



House of Commons
Environmental Audit Committee

The Changing Arctic: Government Response to the Committee's Twelfth Report

**Fifteenth Special Report of Session
2017–19**

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Environmental Audit Committee

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The current staff of the Committee are Lloyd Owen (Clerk), Leoni Kurt (Second Clerk), Ruth Cahir (Committee Specialist), Laura Grant (Committee Specialist), Laura Scott (Committee Specialist), Jonathan Wright (Senior Committee Assistant), Baris Tufekci (Committee Assistant), Anne Peacock (Media Officer) and Simon Horswell (Media Officer).

Contacts

All correspondence should be addressed to the Clerk of the Environmental Audit Committee, House of Commons, London SW1A 0AA. The telephone number for general enquiries is 020 7219 8890; the Committee's email address is eacom@parliament.uk.

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Fifteenth Special Report

The Environmental Audit Committee published its Twelfth Report of Session 2017–19, *The Changing Arctic* (HC 842) on 29 November 2018. The Government's response was received on 29 January 2019 and is appended to this report.

Government Response

The Government is grateful to the Environmental Audit Committee for its inquiry and the timely publication of its report *The Changing Arctic*. The Committee continues to shine a welcome spotlight on the rapid changes in the Arctic region, which comes at an important time as countries around the world seek to adopt international and domestic actions to combat climate change. The Government agrees with the Committee's analysis that the Arctic region is now more accessible and therefore vulnerable to increased human activity than it was as recently as 20 years ago. The Committee's report has produced a wide-range of recommendations that reflect many of the UK's interests in the Arctic and is a constructive addition to the debate on the UK's role in the Arctic.

In April 2018, the Government published the second iteration of its Arctic Policy Framework *Beyond the Ice: UK policy towards the Arctic*. The publication highlights the disproportionate effect of climate change on the Arctic region, whereby greenhouse gases produced elsewhere on the planet are causing temperatures in the Arctic region to rise. This in turn is causing sea ice to melt, and also risks causing major changes to ice sheets with the potential for related sea level change, all of which have global consequences. This global interdependence means that what happens in the Arctic affects Arctic and non-Arctic states alike. While the Government is clear that the UK is not an Arctic State, as its nearest neighbour with a long historical association, connected climate and eco-systems and strong scientific, political and economic interests, we care deeply about what happens in the region.

The Government remains committed to a stable, peaceful and well-governed Arctic, working to achieve this through bilateral and multilateral engagement with the Arctic States and others. *Beyond the Ice* sets out how this ambition will be achieved. Key commitments include: helping to understand a changing Arctic through world-class science; helping to protect the Arctic's fragile environment; and, promoting prosperity in the region. Under this policy, the UK will show leadership in matters of global importance, such as climate change and tackling pollution in our oceans. We will also encourage UK companies to explore commercial opportunities in the Arctic, while ensuring that those people who depend on the Arctic for their livelihoods can continue to do so for generations to come.

Beyond the Ice, and the Government's evidence to the Committee, recognises the sovereign rights of the eight Arctic States.¹ Arctic stewardship rests with the Arctic States and the indigenous people of the region. While seven of the Arctic States are ranked in the top 15 of the 2018 Human Development² report by the United Nations Development Programme, the Committee is right to highlight the disproportionate effects of climate change and environmental degradation on the indigenous peoples of the Arctic region. We welcome

1 Canada, The Kingdom of Denmark (Greenland and the Faroe Islands), Finland, Iceland, Norway, the Russian Federation, Sweden and the United States

2 http://hdr.undp.org/sites/default/files/2018_human_development_statistical_update.pdf

the positive steps that many of the Arctic States, their businesses and civil society are already taking to address environmental changes and emerging risks emanating in and from the Arctic, and continue to support their efforts to ensure a sustainable future for the region.

All countries are responsible for delivering the Sustainable Development Goals. While it would not be appropriate for the UK Government to set targets and measures to meet the domestic commitments of the Arctic States, we must work towards mitigating the UK's impact on the region. The most effective way to do this is to embed the SDGs into a department's Single Departmental Plan. One example of this is through the UK's world-leading domestic performance in reducing greenhouse gases (SDG13). The Government's commitment to meet emission reduction targets has seen the UK reduce its emissions by over 40 per cent while growing the economy by more than two thirds between 1990 and 2016.

This report sets out the Government's response to the Committee's conclusions and recommendations. The Committee's text is in bold and the Government's response is in plain text

Changes in the Arctic

1. The Arctic is undergoing profound environmental change as physical processes react to warming surface and ocean temperatures. Sea ice extent and thickness have been reducing for decades, and melting has accelerated since the early 2000s. Sea ice is now at its lowest level since records began and the Arctic ocean is projected to be ice free in the summer as soon as the 2050s unless emissions are reduced. The loss of 270 billion tonnes of land ice from Greenland each year is contributing to sea level rise and disrupting ocean circulation patterns. The acidification and Atlantification of the Arctic Ocean are causes for significant concern as they threaten marine wildlife. Permafrost thaw has the potential to release potent greenhouse gases into the atmosphere and the "Greening" and "Browning" of Arctic vegetation has already led to wildfires and the destruction of habitats. The complex interactions between permafrost thaw, vegetation and the Arctic carbon cycle are not yet fully understood, nor is the rate at which sea ice will decline. (Paragraph 17)

2. The environmental change in the Arctic is a global concern and a global responsibility. The major physical and ecological changes in the Arctic driven by rising temperatures highlight the need for the UK to strengthen its emissions targets to be in line with the UK's obligations under the Paris Climate Agreement and the Climate Change Act—this should include setting a net-zero target by 2050 at the very latest. While scientific research has made great strides in understanding environmental changes in the Arctic, 'known unknowns' remain. We recommend that the Government increases funding and support to UK scientists to advance global understanding of these scenarios and ensure that these groups continue to have access to vital funding provided by the EU through programmes like Horizon 2020. (Paragraph 18)

The Government is committed to tackling climate change and continues to make strong progress towards the targets under the Paris Agreement. This is evidenced by our world-leading domestic performance, which includes reducing our emissions by over 40 per cent while growing the economy by more than two thirds between 1990 and 2016. According

to PwC, the UK has also decarbonised its economy at the fastest rate of any G20 country since 2000. Our carbon budgets are already set in legislation and are among the most stringent in the world, requiring a 57% cut in emissions by 2028–2032 from a 1990 baseline.

The Government's focus is on delivering these challenging targets as part of our *Clean Growth Strategy*. *The Clean Growth Strategy* made clear that the Government believes the UK will need to legislate for a net zero emissions target at an appropriate point in the future, to provide legal certainty on where the UK is heading. The Strategy outlines what the Government is doing to support greenhouse gas removal technologies that are likely to be important in meeting the 1.5 degree and net zero goals under the Paris Agreement.

We do however agree that we need to understand more about the global path to 1.5 degrees and net zero emissions. That is why, now that the Intergovernmental Panel on Climate Change report on 1.5 degrees has been published, we have asked for the advice of the UK's independent advisors, the Committee on Climate Change, on the implications of the Paris Agreement for the UK's long-term emissions reduction targets. We expect to receive this advice on our long-term targets, including the setting of a net zero target, in Spring 2019. We will consider their evidence-based advice carefully when it is received and believe that is the right way to approach such an important question.

Investment in our science, research and innovation base is critical to ensuring that the UK remains at the forefront of new products and markets. Supporting the Industrial Strategy ambition to raise total research and development (R&D) investment to 2.4% of GDP by 2027, the Government is increasing spending on R&D by £7bn by 2021–22. This will be the largest increase in 40 years.

On 14 November 2018, the UK and the EU agreed in principle the terms of the UK's smooth and orderly exit from the EU, as set out in the Withdrawal Agreement. This will now need to be ratified. Once ratified, the provisions in the Withdrawal Agreement will ensure continued UK participation in EU programmes committed under the 2014–2020 Multiannual Financial Framework (MFF), until the closure of the programme or activity. Horizon 2020 is an EU Programme committed under the 2014–2020 MFF.

In order to ensure the UK can continue to access Horizon 2020 funding in a no deal scenario, the Government announced the underwrite guarantee in 2016. The underwrite guarantee is a commitment by the UK Government to fund all successful UK bids to Horizon 2020 submitted before Exit. The extension to the guarantee, announced in July 2018, covers all successful UK bids to Horizon 2020 calls open to Third Country participation submitted between Exit day and the end of 2020. Both the guarantee and the extension would apply for the lifetime of projects.

In a no deal scenario, the UK would become a third country participant in Horizon 2020 after the UK leaves the EU. As a third country, UK researchers and businesses would, from the date of exit, be able to apply to and participate in all Horizon 2020 calls open to third country participants from the date of exit. Third country participation is a well-established part of Horizon 2020 – entities from third countries currently participate in and lead consortia in a wide range of collaborative programmes.

3. One trillion plastic particles frozen into Arctic sea ice could be released into the ocean in the coming years through accelerated melting from rising temperatures. Between 62,000 and 105,000 tonnes of plastic enter the Arctic every year and plastic

beach litter in the Arctic is comparable to densely populated areas, despite its remote and relatively uninhabited nature. The UK has contributed to plastic pollution in the Arctic and must therefore act swiftly to tackle pollution. (Paragraph 24)

4. We welcome the Government's commitment to tackle the sources of plastic pollution including the ban on the manufacture and sale of microplastics which our predecessor Committee called for in 2016, and which came into force in 2018. This ambition must be met with effective plastic reduction policies to ensure extended producer responsibility to include responsibility for collection, transportation, recycling, disposal, treatment and recovery of its packaging, improved design for recyclability and to create the necessary infrastructure to meet domestic demand. We recommend that the Government contribute to clean-up operations on Arctic beaches to take responsibility for the plastic pollution from the UK that has been transported to the Arctic by ocean currents.

The Government recognises the need to take effective and decisive action to tackle the issue of marine litter and has committed to improving the situation through domestic and international interventions. To address the issue of marine litter in the long-term, we need to reduce on-land littering leaking into the marine environment. It is suggested that around 80% of litter in the marine environment is originally disposed of on land. Clean-up activities on beaches are important for tackling marine litter at a local level and for engaging the public on marine litter issues, but the influx of plastic to the marine environment needs to be stopped.

To achieve this we are taking a number of actions, including working to eliminate all avoidable plastic waste by 2042 and banning certain single-use plastic items. We have the Litter Strategy for England that sets out our approach to clean up the country.

Alongside our status as an observer to the Arctic Council, we are engaged in regional seas conventions. Through OSPAR (Convention for the Protection of the Marine Environment of the North-East Atlantic) we have a Regional Action Plan for Marine Litter for the period 2014–2021. This sets out how we will act to protect our shared marine environment and includes a number of actions. For example Action 58 aims to develop marine litter assessment sheets to assist in developing material for sustainable education programmes, including those for professional seafarers and fishermen. For the Arctic this means a likely reduction of waste reaching its shores; it is assessed that 20% of marine litter comes from the maritime sector

We are also co-chairs of the Commonwealth Clean Oceans Alliance (CCOA). The CCOA is a UK and Vanuatu-led group of countries that have pledged ambitious actions to reduce plastic pollution in support of SDG14 (Life Below Water). Through the CCOA we have pledged a fund of up to £66.4 million to boost global research and help countries across the Commonwealth stop plastic from entering into the oceans in the first place.

Finally, we work through other international fora to drive forward action to protect the world's oceans, including the UN, G7, G20, and the Commonwealth.

We heard that research into ocean plastics is in its infancy. The Government should commit funding to research the potential consequences of an influx of plastic particles trapped in melting Arctic sea ice and ensure that academics and scientists have continued access to research funding and opportunities by UK participation in EU schemes.

As highlighted in *Beyond the Ice*, The Changing Arctic report and multiple scientific research papers, studies have concluded that melting sea ice in the Arctic region is releasing trapped plastics into the Arctic Ocean.

Plastic pollution in the marine environment is a serious environmental issue which we are committed to tackling. Over £100 million has been pledged by the UK Government to reduce the impact of plastic on the environment. It is a key research topic for academia, HMG and our agencies, and a range of research projects looking at the issue in terms of environmental harm, sources, entry to the food chain and water treatment have been completed, are underway or are planned.

The results of the Defra-funded study of the potential for microplastics to cause harm in the marine environment led to our world leading microbead ban, and have been used to inform similar legislation in other countries. We now have further research into microplastics from tyres, textiles and fishing gear underway which will be used to inform future policy and shared publically to inform the international community.

On behalf of UK Government, and in collaboration with other European states, the Centre for Environment, Fisheries and Aquaculture Science (Cefas) is involved in a range of projects covering research, policy development, capacity building, method development and monitoring that enables us to understand the broad range of impacts and outcomes from marine litter and microplastics. Following the release of plastic particles from melting Arctic sea ice it will be essential to assess particle abundance, distribution and fate in our regional seas. These projects will supply us with the capacity needed to carry this out.

Alongside research in to the marine environment, HMG are also prioritising investigating microplastics in freshwater environments and their transport to the marine environment. To achieve this, we have recently commissioned evidence reviews covering sampling and analysis, sources and impacts on biota.

The Government is working with the Environment Agency and the UK's water industry to establish methods to detect, characterise and quantify microplastics and fibres entering wastewater treatment works to evaluate the efficiency of treatment processes for their removal from domestic wastewaters and to assess their fate and biological effects in receiving rivers. The Drinking Water Inspectorate has also commissioned research on removal of microplastics by drinking water treatment processes.

These projects enable UK to be influential in international programmes and, as mentioned in *Beyond the Ice*, this evidence will be available to the Arctic Council and its working groups to help inform future policies on marine litter in the Arctic Ocean.

The Government agrees that it is important to ensure academics and scientists have continued access to research funding and opportunities by UK participation in EU schemes. This is why, in order to ensure the UK can continue to access Horizon 2020 funding in a no deal scenario, the Government announced the underwrite guarantee in 2016. The full current position is regarding future funding is explained on page 3.

Following our predecessor Committee's report on microplastics we welcome the Chief Medical Officer's recent announcement of its consultation on the health implications of these plastic particles entering our food chains. In addition, in its response to this report,

the Government should set out a clear timeline for a comprehensive and wide-ranging plan to reduce UK plastic pollution—not least because of its impact in the Arctic. That should include, for example, bringing forward the existing 2042 plastic waste phase-out date, a ban on plastics that are difficult or impossible to recycle, a commitment to reforming the Packaging Recovery Note scheme and expediting a nationwide Deposit Return Scheme. (Paragraph 25)

The *25 Year Environment Plan* sets out the Government's pledge to eliminate avoidable plastic waste over the lifetime of the plan. This commitment extends to all kinds of plastic waste beyond packaging. We want to avoid making the problem worse through unintended consequences. We need to ensure that the necessary research and assessments are completed before adopting alternative materials.

To that end, the Government will continue to go further where it can and set new targets and aims to accelerate our ambitions from the *25 Year Environment Plan*. In the *Resources and Waste Strategy*, for example, the Government announced the ambition to work towards all plastic packaging that is placed on the market being recyclable, reusable or compostable by 2025. Government policy alone will not solve this problem. Initiatives like the UK Plastics Pact will always be welcomed by the Government and it will support action by industry wherever it can to lessen the impact that we leave on the world.

The *Resources and Waste Strategy* has set out our plans to tackle all waste, not just plastic waste. We will take action at each stage of the product lifecycle – production, consumption and end of life. At the production stage, this includes encouraging producers to take more responsibility for the environmental impact of their products and making sure plastic items are more carefully designed. At the consumer stage we want to reduce demand for single-use plastic. At the end of life stage, we will make it easier for people to recycle and increase the amount of plastic being recycled.

To truly realise the potential of plastics while minimising their impact on our natural environment, we need to successfully move from a linear, take-make-use-throw, economic model to a circular economy where we keep materials and product in use longer. In addition to improving how and what we recycle, in the 2018 budget, the Chancellor announced the plan to introduce a tax on plastic packaging containing less than 30% recycled plastic. The Government is also prepared to ban products, where there is a clear case for it, and alternatives exist. Government will also lead by example and will remove all consumer single-use plastic items from its central office buildings by 2020, with individual departments going faster and further where possible.

The problem of plastic pollution does not recognise national borders. The UK is determined to be at the forefront of the global response to this issue. To affect change internationally we are co-chairing the Commonwealth Clean Oceans Alliance. CCOA countries will take action on plastic pollution, be this by a ban on microbeads in personal care and rinse off products; a commitment to cutting down on single use plastic bags; or other steps to eliminate avoidable single-use plastic waste.

In November 2018, we formally announced the CCOA Technical Assistance Facility, a fund of up to £10m of UK Aid that has been made available as part of our funding package of up to £66.4 million to support the Commonwealth Clean Oceans Alliance. The CCOA Technical Assistance Facility will be made available to ODA-eligible CCOA

member countries and tailored to each country to help them implement their ambitious political commitments made under the Alliance. We will also be carrying out important knowledge exchange activities to help share experiences between CCOA members on best practice of tackling plastic waste.

The Government has also invested £2.4 million in the Global Plastics Action Partnership, an international project run by the World Economic Forum. This will bring together businesses, international donors, national and local government, community groups and world-class experts to collaborate on circular economy solutions to beat plastic pollution and help advance the ambitions set out by the CCOA. This will be done in part by building an evidence base on impactful policy measures to support circular economy solutions and developing country action plans.

We have also signed the Ellen MacArthur Foundation's New Plastics Economy Global Commitment which brings governments, cities and businesses together to address the root causes of plastic pollution. Only by unifying countries and businesses all over the world will we be able to safeguard our land, rivers and seas for future generations.

In the *Resources and Waste Strategy*, we committed to reforming the current packaging waste regulations, and implementing a new extended producer responsibility (EPR) scheme for packaging by 2023. EPR is a policy measure which requires producers to take responsibility for the full life-cycle of their products, including the full net costs at end-of-life. The current system for packaging does not sufficiently incentivise design for greater reuse or recyclability, and less than a tenth of the costs of managing household packaging waste are covered by producers. Our reforms will ensure that producers cover the full net costs, and include mechanisms to incentivise better design and use of materials, such as making producers pay more if their packaging products aren't easily recyclable. This will discourage the use of problematic or hard to recycle plastics or composite materials. We will ensure that the system is tightly monitored and enforced, while making it easy for consumers to do the right thing when disposing of their packaging. Subject to consultation, money raised from producers will be used to cover the costs of collection, recycling, disposal, litter reduction and fly-tipping, communications, data collection and reporting, as well as other measures.

Our Strategy also reaffirmed our commitment to consult on a Deposit Return Scheme (DRS) for drinks containers in England, subject to consultation, aimed at boosting recycling rates and reducing littering. We know more action needs to be taken to tackle plastic bottles and other packaging litter, however, we must make sure we introduce the most effective measures possible for England. We want to make sure any scheme is right for England, draws on the evidence of what works elsewhere in the world and achieves our goals – to reduce litter from drinks containers and improve recycling of them – in the most effective way possible. Although waste and recycling policy is devolved, the Government continues to work with the Devolved Administrations in delivering our shared ambitions to improve waste and recycling outcomes and promote resource efficiency in the UK.

5. Arctic amplification is forcing Arctic communities to adapt quickly to higher temperatures, threatening their transport networks and food security. As part of the United Nations' Sustainable Development Goals (SDGs), the UK has commitments to create sustainable communities at home and abroad. As part of these obligations the UK should build a net zero emission economy by 2050, which will help reverse the

albedo effect. We believe that Defra's adaptation portfolio could benefit from sharing adaptation expertise, including the successes and failures of adaptation measures, with Arctic states. (Paragraph 35)

6. *The UK has an opportunity to drive forward the Arctic Council's focus on the SDGs. We recommend the Government set a series of adaptation targets for the next iteration of UK Arctic policy within the next twelve months, when the Government should publish an annex to the Arctic Policy Framework.*

The UK is supporting societies around the world to build resilience to the effects of climate change, particularly through our programmes of assistance to developing countries. The UK is engaged in collaboration with Arctic Council Working Groups, and in wider international collaboration on climate science. However, there is always more that could be done to mitigate our impact on the Arctic it would not be appropriate for the Government to seek to set adaptation targets for territories in the Arctic.

The UK is leading international efforts on climate resilience for the UN Secretary General's Climate Summit in 2019. We are also helping gather evidence on the actions needed to adapt to climate change ahead of the 2019 summit by co-convening the new Global Commission on Adaptation, co-Chaired by Ban Ki-moon, the former UN Secretary General; Bill Gates; and Kristalina Georgieva, CEO of the World Bank. Emma Howard Boyd, Chair of the Environment Agency, is one of the commissioners. We encourage the engagement of Arctic Council partners on this important area of work, and will consider opportunities for further collaboration as the findings of the Global Commission of Adaptation are further developed.

In November 2018, we published, with the Met Office, a new set of UK Climate Projections 2018 (UKCP18), which we will use to inform adaptation and mitigation planning and decision-making. As well as projections for the UK, UKCP18 also includes global projections which will help individuals and communities to take action to improve resilience. We have shared this report with the relevant Arctic Council Working Groups the Arctic Monitoring and Assessment Programme (AMAP) and the Sustainable Development Working Group (SDWG).

In addition to the above, there is a wide range of other opportunities for the UK to explore partnerships to improve understanding of climate impacts and resilience.

For example, the United Kingdom Marine Climate Change Impacts Partnership (MCCIP) brings together scientists, government, its agencies and NGOs to provide co-ordinated advice on climate change impacts and adaptation around the UK coast and seas.

Climate change impacts such as sea-level rise, increasing temperatures and changes in extreme events, are already affecting the environment, business operations and wider society. To help organisations understand and respond to these challenges, MCCIP launched its Climate Smart Working initiative in 2012. Some examples include a detailed assessment of "climate change adaptation in UK seafood: Understanding and responding to climate change in the UK wild capture seafood industry" and the recent cards published on the UK's marine protected areas and features with advice on building resilience to climate change.

This MCCIP model has been successfully applied internationally in the Commonwealth Marine Economies Programme and could benefit Arctic States in collaborative working. We will suggest MCCIP engage with UK experts in Arctic science, particularly those involved in the Natural Environment Research Council (NERC) £15 million five-year Arctic Research Programme plus members of the relevant Arctic Council Working Groups, AMAP and the SDWG, and the International Arctic Science Committee who are also observers to the Arctic Council.

These targets should outline how the UK will help Arctic communities to adapt to changes in the Arctic environment now and in the future. The Government should fund more research into the social consequences of climate change. We believe there is an opportunity for DEFRA to share expertise on adaptation policy which could prove mutually beneficial, helping Arctic communities to adapt whilst preparing for future UK adaptation measures. (Paragraph 36)

The Government recognises the growing need for research into the social consequences of climate change, and the importance of doing this work in close partnership with indigenous and local communities. At present, although the UK does not have a separate strategic social research programme on the impact of climate change in the Arctic, important connections between research that has a natural environment focus and the wider social and economic connections already exist across many programmes and projects.

For example, the Arts and Humanities Research Council (AHRC) £1m '*Building resilience amongst the Yup'ik of Western Alaska in the face of changing climate and environments*' project, led by the University of Aberdeen. Here, researchers have collaborated closely with indigenous communities in Western Alaska to explore questions of cultural resilience and how communities might cope when their dependency and social connection to their lands is threatened. The project discovered some significant finds in Alaska and, as a direct consequence, the US Administration for Native Americans (ANA) dedicated a US\$1m grant program for tribes in Alaska to address threats to archaeological sites that occur because of climate change.

The Economic and Social Research Council (ESRC) has also undertaken research, specifically through the Centre for Climate Change Economics and Policy, which has explored ice levels at the poles and how these affect people and the environment, with particular consideration on sea level implications.

Another example is the UK-Canada Arctic Bursaries Programme, which is funded directly by BEIS and administered by the NERC's Arctic Office. This Programme, which is now entering its third year, supports UK-based scientists to work with their Canadian counterparts on areas that look at social and environmental impacts of climate change in the Arctic region. Direct involvement of indigenous and local communities is a key focus in many of these projects.

While examples illustrate that we still play an active and impactful role in Arctic social research, despite not being an Arctic State, there is more that can be done to streamline and simplify this process. The formation of UK Research and Innovation (UKRI), whose unswerving focus on delivering research excellence, economic impact as well as societal and cultural impact through investment in disciplinary and cross/multi-disciplinary research is a positive step forward.

7. We welcome the ongoing research undertaken by the Met Office to understand the relationship between reductions in sea ice and the UK's future climate and recommend this work by the Polar Amplification Model Intercomparison Project is fed into future National Adaptation Programmes at the earliest opportunity. (Paragraph 40)

The Climate Change Act 2008 establishes a cycle of requirements laid down to drive a dynamic approach to building domestic resilience to climate change. These include preparing, on a five yearly cycle, a UK Climate Change Risk Assessment (CCRA), followed by a National Adaptation Programme (NAP) for England, setting out how Government will address the risks identified in the CCRA. The current NAP was published in 2018 and the third CCRA will be laid before Parliament in January 2022. It will be based on an evidence report that we have commissioned from the Adaptation Sub-Committee of the Committee on Climate Change, which they will publish in the summer of 2021. The third NAP, addressing the risks in the third CCRA, will be published in 2023.

That said, we recognise the Committee's recommendation to take account of results from the Polar Amplification Model Intercomparison Project (PAMIP) in future assessments. We expect PAMIP results to become available to contribute to the CCRA evidence cycle from 2020.

8. Arctic biodiversity is crucial for many ecosystems around the world. The UK's biodiversity has significant links with the Arctic including many migratory birds, such as waterbirds. The waterbird population is expected to decline by about 50% by the end of the century due to Arctic warming. For the UK to meet its commitment to "take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species" under Sustainable Development Goal 15, the protection of biodiversity in the Arctic area is absolutely key. We recommend that the Government set clear, measurable targets to protect Arctic biodiversity in line with SDG 15 (Life on Land). We would like to see monitoring and research to survey, map, and understand Arctic biodiversity extended, enabling the UK to contribute further research to Arctic Council working group on the conservation of Arctic flora and fauna (CAFF). (Paragraph 45)

The 14th meeting of the Conference of Parties (COP14) to the Convention on Biological Diversity established a process to develop a new post-2020 global biodiversity framework to include refreshed global goals and targets for biodiversity, and enhanced implementation including through voluntary commitments. These global goals and targets will be inclusive of the Arctic, and thereby should provide a framework for more specific targets to be set within the Arctic region, by the Arctic States. Through our observer status at the Arctic Council we will encourage and promote the work of the Arctic States in this area.

There is an important role for the UK in conserving those elements of Arctic biodiversity which we share because they migrate to, or through, the United Kingdom. We will continue to protect and, as appropriate, manage sustainably those Arctic migratory species that visit the UK within existing international legal frameworks, notably the Bern Convention on the Conservation of European Wildlife and Natural Habitats; Convention on Migratory Species; and the African-Eurasian Waterbirds Agreement.

We will also continue to monitor, through schemes such as the Wetland Bird Survey, those migratory species, especially birds, that we share with the Arctic. We will continue

to share or make available such information, gathered outside the Arctic, with relevant working groups of the Arctic Council, especially the Conservation of Arctic Flora & Fauna, and seek ways to use our existing datasets more effectively and innovatively to contribute to developing indicators about the state of Arctic biodiversity.

The part of the Arctic area covered by the OSPAR Convention will fall within the proposed North East Atlantic Environment Strategy (NEAES) currently under negotiation for agreement among OSPAR States in 2020.

Action taken within the Arctic region under these two Conventions will support progress towards Sustainable Development Goals 14 and 15.

UK Arctic research and funding

9. UK Arctic research is world leading and the UK ranks fourth in the world for the number of scientific papers produced. We were pleased to hear that this research is “at the heart” of UK Arctic policymaking and also fed into work conducted by the Intergovernmental Panel on Climate Change and Arctic Council working groups. We heard how important infrastructure is for research in extreme polar environments but were disappointed to hear that the UK’s infrastructure in the Arctic is modest compared to that in Antarctica. *While we understand the historical and geopolitical reasons behind this, we believe that due to the importance of the Arctic for the UK’s climate stability, the Department for Business, Energy and Industrial Strategy should significantly increase funding for Arctic research infrastructure. We recommend that the Government outline its plan for the developing the infrastructure in the Arctic.* (Paragraph 53)

We recognise the crucial need to strengthen our understanding of the changes taking place in the Arctic and the vital role of research infrastructures in this endeavour. This is why the UK continues to be a significant investor and collaborator in polar and marine research infrastructure, including those used in the Arctic region.

For example, the BEIS funded £200 million RRS *Sir David Attenborough*, represents the Government’s largest investment in polar science since the 1980s. This new vessel, which is owned by the NERC and will be operated by the British Antarctic Survey (BAS), is currently under construction and will be one of the most capable polar research vessels in the world once it enters service. The RRS *Sir David Attenborough* will replace the ice strengthened RRS *James Clark Ross*, which has been used as a research platform in several multimillion-pound research programmes including the ‘Arctic Research Programme’ and ‘Changing Arctic Ocean: Implications for marine biology & biogeochemistry’.

The Government has also invested ~£30m in Marine Autonomous Systems (MAS) in the current decade, most recently in the Oceanids programme, which is being coordinated by the National Oceanography Centre (NOC) as part of the Industrial Strategy Challenge Fund. This investment has seen the NERC National Marine Facilities’ Marine Autonomous and Robotic Systems (NMF-MARS) fleet grow to become the most capable in Europe and one of the best in the World. Several NMF-MARS vehicles have deep ocean (down to 6km) and under-ice capability, which allows them to access parts of the ocean inaccessible to many countries.

The Government, through the NERC, also fund the permanent research station in Ny-Ålesund (Norway) and confirmed another 10 years of funding in early 2018. Any investment in fixed infrastructure that benefits global understanding of the Arctic is appropriately undertaken with the full agreement of those Arctic States within whose territory the work is undertaken. The UK would not seek to establish research infrastructure in an Arctic State without first consulting and collaborating with that Government. This is in complete contrast to the Antarctic where the Antarctic Treaty allows for establishment of research facilities and where in addition the UK has sovereign interests.

As the global research community increasingly seeks to understand changes occurring in the Arctic, it is ever more important that researchers collaborate and share research capability. We also intend to continue and expand cooperation with Arctic observations systems that support and involve community-based observatories. Including, where appropriate with the Sustaining Arctic Observing Network (SAON) initiative and other major observing networks, such as the Svalbard Integrated Arctic Earth Observing System (SIOS) and the Distributed Biological Observatory.

Although the UK has extensive research infrastructure capabilities, we recognise the need and benefits of establishing and running some of these in collaboration with our international partners. In addition to strengthening our international relationships, collaborating in this way also helps leverage UK funding. One example is *The Multidisciplinary drifting Observatory for the Study of Arctic Climate* (MOSAIC). This €120m initiative will see the German research ship, the *MV Polarstern*, drift as a research platform in the sea ice across the central Arctic Ocean from October 2019 to October 2020. It has been designed by an international consortium of leading polar research institutions, under the umbrella of the International Arctic Science Committee (IASC), led by Germany, Russia and the US. BEIS and NERC have together provided £2.3m in funding for the UK scientific community to engage in this expedition.

We fully recognise that, for the UK to remain a global leader in research, we need sustained long-term investment in research infrastructure. This is why, as part of our Industrial Strategy, the Government committed to uplifting research and development spending to 2.4 per cent of GDP by 2027, which includes spend for research infrastructure. This is 3 per cent in the longer term and will place us in the top quartile of OECD countries. It also represents the largest increase in spend on R&D in 40 years. As a first step to reaching this target, we are investing an additional £2.3bn in R&D in 2021/22. This means that we will have raised public investment in R&D from around £9.5bn in 2016/17 to around £12.5bn in 2021/22 – a total increase of £7bn over five years. This is the biggest increase in public funding of R&D on record. Although we are not yet in a position to outline specific plans in regard to this uplift, work is underway with industry and the research community, including UKRI, to develop a roadmap for delivering this commitment.

10. The UK produces world leading research into the environmental changes taking place in the Arctic, funded by the Natural Environment Research Council. NERC's two targeted Arctic programmes have provided coordination and communication which has increased the impact and effectiveness of the research undertaken, but the scope of these programmes is limited. We would like to see the framework for the NERC programmes expanded to provide the same level of coordinated research for other important, emerging issues such as land ice melt, permafrost thaw, carbon balance,

vegetation change and interactions between land, sea and air. This would also help to improve collaborations and reduce the “scattered” nature of UK Arctic research spread across UK universities and institutions. (Paragraph 57)

The NERC has invested in two major disciplinary and cross/multi-disciplinary research programmes that aim to do just this and to help us improve our understanding of emerging issues in the Arctic. They include:

- *The Arctic research programme* (2010–2016), which had a budget of £15m and undertook research on the ocean, land and atmosphere. The programme aimed to improve capability to predict changes in the Arctic over the next 50–100 years, including regional impacts and the potential for feedbacks on the global Earth system.
- *The Changing Arctic Ocean programme* (2017–2022), which has a budget of £16m and aims to understand how change in the physical environment (ice and ocean) will affect the large-scale ecosystem structure and biogeochemical functioning of the Arctic Ocean, the potential major impacts and provide projections for future ecosystem services.

The NERC’s Arctic Office, which was established in 2009 and is hosted by BAS works to promote and strengthen the UK’s involvement in Arctic research at the national and global level. The Arctic Office coordinates Arctic research across the UK and has initiated regular meetings at UKRI to draw in broader engagement in Arctic science between NERC, Economic and Social Research Council (ESRC) and the Arts and Humanities Research Council (AHRC). The Arctic Office also acts as the secretariat to the UK Arctic and Antarctic Partnership (UKAAP), which is a research community led initiative that was established in 2014 to bring together researchers across a full range of disciplines who are interested in the both the Arctic and Antarctic regions.

11. To remain as a world leader in Arctic research, the UK will need to move towards a multidisciplinary approach, which includes the social sciences and brings research together from across research councils. According to the Minister for the Polar Regions, “scientific evidence runs throughout Beyond the Ice and is at the heart of UK Arctic policy”, but we heard that despite the UK having world leading social scientists, this expertise is not being harnessed to inform UK Arctic policy. The Economic and Social Research Council and the Arts and Humanities Research Council do not fund Arctic research to the same degree as the Natural Environment Research Council due to limitations in their budgets. (Paragraph 67)

12. We recommend the Government allocate specific funds for an Arctic project within UK Research and Innovation (UKRI) which would enable collaboration between the Economic and Social, Arts and Humanities and Natural Environment Research Councils. Multidisciplinary research is key to finding solutions to the complex problems of the Arctic and the NERC Arctic Office is facilitating this to the best of its ability given the limited resources available. We recommend the Department for Business, Energy and Industrial Strategy provides for the expansion of the NERC Arctic Office to coordinate the new UKRI Arctic Project and to identify disparate Arctic social science research already taking place in UK academic institutions. Expanding the NERC Arctic Office would enable it to increase its work on building international connections, new

collaborations and encouraging multidisciplinary approaches. This would enable the Government to take a leadership role on developing climate resilience for remote communities, which would bring domestic benefits, and allow adaptation measures to assume a higher priority in UK Arctic Policy. (Paragraph 68)

The Government recognises the importance of strong coordination between environmental, engineering, economic, social and cultural research and spend. This is one of the key reasons why the research and innovation funding bodies, including NERC, were brought together to create one new organisation – UKRI. By strengthening synergies between the various councils, UKRI will enable more cross/multi-disciplinary research.

The UK Government has provided UKRI with a budget of more than £6 billion, who have autonomy – due to the Haldane Principle – over specific funding decisions. We have asked UKRI to provide recommendations on research priorities for the upcoming spending review, and this will include Arctic research. We will work closely with UKRI and HMT to secure the best possible outcome for UK research and innovation from the spending review.

The Arctic Office is funded by NERC and the funding needs for it will form part of the advice UKRI puts to government on the spending review. Although its main focus is on supporting UK-based natural environment researchers, we recognise that solutions to the complex research problems of the Arctic will come through linking different disciplines. Therefore, the Arctic Office is already increasing its connections with the social sciences, engineering, arts and humanities, and beyond and this work is being further supported by the formation of UKRI, established to improve multidisciplinary approaches to research.

To further support this work, NERC's Arctic Office is an ex-officio member of the UK Arctic and Antarctic Partnership, which is a body of around 30 senior polar researchers that aims to maximise connections and impact across both poles. This group is already addressing the issue of ensuring better connections between disciplines and how to make even more productive links across the UK and internationally.

13. A recurring concern raised in the evidence was uncertainty over Arctic funding following the UK's decision to leave the European Union. We are pleased to hear that the UK will remain a member of the European Polar Board. It is not, however, known whether the UK will continue to contribute to large programmes such as the European Research Council (ERC), Horizon2020, Copernicus and Galileo. There is also uncertainty about scientific personnel and maintaining the ability to attract the best researchers to academic positions. These uncertainties are having a chilling effect on UK Arctic research. Maintaining the UK's strong track record in Arctic research is vital, but UK institutions need secure funding sources and free movement for the brightest researchers to continue their world-leading research. (Paragraph 78)

14. *The Foreign and Commonwealth Office should emphasise the importance of securing funding for Arctic research to the Treasury and to the Department for Business, Energy and Industrial Strategy, given that UK Arctic research underpins all UK Arctic Policy. The Department for Business, Energy and Industrial Strategy should commit funds for any shortfalls in funding after we leave the European Union. Membership of the EU has been vital to UK leadership in arctic science. In negotiating the UK's*

future relationship with the EU, the Government should seek to maintain the current level of collaboration and co-operation with the EU and ensure the same access to EU programmes. (Paragraph 79)

World-leading science and innovation is an integral component of our relationship with the Arctic region, both in helping understand the region and as a means of science diplomacy. Understanding the Arctic, particularly how it is changing, also contributes significantly to sound evidence-led policymaking. Therefore the Foreign and Commonwealth Office (FCO) will continue to make the case for appropriate funding that supports the overall effort in Arctic research, although as per the Haldane principle will not seek to determine the exact nature of that research.

In recent years the NERC funded *Arctic Research programme* and its successor the *Changing Arctic Oceans programme* have helped to advance global understanding of how changes in the Arctic have global consequences and to find new solutions to the challenges. The FCO has encouraged these programmes, alongside the NERC and BEIS joint funding of the UK research community participation in the upcoming international collaboration on the *Multidisciplinary drifting Observatory for Study of the Arctic Climate (MOSAiC)*.

The Government has repeatedly stated its commitment to pursuing a far-reaching relationship with the EU on science and innovation. We have taken crucial first steps towards achieving this relationship by agreeing in principle the Withdrawal Agreement and Political Declaration. As previously mentioned, once ratified, the Withdrawal Agreement will provide for the UK's continued participation in EU programmes committed under the 2014–2020 MFF to the end of December 2020 and for the lifetime of projects.

We have also been clear that we would like the option to associate to the next EU Research and Innovation Framework Programme, Horizon Europe. The Political Declaration is a positive step towards this, setting out a shared intention between the UK and EU for inclusion of terms for UK participation in Union programmes, such as science and innovation, as part of a future UK-EU agreement.

We continue to explore the option of association to future EU Framework Programmes. The UK has stated its objectives for Horizon Europe, which are a focus on excellence, openness to the world and added value. We are willing to make a fair and appropriate contribution, provided that these aims are met. Whilst the UK remains a Member State, we continue to play an active role in the development of EU research programmes, engaging with our counterparts in the European, Commission, Council and Parliament to ensure these remain attractive to international partners.

Nevertheless, in any scenario, we will continue to back the UK research and innovation community to continue its world-class collaborative research.

The UK's relationship with the Arctic

15. The Arctic Council is the most important international forum for Arctic matters and the UK is a long-standing Observer. The UK has carefully balanced its role in assisting and influencing the Council with the fact that the UK is not an Arctic State.

The Arctic Council has established clear parameters for the level of involvement Observers can have, but within those the UK should provide more clarity on what it intends to do as an Observer over the long term. (Paragraph 88)

16. We recommend that the Government should set out explicitly what it hopes to achieve through the UK's position as an Observer to the Arctic Council over the next 10 years. This may help the strategic direction of the Council, as the two year rotation of the chairmanship can bring frequent changes to priorities for the Council. In addition, the UK should be more transparent about its work with the Arctic Council. The Government should publish the 'reporting card' it produced to reaffirm its status as an Observer as well as publishing its contributions to the six Arctic Council working groups. (Paragraph 89)

The Government supports the stated aim of the Arctic Council, which is to maintain peace, stability and constructive cooperation in the Arctic. That must be the UK's continued priority, and why we are determined to continue our support for the Council.

One of the UK's main strengths as an observer to the Arctic Council is our consistent commitment to collaboration. We will continue to support the Council's Working Groups, particularly in areas of strong UK expertise and/or interest. For example, we remain determined to aid Working Group efforts in pollution prevention including marine litter that finds its way into the Arctic Ocean, protecting shared biodiversity and understanding the impact of climate change on the region. Our input must, inevitably, be driven by the work streams of the Council.

In May 2019, Ministers of the Arctic States are expected to agree and publish for the first time an Arctic Council strategic plan. The plan will set out the Council's ambition towards environmental protection and sustainable development. The UK has consistently welcomed the development of the plan and encouraged members of the Arctic Council to take account of the views of all parties who have an interest in peace and stability in the Arctic region. While at Arctic Council Senior Arctic Officials meetings, UK representatives have met with other Observer States and the Arctic Council Chair to contribute to the direction of travel for this plan. The publication of *Beyond the Ice*, with its support for environmental protection and sustainable development across the region was considered a welcome addition to the Arctic Council's deliberations.

Attached as Annex A is a copy of the submission made to the Arctic Council Secretariat when successfully seeking to reaffirm the UK's status as an observer state in 2017. We will seek opportunities to update the Committee on UK actions in the Working groups and taskforces as appropriate. We remain committed to the UK's Arctic policy framework being a living document and will ensure it is updated every few years.

17. The United Kingdom is a long-standing Observer to the Arctic Council and has a strong reputation for engaging with the work of the Council and contributing scientific expertise to the working groups. The significant increase in the number of State Observers to the Arctic Council since 2013 brings a fresh challenge to the UK's claim as a "near Arctic state". There is a risk that the UK's geographical proximity to the Arctic will be overshadowed by increased foreign investment and scientific research by others. The UK can play a role in ensuring that foreign interest in the Arctic is driven by a scientific understanding of the challenges facing the Arctic. (Paragraph 97)

18. *The Arctic Council is becoming an increasingly global forum for securing agreements, cooperation and dialogue on Arctic issues. The Government should ensure that there are UK representatives at all important Arctic science meetings and scientific forums, including the upcoming Arctic Scientific Forum in Berlin. The UK should offer to host a forthcoming Arctic Scientific Forum, possibly in collaboration with an Arctic State.* (Paragraph 98)

We agree that the UK should have representation at all important Arctic science meetings and scientific forums. Notable events where we ensure there is UK representation include the Arctic Science Forum, the Arctic Science Ministerial Meetings, the International Arctic Science Committee, Arctic Circle Assembly, Arctic Frontiers and the Arctic Science Summit Week, to name a few. Most recently the UK was represented by a 9-strong delegation from Government, the NERC, BAS and several universities at the Arctic Science Forum in Berlin in November 2018.

At the 2nd Arctic Science Ministerial meeting in Berlin, which took place directly after the Science Forum, the Government announced support for Japan and Iceland's bid to co-host a 3rd Arctic Science Ministerial (ASM3) meeting in Japan in 2020. Both countries make significant contributions to Arctic Science and, with Iceland being the next chair of the Arctic Council, synergies can be maintained between the Arctic Council and ASM3 agendas. Reflecting the growing diversity of stakeholders involved in Arctic science and research, particularly in non-Arctic states, we also believe it is important for events like this to take place in a range of geographical regions around the world.

The Arctic Science Ministerial model is not a formal intergovernmental meeting so, if appetite for such a meeting exists, the UK could consult with other nations on the potential to co-host a future meeting.

19. *Our predecessor Committee called for a UK Arctic policy that would ensure Government departments work together in a cross-cutting way. The second iteration of the resulting UK Arctic strategy, Beyond the Ice, is a commendable document that covers the breadth of the UK's interests in the Arctic. However, we found that the Foreign and Commonwealth Office (FCO), which leads on co-ordinating Arctic policy, was not able to articulate the UK's position on a number of matters affecting the Arctic. This is concerning given that the FCO represents the UK at the Arctic Council. While there are important geopolitical reasons for more departmental resource within the FCO to be dedicated to the Antarctic, we believe that the speed and complexity of change in the Arctic means that British engagement with the region should be increased. The Committee recognises that the Minister for the Polar regions is also Minister for Europe and the Americas and that it is therefore unfair to expect the Minister to take a more active role in co-ordinating UK Arctic activity. We therefore recommend that the Government further considers the recommendations by the House of Lords Select Committee on the Arctic in 2015, and the House of Commons Defence Committee in 2018, that the UK should appoint a special representative or envoy to the Arctic to play a co-ordinating role, in support of the Polar Regions Department and the Minister.* (Paragraph 109)

20. *In order effectively to influence the Arctic Council, the UK needs to have a coordinated Arctic policy led by the FCO. When our predecessor Committee recommended the introduction of an Arctic strategy to ensure cross-cutting departmental work, they*

envisaged a deeper level of coordination than the production of a shared Government document. The Minister for the Polar Regions should fulfil his role in overseeing the coordination of UK Arctic policy by working to develop a set of strategic priorities along with targets to measure them. To facilitate the establishment and measurement of these Arctic priorities, the FCO should dedicate more departmental resources to the Arctic to ensure that the UK is capitalising on the opportunities in the Arctic and fully participating in the work of the Arctic Council. (Paragraph 110)

As set out in the introduction of this response, *Beyond the Ice* is the Government's framework for the UK's policy towards the Arctic. It sets out our commitments and priority areas for engagement in the Arctic.

The Government has reviewed its approach to the appointment of Arctic Ambassador at regular intervals since the 2015 House of Lords report, most recently in September 2018 in response to the House of Commons Defence Select Sub-Committee report. The Government remains of the view that the appointment of a special representative or envoy is not the right approach for the UK.

The Foreign and Commonwealth Office Minister of State responsible Europe and the Americas, a position currently held by the Rt Hon Sir Alan Duncan MP is precisely the right position to also have responsibility for the Polar Regions. With geographical responsibility for all of the Arctic States, he is also supported by a senior official in the Foreign and Commonwealth Office Polar Regions Department who is a specialist on Arctic and Antarctic matters. They oversee and coordinate the development of cross-Government policy towards the Arctic, chair biannual cross-Government Arctic Network meetings and ensure that the UK has appropriate representation at the Arctic Council and in other international fora.

The Government's cross-Government Arctic Network was established in 2010 in order to streamline and improve cross-Government Arctic cooperation, drawing together senior representatives from all relevant Government departments and across the FCO's network under the Chairmanship of the FCO's Polar Regions Department.

The Government's overseas network, Her Majesty's embassies and high commissions in the eight Arctic States ensure that the UK maintains strong bilateral relationships. The recently bolstered joint FCO/BEIS Science and Innovation Network in the Arctic States and the FCO Special Representative for Climate Change all supplement the UK's ability to pursue our priority interests in the Arctic and help to formulate UK priorities and policies for engagement through the Arctic Council and other relevant forum such as the International Maritime Organisation.

Commercialisation of the Arctic

21. **The loss of sea ice creates new economic and social opportunities and risks in the Arctic. We heard that if these opportunities are not managed correctly, the consequences could be dire for the Arctic. The UK has a responsibility to ensure that commercial opportunities in the Arctic are guided by the principle of sustainable development. The new focus on 'sustainable' rather than 'responsible' development in the UK Arctic policy is a welcome change in the Government's intentions, as is the explicit reference**

to the Sustainable Development Goals (SDGs). However, we are concerned that the Government may only be paying lip service to the SDGs, rather than using them to guide and evaluate its approach to the Arctic. (Paragraph 123)

22. The UK has identified three SDGs relevant to the Arctic; Climate Action (Goal 13), Life Below Water (Goal 14) and Life on Land (Goal 15), but the Minister for the Polar Regions was not able to explain how the SDGs applied in an Arctic context, nor how their implementation is audited. Even though the Government has identified Goal 13 as particularly relevant to the Arctic, the Minister told us that the compatibility of drilling for oil and gas in the Arctic with the ambition of Goal 13 had not been explicitly put to him. We heard that not only is drilling for oil and gas in the Arctic incompatible with the SDGs, it is also incompatible with the UK's commitment to the 2015 Paris Climate Change Agreement. However, the UK's Arctic policy notes that it supports the use of "the highest possible standards" in Arctic oil and gas activities, rather than supporting the termination of drilling in the Arctic. (Paragraph 124)

23. *If the SDGs are to inspire and inform the UK's Arctic policy, the Government should consider ending its encouragement of UK businesses to explore oil and gas opportunities in the Arctic. In its response to this report, the Government should acknowledge the incompatibility of continued support for oil and gas exploitation in the Arctic "for decades to come" with the UK's SDG commitments and with the Paris Agreement, and set out plans to press members of the Arctic Council to adopt a similar approach.* (Paragraph 125)

The Government fully supports the Sustainable Development Goals including both SDG13 (tackling climate change) and SDG7 (improving energy access). We also wholeheartedly support action to deliver the Paris Agreement. It is wholly inaccurate for the committee to assert that the Government encourages oil and gas exploration in the Arctic. This statement is untrue and baseless. We do not do so. Although providing support for exports, the Government does not seek to direct where UK businesses invest: such decisions are matters for companies' commercial judgement.

In line with UN agreement on national sovereignty over natural resources the Government recognises that the regulation of oil and gas activities in the Arctic is a matter for the States in whose jurisdiction these resources occur. These countries have well developed systems governing such activities.

The UK supports measures to reduce demand for oil and gas as part of the global transition to a low carbon economy. However, as set out in the *Beyond the Ice*, the world will continue to rely on energy from oil and gas for some time yet and it is important that supplies of these fuels continue to be secure and affordable. As output from existing oil and gas fields is declining significantly faster than projected demand, this will require that oil and gas resources continue to be identified and brought into production.

Under the Paris Agreement, any emissions resulting from the extraction and use of hydrocarbons from the Arctic, as from anywhere else, will be included in the Nationally Determined Contributions of the countries concerned. The UK will continue to encourage all countries to set ambitious targets to reduce carbon emissions while also respecting the right of countries to determine their own policies to meet these targets.

24. Additionally, as recommended earlier in this report, the FCO should set a series of strategic priorities and targets for the UK's sustainable engagement with the Arctic. The SDGs should be used to set and evaluate these priorities. There are more than three SDGs relevant to the Arctic and this should be acknowledged throughout the next iteration of the UK Arctic policy, such as; Goal 7 (affordable and clean energy), Goal 8 (decent work and economic growth) and Goal 11 (sustainable cities and communities). The use of the SDGs will ensure that the UK takes a sustainable approach to Arctic tourism, social issues and economic development in Arctic communities. (Paragraph 126)

The Government is fully committed to promoting and delivering the Sustainable Development Goals (SDGs) at home and around the world. On 28 March 2017 the Government published a report outlining some of the UK's domestic and international action towards delivering this agenda. The UK is currently reviewing its progress towards the SDGs and will present its Voluntary National Review at the UN High Level Political Forum in July this year. More information on this process can be found here: www.gov.uk/sustainabledevelopmentgoals.

The Government notes and agrees with the importance the committee has placed on the SDGs and as it recommends will seek to further incorporate them as appropriate into the next iteration of the Government's Arctic Policy Framework.

While Government recognises that all of the SDGs have relevance to the Arctic region, we do not agree with the Committee that the UK should deliver all of the SDGs across the whole region.

All countries are responsible for their delivery of the SDGs. While it would not be appropriate for the Government to set targets and measures to meet the domestic targets of the Arctic States we must work towards mitigating the UK's impact on the region.

25. As Arctic sea ice melts, new shipping routes are becoming increasingly accessible. We heard that by 2050, the Arctic could be ice free in summer. However, it will be some time until the Arctic seas can be fully utilised for transit shipping. We are concerned that there is a quickening "albedo effect" in the economic exploitation of the Arctic; as sea ice melts, more shipping is possible but this in turn further threatens the environment. The risk of oil spills, higher carbon emissions and plastic pollution threaten the fragile environment of the Arctic. (Paragraph 136)

26. The Polar Code should be amended to protect the Arctic from the risks from increased shipping. The Polar Code includes some provisions on environmental protection in the Arctic such as a ban on the disposal of food and plastic waste, but the Arctic has fewer environmental protections than the Antarctic. The ban on dangerous heavy fuel oils currently applied in the Antarctic should be extended to the Arctic as soon as is technologically feasible. Provisions on marine noise and invasive species should also be added to ensure that increasing shipping does not threaten Arctic biodiversity and marine wildlife. (Paragraph 137)

27. The UK Government should press the International Maritime Organisation (IMO) to ban HFO in the Arctic as soon as is technologically feasible and strengthen its involvement in the Protection of the Arctic Marine Environment working group of the Arctic Council to ensure that the Arctic Council is itself able to make an influential,

science-driven representation to the IMO. The UK should push the IMO to make the Arctic designated as a special sensitive area under MARPOL annex 6 and thus join other seas such as the 'Antarctic area'. (Paragraph 138)

The UK Government recognises international shipping's growing interest in the Arctic region as potential new routes open up there as a consequence of changing sea ice patterns associated with climate change.

Reductions in distance and associated fuel costs are frequently cited as advantages to potential Arctic shipping routes, but the Government acknowledges that there are significant new safety and environmental concerns generated by ships operating in the Arctic region. For this reason, the Government has consistently supported the development of stringent safety and environmental standards to address these concerns, specifically by exerting its influence and supporting like-minded countries proposed regulatory measures at the International Maritime Organisation (IMO). Indeed, the UK played an integral role at the IMO in formulating the landmark International Code for Ships Operating in Polar Waters (Polar Code), which has tailored requirements for safe and environmentally-sound shipping practices in Arctic and Antarctic waters. The Government considers the IMO to be the most appropriate authority for regulating international shipping, including activity in Arctic waters. Recognising the IMO's essential role in the regulation of international shipping, the UK is supporting the IMO's bid for observer status at the Arctic Council.

The UK is and will continue to be supportive of endeavours that seek to secure greater protections for the Arctic's unique marine environment and the indigenous communities that live in the region. For example, the UK has consistently registered its support for further controls on the use and carriage of Heavy Fuel Oils (HFOs) as fuel by vessels operating in Arctic waters. Indeed, there is no technical impediment to further controls on HFOs, and the UK Government is committed to supporting an outright ban on their use and carriage as fuel in the Arctic region if such a measure is ultimately brought forward at the IMO. At present, the UK is fully-engaged in the IMO process that is consulting on a ban on the use and carriage of HFOs as fuel in Arctic waters, and will push for a solution to be reached in a timely manner. Recognising Arctic States' sovereignty and expertise in the region, the UK would ultimately look to these countries to lead on any such binding decision.

With regards to the potential threats facing the Arctic's marine ecosystem, the UK Government has been proactive in shaping a global regulatory regime that can tackle the effects of international shipping on the natural environment across all regions. For example, the 2017 Ballast Water Management Convention has been designed to prevent the spread of harmful aquatic organisms from one region to another, and should thus mitigate the threat of invasive species entering the Arctic's marine ecosystem. The UK will ratify this convention in due course. Such provisions are separate from but ultimately compliment the requirements of the Polar Code.

Where a need for new international provisions is identified, the UK will of course support those regulatory measures derived from a robust evidence base. On the specific issue of anthropogenic underwater noise, the IMO ratified voluntary guidelines in 2014 to address the adverse impact that noise from shipping may have on marine life. As our knowledge concerning the impact of underwater noise on marine life increases, the UK will look to work with like-minded countries on possible regulatory measures and technical solutions

to lessen shipping's detrimental effects on affected wildlife. The Government considers the identification of marine wildlife "hotspots", and then safe shipping corridors that can minimise disturbance to these areas, to be a research priority. Through its contributions to the Arctic Council Working Group the Protection of the Arctic Marine Environment (PAME), for example, the UK is helping to generate the knowledge and expertise that is needed to inform future regulatory measures.

Finally, concerning the designation of the Arctic as a Particularly Sensitive Sea Area (PSSA) under MARPOL Annex 6, it would ultimately be for Arctic States to bring forward such a proposal at the IMO. Recognising the sovereignty of Arctic States in their region's future, the UK would, in its capacity as a member state of the IMO and an observer state at the Arctic Council, look to support Arctic States in the development and passage of such a proposal at the IMO.

The Department for Transport's Maritime 2050 Strategy, published on 24 January 2019, reaffirms the UK Government's position on shipping in the Arctic, which is to give primacy to the protection of the Arctic's unique marine environment. As has been outlined above, the UK has already played a significant role in the creation of international conventions designed to mitigate some of the threats posed to the Arctic's marine environment by shipping. Where further regulatory measures are needed, for example with regards to the use and carriage of HFOs as fuel, the UK is playing an active and supportive role at the IMO to bring about effective resolutions. The Government firmly believes that it is in the interests of the international community to establish a strong, coherent set of regulatory requirements for ships operating in the Arctic region, and that any opportunities that arise from new Arctic shipping routes must be realised in a safe way, ensuring a sustainable future for generations to come.

28. Arctic tourism can bring numerous economic opportunities to the region if it is managed correctly. Over the past decade the number of people going on Arctic cruises has increased from around 50,000 passengers per year to around 80,000 in 2016, and the market for small cruises in particular is expected to grow by almost 50% over the next three years. There is a risk that the thousands of tourists who travel to see a pristine, remote and unspoilt Arctic landscape are contributing to degradation of the very environment they came to see, and increased tourism can disrupt traditional ways of life. We heard that very large cruise ships with around 6,000 passengers are docking in small Arctic communities and overwhelming them. Large cruise ships also heighten risks of plastic pollution and place additional strain on already limited search and rescue capacity in the Arctic. (Paragraph 145)

29. *The Arctic states have an opportunity to place limits on the type of tourism acceptable in the Arctic region. The UK should work with the Sustainable Development Working Group of the Arctic Council to push for a ban on cruise ships of over 500 passengers, and instead promote sustainable and considered Arctic tourism. The UK should engage with the Permanent Participants on the Arctic Council to ensure that they have the capacity, in collaboration with Arctic states, to influence the development of Arctic tourism so it is managed in a way that benefits their communities.* (Paragraph 146)

The Government recognises all forms of tourism to the Arctic have increased significantly in recent years. As the Arctic environment changes, becomes more accessible and people's appetite for new travel experiences increase, so does the number of visitors. This in turn

brings new economic opportunities for Arctic communities. Thriving local economies can help to ensure a future for the people who choose to live there and will better protect the environment.

Responsibility for the regulation of Arctic tourism rests with the Arctic States whose territory and/or waters are visited. The Government also recognises that while the majority of visits to the region will be trouble-free, more visitors put greater strain on limited search and rescue capability, do not always directly benefit the communities they are intended to support, and can increase the risk of harm to pristine environments.

When visiting the Arctic, we want British nationals to be safe and to ensure that all international travellers and operators refrain from harming the Arctic environment. The Government therefore supports safe, responsible and sustainable tourism in the Arctic that enables visitors to experience the uniqueness of the region that respects the preserve of local communities and supports their economy, and protects the fragile environment for future generations. Increased mapping and charting of the marine environment would be a positive step towards understanding and addressing possible dangers. The UK Hydrographic Office has extensive experience in this field and the Government supports their application to become Associate Member of the Arctic Regional Hydrographic Commission.

The Government also supports the work and goals of the Association of Arctic Expedition Cruise Operators (AECO) and will use its experience of polar tourism in Antarctica to discuss further enhancements to AECO's standards for its operators.

The Government believes that building a better understanding of the challenges faced by local communities is that first step towards agreeing what appropriate mitigations could be implemented by the Arctic States, within whose jurisdiction these activity takes place. We welcome the priority that Iceland, the next chair of the Arctic Council, intends to place on discussions for sustainable tourism. This will supplement embryonic work by the Arctic Council Working Group PAME and we will seek to identify ways in which the Government and industry can provide useful and specific assistance that will enable communities to truly benefit from new economic opportunities in future.

Annex

Observer Report

Please describe in no more than 2 pages your state or organization's contributions to the work of the Arctic Council's Working Groups, Task Forces and/or Expert Groups since the time of your most recent report, or in the previous two years. Please highlight contributions to specific projects, such as through proposals, concept development, in-kind and financial support, and hosting of meetings. If applicable, please include mention of collaboration with Permanent Participants, such as project proposal endorsement and support.

The UK is the Arctic's closest neighbour and has an over 400 year old relationship with the region, from the voyages of men like Frobisher and Franklin to today's cutting edge scientific research. The UK's long-standing ties, continued interests and engagement with the Arctic is reflected in the fact that the UK was an accredited Observer at the first AEPS Meeting in 1991 and the UK was listed as an Observer in the initial rules of procedure of the Arctic Council. The UK has been represented, by officials from London, at every Senior Arctic Officials and Ministerial Meeting of the Council since 1996 and has always constructively engaged with the Council.

In October 2013 the UK Government published its Arctic Policy Framework: Adapting to Change, which for the first time sets out UK interests in and policy towards the Arctic. The policy framework set out the UK's vision for the Arctic as *"an Arctic that is safe and secure; well governed in conjunction with indigenous peoples and in line with international law; where policies are developed on the basis of sound science with full regard to the environment; and where only responsible development takes place"*.

It outlines what expertise the UK can offer to help meet some of the long term challenges facing the region and to ensure a sustainable future and therefore provides the framework for supporting the goals of the Arctic Council. This was reiterated in 2015 in the Governments Response to the House of Lords Select committee on the Arctic Report (2015).

The UK continues to be fully engaged and directly contribute to the work and the objectives of the Arctic Council's Working Groups, Task Forces and Expert Groups. For example:

- Plymouth Marine Laboratory in the UK has contributed to the Arctic Council's "Ocean Acidification Expert Group," since 2011 and continue to participate in all AMAP, Acid Ocean Acidification meetings to date, the latest held in January 2016.
- The UK is a strong supporter for action to reduce global emissions of methane and black carbon and so the UK has been actively involved during the development stage of the Black Carbon framework 2015, which was produced by the Arctic Council Taskforce on Black Carbon.

- Through the participation of the National Environmental Research Council (NERC) Arctic Office the UK contributes to the Arctic Council sponsored “Sustaining Arctic Observing Network”, which aims to provide an international setting for coordinating Arctic observational networks.
- In the context of global biodiversity, the UK is of major international importance for its populations of non-breeding water birds deriving from the Arctic. The UK’s Joint Nature Conservation Committee regularly contributes to the work of, and is the UK’s permanent representative to, the Conservation of Arctic Fauna and Flora Working Group as well as having a UK expert on the Arctic Migratory Birds Initiative Steering Group.
- The UK has attended meetings of PAME and TFAMC, and has contributed expertise on the polar code and the Polaris system, feeding into the Arctic Marine Shipping Assessment session this year. We have also attended all of the meetings of the Science Cooperation Task Force and actively suggested alternative wording for text directly affecting the position of non arctic states. We have also attended the Task Force meetings of the Arctic Marine Cooperation in 2015 and 2016.

The UK strongly supports the role of Permanent Participants in the Arctic Council and welcomes their unique and essential input into Council discussions. At the Arctic Circle Assembly in 2015 the UK presented a well received and successful breakout session on Traditional Knowledge-based Innovation in the Age of Climate Change. We continue to have constructive and useful discussions with Permanent Participants on issues of mutual concern/benefit. The UK and Permanent Participants share a great concern over climate change and its effects. We are well aware of the value of local knowledge/memory in determining the level and effects of climate change on the Arctic and its communities.

If applicable, please describe in no more than 1 page your state or organization’s future plans for contributing to the work of the Arctic Council’s Working Groups, Task Forces and/or Expert Groups. Please highlight intentions to contribute to specific projects and to collaborate with Permanent Participants.

The UK is committed to continuing to support the work of the Working Groups and is keen to explore ways in which to better coordinate science programmes and other initiatives. Identifying common ground and improving synergies, cooperation and collaboration will then make it easier to contribute more directly and substantially to the Working Groups, (in particular, CAFF, AMAP and PAME) by ensuring for example that where appropriate the future funding of NERC science programmes takes these elements into account.

Our continuing and future contributions to specific projects are highlighted below:

- The UK continues to work with the Council’s Science Cooperation Task Force, engaging on the draft of the Science and Cooperation Agreement. The UK strongly supports the principle of increased scientific cooperation on Arctic matters, particularly as many of the scientific challenges are so great

that solving them requires a fully international effort. The UK will therefore continue to work closely with this Task Force, ensuring representation at all meetings until the agreement is finalised.

- The UK has nominated an expert to Arctic Migratory Birds Initiative Steering Group (CAFF) from the Joint Nature Conservation Committee and we intend to stay fully engaged with this steering group.
- Reducing global emissions is of critical importance to the UK and therefore the UK intends to be fully engaged in this area. We have a UK expert appointed to the AMAP Expert Group on Ozone and Black carbon and are currently contributing to the Expert Group on Black Carbon and Methane (EGBCM).
- The UK intends to continue to work with the Protection of Arctic Marine Environment Working Group as it discusses the Pan-Arctic Network of Marine Protected Areas, Arctic Shipping and Offshore Oil and Gas Guidelines. With the Polar Code coming into force in 2017, the UK is keen to stay engaged with the work to analyse the relative effect of the Code on Arctic Shipping. We have a UK representative on the Shipping Expert Group who will work on a paper to PAME II 2016 that elaborates on proposals for an "Arctic Shipping Best Practice Forum".

Following the success of its previous four year Arctic Research Programme, NERC announced in 2015 the investment of a further £16m in a new five year research programme (covering the period 2017-2022). The overarching goal of which is to explore the effect of changes to ice cover on the marine ecosystem and the associated biochemistry of the Arctic Ocean. The aims are to understand the potential major impacts of environmental change in the Arctic and provide projections for future ecosystems services. This knowledge will help to develop mitigation and adaptation strategies to manage these effects. A key principle in determining what to invest these funds will be the strength and depth of international cooperation including links with priorities of the Arctic Council Working Groups.

If applicable, please describe in no more than 1 page your state or organization's contributions to other aspects of the Arctic Council and its goals not covered by the previous sections since the time of your most recent report, or in the previous two years.

The UK plays an active role in many relevant international bodies and agreements including the IMO, UN (especially in respect of UNCLOS), CBD and OSPAR, all of which contribute to the orderly management and governance of the wider Arctic region. The UK has made significant contribution to the development of the IMO's Polar Code under the SOLAS and MARPOL Conventions, including acting as the Chairman of the groups that developed the environmental aspects.

The UK maintains good bilateral and multilateral relations with all the Arctic States both generally and in relation to polar matters and is keen to maintain this position. The UK's Memorandum of Understanding with Canada is an excellent example of bilateral cooperation. The primary aim is to facilitate exchange of scientific knowledge, expertise and facilities. We are beginning discussions with Canadian authorities on

reviewing the agreement, to fully reflect current priorities. The UK also has a polar Memorandum of Understanding with Norway, which includes Arctic research and which is currently also being renewed.

The UK promotes the Arctic Council wherever appropriate and possible to do so and considers that education and outreach are important in order to promote the Arctic and the work of the Arctic Council. The FCO developed website “Discovering the Arctic” is aimed at school children and provides a guide to the Arctic, its people and institutions. UK Government Ministers have also highlighted the importance of the Arctic Council and the UK’s position as an Observer in several debates in the Houses of Parliament, most recently in 2015.

The UK is a committed member of the International Arctic Science Committee (IASC) and has a large body of Arctic scientists at a range of institutions across the UK. A number of universities and national institutions have large Arctic research programmes, such as those at Swansea, Leeds and Stirling Universities. The Scott Polar Research Institute and Scottish Association for Marine Science are both deeply involved in the Arctic, as are the British Antarctic Survey (BAS), who increasingly deploy their internationally renowned polar scientists and resources in the region and continues to host the UK Arctic Office, at their headquarters in Cambridge.

The UK continues to view the Arctic Council as the primary regional body; it represents a unique forum to help ensure sustainable management of the region. The UK recognises that a peaceful, stable and well-governed Arctic is the bedrock on which all of the Government’s policies towards the Arctic are based. As an Observer, the UK has contributed scientific and policy expertise to various expert, working groups and major reports produced by the Arctic Council. The UK intends to continue this high level of engagement and considers that the Arctic Council could benefit from greater UK and other State Observer participation in order to achieve common goals, and we recognise that steps have been made toward this by the US Chairmanship. The UK has been actively engaged in the Council for the last 20 years and we remain committed to doing so.