reason for that is that Shell’s partners went for project financing. Going to the banks and the international financial institutions is
what made them accountable and vulnerable to the NGO community, so financing Arctic exploration will be a key issue to consider in the future. I think companies going there are very well aware of the risks, but they bring with them a level of transparency that we do not see if a project is developed by just a Russian company. So you can contrast, for example, the Sakhalin projects with Gazprom’s Prirazlomnaya platform, which had the problem with the Greenpeace protestors. On the more regulatory issues to do with the state, I defer to others.

Dr Richard Powell: I again agree. The important thing is that it is very complicated. Regulation differs across states and frameworks. It differs even within Canada because of the complicated geography of indigenous land title processes and the political resolution of land-claims processes, and the different arrangements in Nunavut, the Northwest Territories and Yukon.

When the Government of Greenland were pursuing negotiations for the formulation of their Mineral Resources Act 2009 after the self-rule agreement, they wanted to come up with what they called, under the Bureau of Minerals and Petroleum, a ‘one-stop shop’. The idea was to arrange consultancy and environmental reporting arrangements all in the same place. But even that has proved to be problematic. So the question of regulation depends on where you are in the Arctic, which means that the regulatory challenges really depend on where a particular initiative will take place.

As you say, the statutory powers of the Arctic Council are relatively weak, although it was formed from discussions about environmental agreements in the first place and was never initially intended to have ‘strong’ powers. There are some historical agreements about the clean-up of pre-1996 pollution and such things. Very recently, as a result of the Kiruna meeting in May 2013, all eight council member states signed the Agreement on Cooperation
on Marine Oil Pollution Preparedness and Response in the Arctic. That, for the first time, agreed a set of responsibilities for remediation of an oil spill in the Arctic by one of those states. Basically, the question of regulation is complicated by different responsibilities.

**Q148 Lord Moynihan:** Do you anticipate that there will be a growing influence of the Arctic Council in this context?

**Dr Richard Powell:** Because the oil spill response is a big picture issue, all the Arctic members are under lots of pressure to have a statement about that. I would not anticipate the Arctic Council regulating mineral development in the Arctic unless there are changes in the structure of the Arctic Council, which will take political will on the part of the member states, Permanent Participants and other actors. It is possible, but not immediately.

**Professor Frances Wall:** I have a comment from the mining point of view. The Governments of Canada, Denmark, Norway, Sweden and Finland have well established protocols for exploration and mining development projects. In Sweden, for example, when you apply for an exploration licence, I think you also need an environmental licence before you can start the first steps. They are seen as very favourable places by the world mining community to go and develop projects.

We have heard already about Greenland and the very interesting situation where a small population wants to develop mining. It has to decide how best to do it. It works with the Geological Survey of Denmark, which is very active in Greenland, so it has a very good basis for its original information.

Russia is very much more opaque. I am not an expert on Russian mining regulations. UK companies are working as environmental consultants with Russian operations. Russia certainly is interested in environmental performance. From my own experience, not in the Arctic region but elsewhere in Russia working with Russian collaborators on an
environmental project on a mining and smelter site, we found it much harder to get
information and to interview people and so on than in, say, Scandinavia. We directly
contrasted it with Sweden, which was a much easier environment for anyone to find out
what was going on. We found it much more difficult in Russia. I would say that that is a
different environment.

I am very ignorant of the Arctic Council, which may say something about how far it has come
into the mining community so far. The mining community would not want a double tier of
regulations. It would not want the national regulations and then have to satisfy an Arctic
Council as well. But it might be useful if a council helped to co-ordinate national regulations.
The main onus that I would look at is the operators. An International Council on Mining and
Metals brings together the largest mining companies in the world. It puts out guidance, its
members have to abide by the global reporting initiative and it is audited. It tries to maintain
high standards.

However, most companies are not members of the ICMM and one of the main controls on
companies is that when they need to raise money, they will come across the Equator
Principles and so on for larger projects. They then have to think about their environmental
performance, particularly about the social licence to operate and how they deal with the
local people. That is a very big issue which people have to take account of in developing new
mining operations.

Q149 Lord Addington: You have covered the general environmental concerns. How
developed is the accident, the catastrophic event, situation? How developed is that within
the companies’ and the Governments’ feeling and planning? When we talked about
shipping, we heard just how difficult and how isolated some of these situations and activities
are going to be. I wonder how you get that into the structure of any operation taking place in
the very remote and cut-off areas, both as regards the activity of Governments and companies.

Professor Mike Bradshaw: It is obviously a key concern. I recall Shell having a discussion with the US regulators when US regulators had shortened the drilling season because it was concerned that there would be too much drilling close to a point at which there would not be any access if there was a problem. There was a disagreement about it but it was curtailed. The big issue is that if something catastrophic happens and we do not have access to the field because the ice arrives we would be in unknown territory. Hence the need to have these capping devices—a fairly Heath Robinson solution—to put over the well or the ability to drill a relief well to stop the production.

The problem is the time constraint. If we end up with a substantial spill under ice, of course, the oil companies may tell us that they are making progress but we do not have any evidence because, fortunately, we have not faced that scale of disaster. The NGOs are quite adamant that this would be catastrophic.

It also affects the kind of development strategy that you might have. One of the reasons for putting a production platform offshore is access and drilling. It has become an issue, for example, on Sakhalin. At the moment, Gazprom has developed a field using subsea production systems, which are provided by FMC Technologies, and it is doing it for gas. It is proposing that it might do it for oil but the problem with that is if you have a subsea production system and there is ice above it and something goes wrong you cannot access it. That would be something to watch.

We really are in uncharted territory. Clearly, the oil companies understand that they have to make progress on this issue but there does not seem to be any consensus that we can deal with oil spills under ice. Moving forward, that definitely would be a concern.
It is not just about the production stage, it is also about exploration. Hence the need for all the preventive measures when doing the activity. There is no easy answer. The companies also point out that the operating conditions are different from the Gulf of Mexico in terms of the depth, the pressures and those kinds of things, and that these wells are not as challenging. But we only have their word that this is the case.

**Dr Richard Powell:** I would just add that the remote and small populations do not have huge capacity for an environmental clean-up in the event of a huge spill or any other catastrophic event. That also plays into domestic politics, certainly in Greenland but also in parts of Canada as well. The sense of huge uncertainty becomes a domestic, internal issue as well, which can lead to political instability.

**Professor Frances Wall:** Some mines are very isolated but others are not. They are connected by road networks and very good rail networks south in Scandinavia and Russia. Each case needs to be looked at individually to assess the risks and how they would be dealt with.

**Lord Hannay of Chiswick:** I note your great caution about whether the Arctic Council is having much impact in this field. Have you come across the testimony that was given in the Swedish Parliament and in the United States Congress, which rather bizarrely said that nobody could identify any implementation activity whatsoever being conducted by either of those two countries as a result of the Arctic Council’s decisions? That presumably reinforces your scepticism.

**Professor Frances Wall:** I have not read those testimonies, but it is interesting, yes.

**Dr Richard Powell:** The Arctic Council was set up in a particular way in the mid-1990s, on Finnish and Canadian initiative, to deal with the remediation of pollution in the Arctic. It has since had to take on certain responsibilities. It has been pushed into another place as the
wider geopolitical and general public interest in the Arctic has changed. While I agree with some of the cynicism about its capabilities, it is also slightly unfair because it was never designed to do that in the first place. It is an institution that has evolved. That also needs to be remembered when people ask whether it can do this or that: it could, but there needs to be political will by the member states, observers and the indigenous permanent participants to do that as well.

Lord Soley: The Arctic Council is evolving. When we visited the Arctic recently there was quite a bit of discussion on that. I do not invite you to comment now, but if you have any thoughts about how the British Government should relate to the Arctic Council on things that affect your area, it may be no bad idea if you send those details to us.

Q150 Lord Hunt of Chesterton: We have had evidence from the scientific community of the UK. Even though they are invited, they get almost no funding to attend meetings of the Arctic Council. Scientists would like to attend Arctic Council meetings, which are extremely effective. The Arctic Council produces the Arctic Climate Impact Assessment, which is an acknowledged top document, but it is very difficult for the UK to participate because the Government do not regard paying the plane fare for our scientists as worth while. In the other areas you represent—economic, social, geographic—is there support for UK academics to participate?

Professor Mike Bradshaw: It is a particular bugbear of mine that there is little or no funding for fossil fuel research. Understandably, the Research Councils’ mission is to deliver the Government’s low-carbon transition strategy. Less than 0.1% of RCUK’s funding on energy goes on fossil fuels. It is a kind of “mind the gap” problem: we seem to be forgetting that we are still in the fossil fuel age and we have to deal with the problems of the fossil fuel age. Every now and then places such as Russia remind us or we have events such as Macondo.
When that happens we expect the capacity to be there. But my point is that we are not really trying to understand the impact of climate change policy and a low-carbon transition on the fossil fuels sector. We really need to look at that. It is creating all sorts of problems. I am not saying that it should be the lion’s share of the funding by any means; I am just saying this is an important issue that we neglect at our cost. We are still dependent on these fossil fuels.

**Lord Soley:** If you want to send in additional information on that or the relationship with the Arctic Council, that would be helpful, so please do so.

**Baroness Symons of Vernham Dean:** Particularly on the points you made about government funding and the percentage spent on fossil fuels.

**Q151 Baroness Browning:** The oil and gas producers have suggested to us that development in the Arctic is usually welcomed by local populations. That is not an experience we have had in this country generally, but do local populations in the Arctic typically welcome new developments? What evidence is there of the socioeconomic impacts on the local population of recent oil, gas and mining developments? Can you comment on how effective UK companies are at social licensing when it comes to managing mining projects?

**Professor Frances Wall:** On whether local communities welcome new mining projects, I think the answer is yes. There are always people there who welcome new mining projects. I have done socioeconomic work in Sweden, so south of the Arctic Circle, but the arguments are always the same. I have worked in the north as well on exploration projects. We had to be very careful there not to raise the expectations of the local people. They were really keen to have the economic activity of a new mine, but of course most exploration projects do not come to fruition in terms of opening a mine. You have to be very careful when you go in not
to raise people’s expectations. I think that generally across the Arctic people want mining activity because of the economic benefit that it brings to the region.

**Baroness Browning:** Could you quantify that with an example? What does it do for the local population?

**Professor Frances Wall:** I read that they have opened a new coal mine on Svalbard because it is almost the only economic activity there. Greenland is another example: they run in deficit now because they used to have a lead-zinc mine, Black Angel, which is now closed. They also had a cryolite mine, which is closed. If they could open two or three more new mines, it would be the mainstay of their economy. It can be really important.

The second thing people say, the negative thing, is, “But we are worried about the possible environmental effects”. Almost everybody you speak to will give the positive of the economic activity and jobs, and the negative of, “We are worried in case there are negative environmental effects”. The onus is then on the company to satisfy the population that there will not be environmental effects, or that there will be very small ones they can live with, or there then needs to be a decision that the mining does not go ahead. There are projects that are stopped because of that fear.

**Baroness Browning:** Is the take-up of employment from local populations realistic?

**Professor Frances Wall:** Yes, it is. It is the number one issue in mining development around the world. It is not good enough now to go in and open a mine and ship in your miners and all your employees from somewhere else. When you open a mine, you always try to employ the local population and upskill those people as necessary. There is a new programme in Finland, for example, ensuring they can train mining engineers in their local universities so you get the professional jobs as well as the labour jobs on your mines. Yes, that is really important.
Q152 Lord Soley: Different countries have very different responses to indigenous people: some are very good, some are very poor. We heard that on our recent visit to the Arctic. As a general judgment, can you say how good UK companies are at dealing with the indigenous population? There was a feeling around, not about the UK particularly, that there was not a good relationship with the indigenous people in a number of situations, whereas one or two other countries—there was an Italian company, the name of which I forget—were regarded as extremely good. I am not quite sure how the UK would come out on this.

Professor Mike Bradshaw: Perhaps I could comment on Shell’s experience in Sakhalin. It comes back to the role of international financial institutions, IFC guidelines, the Equator Principles and the like, which empower indigenous people. In developing that project, the foreign investors had to demonstrate that they were dealing with the indigenous people’s issues to World Bank standard, so they hired someone from the World Bank to do that. They developed their own community policies for the indigenous peoples but that created unforeseen problems because the indigenous peoples on Sakhalin are a very small percentage of the local population and they were divided among themselves, so they had a problem in delivering their policies but they clearly wanted to do it because they were required to do it. How this played out in terms of environmental impacts is quite interesting as the people on the island were not that concerned about the grey whales because they did not even know they were there until the drilling and offshore exploration activity started. They did not see that the grey whale issue had anything to do with their livelihoods. What they were most concerned about was the onshore impact of the pipeline on the salmon fishery because the salmon fishery was an important source of protein for them and a major economic activity. Therefore, there was a disconnect between the global NGO campaign, which was all about saving the whale, and the local concerns, which were also the concerns
of the indigenous peoples, about the impact of the pipeline corridor. In that instance Shell and its Japanese partner recognised that internationally they had a duty to address these issues but they were not the local issues. The local issues were much more complicated and were not actually related to a very small indigenous population. It turned out, for example, that the pipeline corridor went through one area which happened to be a reindeer pasture, but there was not a substantial number of people living off reindeer herding, so it was an interesting issue. Elsewhere in Russia, of course, there is not the tradition of civil society and of locals expressing an opinion about these things. I think that RAIPON, which is the NGO representing the so-called “small” peoples of the north, has had problems with the Russian Government of late. I notice on Sakhalin that the NGOs have gone quite quiet now that Gazprom has arrived, so there is not that involvement. Of course, when international NGOs get involved, it can have disastrous consequences in Russia today, so it is not being held to account. Today, on Sakhalin, I think that I am right in saying that 80% of the local government’s revenue comes from oil and gas, and that it now ranks among the most well-to-do regions in Russia, although you would not think it to look at the streets of Yuzhno-Sakhalinsk, but clearly this has made a difference, albeit within a federal structure whereby, if you get a lot from the resources, they take more away in terms of federal transfers.

**Lord Soley:** Professor Bradshaw, that is very helpful. Have you any thoughts on what else the indigenous peoples need in terms of a voice? Clearly, we cannot interfere in the individual policies of other countries but we were struck by the organisation of the voice of the indigenous people in the Arctic. You are right to point out that the Russian group had severe problems recently.
**Professor Mike Bradshaw:** I think that they have been much more successful in Alaska. It is interesting that some of the NGOs active on Sakhalin then moved to Alaska when Shell moved to Alaska, so I think the Alaskan case is very different.

**Dr Richard Powell:** Could I just comment quickly on Greenland? Essentially the country is split 50:50 between those who believe mining will provide for economic independence and those who urge caution because there could be ruinous consequences for Greenland. The key issue is that of developing free, prior and informed consent. Some UK and international companies are better at that than others but currently lots of issues are arising in public consultations, for example, about who pays for translation into potentially three languages. Is it the state—the state may not have the capacity to do it—or is it the companies seeking licences to operate? Lots of these complications are arising in different places, in the Arctic. The picture is better in some places in the Arctic than others but I do not think that anywhere the population is overwhelmingly, 100% in favour of the development of oil, gas and mining. The situation is different for particular projects where specific issues arise.

**Professor Frances Wall:** You mentioned UK mining companies. It is difficult to respond to that without knowing about the individual projects. However, as has been mentioned and explained very well, there are always different stakeholders with different points of view and it is a question of getting a balance there. There was concern recently about one project because it was going to cut through the path of the reindeer migration and, of course, that is very important to the people there. Reindeer herders further south have been living with mining companies for a long time and that is very well established. What they did not like was the wind turbines that had been put up because the associated roads cut through the paths of the reindeer migration, so it is important that the companies think of all these
things. Maybe there is nobody there now but for a month in the year that is a crucial pathway for people.

**Q153 Lord Hunt of Chesterton:** As regards mining and the development of indigenous people in the Arctic, I know about the Scott Polar Research Institute in Cambridge but I was just wondering whether many other universities in the UK are focusing on this. Is there a co-ordinated interest in the UK on this question?

**Professor Mike Bradshaw:** There is not a co-ordinated interest. A Siberian studies community is run out of the University of Aberdeen and has a journal called *Sibirica*. That shows that anthropologists are the most active in Arctic research in these areas but the more traditional social science research is fairly limited. A lot of good work is done at the Scott Polar Research Institute and at Aberdeen University but I do not think that there is a network or community in this regard.

**Lord Hunt of Chesterton:** Should there be more? Is this an important aspect of the UK participating more in the Arctic? Should this aspect of our capability be improved?

**Professor Mike Bradshaw:** Again, it is quite cyclical. In the 1990s there was a lot more interest, particularly in Russia, when there was a greater hope that Russia might develop a more positive attitude towards civil society and the rights of these people and allow greater access to do research. Today, there is more concern about access to do research, for example. However, there are people like Piers Vitebsky at Cambridge who wrote a wonderful book about the reindeer people in Sakha (Yakutia), so there are pockets of expertise. However, I do not think that they are attuned to the wider issues to do with the social licence to operate.

**Q154 Lord Hannay of Chiswick:** Could we turn to climate change and its effects? Can you speculate a little on whether the future consequences of climate change and its track is likely
to help or hinder oil, gas and mineral extraction in the Arctic, both onshore and offshore? Obviously, it would help if you could include in that the possible effect on the permafrost releasing methane.

**Professor Mike Bradshaw:** As regards the issue of onshore, we have not pointed out that in Russia there is already a lot of Arctic onshore production and more is planned in the Yamal. Of course, there is an interesting history whereby Putin at one point said that climate change would be good for Russia and then his climate change scientists pointed out that it would not for all sorts of reasons, one of which is the level of discharge from the Arctic rivers. The amount of erosion taking place is exposing the pipelines buried under the rivers, so this is an issue they will have to go back and look at. I do not think that it is a black-and-white situation. This idea that suddenly the Arctic is open for all introduces a huge amount of variability, for example, in terms of ice. It does not mean that there is no ice but in key areas this envelope when you can go there and operate is dynamic year on year. I think that the issue of the melting of the permafrost adds to the cost. I am not a physical scientist but I know that the inquiry into protecting the Arctic discussed this at length. Certainly, building on permafrost adds to the cost of major engineering challenges. The onshore production facilities that are built on permafrost are very expensive. At the moment Novatek is building an LNG plant on permafrost in the Yamal peninsula. That is a first and it is having to go to all sorts of lengths to make sure that it does not damage the active layer and so forth, so there are major challenges there. I know, for example, that with the opening up of the Arctic storms result in higher wave heights and so forth. That poses challenges but I am afraid that it is not an area of expertise on which I can comment.

**Professor Frances Wall:** There are advantages and disadvantages. You often read that retreating ice has exposed new mineral deposits. I did some reading before today’s session
but I think that a lot of what I read was not quite right. The rare earth deposits that you read about on Greenland are on the coast and have been known about for many years, so although I know that some new mineral deposits have been exposed, I think that that is not producing new mines as of today. That is a positive factor, if you like, but a much smaller one than you might believe from reading press reports. On the negative side, climate change can affect mines that are already in operation. The Met Office in the UK has a consultancy unit that works with the mining industry to assess climate change factors. I asked them if they were working with any companies from the Arctic region and they said no. However, at CSM—we work with the Met Office—we have done a research project with one of the diamond mines just below the Arctic region. We assessed that they have to deal with having less time in which they can drive over the ice roads—that is, the ice road truckers that everybody has heard about—and that those roads will be open for shorter periods of time. Increased precipitation is likely to be an effect of climate change so they will have to deal with more snow and that can give them slope stability problems and so on. They will probably need to take measures to deal with that, so that is an issue for them.

**Dr Richard Powell:** I agree with what has already been said, there are potential advantages and potential disadvantages.

**Lord Soley:** I call on Baroness Symons to deal with the issue of European Union sanctions.

**Q155 Baroness Symons of Vernham Dean:** We move from climate change to politics. Perhaps I may ask Professor Bradshaw, or ask him first, what he thinks will be the likely impact of the recent EU sanctions on Russian oil and gas as they affect western and non-western companies currently operating in the Arctic region.

**Professor Mike Bradshaw:** These sanctions are fairly clearly targeted at these projects, and it is as much US sanctions as it is EU sanctions. As you will know, the drilling rig that Exxon and
Rosneft had operating in the Kara Sea was the focus of the sanctions, and then the sanctions were tightened to make it clear that that was what they were aimed at, among others. So, yes, the idea of the sanctions is to delay the progress of offshore Arctic exploration, but also onshore tight oil as well, it has to be said. It is early days in knowing what the impact will be, and it is an issue that we are hoping to do further research on. But certainly at the Sakhalin Oil and Gas Conference two weeks ago, the Russian speakers were right up front about it. On their side, I think there was a good degree of annoyance and indignation. People from the Government were saying, “We will develop import-substituting responses”, and, “The Government will finance and support companies affected by the sanctions”. With sanctions, there is always a double-edged sword for them to work, and there are always unforeseen consequences. If the intent is to delay, that is what will happen. Western companies are responding, and not just the IOCs but the service companies too. Companies such as Schlumberger have been withdrawing expat staff from Moscow. There is a good degree of uncertainty about what will happen from now on in. All those things are starting to happen. It was interesting in that section where he (Sechin) was talking about this big find at the Universitetskaya well. He listed all the western companies that had helped, almost to make a point. He talked about Schlumberger, Halliburton and many others as being important. He was making the point that it was not just Exxon; there are all these other companies. This is a complex network and we need to understand that. Norway, for example, is concerned about the impact, because many of its companies are involved. The drilling rig came from Norway. It is having an immediate effect, I would say, on planning for next year and in uncertainty. I think everyone hopes that it is a short-term blip, from the industry perspective, and that the sanctions will be lifted because something positive will happen. It remains to be seen what the relational damage will be. Exxon has had to leave, but Rosneft
understands that it is because of the sanctions. Exxon is carrying Rosneft financially through this phase.

All these joint ventures have financial carries, so the western companies are providing the finance, their networks and their experience to make the drilling happen. It cannot be possible for Russia to replicate that capacity very quickly. It does not mean that in the longer run they might not be able to do it in certain areas. I know that the shipbuilders are already trying to do more in that area. Of course it would make sense. If you say, for example, that you are going to invest $500 billion in the Arctic offshore in Russia, it makes sense to build your own domestic capacity to do so. One wonders why they have not done it before. The immediate impact is that one well has been stopped, but it has been completed.

There is a huge amount of uncertainty about what happens next year. Is this a good or a bad thing? I would be worried if the likes of Rosneft were saying, “We will carry on regardless”, because I do not think that they have learnt enough from this operation here or in Sakhalin to be able to do it themselves to the same standard. So there is a danger in isolating these companies from this international network of service providers.

**Lord Soley**: Might not one unforeseen circumstance also be growing co-operation with China?

*Professor Mike Bradshaw*: Yes, but that is a question of technical ability. There is no evidence to suggest that the Chinese necessarily have the ability to do this either. There is a shortage of ice-class drilling rigs, but onshore that is certainly a possibility.

**Lord Moynihan**: I just wanted to pick up on that point and the geopolitics of this. It was interesting that he went further than that, did he not? He talked about the West and co-operation as co-operation between friends. In Russian terminology, that was a very important and significant comment. Would you not have interpreted that as a signal that,
post-sanctions, he seeks to return to relations with the West, and would encourage them not to go away, and would encourage them to retain the relationship as long as they can, aware that the Russians treasure that relationship more than looking to the East? But while they are definitely looking to the East at the moment, and the negotiations with China have a different priority than they have had ever before in the hydrocarbons sector, the reality is that the signals that are being sent from Moscow at the moment, both by the Foreign Minister and by Rosneft, would indicate a willingness to continue the co-operation in time, despite the current sanctions.

**Professor Mike Bradshaw:** I think that is probably true. It is not that long ago that Putin invited the international oil companies back to Russia after we had these episodes with Shell and BP and so forth, recognising the need for foreign participation. They understand full well that if they are to carry this out it has to be with joint ventures, and because of all the reasons we have spoken about. The Chinese offer something else: they offer finance and a market. But they do not offer that technological capability, so it would not be a good idea to say, “Right. Well, you can’t come back”, because they fully understand the extent to which they need these companies. There has to be a way back. But I wonder about the extent to which, at the same time, they are going to be much more conscious about the need to learn and the need to develop domestic capabilities in many of these areas.

**Lord Soley:** We are drawing to a close. A final, quick question, Lord Hannay.

**Q156 Lord Hannay of Chiswick:** It is probably impossible to answer this, but I imagine that you cannot really separate out the geopolitical sanctions effect, which we are talking about, and the effect of movements in the oil price. Presumably if the oil price continues its downward path not very much further, not many western companies would want to invest in these extremely expensive resources, at least in the short term.
Professor Mike Bradshaw: I think one of the issues is the need to book new reserves. The international oil companies do not have many choices. They talk about the end of easy oil, but that is the end of their access to easy oil. There is plenty of easy oil but it is in the Middle East and is not available to them. Going to the Arctic is part of this desire to access new reserves. Even if they book reserves and do not develop them, it has had a benefit on their balance sheet. How low the price will go is again the interesting question, given the importance of unconventional oil and gas, which requires a rather higher oil price than conventional. These companies will not enter into loss-making activities willingly. All sorts of sweeteners may be put in place, but reserve access is critical. They have little choice. Wherever they go it is going to be high risk and higher cost. They have this technological edge at the moment. I think we need to watch this. Once it gets to the development stage, those difficult questions will have to be asked.

Q157 Lord Hunt of Chesterton: During the Cold War, and despite the Cold War, there was very close scientific and technical collaboration between the West and Russia, including weather forecasts every day and all that stuff. In this situation, is this not an area that we should also consider maintaining? There could be some cutback in commercial exploitation, but do you believe it would be possible to have a closer collaboration with the Russians at an R&D level?

Professor Mike Bradshaw: I cannot comment on the scientific co-operation, but within the industry there is a lot of co-operation. I tend to think that it is not in the interests of the western companies to give up their secrets because that is their competitive edge. They do not want to transfer the capacity to replicate these projects. That is true of the service industries as well. There is a limit to co-operation there. I cannot comment on the scientific side.
**Lord Soley:** Dr Powell and Professor Wall, do you have any final comments on anything that has been said so far?

**Professor Frances Wall:** On the scientific side, there is certainly a lot to be gained by co-operation between European and Russian countries. There used to be a particular European pot of money, with the acronym INTAS, which encouraged such projects. There were quite a few of those, but that is finished now, and you have to incorporate Russian partners into, say, European Union proposals. That is possible, but it is not encouraged quite so much as it was.

**Lord Hunt of Chesterton:** Encouraged by whom?

**Professor Frances Wall:** Encouraged by the funding guidelines, if you like. With INTAS you had to have at least one Russian partner to get that money, whereas now it is not necessary. But if you want to, you can try to incorporate them.

**Lord Soley:** I think that we must close there unless you have anything burning to say. Thank you. If you have any other views, please send them in. If you feel there is anything that we have not covered that we should have covered, do not hesitate to write in. I thank you very much for your co-operation and your time. You will get a transcript of the notes in due course. I am grateful to you and thank you very much indeed.