



House of Commons
Environmental Audit Committee

Sustainable Seas

Fourteenth Report of Session 2017–19

*Report, together with formal minutes relating
to the report*

*Ordered by the House of Commons
to be printed 8 January 2019*

Environmental Audit Committee

The Environmental Audit Committee is appointed by the House of Commons to consider to what extent the policies and programmes of government departments and non-departmental public bodies contribute to environmental protection and sustainable development; to audit their performance against such targets as may be set for them by Her Majesty's Ministers; and to report thereon to the House.

Current membership

[Mary Creagh MP](#) (*Labour, Wakefield*) (Chair)

[Colin Clark MP](#) (*Conservative, Gordon*)

[Dr Thérèse Coffey MP](#) (*Conservative, Suffolk Coastal*)

[Geraint Davies MP](#) (*Labour (Co-op), Swansea West*)

[Mr Philip Dunne MP](#) (*Conservative, Ludlow*)

[Zac Goldsmith MP](#) (*Conservative, Richmond Park*)

[Mr Robert Goodwill MP](#) (*Conservative, Scarborough and Whitby*)

[James Gray MP](#) (*Conservative, North Wiltshire*)

[Caroline Lucas MP](#) (*Green Party, Brighton, Pavilion*)

[Kerry McCarthy MP](#) (*Labour, Bristol East*)

[Anna McMorrin MP](#) (*Labour, Cardiff North*)

[John McNally MP](#) (*Scottish National Party, Falkirk*)

[Dr Matthew Offord MP](#) (*Conservative, Hendon*)

[Dr Dan Poulter MP](#) (*Conservative, Central Suffolk and North Ipswich*)

[Joan Ryan MP](#) (*Labour, Enfield North*)

[Alex Sobel MP](#) (*Labour (Co-op), Leeds North West*)

Powers

The constitution and powers are set out in House of Commons Standing Orders, principally in SO No 152A. These are available on the internet via www.parliament.uk.

Publications

Committee reports are published on the Committee's website at www.parliament.uk/eacom and in print by Order of the House.

Evidence relating to this report is published on the [inquiry publications page](#) of the Committee's website.

Committee staff

The current staff of the Committee are Lloyd Owen (Clerk), Leoni Kurt (Second Clerk), Ruth Cahir (Committee Specialist), Nicholas Davies (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 5777; the Committee's email address is eacom@parliament.uk.

Contents

Summary	3
1 Introduction	5
Our inquiry	5
2 Threats to the Ocean	7
Climate Change	7
Ocean acidification	8
Pollution	12
Chemical pollution	12
Plastics	15
3 Sustainable Fisheries	19
Marine Stewardship Council certification	19
Salmon aquaculture	23
4 Deep sea mining	28
Environmental risks and their mitigation	30
5 Marine Conservation	34
Marine Protected Areas	34
UK progress on Marine Protected Areas	34
UK Marine Protected Area network	34
Overseas Territories Blue Belt Programme	37
6 International Leadership	42
Government ambition to increase global Marine Protected Area coverage	42
The Weddell Sea, Antarctica	43
The High Seas - Areas Beyond National Jurisdiction	43
Conclusions and recommendations	47
Annex	52
Formal minutes	56
Witnesses	57
Published written evidence	58
List of Reports from the Committee during the current Parliament	62

Summary

Oceans cover around 70 per cent of the earth and support a huge variety of life. Including its Overseas Territories, the UK has jurisdiction over 6.8 million square kilometres of ocean, nearly 30 times the size of the UK itself, containing internationally significant marine biodiversity worth trillions of pounds to the UK economy according to a 2018 report by the Government Office for Science. As much as 40 per cent of the world's oceans are heavily affected by human activities threatening the future of marine life and the three billion people whose livelihoods they support. Climate change, overfishing and pollution are the three greatest threats to the ocean. Added to this are new challenges from a growing demand for resources and emerging industries seeking to exploit the sea and the seabed.

The impacts of climate change have been detected at all levels of the food web causing species migration and local impacts such as coral bleaching. A two-degree temperature rise above pre-industrial levels will significantly harm biodiversity, fish stocks and destroy nearly all coral reefs in the world. The impacts on marine ecology risk being particularly pronounced. Species affected by climate change include krill and plankton, which if removed from the marine food chain, could lead to a one-third decline in the populations size of larger predators including polar bears, walruses, seals, sea lions, penguins and sea birds. Increased ocean temperatures are also likely to see large reductions in fisheries stocks. A rise of one degree Celsius in temperature will increase the prevalence of pathogens and parasites, resulting in at least a 20 per cent decline in populations of mussels, shrimp, squid and other marine mammals.

Urgent action is needed to meet the Paris Agreement on climate change to limit warming to 1.5 degrees Celsius. The Government must not delay in implementing the Committee on Climate Change's advice on how to meet the ambitions of the Paris Agreement and set out its plans for this in the first half of 2019. This should include setting a net-zero emissions target by 2050 at the very latest.

We are treating our seas as a sewer. Most of the action required to protect the seas relies on action on land. More than 80 per cent of marine pollution is from land-based sources, reaching the ocean through waterways, sewers and drains. Excess nutrients from fertilisers, mismanaged waste and contaminants such as heavy metals, radioactive materials, pharmaceuticals, oils and untreated sewage all pollute the sea. Plastic makes up 70 per cent of all the litter in the ocean, and if no action is taken to reduce its input, then it is forecast to treble within the next ten years. Once in the environment plastic can entangle marine life and break down into microplastics, storing up long terms risks for the future.

The "out of sight, out of mind" or "sea blindness" attitude to the seas must be tackled. There is much more that the Government can be doing to prevent waste reaching the ocean, both domestically and by stopping exports of waste to countries with poor recycling infrastructure. Legally binding targets for water quality underpinned by clear milestones are needed to reduce chemical pollutants from land-based sources. The Government must show leadership on plastic and make progress to ban those plastics that are difficult or impossible to recycle, bring forward the 2042 target date to

achieving zero avoidable plastic waste, provide a clear definition of 'single use' plastics and 'avoidable' plastics, expedite its proposed deposit return scheme and extended producer responsibility schemes.

In the future, ocean resources will be in greater demand from a growing global population and new technology will open it up to greater exploration and exploitation. Deep sea mining has the potential to provide a source of 'critical' metals for a future renewable economy. Given technological and regulatory development it is possible that exploitation could begin in the next decade. Deep sea mining would have catastrophic impacts on habitats and species on seafloor sites and there is little evidence that mitigation measures such as setting aside areas of the seabed will work to mitigate the damage. The Government must rule out its own exploitation of resources in unique ocean environments such as hydrothermal vents and use its influence internationally to impose a moratorium on exploitation licences in these environments. Outside of these areas, the Government should use its substantial experience in regulating marine industries to ensure Environmental Impact Assessments for exploitation licences are robust, based on the precautionary principle and use the best available scientific evidence.

The Government claims to have met its targets for marine conservation in UK waters. However the current approach is not working with too many harmful activities occurring across too wide an area. Fisheries are not adequately incorporated into marine planning and few Marine Protected Areas have management plans or ongoing monitoring in place. The Overseas Territories Blue Belt programme has bold ambitions to protect four million square kilometres of sea, yet not all protected areas that have been established are meeting international best practice guidelines. The goal should not only be to designate protected areas, but to ensure they are achieving their desired effect. Sustainable funding for the Blue Belt Programme post-2020 is needed to ensure these areas are adequately monitored, managed and enforced.

We welcome the development of the Government's International Ocean Strategy, which presents the opportunity to tackle the many, and interlinked, threats that face the oceans. Ministers must ensure that this strategy is developed collaboratively with cross-Departmental support to break down the barriers to effective coordination identified by the Government Office for Science.

The UK has shown leadership internationally with its active involvement in protecting the Southern Ocean and its stated ambition to protect 30 per cent of the ocean globally by 2030. The recent failings of international negotiations on protecting the Weddell Sea highlight just how difficult it will be to achieve the multilateral consensus needed to achieve its ambitions. The UK should use the highest levels of Government, including the Foreign Secretary, to mobilise its diplomatic network and use its position as Chair of the Commonwealth to advocate for its targets for marine protection. The UN High Seas treaty presents a unique opportunity for global ocean protection. The Government should support a legally-binding 'Paris Agreement for the Sea' and the establishment of a new global oversight body for the oceans. This would deliver the gold standard of environmental principles that Ministers say is necessary for protection of the ocean.

1 Introduction

1. Oceans cover around 70 per cent of the earth’s surface and support a huge variety of life. Healthy marine habitats and biodiversity provide us with goods and services essential to life on earth, including food, raw materials, leisure and recreation, carbon and nutrient cycling, and climate regulation. They support the livelihoods of three billion people around the world.¹ Including its 14 Overseas Territories, the UK is responsible for 6.8 million square kilometres of ocean, nearly 30 times the size of the UK itself.² The UK Overseas Territories encompass vast tracts of ocean and thousands of coral atolls, with internationally significant marine biodiversity in four of the world’s oceans. They account for 90 per cent of the biodiversity for which the UK Government has responsibility, the value of which has been estimated in the trillions of pounds.³

2. Human activities in both coastal and open waters have increased, leading to physical and biological pressures on the marine environment. According to the UN, as much as 40 per cent of the world’s oceans are heavily affected by human activities with impacts from pollution to depleted fisheries and loss of coastal habitats.⁴

3. In March 2018, the Government Office for Science published a report on the future trends, challenges and opportunities for the UK from the sea, *Foresight Future of the Sea* (henceforth *Foresight*).⁵ This also assessed how the UK could use its expertise and technological strengths to benefit from future marine opportunities such as deep sea mining and tackle problems like ocean acidification. It concluded that there is a widespread lack of understanding of the sea and its value, from what is termed “sea blindness” and a risk that marine issues may be ignored because of the shared interest and responsibility for them across Government departments and the devolved administrations. *Foresight* recommended that the Government develop a clear, joined-up marine strategy.⁶ In response, on 22 June 2018, then Foreign Secretary, Boris Johnson announced the development of a cross-Government International Oceans Strategy.⁷ Lord Ahmad of Wimbledon, Minister of State at the Foreign and Commonwealth Office confirmed that the strategy would be coordinated by the Foreign Office and involve seven Government Departments.⁸

Our inquiry

4. In April 2018, we launched an inquiry into Sustainable Seas, examining how ocean life can be protected from acidification, overfishing, resource extraction and pollution and what more the Government could be doing to protect it. We received 145 written responses to the inquiry and are grateful to all those who took the time to contribute. We held four hearings, the first with the Government’s Chief Scientific Advisers on the *Foresight* report and leading academics from the sector. The second focussed on the effectiveness of the Marine Stewardship Council certification and the sustainability of aquaculture. The third explored the designation and management of Marine Protected

1 United Nations. [Intergovernmental conference on marine biodiversity](#), 16 April 2018

2 Institute of Zoology. 2016. [Big-ocean commitments in the UK Overseas Territories](#) [Accessed 18/04/2018]

3 Foreign and Commonwealth Office. 2012. [The Overseas Territories: Security, Success and Sustainability](#), p8

4 UN Sustainable Development Goals, [Goal 14: Conserve and sustainably use the oceans, seas and marine resources](#) [Accessed 23/10/2017]

5 Government Office for Science. 2018. [Foresight Future of the Sea](#)

6 Government Office for Science. 2018. [Foresight Future of the Sea](#)

7 [Foreign Secretary announces UK strategy to protect world’s oceans](#). Press Release, 22 June 2018

8 [Q395](#)

Areas and the environmental risks from deep sea mining, and the final hearing was with Ministers from the Foreign and Commonwealth Office and the Department for Business, Energy and Industrial Strategy.

5. During the course of our inquiry international negotiations including the UN High Seas Treaty,⁹ the Commission for the Conservation of Antarctic Marine Living Resources,¹⁰ and the UN Convention on Biological Diversity¹¹ were held (see Annex A for further details). The outcomes of these and the Government's International Ocean Strategy announcement have therefore influenced the course of our inquiry and its recommendations.

9 In September 2018 an inter-governmental conference of the UN began negotiating the development of an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction. Also known as the High Seas Treaty, see Annex A.

10 The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) met in Tasmania in the last two weeks of October 2018 to vote on the Weddell Sea protected area.

11 The 14th meeting of signatories to the UN Convention on Biological Diversity was held in Egypt from 17–24 November 2018, where the UK planned to call on other nations to push for a 30 per cent target for marine protected areas globally by 2030.

2 Threats to the Ocean

Climate Change

6. Climate change will lead to changes in the oceans, including increased frequency and intensity of weather and climate events, decline in sea ice, sea-level rise, oxygen depletion, ocean warming and acidification, putting marine ecosystems and coastal communities under stress.¹² Sea-surface temperatures in UK coastal waters and in the North-East Atlantic have risen by between 0.1 and 0.5 °C per decade since the 1980s.¹³ As oceans warm, sea water expands. The Met Office described that under a strong warming scenario, thermal expansion is expected to contribute around 27cm to the total global sea level rise of 74cm in 2100.¹⁴

7. This thermal expansion has been accompanied by ocean deoxygenation. Ocean deoxygenation refers to the loss of oxygen from the oceans due to climate change. Long-term ocean monitoring shows that oxygen concentrations in the ocean have declined during the 20th century, and the new Intergovernmental Panel on Climate Change (IPCC) report predicts that they will decrease by a further three to six per cent during the 21st century in response to surface warming.¹⁵ The University of Exeter has already observed that lowered oxygen levels have reduced certain species' populations.¹⁶

8. The International Union for the Conservation of Nature has stressed the threat posed to marine species by the interaction between ocean acidification, increased temperature and deoxygenation:

Ocean acidification is happening in parallel with other climate-related stressors, including ocean warming and deoxygenation. This completes the set of climate change pressures on the marine environment- heat, acidity and oxygen loss- often referred to as the 'deadly trio.' Interaction between these stressors is often cumulative or even multiplicative, resulting in combined effects that are more severe than the sum of their individual parts.¹⁷

9. Another major recent finding has been the detection of a long-term decline in the largest part of Atlantic Ocean circulation, (a northward flow of warm, salty water in the upper layers of the Atlantic, including the Gulf Stream), which has weakened by around 15 per cent since the nineteenth century.¹⁸ We heard that these changes to ocean currents have potentially serious effects on marine biodiversity.¹⁹

10. Dr McQuatters Gollop, from the University of Plymouth, told us that the impacts of climate change have been detected at all levels of the food web. Her research has shown that there has been a northern migration of plankton, (the microscopic plants, algae and animals at the base of the food web), which could have repercussions on higher levels

12 Government Office for Science. 2018. [Foresight Future of the Sea](#); EU ATLAS Project ([SSI0037](#)); University of Exeter ([SSI0065](#)); Met Office ([SSI0057](#));

13 Adaptation Sub-Committee of the Committee on Climate Change ([SSI0053](#))

14 Met Office ([SSI0057](#))

15 IPCC. 2018. [Special Report on Global Warming of 1.5 °C \(SR15\)](#)

16 University of Exeter ([SSI0065](#))

17 IUCN. 2017. [Ocean acidification](#)

18 EU ATLAS Project ([SSI0037](#))

19 EU ATLAS Project ([SSI0037](#))

of the food web.²⁰ Professor Ian Boyd, Chief Scientific Adviser for the Department for Environment, Food and Rural Affairs, described an increasing number of tropical and temperate species moving northwards but noted that some species will not be able to adapt as quickly as climate change is happening.²¹ We also heard from Professor Callum Roberts of the University of York that that ocean warming may increase the prevalence of parasites and pathogens and affect ocean productivity.²² According to Professor Roberts:

Warming is reducing productivity. It slows mixing between a warm surface layer of water and colder water below, starving the surface layer of nutrients necessary for plant growth, and deeper waters of life-sustaining oxygen.²³

- Temperature increase can distort species and the local ecosystems by favouring the introduction of alien species.²⁴
- Thermal stress events causing coral bleaching have been linked to disease outbreaks in coral.²⁵
- It has been estimated that a 1°C increase in temperature could lead to a 50 per cent reduction in the productivity of mussel aquaculture in the UK.²⁶

Ocean acidification

11. The oceans act as an important carbon sink and it is estimated that they have absorbed 30 per cent of anthropogenic carbon dioxide emissions to date.²⁷ As carbon dioxide dissolves in seawater, it forms carbonic acid and reduces ocean pH (acidification).²⁸ Over the last 30 years the acidification of UK seas has been found to be happening at a faster rate than in the wider North Atlantic.²⁹ Ocean acidification reduces the amount of carbonate in seawater, making it more difficult for marine organisms, such as plankton, the UK's coldwater corals and molluscs, to form their calcium carbonate shells and skeletons.³⁰ This could have impacts across the food web.³¹

12. The UN Sustainable Development Goal 14 (conserve and sustainably use the oceans, seas and marine resources for sustainable development), which the Government has committed to, contains a target to “minimise and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels” (see Annex B for more information).³² The University of Plymouth told us that monitoring of ocean acidification had stopped since the UK Ocean Acidification Research Programme ended

20 [Q60](#)

21 [Q9](#)

22 Professor Callum Roberts ([SSI0077](#))

23 Professor Callum Roberts ([SSI0077](#))

24 Marine Biology Research Group, University of Southampton, ([SSI0087](#))

25 Society for Applied Microbiology ([SSI0119](#))

26 Government Office for Science. 2018. [Foresight Future of the Sea](#)

27 Met Office ([SSI0057](#))

28 Met Office ([SSI0057](#))

29 Marine Biological Association ([SSI0028](#)) and Williamson, P., Turley, C. and Ostle, C. 2017. [Ocean acidification](#). MCCIP Science Review 2017, 1–14

30 [Q66](#); Marine Biology Research Group, University of Southampton, ([SSI0087](#)); Defra. 2018. [Recommendations to inform a UK ocean acidification monitoring strategy](#)

31 [Q66](#)

32 UN Sustainable Development Goal 14: [Life below water](#) [Accessed 14/09/2018]

in 2015, and said it is important that its impetus is not lost.³³ The Government’s scientific advisers agreed that long term monitoring is essential to understand the trends in ocean acidification, although they were not sure how the impacts of acidification can be managed, other than by reducing carbon dioxide emissions.³⁴ Professor Mills from the University of Southampton told us that monitoring is needed internationally because acidification is “a global phenomenon”.³⁵ The locations of the Overseas Territories could allow for this data to be collected, although Professor Moffat, from the Office of the Chief Scientific Advisor at the Scottish Government, described the difficulty of monitoring ocean acidification:

... measuring pH in the sea is a real challenge. We can do it in a laboratory because we have—and you have probably all done it at school where we have popped a pH meter in or a piece of litmus paper or something like that. We cannot do that in the sea because the sea is salty. We have to measure other parameters and calculate the pH. Unfortunately, currently, there is no simple device to pop in the sea.³⁶

He noted that the infrastructure for testing would not be needed on each territory, as samples could be analysed in the UK through collaborative working.

13. Dr McQuatters Gollop stressed that there is “a lot we don’t know” about how ocean acidification will affect UK waters and the many “elements of the food web”.³⁷ The Committee on Climate Change Adaptation Sub-Committee agreed and highlighted that fisheries and biodiversity could be impacted:

There is also a lack of evidence of impacts on UK marine ecosystems for different degrees of warming. Higher water temperatures and increasing acidity could result in significant changes to the base of the marine food chain, possibly with major implications for fisheries and biodiversity.³⁸

Some species such as reef-forming corals, already living at their upper tolerance level for temperature, will have more difficulty ‘moving’ fast enough to new areas.³⁹ Coral reefs support over a quarter of all marine species and are of economic importance to many of the UK Overseas Territories where they support regional fisheries, tourism and play a key role in buffering coastal communities from storm waves and erosion.⁴⁰

14. In May 2018, the Science Advisory Council produced a report for the Department for Environment, Food and Rural Affairs (Defra) which reviewed the national monitoring and assessment programmes for ocean acidification and provided advice on how the UK should contribute to global monitoring.⁴¹ Among the recommendations were that the four existing UK time series for ocean acidification should be maintained on a long-term

33 The UK Ocean Acidification (UKOA) research programme ran from 2010 to 2015 jointly funded by National Environment Research Council (NERC), Defra and the then Department for Energy and Climate Change (DECC). University of Plymouth Marine Institute ([SSI0070](#))

34 [Qq11–16](#) [Professor Boyd and Dr Vallance]

35 [Q69](#)

36 [Q68](#)

37 [Q66](#)

38 Adaptation Sub-Committee of the Committee on Climate Change ([SSI0053](#))

39 IUCN. 2017. [Ocean acidification](#)

40 IUCN. 2017. [Ocean acidification](#); Government Office for Science. 2018. [Foresight Future of the Sea](#); Plymouth Marine Laboratory ([SSI0048](#))

41 Ocean Acidification sub group of the Science Advisory Council 2018. [Recommendations to inform a UK Ocean Acidification Monitoring Strategy](#), May 2018.

basis and additional UK sites for ocean acidification monitoring should be established. We asked Professor Boyd why ocean acidification was not being monitored in UK waters, he told us that the monitoring is still going on, but the funding for some of the monitoring has stopped.⁴²

15. Defra's evidence recognised that the ability for the sea to act as a sponge for carbon dioxide (CO₂) is not infinite and there will be a 'tipping point' reached unless emissions can be reduced in line with the United Nations Framework Convention on Climate Change Paris Agreement.⁴³ Professor Moffat made the distinction that climate change is caused by greenhouse gas emissions, whereas ocean acidification relates just to carbon dioxide emissions. He said, "the solution to try to reduce ocean acidification is to reduce the CO₂ concentration in the atmosphere".⁴⁴

Government action on climate change

16. We heard from scientists, including the Government Chief Scientific Adviser, that meeting the Paris Agreement is crucial to a healthy sea.⁴⁵ The Agreement aims to limit warming to well below two degrees Celsius and to pursue efforts to limit it to 1.5 degrees above pre-industrial levels. In October 2018, the Intergovernmental Panel on Climate Change (IPCC) published its special report on the impacts of global warming of 1.5 degrees above pre-industrial levels.⁴⁶ It finds that the additional 0.5°C of warming would mean a 10-cm-higher global sea-level rise by 2100, longer heat waves and would result in virtually all tropical coral reefs being eradicated.⁴⁷ The report cites a global fishery model that projects a 50 per cent decrease in global annual catch. This is twice the rate of decline that would be seen at 1.5C.⁴⁸ The IPCC report deepens the scientific evidence base towards supporting efforts to limit global warming to 1.5 degrees and warns that the window to achieve this, and avoid the worst climate change impacts, will close within the next 12 years.

17. Under the *Climate Change Act*,⁴⁹ the UK is committed to reducing its greenhouse gas emissions by at least 80 per cent by 2050, relative to 1990 levels. In June 2018, the Committee on Climate Change (CCC) concluded that "the Government's current plans and proposals are not on track to meet carbon budgets".⁵⁰ On 15 October 2018, Rt Hon Claire Perry MP, Minister of State for Energy and Clean Growth at the Department for Business, Energy and Industrial Strategy, and Ministers in Scotland and Wales wrote to

42 [Q11](#)

43 Department for Environment Food and Rural Affairs ([SSI0125](#)); The United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement was adopted by consensus on 12 December 2015. The UK ratified the agreement in November 2016.

44 [Q61](#); see also Adaptation Sub-Committee of the Committee on Climate Change ([SSI0053](#))

45 [Q9](#); [Q61](#); Department for Environment Food and Rural Affairs ([SSI0125](#)); Plymouth Marine Laboratory ([SSI0048](#)); Dr Michael Sweet ([SSI0056](#)); Professor Elizabeth Kirk ([SSI0031](#));

46 IPCC. 2018. [Special Report on Global Warming of 1.5 °C \(SR15\)](#)

47 Carl-Friedrich Schleussner, Tabea K. Lissner, Erich M. Fischer, Jan Wohland, Mahé Perrette, Antonius Golly, Joeri Rogelj, Katelin Childers, Jacob Schewe, Katja Frieler, Matthias Mengel, William Hare, Michiel Schaeffer. Differential climate impacts for policy-relevant limits to global warming: the case of 1.5 deg C and 2 deg C. *Earth System Dynamics*, 2016; 7 (2): 327 DOI: [10.5194/esd-7-327-2016](#)

48 IPCC. 2018. [Special Report on Global Warming of 1.5 °C \(SR15\)](#); World Resources Institute. [Half a degree and a world apart](#)

49 [Climate Change Act 2008](#)

50 Committee on Climate Change [progress report](#), June 2018, p36

the CCC to seek advice on the UK's long term climate targets.⁵¹ They asked when the UK should achieve a net zero greenhouse gas target and/ or a net zero carbon target to contribute to the global ambitions set out in the Paris Agreement. The CCC is due to respond by the end of March 2019. We asked the Minister for Energy and Clean Growth (Claire Perry MP) whether action needed to be accelerated to meet existing carbon budgets in light of the CCC's criticism and the findings of the new IPCC report, she said:

Even 10 and 15 years away from these budgets ending, we are over 90% of where we need to be against 1990 levels. I am confident that we will get there. The IPCC report was a very sobering assessment of what we needed to do and that is why we are the first major industrial economy to ask for advice on how we might achieve a zero-emissions economy.⁵²

Claire Perry later clarified in a letter that the Government's response to the CCC's annual progress report outlines new milestones to further progress the policies and proposals set out in the Clean Growth Strategy.⁵³ Lord Ahmad of Wimbledon, Minister of State for the Commonwealth and the UN at the Foreign and Commonwealth Office, told us that additional funding (£26.5 million) has been announced through the Commonwealth Marine Economies Programme, which includes mitigating against the impacts of climate change for small island developing states.⁵⁴

18. Meeting the UN Framework Convention on Climate Change Paris Agreement is critical for the future health of the oceans. A two-degree temperature rise will significantly harm biodiversity and fish stocks and destroy 99 per cent of global coral reefs. We welcome the Government's updated actions and milestones for the Clean Growth Strategy and its request for advice on meeting the Paris Agreement. *The Government must not delay in implementing the Committee on Climate Change's advice on how to meet the ambitions of the Paris Agreement whether through legislative means or otherwise. It should set out its plans in the first half of 2019. This should include setting a net-zero target by 2050 at the very latest.*

19. Human induced carbon dioxide emissions are causing ocean acidification, warming and deoxygenation. This will have major implications for fisheries and biodiversity around the UK and some of the UK Overseas Territories which are reliant on coral reefs for their livelihoods and resilience to extreme weather events. We heard that there is limited knowledge of how these dangers are affecting the biodiversity of our waters and, we are disappointed that monitoring of ocean acidification is no longer being funded by the Government. *In line with the Science Advisory Council's advice to Defra on future ocean acidification monitoring, the existing UK time series for ocean acidification should be maintained on a long-term basis and additional UK sites for ocean acidification monitoring should be established to cover other important habitats. The Government must also use its expertise internationally to help Overseas Territories and Commonwealth countries understand and assess, including through monitoring, their vulnerabilities to ocean acidification, warming and deoxygenation particularly with regards to the impact to biodiversity and fisheries.*

51 [Letter to Lord Deben, Chair of the Committee on Climate Change](#) from Rt Hon Claire Perry, Roseanna Cunningham MSP and Lesley Griffiths AM, 15 October 2018.

52 [Q446](#)

53 [Letter from Rt Hon Claire Perry to Chair](#), 27 Nov 2018; Department for Business, Energy and Industrial Strategy. 2018. [Committee on Climate Change's 2018 progress report: Government response](#), p76 - 82

54 [Q388](#)

Pollution

Chemical pollution

20. Pollution in the ocean comes in many different forms. Some is from activities at sea, such as marine litter, oil spills, lost or discarded fishing gear (known as ‘ghost gear’) as well as underwater noise and light pollution from shipping and marine industries.⁵⁵ Yet more than 80 per cent of marine pollution is from land-based sources, reaching the ocean through waterways, drains or sewers.⁵⁶ This includes excess nutrients from fertilisers and sewage run-off, mismanaged waste and contaminants such as heavy metals, radioactive waste, pharmaceuticals, persistent organic pollutants (POPs),⁵⁷ oils and untreated sewage.⁵⁸

21. Nutrient-based pollution of coastal areas is associated with effluent run-off from farmland and septic tanks and from the adverse effects of discharges of wastewater and certain industrial discharges.⁵⁹ These excess nutrients cause excessive growth of plants and algae resulting in depleted dissolved oxygen concentrations (eutrophication). This can cause algal blooms which harm fish, mammals and birds and have economic impacts, such as the closure of shellfish harvesting areas.⁶⁰ Our recent inquiry into *UK Progress on Reducing Nitrate Pollution* found that 86 per cent of English rivers did not reach good ecological status in 2016,⁶¹ which is lower than the EU average, and that UK bathing waters are seventh from the bottom in the EU.⁶² Witnesses such as the RSPB suggested that to effectively deal with the impacts at sea, much greater progress must be made to reduce land-based sources of nitrogen pollution.⁶³ The diffuse sources of nutrient enrichment make remediation of eutrophication difficult, but it could be limited through more responsible fertiliser use on land through improved catchment management practices and incentivising the reduction of chemical fertilisers and pesticides in agriculture.⁶⁴ The British Ecological Society noted that improved sewage treatment has reduced its impact on UK marine ecosystems, yet there are other issues of concern that have not been studied in as much detail, such as the potential build-up of pharmaceuticals in marine habitats.⁶⁵

22. Dr Patrick Vallance, Government Chief Scientific Adviser, told us that there is a “good news story” for heavy metals as they are decreasing.⁶⁶ The UK’s Biodiversity Indicators which monitor marine pollution,⁶⁷ show that over the period 1990 to 2016 all six indicator

55 Environment Links UK ([SSI0102](#)); University of Exeter ([SSI0065](#)); World Animal Protection ([SSI0052](#))

56 WWF-UK ([SSI0101](#))

57 Persistent organic pollutants are chemical substances that persist in the environment, bio-accumulate through the food web, and pose a risk of causing adverse effects to human health and the environment.

58 Environment Links UK ([SSI0102](#)); Professor Callum Roberts ([SSI0077](#)); British Ecological Society ([SSI0076](#)); Professor Elizabeth Kirk ([SSI0031](#)); Marine Biological Association ([SSI0028](#)); Arup ([SSI0038](#))

59 Fauna & Flora International ([SSI0105](#)); Environmental Audit Committee, Eleventh report of Session 2017–19, [UK Progress on Reducing Nitrate Pollution, HC656](#)

60 MCCIP; Arup ([SSI0038](#))

61 Under [the EU Water Framework Directive](#) all water bodies should have a good ecological status by 2027

62 Environmental Audit Committee, Eleventh report of Session 2017–19, [UK Progress on Reducing Nitrate Pollution, HC656](#) and European Environment Agency, [Good news for holiday makers: excellent water quality at vast majority of European bathing sites](#), May 2018

63 RSPB ([SSI0063](#))

64 RSPB ([SSI0063](#)); University of Exeter ([SSI0065](#)); EU ATLAS Project ([SSI0037](#))

65 British Ecological Society ([SSI0076](#)); Fauna & Flora International ([SSI0105](#))

66 [Q23](#)

67 Defra, DAERA, Welsh Government, Scottish Government, [2018 Biodiversity statistics](#)

substances have declined.⁶⁸ Yet a review by the University of Plymouth stressed that a lack of data is a challenge for measuring marine pollutants and their impact, as many of the contaminants of concern are not commonly monitored entering the marine environment.⁶⁹ These include nanomaterials, personal care products and pharmaceuticals.⁷⁰ Some of these materials are not subject to bacterial attack and so steadily build up in coastal waters, sediments, plants and animals, creating an increased prevalence of disease and build-up of toxins in the food chain.⁷¹ Professor Boyd explained it is new chemical compounds that he is most concerned about:

The things I worry about are the unseen things. We are creating new chemical species all the time and we are using them in all sorts of imaginative ways in our economy. Very often we do not worry they are a problem until they turn up in the oceans in some way or another. Brominated flame retardants are an example of that.⁷²

23. Brominated flame retardants have routinely been added to consumer products for several decades. Professor Boyd said they can travel into the marine environment and bioaccumulate.⁷³ They are “not quite as toxic” as Polychlorinated biphenyls (PCBs), but once they get into top predators they tend to have negative effects.⁷⁴ PCBs are persistent organic pollutants (POPs)⁷⁵ that are considered the main threat to cetaceans (whales, dolphins and porpoises) in Europe.⁷⁶ Although they are now banned, PCBs were used ubiquitously in electrical utilities and in other industrial applications which has created a large legacy issue. We heard that old transformers and infrastructure have PCBs in and there are probably “large amounts” in landfill sites which continuously leak into the environment.⁷⁷ Once POPs get into the marine system they become distributed over very large areas and can volatilise, travelling across the world. POPs can also become trapped in marine sediments, which cannot easily be treated and can cause re-exposure if disturbed by marine industries.⁷⁸

24. The best course of action is not to release POPs in the first place.⁷⁹ PCBs and some brominated flame retardants are covered by the 2004 Stockholm Convention, an international treaty which aims to eliminate, restrict or reduce emissions of the 28

68 The indicator is based on levels of five heavy metals (cadmium, mercury, copper, lead and zinc) and one organic compound (lindane). Mercury and lindane have fallen by 90%; cadmium by 87%; lead by 66%; zinc by 63% and copper by 57%.

69 Future of the Sea: [Hazardous Chemicals and Physical Contaminants in the Marine Environment](#); University of Plymouth Marine Institute ([SSI0070](#))

70 Such as heavy metals, pesticides, flame retardants, plastics, radioactive material, and drugs such as antibiotics, hormones and birth control chemicals.

71 University of Plymouth Marine Institute ([SSI0070](#))

72 [Q23](#)

73 Birnbaum, L.S., Staskal, D.F. 2004. Brominated flame retardants: cause for concern? *Environmental Health Perspectives* 112(1): 9–17.

74 [Q4](#)

75 Persistent organic pollutants (POPs) are chemicals of global concern due to their potential for long-range transport, persistence in the environment, ability to bio-magnify and bio-accumulate in ecosystems, as well as their significant negative effects on human health and the environment.

76 British Ecological Society ([SSI0076](#)); [Q29](#)

77 [Q6](#)

78 [Q6](#); Fauna & Flora International ([SSI0105](#))

79 [Q6](#); [Q29](#)

chemicals classified as POPs.⁸⁰ Under the Convention, existing equipment that contains or is contaminated with PCBs may continue to be used until 2025, and there is an exemption that allows the recycling of plastics and foams containing POPs until 2030.⁸¹ We asked Lord Ahmad, Minister of State for the Commonwealth and the UN, to clarify the Government's position on PCBs. He stated:

The use of Polychlorinated Biphenyls (PCBs) has been progressively restricted since the 1970s and their supply and use in new products was banned in the UK in 1986. In the 25 Year Environment Plan the Government has committed to seeking to eliminate the use of all PCBs by 2025, in line with our commitments under the Stockholm Convention on Persistent Organic Pollutants. This commitment refers to PCBs in legacy materials and equipment including transformers, capacitors or other repositories containing liquid stocks.⁸²

25. Professor Boyd suggested that the UK was acting responsibly but added that there may be other countries still producing PCBs in “places like Southeast Asia”.⁸³ He suggested the UK should not only get its “own house in order” with respect to polluting the oceans but should also help other countries to understand where their sources of pollution are. He added that the UK should use its influence in the international community to make sure that treaties such as the Stockholm Convention are complied with.⁸⁴ As of June 2018 the Convention had not been ratified by the United States,⁸⁵ Israel, Malaysia and Italy, yet the global nature of the impacts demonstrates the need for multi-lateral action.⁸⁶

26. Many of the chemical pollutants found in the ocean are from land-based sources. It is worrying that the UK is lagging behind other countries in the EU with regards to nitrate pollution, and much greater progress must be made to reducing land-based sources of chemical pollution. *The Government should, as part of its Environment Bill, produce legally binding targets on water quality in-line with or exceeding those set out in the EU Water Framework Directive. These targets should be underpinned by clear milestones.*

27. Once in the marine environment, Persistent Organic Pollutants can travel across the globe. They therefore require global commitments and coordination to eliminate, restrict or reduce their use. Although Polychlorinated Biphenyls (PCBs) have been banned in the UK for over 30 years, they remain high in estuarine and coastal environments. This highlights the importance of the precautionary approach to chemical regulation and use. *In addition to meeting its obligations under the Stockholm Convention, the Government should to use its expertise and influence in*

80 UN Industrial Development Organization. [Stockholm Convention](#) [Accessed 19/11/18] and POST. 2018. [Persistent Chemical Pollutants](#) The pollutants covered by Convention are either pesticides, industrial chemicals or unintentionally produced by-products from combustion. Only three brominated flame retardants are currently listed under the convention yet there are around 80 different types, with others are expected to join the list soon.

81 UNEP. 2018. Stockholm Convention [PCBs overview](#) [Accessed 20/11/2018]; POST. 2018. [Persistent Chemical Pollutants](#)

82 [Letter from Lord Ahmad of Wimbledon to Mary Creagh](#), 11 November 2018

83 [Q6](#)

84 [Q17](#)

85 Although the United States signed the agreement in 2001, the Senate has yet to provide advice and consent to ratification. U.S. participation as a full party to the Stockholm Convention is needed to ensure the treaty fulfills its objective.

86 UNEP. Stockholm Convention [Status of ratification](#) [Accessed 28/11/18]

the international community to pressure non-ratifying states to eliminate the use of Persistent Organic Pollutants and ensure that those which have signed the Treaty are complying with its requirements.

Plastics

28. Globally, 320 million tonnes of plastic are used every year, and, of this, only five per cent is effectively recycled.⁸⁷ Plastics are made to be durable, but this means they degrade slowly and therefore accumulate in the environment. Around 70 per cent of all the litter in the oceans is made of plastic and the vast majority originates from land, with rivers providing a pathway to the sea.⁸⁸ Once in the environment, plastics can also break down to form microplastics through the fragmentation and weathering of larger items.⁸⁹

29. The British Sub Aqua Club told us that “as well as fishing nets, divers routinely see rubbish such as plastic drinking bottles and other detritus”.⁹⁰ Programmes such as BBC’s ‘Blue Planet 2’, have captured the public attention and shone a spotlight on the issues of marine litter and specifically plastic pollution.⁹¹ Its impacts range from direct entanglement of marine life, choking of animals on ingested plastics and the suffocation of coral reefs. The number of seabirds estimated to have ingested plastic has increased from five per cent in 1960 to 90 per cent in 2015.⁹² Microplastics can also enter the food chain and act as vectors for toxins, both from chemical additives in plastics and because of their role in concentrating the background pollutants present in the oceans.⁹³ Professor Boyd warned of hidden threats to the ocean as so much unseen pollution is made up of microplastics.⁹⁴ He said that there is relatively little evidence that microplastics cause serious long-term harm, but that is “largely because we have not looked hard enough yet”.⁹⁵

30. Professor Richard Thompson, Head of the International Marine Litter Research Unit at the University of Plymouth, told us action on plastics needs to be taken on land to prevent it ending up in the oceans:

Plastic pollution in the sea is a symptom of a more systemic issue originating on land and related to the design, the use and the disposal of plastic items, particularly single-use packaging. To reduce it, a key priority is to focus on interventions and stewardship to help reduce the quantity of plastic waste generated by society and the associated release of litter to the ocean.⁹⁶

Dr Vallance agreed that plastics must be tackled at their source and told us that if nothing is done about the input of plastic to the ocean it will treble in ten years.⁹⁷ China, Indonesia, the Philippines, Thailand and Vietnam are responsible for as much as 60 per

87 Sky Group. 2018. [Bigger Picture Impact Report](#)

88 Professor Elizabeth Kirk ([SSI0031](#)); University of Plymouth Marine Institute ([SSI0070](#))

89 CIWEM, 2017. [Addicted to plastic](#)

90 British Sub-Aqua Club ([SSI0126](#))

91 WWF-UK ([SSI0101](#))

92 Wilcox, C., Van Sebille, E. & Hardesty, B. D. 2105. Threat of plastic pollution to seabirds is global, pervasive, and increasing. *Proceedings of the National Academy of Sciences* 112: 11899, cited in WWF. 2018. [Living Planet Report](#)

93 Fauna & Flora International ([SSI0105](#))

94 [Q4](#)

95 [Q4](#)

96 University of Plymouth Marine Institute ([SSI0070](#))

97 [Q18](#)

cent of the plastic waste that enters the world's seas,⁹⁸ yet the UK ships its waste to these countries, which could be exacerbating the problem.⁹⁹ Will McCallum, Head of Oceans at Greenpeace highlighted that the UK is beginning to lose its markets for these exports:

... just this week we had Thailand announce that it is going to stop receiving any waste from the west. At the start of this year, we had China say the same. This morning we had Malaysia come out and say that they are going to be reforming their waste imports. This problem on the other side of the world still involves UK waste, and that is waste that sometimes we think is being recycled.¹⁰⁰

31. Under UN Sustainable Development Goal 14 there is a target to “prevent and significantly reduce marine pollution of all kinds, particularly from land-based activities, including marine debris and nutrient pollution” by 2025 (see Annex B for more information).¹⁰¹ The Government's *Clean Growth Strategy* commits it to work towards “zero avoidable waste by 2050” and its *25 Year Plan for the Environment* commits to “achieving zero avoidable plastic waste by the end of 2042”,¹⁰² while the EU has a more ambitious target to make all plastic packaging on the European market recyclable by 2030. Greenpeace suggested the UK's targets are too weak and action on avoidable plastic should be accelerated:

The 25yr environment plan commitment of “working towards eliminating all avoidable plastic waste by the end of 2042” is far too vague and massively lacks ambition on timescale. Instead, it should be a target to eliminate all single use plastic by the mid-2020s.¹⁰³

Defra highlighted the action that the UK Government has already taken on plastics, including legislation to band microbeads, the 5p plastic bag charge, its plans for a plastic bottle deposit return scheme and to end the sale of plastic straws, stirrers and cotton buds.¹⁰⁴ Although the 5p plastic bag charge has resulted in a reduction of 86 per cent since it was introduced in 2015, Professor Mills from the University of Southampton thought more could be done through complete bans or a more significant plastic tax.¹⁰⁵ Will McCallum suggested that the Government should go further and introduce a tax on virgin plastics (those that have never been used or processed before), to steer companies to move away from the need to produce single-use plastics using virgin plastic. He thought it would also provide an incentive to recapture material that is being sent abroad.¹⁰⁶

32. Fiona Ball, Head of Inspirational Business at Sky Group, thought that the Government could do more to help businesses determine which plastics are avoidable and which are problematic:

98 McKinsey & Company and Ocean Conservancy. 2015. [Stemming the Tide: Land-based strategies for a plastic free ocean](#)

99 [Why the world's recycling system stopped working](#), Financial Times, 25 October 2015

100 [Q238](#)

101 UN Sustainable Development Goal 14: [Life below water](#) [Accessed 14/09/2018]

102 Department for Business, Energy and Industrial Strategy. 2017. [Clean Growth Strategy](#); HM Government. 2018. [A Green Future: The Government's 25 year plan to improve the environment](#)

103 Greenpeace ([SSI0086](#))

104 Department for Environment Food and Rural Affairs ([SSI0125](#))

105 Defra, [Carrier bag charge: summary of data in England](#), 30 July 2016; [Q72](#)

106 [Q238](#)

We need to be really clear with respect to what the problematic plastics are and what businesses need to do, so a policy with respect to what single-use plastic is and what plastics we should as businesses eliminate, and Government could help identify which plastics we need to act fast on.¹⁰⁷

33. In the 2018 Budget, the Chancellor, Phillip Hammond, announced a new tax on the manufacture and import on plastic packaging which includes less than 30 per cent recycled plastic from April 2022 (subject to consultation).¹⁰⁸ The Budget did not include a tax on disposable cups (commonly referred to as a ‘latte levy’) as recommended by this Committee, but this will be reconsidered if the industry does not make enough progress. DEFRA’s Resources and Waste Strategy, says it will consider including disposable cups in its deposit return scheme.¹⁰⁹ We asked Claire Perry why there were not more measures to tackle plastic in the Budget. She told us:

There are many ways to tackle the plastics problem. Clearly part of that is to improve recycling rates and there are consultations currently out there on the idea of deposit schemes—refunds for deposits. We have shown absolute leadership in banning microbeads, which is something that other European countries have not done. Microbeads are a major problem in the ocean food chains. I may not be able to persuade you that we are leading but I hope I can persuade you that this has come from nowhere, in the last 18 months, to being one of the most fundamental questions for DEFRA.¹¹⁰

34. Around 70 per cent of all the litter in the oceans is made of plastic and, if no action is taken, it will treble within the next ten years. There are a wide range of risks associated with marine litter and plastic pollution including direct entanglement or ingestion by seabirds and marine life and the suffocation of coral reefs and life on the seabed. Plastics break down to form microplastics which have the potential to enter the food chain and act as vectors for toxins. There is a lack of data on their serious long-term harm and the health implications of these plastic particles entering the food chain.

35. There is much more that the Government could do to prevent waste reaching the ocean, both domestically and by not exporting waste to countries with poor recycling infrastructure. Supporting Indonesia and Malaysia to reduce plastic while simultaneously exporting contaminated plastics to them shows the lack of a lined-up approach at the heart of the Government’s strategy. We welcome the Government’s Resources and Waste Strategy which puts more onus on producers to pay for the costs of recycling and disposal of waste. Yet much of the strategy remains subject to consultation and will not be implemented for several years. We are disappointed that the plastic bottle deposit return scheme promised in 2017 will not be ready until 2023. Action needs to be taken much sooner to meet the Sustainable Development Goal target to prevent and significantly reduce marine pollution of all kinds by 2025.

107 [Q235](#)

108 HM Treasury. [The 2018 Budget](#)

109 Department for Environment, Food and Rural Affairs. [Our Waste, Our Resources: A Strategy for England](#), p.61

110 [Q423](#) see also [Qq417–435](#)

We recommend that the Government should:

- ***bring forward the 2042 target date to achieving zero avoidable plastic waste and set binding interim targets in its upcoming Environment Bill which meet or exceed targets set by the European Union, in consultation with the Welsh, Scottish and Northern Irish Governments and the proposed Office for Environmental Protection;***
- ***expedite the deposit return scheme and extended producer responsibility schemes proposed in the Resources and Waste Strategy as soon as practicable and before the end of this Parliament;***
- ***provide a clear definition of ‘single use’ plastics and ‘avoidable’ plastics;***
- ***ban single use plastic packaging that is difficult or impossible to recycle;***
- ***introduce a 25p latte levy on disposable coffee cups and for all coffee cups to be recycled by 2023; and***
- ***set out how it will create and fund the necessary infrastructure to support a domestic recycling industry to help end of export of contaminated waste/ recycling.***

3 Sustainable Fisheries

36. Globally a third of fish stocks are overfished.¹¹¹ Professor Boyd, Chief Scientific Adviser for the Department for Environment, Food and Rural Affairs, told us that although it is not getting worse, overfishing is still probably the number one threat to the health of the oceans.¹¹² Unsustainable fishing, in the UK and elsewhere, causes a decline of populations of non-target species which are caught accidentally. For example, it has been estimated that between 160,000 and 320,000 seabirds are killed annually in longline fisheries across the world.¹¹³ One of the biggest threats to corals and other seafloor habitats is from fishing practices such as bottom trawling, which can damage or destroy corals and habitats. Sustainable fishing practices could help reduce wider biodiversity loss and the risk of damage to deep sea habitats and ecosystem function. Market-based mechanisms can be used to recognise, reward and incentivise sustainable fishing as a compliment to robust fisheries policy and legislation.¹¹⁴ Our inquiry has looked specifically at the effectiveness of the Marine Stewardship Council certification scheme's contribution to sustainable fisheries.

Marine Stewardship Council certification

37. The Marine Stewardship Council (MSC) was founded in 1997 by WWF and Unilever (then owner of major seafood brands Birdseye and Iglo) and has been independent since 1999. It is one of the world's most recognised certification schemes for wild capture fisheries with its 'blue tick' label denoting a fishery has scored highly against the MSC's sustainability criteria (see box). Over four hundred fisheries, landing 10 million tonnes of seafood per year are engaged in the programme, certified or under full assessment, including small-scale fisheries in Asia, Africa and Latin America; over 50 per cent of UK landings are MSC certified.¹¹⁵

Marine Stewardship Council certification

Fisheries are assessed by independent third-party accreditors (Conformity Assessment Bodies - CABs) against the MSC's standard for environmentally responsible and sustainable fishing, which is based on the United Nations Food and Agricultural Organisation's Code of Conduct for Responsible Fishing. They receive a score out of a hundred for each of 28 sustainability indicators. If a fishery scores below 60 it fails to be certified, if it scores between 60–79 for any indicator it must improve its performance within a specified time frame to gain or retain certification. Certified fisheries must score an average of at least 80 for indicators within each of the three principles of the MSC Standard: Sustainable fish stocks, minimising environmental impact and effective management. Assessments can take 8–24 months, depending upon the complexity of the fishery.

111 Currently 33.1 per cent are fished beyond biological sustainability. UNFAO. 2018. [The state of world fisheries and agriculture](#).

112 [Q3](#)

113 Anderson ORJ, Small CJ, Croxall JP, Dunn EK, Sullivan BJ, Yates O, Black A. 2011. [Global seabird bycatch in longline fisheries](#). *Endangered Species Research* 14:91–106

114 RSPB ([SSI0063](#)); Marine Stewardship Council ([SSI0095](#)); Pew Trusts ([SSI0014](#))

115 Marine Stewardship Council ([SSI0095](#))

38. The MSC has met Global Sustainable Seafood Initiative (GSSI) certification, one of five certification schemes in the seafood sector, and we heard that the alternative labelling and certification systems (FairTrade, ASMI, Friend of the Sea, Marine Ecolabel Japan) are not nearly as rigorous or stringent.¹¹⁶ The MSC is the only wild-capture fisheries certification and ecolabelling programme that meets best practice requirements set by both the United Nations Food and Agricultural Organisation (UNFAO) and ISEAL Alliance.¹¹⁷ We received many submissions supporting the MSC and providing evidence of where it has led to improvements in sustainable fishing practices,¹¹⁸ and a number calling for the MSC to review and improve its processes and standard.¹¹⁹ One witness described it as a force for good that had lost its way,¹²⁰ while another said that the bar is becoming too high even for world leading fisheries.¹²¹

Unit of Assessment and fishing practices

39. The NGO collective *Make Stewardship Count* suggested that an increasing number of controversial fisheries “that have long-lasting negative impacts on vulnerable species and sensitive habitat” have received MSC certification or have been recertified.¹²² Another coalition *On the Hook*,¹²³ has called for the MSC to “urgently review its Standard” with regard to the fishing of tuna in the Parties to the Nauru Agreement (PNA) fishery.¹²⁴ The use of nets to catch free swimming tuna in the region was certified by the MSC in 2011, but it has been reported that the same vessels can also use other more damaging techniques that generate more by-catch on the same fishing trip, including the capture of protected species (see box).¹²⁵ This is called a compartmentalised fishery. The MSC allows fisheries to define their target stock, management area, fishing gear and vessels, their *Unit of Assessment*.¹²⁶ On the Hook consider that fisheries entering the MSC programme should

116 The Global Sustainable Seafood Initiative ([SSI0055](#)); California Environmental Associates ([SSI0010](#))

117 Marine Stewardship Council ([SSI0095](#)); ISEAL Alliance ([SSI0072](#)) The ISEAL Alliance is the global membership association for sustainability standards.

118 E.g. Zoological Society of London ([SSI0058](#)); Marine Biological Association ([SSI0028](#)); Professor Michel Kaiser ([SSI0054](#)); Dr Simon Jennings ([SSI0020](#)); RSPB ([SSI0063](#)); Wageningen Marine Research ([SSI0015](#)); Scomber consultancy ([SSI0016](#)); BirdLife South Africa ([SSI0025](#)); Sustain: The Alliance for Better Food and Farming ([SSI0110](#)); Southern Inshore Fisheries and Conservation Authority ([SSI0093](#)); Aquaculture Initiative EEIG ([SSI0071](#)); Fair Seas Limited ([SSI0044](#)); Thuenen Institute of Baltic Sea Fisheries ([SSI0062](#)); Deepwater Group ([SSI0064](#)); see also California Environmental Associates ([SSI0010](#))

119 E.g. Make Stewardship Count ([SSI0097](#)); Earth Island Institute ([SSI0040](#)); On The Hook ([SSI0094](#)); Fish4Ever ([SSI0012](#)); Richard Page ([SSI0027](#)); Austral Fisheries Pty Ltd ([SSI0002](#)); Professor Callum Roberts ([SSI0077](#));

120 Professor Callum Roberts ([SSI0077](#))

121 Norwegian Fishermen’s Association (NFA) ([SSI0024](#))

122 Make Stewardship Count ([SSI0097](#)) Make Stewardship Count is a collective of marine conservation organisations, academics and researchers, animal protection organizations, and individuals. In January 2018, the group sent an open letter to the Marine Stewardship Council outlining concerns and a series of specific recommendations.

123 Signatories to On the Hook ([SSI0133](#)) (Oct 2018) include Lewis Pugh, Hugh Fearnley-Whittingstall, World Wise Foods, Bloom, American Tuna, Blue Marine Foundation, Woolworths South Africa, David Suzuki Foundation, Ocean Harvester Operative, Ecology Action Centre, Island Conservation Society, SharkProject, Environmental Justice Foundation, Fish4Ever, Forest & Bird, Fair Fish, Turtle Island, Richard Benyon MP, James Heapey MP, Simon Clarke MP, Paul Scully MP, Professor Callum Roberts, Professor Jennifer Jacquet, Professor Megan Bailey, Dr Thomas Appleby, Dr Phillippe Cury.

124 PNA Members are Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Palau, Papua New Guinea, Solomon Islands and Tuvalu.

125 [Consumers ‘betrayed’ over sustainability of world’s biggest tuna fishery](#), The Guardian, 31 Aug 2018

126 On The Hook ([SSI0094](#)); On the Hook ([SSI0133](#)); Dr Simon Jennings ([SSI0020](#))

be assessed holistically looking at all the activities that take place within it.¹²⁷ It also has concerns that shark finning is taking place within the PNA Fishery which is banned by the MSC standard and the PNA nations.¹²⁸

Fishing gear types in tuna fisheries

Purse seine fishing involves a net being put into the water to encircle a school of tuna. The bottom of the net is then drawn together, trapping them. The net may be placed over a school of tuna swimming in the open ocean. The levels of bycatch are lower because it is less likely that other marine mammals or fish will be trapped. Tuna can be difficult to locate in the open ocean, so fishers can rely on Fish Aggregating Devices (FADs), originally natural objects around which small fish congregate, attracting larger fish such as tuna, but latterly manmade devices. Due to the development of communities around these devices, setting a purse seine net on a FAD involves much more by catch of non-target species and juvenile tuna.¹²⁹

40. We asked Rupert Howes, Chief Executive of the MSC, why it allowed compartmentalised fisheries to be certified. He told us that the MSC, like all market-based programmes, allow the Unit of Assessment to be defined by the client, to “try to give advantage to those units that are operating sustainably”.¹³⁰ He pointed out that the MSC cannot differentiate between gear types because it follows the UNFAO guidelines for certification.¹³¹ Only the sustainable catch is certified, and the independent certifiers have onboard observers who ensure the catch is completely segregated.¹³²

41. In January 2018, the MSC Board considered the issue of compartmentalised fisheries and “determined its preferred solution”, but further stakeholder engagement identified that the “proposed solution could not readily be operationalised”, and consultation was therefore re-opened for further input in August 2018.¹³³ The MSC told us that since then it has been in the process of reviewing its Standard and it will incorporate the submissions from On the Hook and Make Stewardship Count and other stakeholders.¹³⁴ It said the proposal by its critics to complete the review by the year end,¹³⁵ “suggests they do not appreciate the scale of the task of reviewing a 700-page Standard alongside new developments in science and fisheries management”.¹³⁶ The MSC also explained its view that Governments and international fisheries management agencies are responsible for ensuring fisheries are sustainable:

We want to see global fisheries fish sustainably. It does not mean they have to be MSC certified. Yes, we do have concerns on policy, but we are not a policy organisation or an advocacy or a campaigning organisation.

127 On the Hook ([SSI0133](#))

128 On the Hook ([SSI0133](#))

129 On The Hook ([SSI0094](#))

130 [Q109](#)

131 [Q139](#)

132 [Q111](#)

133 Marine Stewardship Council ([SSI0143](#))

134 [Q156](#)

135 E.g. Sharkproject International e.V ([SSI0098](#))

136 [Letter from Rupert Howes, Marine Stewardship Council on the Sustainable Seas Inquiry, 9 Oct 2018](#)

It sounds a bit boring, but we are a crusty old standard setter trying to use certification, labelling and science to influence behaviour. That is our contribution to shifting the entire sector.¹³⁷

42. We asked WWF, one of the founders of the MSC, what it made of the criticism. Dr Louise Heaps, Head of Blue Economy at WWF told us that the MSC has been “a game changer globally over the last 20 years”.¹³⁸ Yet she considered the external environment had changed a great deal and consumers are now expecting a lot more in terms of governance for the whole ecosystem and not just on the target species. Dr Heaps also explained that WWF had concerns on the independence of the certifying bodies:

Many fisheries out there are certified well and are acting well and we are happy with them, but we have experienced cases where we have felt that there was not full independence with regard to the certifier. [...] We are suggesting that the system should be tightened to make sure that the certifier is not the only body finalising and making decisions and that the best scientific evidence that is out there is leading the decisions and making them robust.¹³⁹

43. The MSC told us it is subject to regular independent review and evaluation; it undertakes a comprehensive and systematic review of its own Standard every five years.¹⁴⁰ The Conformity Assessment Bodies that undertake the certification process are accredited by an independent accreditation body, Accreditation Services International (ASI). ASI told us that in the past five years, it has placed four CABs under suspension from the MSC Fisheries programme.¹⁴¹ Dr Heaps suggested that a third arbiter could be brought in if there was no agreement between a peer reviewer, a stakeholder and the certifying body.¹⁴²

Small scale fisheries

44. Charles Redfern, from Fish4ever, expressed serious concerns that the MSC is “not viable” for the small-scale fishing industry:

By their definition they favour large-scale industrial boats, and if you look at it from a global statistics point of view, small-scale fishing is far better in terms of bycatch, discard and environmental impact ... I think it is very important that the small-scale fishing industry, which is also disadvantaged by economic factors and competitive factors, is not disadvantaged by a sustainability certification.¹⁴³

He added that small scale fishing can be hampered by others overfishing in the same area.¹⁴⁴ Sönke Fischer from ASI said that most standard systems are harder for small scale producers to access and a review of barriers to entry may be helpful.¹⁴⁵ Rupert Howes

137 [Q118](#)

138 [Q128](#)

139 [Q135](#)

140 Marine Stewardship Council ([SSI0143](#))

141 Accreditation Services International ([SSI0130](#)); Marine Stewardship Council ([SSI0095](#)); Dr Simon Jennings ([SSI0020](#))

142 [Q153](#)

143 [Q97](#)

144 Charles Redfern ([SSI0144](#))

145 [Q148](#)

explained that the MSC has helped to engage small scale fisheries, for example through the UK Project Inshore, an eight-year project with Defra.¹⁴⁶ Dr McQuatters Gollop from the University of Plymouth noted that, as large fisheries generate more CO₂ than smaller fisheries due to their ships travelling over longer distances, carbon should be factored into the MSC standard.¹⁴⁷

45. Under its *25 Year Plan for the Environment*, the Government has committed to implement science-based plans as part of its approach to managing fisheries sustainably and to recovering fish stocks to sustainable levels in the shortest time feasible.¹⁴⁸ Defra told us that fisheries companies using certification standards such as those provided by the MSC and retailers stocking products with fisheries ecolabels, are playing key roles in tackling the challenge of unsustainable fishing.¹⁴⁹ Lord Ahmad said that the Foreign and Commonwealth Office believed certification to be one of the solutions to tackling the challenge of unsustainable fishing and pointed to the successful recovery of cod stocks in the North Sea.¹⁵⁰ Specifically on the MSC, Claire Perry noted that the Government do not have a view as to whether it is the right scheme or whether there might be another scheme that is better.¹⁵¹

46. The Marine Stewardship Council standard is the market leader and the most rigorous certification in the seafood sector. We heard evidence that it is driving incremental change towards sustainable fish stocks through improvements in fishing practices, but there were concerns with the holistic assessment of fisheries and the inclusion of small scale fisheries. To ensure continued consumer confidence in the Marine Stewardship Council certification, we recommend the MSC addresses specific criticisms raised by WWF, Prof Callum Roberts and others into its five-year review and strengthens its standard accordingly. These criticisms include its unit of assessment, the need to factor in carbon from ships into its standard, concerns about shark finning (where we look forward to the publication of data verifying the reduction of this practice in 2019) and barriers to entry for small scale fisheries. The review should be transparent and ideally independently evaluated. Ultimately voluntary, market-based schemes will never be applicable or relevant to every fishery. The responsibility for managing and overseeing fisheries and ensuring their sustainability lies with policymakers both at the national and international level, whether it be individual governments or regional bodies such as the European Union.

Salmon aquaculture

47. Aquaculture—or fish farming—now provides half of all fish for human consumption globally and by 2030 it may be as much as 63 per cent.¹⁵² The University of Exeter’s Centre for Sustainable Aquaculture Futures (SAF) argues that aquaculture is the only foreseeable way to sustainably intensify seafood production to meet the projected growth in human population.¹⁵³ The UK is one of Europe’s leading aquaculture producers. It is dominated

146 [Q146](#); see also Southern Inshore Fisheries and Conservation Authority ([SSI0093](#))

147 [Q94](#)

148 HM Government. 2018. [A Green Future: The Government’s 25 year plan to improve the environment](#)

149 Department for Environment Food and Rural Affairs ([SSI0125](#))

150 [Letter from Lord Ahmad of Wimbledon to Mary Creagh](#), 11 November 2018

151 [Q455](#)

152 UN Food and Agricultural Organisation. 2016. [The state of world fisheries and aquaculture](#)

153 Centre for Sustainable Aquaculture Futures ([SSI0111](#))

by Atlantic salmon and blue mussels with 99 per cent of UK finfish production based in Scotland and 47 per cent of UK shellfish produced in England and Wales.¹⁵⁴ Agriculture, fisheries and environment policies are devolved to Scotland.

48. In 2018 the Scottish Parliament Environment, Climate Change and Land Reform Committee (ECCLR) conducted in depth inquiry on the environmental impacts of salmon farming. It found that of the 227 salmon farms in the sea, 22% are within Marine Protected Areas. The report identified further issues within the industry (for example, sea lice, disease and discharge of medicines, the sustainability of feedstock, waste and the impacts on wild fish), and was deeply concerned that growth of the sector is taking place without a full understanding of the environmental impacts.¹⁵⁵ It recommended an independent assessment of the environmental sustainability of the predicted growth of the sector.

A sustainable food source?

49. Aquaculture is more space efficient than agriculture and salmon production has lower CO₂ emissions compared to pork or beef. Fish are also more efficient producers of protein than cows or chicken.¹⁵⁶ In the wild, salmon eat other fish and marine animals. On farms, most species are fed a carnivorous diet comprising fishmeal and fish oil derived from wild caught species of small non-native pelagic fish (fish that live in the open seas) such as anchovies, herring and sardines.¹⁵⁷ Professor Boyd, Chief Scientific Adviser for the Department for Environment, Food and Rural Affairs, raised concern over the sustainability of fish feed and its impacts on the food chains in the Southern Ocean:

Essentially we feed fish to fish, so we catch fish in various parts of the world, process them into salmon food, and then feed them to salmon. That is highly inefficient. The environmental impacts of that are felt in places like Antarctica, because Antarctic krill are fished partly for that purpose.¹⁵⁸

Dr McQuatters Gollop from the University of Plymouth also stressed that the diverse Southern Ocean food web is largely dependent on availability of krill (small crustaceans).¹⁵⁹ The ECCLR Committee concluded that the current source of fish meal and fish oil are at “maximum sustainable yield” and there is not enough sustainable fish produced to expand Scottish aquaculture.¹⁶⁰ We put this to Ben Hadfield from the Scottish Salmon Producers’ Organisation, he told us:

We buy a lot worldwide. Basically, everything that we have is certified [...] by the International Fishmeal and Fish Oil Organisation. That standard

154 33% in Northern Ireland; 20% in Scotland for 2008. MCCIP. 2011. [Aquaculture](#) impacts report card and Centre for Sustainable Aquaculture Futures (SSI0111)

155 Environment, Climate Change and Land Reform Committee, [Report on the environmental impacts of salmon farming](#), 5 March 2018

156 Centre for Sustainable Aquaculture Futures (SSI0111); [Q162](#); [Q208](#); It takes around 700 grams of wild fish to produce over 1 kilo of farmed salmon,

157 Arup (SSI0038)

158 [Q50](#)

159 [Q64](#); see also Friends of the Sound of Jura (SSI0030)

160 Environment, Climate Change and Land Reform Committee, [Report on the environmental impacts of salmon farming](#), 5 March 2018

says that the total allowable catch is sustainable relative to the biomass. It is not as advanced as MSC [...] Fisheries is moving towards MSC certification for feed-grade fisheries in fishmeal and fish oil.¹⁶¹

Fishmeal can be replaced with specific plant and vegetable alternatives, however a differentiator for consumers is that Scottish salmon has high marine oil content in its diet which provides health benefits (Omega 3 essential fatty acids).¹⁶² SAF told us that replacing fishmeal and fish oil has now reached its limit without affecting fish health and the quality of the product.¹⁶³ Research and development is ongoing into alternative sources of feedstock including algal fermentation and genetically modified (GM) oil seed plants so that the industry is able to grow without utilising more fish.¹⁶⁴ Mr Hadfield told us that “GM crops will not be acceptable within Europe” and he hoped algal fermentation would become cost effective and scalable in time.¹⁶⁵

Environmental impacts

50. Guy Linley-Adams, representing Salmon and Trout Conservation Scotland (S&TCS) told us its main concern on aquaculture is the impact of open-cage salmon on wild salmon and sea trout, particularly regarding sea lice.¹⁶⁶ Sea lice reproduce in numbers many orders of magnitude higher than any natural background on Scottish salmon farms which wild salmon have to pass as they emigrate from rivers.¹⁶⁷ Sea lice are naturally occurring marine crustacea that attach to the skin of salmon and harm the fish by feeding on skin and blood. They can be treated with pesticides although there is a concern that these treatments are costly (currently £70 million per year), not fully effective and sea lice may be becoming resistant to treatment. S&TCS are concerned that if the industry expands, the problem of sea lice will increase with it.¹⁶⁸

51. The majority of finfish farming takes place in floating net cages in freshwater lochs or coastal waters. Discharges of feed and waste along with dissolved residues of medicines used to treat disease or parasitic infection may pose a risk to the environment.¹⁶⁹ We heard that these discharges have been known to cause biotoxin contamination of shellfish and other marine biota.¹⁷⁰ Ben Hadfield told us that the environment around the farms assimilates the waste without causing eutrophication and this is the reason the industry has such a low CO₂ profile and the reason why salmon farming is so efficient.¹⁷¹ Dr Hughes, from the Scottish Association for Marine Science (SAMS) confirmed that waste is assimilated within the environment and he felt the process was “well regulated”.¹⁷² He added that there is a recognition by the aquaculture industry that it is dependent on

161 [Qq212–213](#)

162 Scottish Salmon Producers' Organisation ([SSI0127](#))

163 Centre for Sustainable Aquaculture Futures ([SSI0111](#))

164 [Q214](#)

165 [Q214](#)

166 [Q165](#)

167 Salmon and Trout Conservation Scotland ([SSI0128](#))

168 [Q165](#)

169 Scottish Environmental Protection Agency. [Aquaculture](#) [Accessed 25/09/2018]

170 Mr Allan Berry ([SSI0112](#))

171 [Q222](#); Scottish Salmon Producers' Organisation ([SSI0131](#))

172 [Qq192–193](#)

good environmental status of the waters its farms are in and, therefore, has an interest in developing innovative technology.¹⁷³ We also heard that the stocking densities in Irish farms were lower than in Scotland.

52. Salmon and Trout Conservation Scotland recommend that over the medium to long term the industry should move into closed containment technology, whether that is floating at sea or on land, so there is a biological separation between farmed fish and wild fish.¹⁷⁴ We asked Ben Hadfield how much recirculating aquaculture systems would cost, he said another company was “spending close to £50 million” to produce 1000 tonnes of fish at any one time. He added that to create capital infrastructure on land to replace that which is already in the sea in Scotland would cost around £2 billion. He added that the positive CO₂ benefits would be lost by building “huge concrete structures, which are hugely hungry in power”.¹⁷⁵ We asked Dr Hughes for his view on whether there should be a moratorium on open cage salmon farming and he thought more research was needed:

I do not think that there is enough evidence to say that there should be a moratorium. There needs to be more scientific research to establish what the major impacts are, and we lack a major risk assessment for the industry.¹⁷⁶

The ECCLR Committee also noted concerns about the energy consumption, visual impact and availability of suitable sites for closed containment systems. It called for independent research to be commissioned including a full cost-benefit analysis of recirculating aquaculture systems, with a comparative analysis with the sector as it currently operates in Scotland.¹⁷⁷

53. Lord Ahmad wrote to us to confirm that the all feed in the Scottish salmon farming industry uses 100 per cent International Fishmeal and Fish Oil Organisation or MSC certification. He said the Scottish Government is supportive of the exploration of alternative feed sources and has provided £11.1 million to establish the Scottish Aquaculture Innovation Centre (match funded by industry) which is exploring alternative protein sources for fish feed.¹⁷⁸ He also added that “while the Scottish Government has said it will ban the cultivation of GM crops in the open environment, it is up to the industry to decide whether or not to use EU approved GM feed”. Lord Ahmad noted that the annual krill catch is around 0.3 per cent of the unexploited krill population in the Southern Ocean. He said the issue had not been directly raised with the Foreign and Commonwealth Office in the context of the development of the International Ocean Strategy, but he could see its relevance:

One of the aims of the strategy is to ensure that the Government looks holistically at these interconnected economic and environmental issues such as how we can promote sustainable aquaculture that helps wild fish stocks recover from overfishing, but without causing other environmental impacts.¹⁷⁹

173 [Q163](#)

174 [Q165](#)

175 [Qq221–222](#)

176 [Q225](#)

177 Environment, Climate Change and Land Reform Committee, [Report on the environmental impacts of salmon farming](#), 5 March 2018, p55

178 [Letter from Lord Ahmad of Wimbledon to Mary Creagh](#), 11 November 2018

179 [Letter from Lord Ahmad of Wimbledon to Mary Creagh](#), 11 November 2018

The management of protected areas in the Southern Ocean is discussed in Chapter 6: International Leadership.

54. Since our inquiry the Scottish Environmental Protection Agency (SEPA) has published a study which found that medicines from Scottish salmon farms is significantly harming local marine environments.¹⁸⁰ It has announced “evidence-based proposals for a revised regime that will strengthen the regulation of the sector”, including a new tighter standard for the organic waste deposited by fish farms, a new approach to sustainable siting of farms and an enhanced environmental monitoring and enforcement unit.¹⁸¹

55. By 2030 as much as 63 per cent of fish for human consumption could come from aquaculture. Salmon is a net producer of protein and can be a sustainable source of food provided that its feed is sustainably sourced, and its environmental impacts are mitigated. We welcome and support the precautionary approach of the Scottish Parliament’s Environment, Climate Change and Land Reform Committee suggesting that independent assessments are needed on the environmental sustainability of the predicted growth of the sector and a full cost-benefit analysis of closed containment systems. We also welcome the Scottish Environmental Protection Agency’s proposals for a revised regulatory regime, including the sustainable siting of fish farms and tighter standards for the release of organic waste. The Government has recognised that aquaculture and marine conservation are interconnected economic and environmental issues and we look forward to this being reflected in its International Oceans Strategy to help ensure that wild fish stocks recover from overfishing.

180 [Scottish salmon farm medicine significantly impacting local marine environments as SEPA unveils firm, evidence-based proposals for a revised regulatory regime, SEPA, 7 Nov 2018](#)

181 [Scottish salmon farm medicine significantly impacting local marine environments as SEPA unveils firm, evidence-based proposals for a revised regulatory regime, SEPA, 7 Nov 2018](#)

4 Deep sea mining

56. Oceans that are more than 500m deep are referred to as the ‘deep sea’. The deep sea covers about 60 per cent of the Earth’s surface, hosting a diverse spectrum of geological environments, geomorphological features and ecosystems.¹⁸² Valuable minerals are known to be deposited at or near the surface of the deep seabed with potential societal and economic benefits. There are two classes of interest, minerals from mining of the deep-ocean floor and novel chemicals, particularly drugs, derived from the genetic diversity of marine life.¹⁸³ Such deposits were first considered for extraction in the 1960s, but at that time it was technologically and financially unfeasible.¹⁸⁴ There has been renewed interest in deep sea mining because of the growing demand for metals, the increasingly inaccessible and degraded land-based deposits and advances in marine submersible and mining technology.¹⁸⁵ Deep seabed mining has not yet begun on a commercial scale but the Royal Society indicated that given technological and regulatory development it is possible that exploitation could begin in the next decade.¹⁸⁶

Access to resources

57. Seabed mining within national jurisdictions is common, for example mining for diamonds off Namibia has taken place for decades, and this is permitted within a nation’s exclusive economic zone and where it has sovereign rights to the continental shelf (see figure 1).¹⁸⁷ Resources in the deep sea are, by their nature, beyond the limits of national jurisdiction and are designated for the “common heritage of mankind” under the UN Convention of the Law of the Sea (UNCLOS) (see Annex A).¹⁸⁸ Exploration and exploitation activities in the high seas (or Area Beyond National Jurisdiction (ABNJ)) are regulated at the international level by the International Seabed Authority (ISA), which was established under UNCLOS. ISA has established regulations for mineral exploration and is currently developing regulations for exploitation. As a party to UNCLOS, the UK can bid to ISA for mining rights in the high seas.

182 Glover AG, Smith CR. The deep sea floor ecosystem: current status and prospects of anthropogenic change by the year 2025. *Environ Conserv.* 2003 Sep; 30(3): 219–241, cited in Royal Society. 2017. [Future Ocean Resources: metal rich minerals and genetics evidence pack](#)

183 Royal Society. 2017. [Future Ocean Resources: metal rich minerals and genetics evidence pack](#)

184 Mero, J. 1965. *The Mineral Resources of the Sea*, Elsevier, New York, US

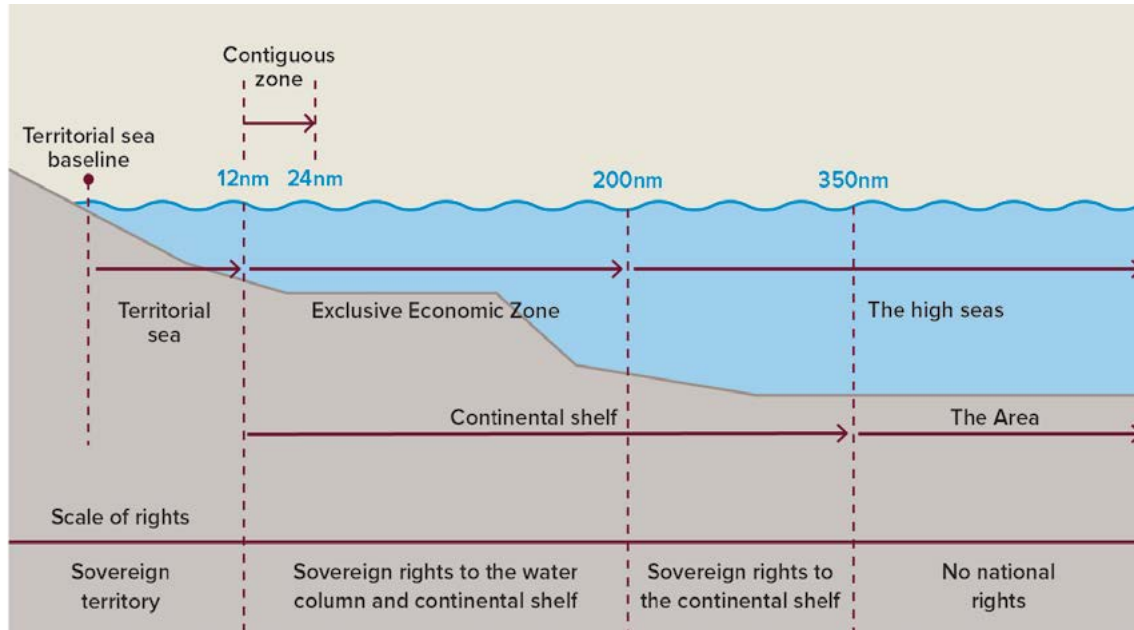
185 Deep Sea Mining, [POSTnote 508](#), Parliamentary Office of Science and Technology, September 2015

186 International Seabed Authority ([SSI0142](#)); The Royal Society ([SSI0122](#))

187 UK Seabed Resources Ltd ([SSI0118](#)); The National Oceanography Centre ([SSI0079](#))

188 International Seabed Authority ([SSI0142](#))

Figure 1. Jurisdictional zones from a nation's coast. 1 nautical mile = 1852 metres. Courtesy of the Royal Society.¹⁸⁹



58. At present, no international organisation has the mandate to regulate access to marine genetic resources beyond national jurisdiction, which currently falls under an open access regime based on “the freedom of the high seas”.¹⁹⁰ Preparations are under way for a legally binding instrument on biodiversity in areas beyond national jurisdiction within the UN High Seas Treaty (see Chapter 6). We focussed our inquiry on the environmental risks associated with the exploration and extraction of deep sea minerals and how they can be mitigated.

Opportunities from deep sea mining

59. Minerals are vital to support economic growth and the functioning of modern society, for example ‘critical’ metals (rare earth elements, cobalt, tellurium) used in high technology and clean energy applications.¹⁹¹ UK Seabed Resources Ltd suggests that polymetallic nodules could generate a secure and predictable supply for UK industry of minerals which are increasingly at risk of global supply disruption.¹⁹² Environment Links UK claims that deep sea mining runs contrary to our Sustainable Development Goal commitments on sustainable consumption and production and to conserve and sustainably use the oceans (SDGs 12 and 14).¹⁹³ Will McCallum, Head of Oceans at Greenpeace, considered that there are other sources of the materials found on the seabed available on land and that these should be exploited first:

One hundred and sixty million mobile phones are thrown away every single year in Europe. Those mobile phones are all packed with exactly the same materials that we are being told we need to go out to the deep sea and mine

189 Royal Society. 2017. [Future Ocean Resources: metal rich minerals and genetics evidence pack](#)

190 Royal Society. 2017. [Future Ocean Resources: metal rich minerals and genetics evidence pack](#)

191 Royal Society. 2017. [Future Ocean Resources: metal rich minerals and genetics evidence pack](#)

192 UK Seabed Resources Ltd ([SSI0118](#)); see also [Q318](#)

193 Environment Links UK ([SSI0102](#))

for. At the very least we need to start looking at this more holistically and so I would say, until the conclusion of the treaty, put those ambitions for deep sea mining totally on hold and conduct this investigation.¹⁹⁴

60. Michael Lodge, Secretary General of ISA, told us that the minerals were not only needed for mobile phones but to drive a “future renewable economy” including wind turbines and electric cars which need “a tremendous amount of these critical minerals”. He said that the grades in the sea are many orders of magnitude higher than the grades on land.¹⁹⁵ However he described deep sea mining as “almost as difficult as going to the moon”.¹⁹⁶ The Royal Society’s synthesis of current evidence concluded that although the deep sea offers huge potential for the extraction of metals, “a lack of exploration and data results in great uncertainty about the total size of the resource and its economic value”.¹⁹⁷ When questioned on the need for deep sea mining, Claire Perry responded that the Department for Business, Energy and Industrial Strategy is building the economic case for extracting minerals from the seabed and has commissioned independent analysis which will report in early 2019.¹⁹⁸

Environmental risks and their mitigation

61. Deep sea mining presents risks such as the physical destruction of habitats and organisms as well as changes to light and noise levels, which can impact on ecosystem function and the ability for species to communicate.¹⁹⁹ We heard that this can cause local extinctions.²⁰⁰ Mining also disturbs the seabed causing sediment plumes which can travel considerable distances and smother seabed organisms.²⁰¹ Plumes can also be caused when mining waste is returned to the water, which remains suspended above the seabed in the water column.²⁰²

62. Deep sea mining is currently targeting three types of minerals that are found in distinct deep sea habitats that vary greatly in area, biodiversity and ecological dynamics:

- polymetallic sulfides/ seafloor massive sulfides found at hydrothermal vents;
- ferromanganese crusts found at seamounts; and
- polymetallic nodules found on abyssal plains.²⁰³

63. Dr Jon Copley from the University of Southampton, told us that given the ecological differences between these deep sea habitat types, each is likely to respond very differently to the impacts of mineral extraction activities.²⁰⁴ ISA has approved 29 contracts for

194 [Q302](#)

195 [Q317](#)

196 [Q317](#); see also [Q303](#) [Will McCallum]

197 Royal Society. 2017. [Future Ocean Resources: metal rich minerals and genetics evidence pack](#), p12

198 [Letter from Rt Hon Claire Perry to Chair](#), 27 Nov 2018

199 Ocean and Earth Sciences, University of Southampton ([SSI0088](#)); Deep Sea Mining, [POSTnote 508](#), Parliamentary Office of Science and Technology, September 2015

200 [Q360](#)

201 EU ATLAS Project ([SSI0037](#)); Ocean and Earth Sciences, University of Southampton ([SSI0088](#)); Deep Sea Mining, [POSTnote 508](#), Parliamentary Office of Science and Technology, September 2015

202 Deep Sea Mining, [POSTnote 508](#), Parliamentary Office of Science and Technology, September 2015

203 Dr Jon Copley ([SSI0050](#))

204 Dr Jon Copley ([SSI0050](#))

exploration for all three types of minerals in the deep seabed.²⁰⁵ UK Seabed Resources Ltd, sponsored by the UK Government, holds two of these exploration licences for polymetallic nodules in the Pacific Ocean's Clarion Clipperton Zone (CCZ), which it hopes to commercially harvest in future.²⁰⁶

64. Under ISA's exploration regulations, an Environmental Impact Assessment (EIA) is mandatory. Professor Mills from the University of Southampton suggested that the difficulty of undertaking an EIA two miles beneath the sea's surface has been underestimated. The University of Southampton is concerned that the environmental impacts of one site may be small in scale but that the cumulative impacts are unknown and difficult to predict. It suggests that an EIA may not be able to scale up these small-scale and laboratory experiments adequately.²⁰⁷ Professor Henderson from the Royal Society advocated that a regional management approach is needed rather than a local impact assessment.²⁰⁸

65. ISA told us it is addressing the challenge of planning at the regional scale by progressively developing Regional Environmental Management Plans (REMPs) in all areas where exploration activity is taking place. The first REMP, was created for the CCZ which designated a network of nine Areas of Particular Environmental Interest (APEIs), where mining will not be permitted to take place.²⁰⁹ ISA told us it is in the process of developing REMPs for the Mid-Atlantic and Western Pacific Oceans.²¹⁰ The National Oceanography Centre told us APEIs are presumed to be geographically close enough to mining sites to allow for biological connectivity with the proposed mining areas, so that re-colonisation can occur after mining has ceased.²¹¹ Professor Mills explained that there was no knowledge of whether this approach would work:

We do not know whether they are big enough to be useful for recolonisation of the potentially mined sites, and we do not even know what timeframe those ecosystems are reproducing on. We do not even know what role the hard substrate of the manganese nodules holds for the life cycle of those organisms living near the seafloor.²¹²

Professor Henderson also stressed the lack of knowledge of the deep sea, he considered that "a sense of the diversity of the ecosystem, regionally and spatially" is missing at present.²¹³ He said:

it is doubtless true that exploitation of a very small fraction of the deep ocean floor might cause catastrophic damage to that point, but it would not cause catastrophic damage to the whole deep ocean ecosystem. If you were to mine a very substantial area it would and the question is: how much might you be able to mine without causing very substantial environmental impact?²¹⁴

205 [Qq313–314](#); See International Seabed Authority ([SSI0142](#)) for a full breakdown of licences

206 UK Seabed Resources Ltd ([SSI0118](#))

207 Ocean and Earth Sciences, University of Southampton ([SSI0088](#))

208 [Q321](#)

209 [Q332](#); International Seabed Authority ([SSI0142](#))

210 [Q332](#); International Seabed Authority ([SSI0142](#))

211 The National Oceanography Centre ([SSI0079](#))

212 [Q88](#)

213 [Q321](#); [Q329](#)

214 [Q329](#)

66. Professor Mills was also concerned that there was no independent body to monitor the impact of the industry.²¹⁵ The National Oceanography Centre pointed out that ISA is responsible for the environmental impacts and their mitigation, and the sharing of the revenues that may flow from deep sea mining.²¹⁶ Will McCallum also noted this and believed it was a conflict of interest.²¹⁷

Unique habitats

67. Charles Clover, representing the Great British Oceans coalition,²¹⁸ was critical of ISA for allowing exploration in unique habitats such as hydrothermal vents on the mid-Atlantic ridge:

The problem at the moment is that the International Seabed Authority has been granting exploration licences in places that on land would be world heritage sites. They have given Poland, I think it is, permission to explore the Lost City, which is one of the seven wonders of the world in the deep sea.²¹⁹

Professor Henderson agreed that the Lost City is “a treasure of the deep sea”.²²⁰ Areas of massive sulphides are often unusual environments and there is a risk that they may be unique, so mining one of them will cause catastrophic damage.²²¹ Dr Copley described that in a survey of deep sea hydrothermal vents on the Southwest Indian Ridge, (where the ISA had already granted an exploration licence) he discovered six previously undescribed animal species not yet known elsewhere on Earth, and a unique combination of species resulting in an “ecologically distinct community” compared with other known hydrothermal vents.²²² He said that there is insufficient understanding of the variation in marine life between vent sites to inform effective regional management plans.²²³ We heard that although exploration is most advanced for polymetallic nodules on abyssal plains, mining of hydrothermal vents is closest to commercial success.²²⁴

68. Claire Perry said the Government’s view of deep sea mining is evolving and that the “idea of flattening seamounts, scraping seabeds, having impacts on fishery stocks and other challenges are to be answered”.²²⁵ We asked whether she would rule out exploration in special sites such as hydrothermal vents. She responded:

215 [Q87](#)

216 The National Oceanography Centre ([SSI0079](#))

217 [Q302](#)

218 A coalition of the Blue Marine Foundation, Greenpeace, Marine Conservation Society, The Pew Trusts, RSPB and Zoological Society of London

219 [Q304](#). The ‘Lost City’ is a hydrothermal field of 60 giant chimney structures, up to 250 feet tall, formed by hot mineral water pouring out of volcanic vents in the seabed. In 2017 ISA approved a 15-year exploration contract with Poland, covering part of the Mid-Atlantic Ridge.

220 [Q330](#)

221 [Q330](#)

222 Dr Jon Copley ([SSI0050](#))

223 Dr Jon Copley ([SSI0050](#))

224 Dr Jon Copley ([SSI0050](#))

225 [Q389](#); [Q406](#)

This will depend on the results of further environmental analysis; on having a clear economic case; the necessary metrics, measures and inspection regimes, and an agreed commercial policy. All of these elements are in play at the moment.²²⁶

69. Both Lord Ahmad and Claire Perry recognised the role the UK can play internationally within ISA and the UN:

Lord Ahmad: On the example you have raised of the Lost City, we have to learn from the experience of exploration and then exploitation and techniques. With the current discussions that are happening at the ISA and through the [UN negotiations on the conservation and sustainable use of marine biodiversity of areas beyond national jurisdiction] and with the specific discussions on looking at those jurisdictions beyond national boundaries, it is important that we not only have a voice on that but show leadership.²²⁷ [...]

Claire Perry: If we can establish a gold standard of environmental principles, we can have an important leadership role, as we did in the discussions around Antarctica and exploitation on the continent in the 1940s.²²⁸

70. **Deep sea mining would have catastrophic impacts on the seafloor site and its inhabitants. We heard that Environmental Impact Assessments are very difficult to undertake for the deep sea and that there was little evidence that mitigation measures such as setting aside areas of the seafloor will mitigate the damage and allow for the recolonisation of habitats and species recovery. Licences have been granted by the International Seabed Authority to permit exploration in unique habitats, but we consider the exploitation of resources must be prohibited in unique ocean environments, such as hydrothermal vents, until it can be determined that adequate mitigation techniques are available. We are concerned that the ISA, the licensing body for seabed exploration, also stands to benefit from revenues, which is a clear conflict of interest. *The Government must commit not to pursue licences for polymetallic sulfides/ seafloor massive sulfides found at active hydrothermal vents within its own jurisdiction and internationally. The UK should utilise its substantial experience in regulating marine industries and its influence with the International Seabed Authority (ISA) to impose a moratorium on exploitation licences in these areas as ISA develops its exploitation guidelines. Outside of these unique areas, the Government should proactively work with ISA to ensure Environmental Impact Assessments are robust, based on the precautionary principle and use the best available scientific evidence.***

71. **The case for deep sea mining has not yet been made. *We welcome the Government's review on the economic case for extracting minerals from the seabed. This should include a full review into the necessity for deep sea mining for rare earth metals, based on the availability of these materials in old and discarded products.***

226 [Letter from Rt Hon Claire Perry to Chair, 27 Nov 2018](#)

227 [Q413](#)

228 [Q414](#)

5 Marine Conservation

Marine Protected Areas

72. To tackle the risks from over-exploitation, pollution and climate change, areas of the sea are designated and protected both nationally and under international treaties. Marine protected areas (MPAs) are clearly defined geographical spaces, identified through legal or other effective means, and are dedicated to achieving the long-term conservation of nature.²²⁹ MPAs can be created for a number of reasons including economic resources, biodiversity conservation and species protection.²³⁰ For the purposes of this report, MPAs are the generic term that incorporates a number of different designations which are considered to contribute to the MPA network (see Annex C for a list of designations).

73. The IUCN (International Union for the Conservation of Nature) is the global arbiter of MPAs, recognised by national governments and the UN as the global leader in protected area policy, science and management practice.²³¹ It has defined categories for MPAs on a continuum from fully protected areas with no take, through to multiple use areas.²³² The IUCN defines the essential characteristics that MPAs must have:

- a) conservation focused with nature as the priority;
- b) defined goals and objectives which reflect these conservation values;
- c) suitable size, location, and design that deliver the conservation values;
- d) defined and fairly agreed boundary;
- e) management plan or equivalent, which addresses the needs for conservation of the MPA's major values, and achievement of its social and economic goals and objectives; and
- f) resources and capacity to effectively implement.²³³

UK progress on Marine Protected Areas

UK Marine Protected Area network

74. Networks of MPAs have been shown to be effective at protecting marine species, leading to “higher densities, biomass and species richness of marine biota” within and around the area due to species’ ability to move.²³⁴ The UK has signed up to establish

229 [Marine Conservation Zones in England](#), Commons Library Briefing SN06129, 17 July 2015; [Selection of Marine Conservation Zones](#), POST Note, 6 June 2013; [Biodiversity in UK overseas territories](#), POST note, 18 January 2013; and [Selection of Marine Conservation Zones](#), POST Note, 6 June 2013

230 IUCN. [Marine Protected Areas](#) [Accessed 12/09/2018]

231 [Q258](#); [Great British Oceans \(SSI0134\)](#)

232 The seven categories range from ‘strict nature reserve’ (Ia) through to ‘protected areas with sustainable use of natural resources’ (VI). The category should be based around the primary management objective(s), which should apply to at least three-quarters of the protected area. IUCN. [Guidelines for Applying Protected Area Management Categories](#)

233 IUCN WCPA. 2018. [Applying IUCN’s Global Conservation Standards to Marine Protected Areas \(MPA\)](#). Delivering effective conservation action through MPAs, to secure ocean health and sustainable development.

234 [Marine Conservation Zones in England](#), Commons Library Briefing SN06129, 17 July 2015; see also [Q33](#);

an ecologically coherent network of well-managed MPAs under the Aichi targets of the Convention on Biodiversity and the OSPAR Convention (see Annex B for further information). Defra told us that the UK had “exceeded” its target to protect ten per cent of coastal and marine areas and is at the forefront of marine protection.²³⁵ The UK has currently identified 283 OSPAR MPAs,²³⁶ and as of March 2018, approximately 24 per cent of UK waters are currently within MPAs.²³⁷ This is over the ten per cent required by the Aichi targets. However witnesses such as WWF claim that whilst the UK meets the ten per cent target in terms of area, it would not meet the element of ten per cent being “well-managed”.²³⁸

75. Dr McQuatters Gollop from the University of Plymouth argued that “there is no point putting in place an MPA that does not have a management strategy with effective measures of management”.²³⁹ We heard that many MPAs are missing key components to meet protected area classification, including adequate management plans and monitoring against them.²⁴⁰ In its evidence, the British Sub-Aqua Club (BSAC) states that current MPAs, including currently designated MCZs, still allow fishing activity to take place, including the most damaging of fishing practices- scallop dredging. It notes that its members see first-hand the destruction caused by these activities, describing a “barren wasteland of silt and sand that is devoid of life”.²⁴¹ The Marine Conservation Society highlights that whilst we have achieved more than 20 per cent coverage in UK seas, “we only have bottom trawling restrictions in 1.7 per cent of our seas” and none of our offshore water MPAs are protected (beyond 12 nautical miles).²⁴²

76. Throughout our inquiry we heard that marine species are facing multiple stressors—warming, acidification, oxygen depletion, chemicals and plastics—which will affect the productivity and health of the oceans.²⁴³ Professor Boyd, Chief Scientific Adviser to Defra, recommended that to combat these different threats, an adaptive management approach should be used where stressors are taken out of the system; for example, if cod are affected by acidification then the action should be to catch fewer cod.²⁴⁴ Changes in temperature and ocean circulation highlight the need for flexible management of MPAs, as the best locations for the protection of certain species are likely to change in the future, for both shallow and deep-water species.²⁴⁵ To do this would require monitoring of existing MPAs to be able to inform future management decisions, which Professor Boyd thought was lacking:

235 Department for Environment Food and Rural Affairs ([SSI0125](#))

236 JNCC. 2018. [OSPAR Marine Protected Areas](#). [Accessed 21/11/2018]

237 JNCC. [Contributing to a marine protected area network](#). [Accessed 21/08/2018] and Department for Environment Food and Rural Affairs ([SSI0125](#))

238 WWF-UK ([SSI0101](#))

239 [Q80](#)

240 [Q242](#); [Q259](#); WWF-UK ([SSI0101](#)); RSPB ([SSI0063](#)); Plymouth Marine Laboratory ([SSI0048](#))

For example, the RSPB told us that in 2013 only 28 out of 115 of the “most important” MPAs (Special Areas of Conservation with a marine component) had comprehensive management plans in place and more recent assessments indicate that most habitats are in unfavourable condition. The UK is next due to report on progress in 2019.

241 British Sub-Aqua Club ([SSI0126](#))

242 Marine Conservation Society ([SSI0115](#))

243 [Q9](#); [Q70](#); Plymouth Marine Laboratory ([SSI0048](#)); Dr Michael Sweet ([SSI0056](#))

244 [Q9](#)

245 EU ATLAS Project ([SSI0037](#)); see also [Q33](#) [Dr Vallance]

What I would say we should do a lot better is getting out and looking at the areas we have already protected to understand whether they are really having the effects that we hope they will have. At the moment I am not sure that we have that information. In fact, I know we do not have that information.²⁴⁶

77. The Devon and Severn Inshore Fisheries and Conservation Authority, whose role is to seek to ensure that the exploitation of sea fisheries resources is carried out in a sustainable way, told us that its funding has been withheld by local authorities and it would not be able to fulfil its statutory duties if funding to the Authority was further reduced.²⁴⁷

78. Witnesses also described “fisheries law trumping environmental law”, such as pulse fishing being allowed on the Dogger Bank, the largest MPA in Europe; that there are few goals for restoration of the environment; and that competent authorities are not receiving enough funding for policing protected areas.²⁴⁸ Almost all MPAs allow industrial fishing and bottom trawling which conservationists describe as “tragically unambitious”.²⁴⁹ A report for Defra found that trawling is ubiquitous across the UK shelf seas.²⁵⁰ It suggests that since most impacts on seafloor life and processes seem to occur the first time an area is trawled, “it would seem better to have high fishing effort in some areas and none in others, rather than equally spreading the seafloor disturbance”.²⁵¹ The Wildlife Trusts agreed with this assessment, describing that marine plans do not adequately incorporate all the activities in the sea, most notably fishing.²⁵² Environment Links UK told us there is a “significant opportunity” for improving the planning process in the marine environment, particularly through the forthcoming update to the UK Marine Strategy, which could guide the future implementation of the Sustainable Development Goals, international obligations and the 25 Year Plan for the Environment.²⁵³

79. Defra told us the UK’s current legal and regulatory framework is adequate to protect biodiversity even given the growing demands which are likely to be placed on marine resources:

The UK Marine Policy Statement and the Marine and Coastal Access Act 2009, the Marine (Scotland) Act 2010, the Environment (Wales) Act 2016 and the Marine Act (Northern Ireland) 2013 provide the framework for improving and managing the UK’s marine environment including protection of marine biodiversity. This framework is supported by the UK Marine Strategy which sets out our vision for the marine environment, the monitoring programmes we have in place to assess the state of our seas and the policies, regulations and actions we are taking to protect marine biodiversity and sustainably manage the marine environment. The UK

246 [Q36](#)

247 Devon & Severn Inshore Fisheries and Conservation Authority ([SSI00147](#)). IFCA’s aim to lead, champion and manage a sustainable marine environment and inshore fisheries, by successfully securing the right balance between social, environmental and economic benefits to ensure healthy seas, sustainable fisheries and a viable industry. Two-thirds of IFCA funding comes from local government and one-third comes from Defra.

248 [Qq241–244](#) [Will McCallum and Charles Clover]

249 92% of MPAs in England’s EEZ are open to bottom-trawled or bottom-dredged gears, mobile gears. [Q240](#); [Q244](#)

250 Kröger S, Parker R, Cripps G and Williamson P (Eds.) 2018. [Shelf Seas: The Engine of Productivity](#), Policy Report on NERC-Defra Shelf Sea Biogeochemistry programme. Cefas, Lowestoft

251 [New report improves understanding of UK Shelf Seas ‘blue carbon’ role](#), 6 Nov 2018

252 The Wildlife Trusts ([SSI0021](#))

253 Environment Links UK ([SSI0102](#))

Government's 25 Year Environment Plan reinforces this commitment under the twin objectives of achieving good environmental status of our seas and implementing a sustainable fisheries policy.²⁵⁴

The *25 Year Plan for the Environment* states that Defra is completing a "major assessment" of how far our seas have moved towards good environmental status since 2012 and will put in place an updated strategy that will be regularly updated.²⁵⁵ It will review all marine targets and indicators and complete the full series of England Marine Plans by 2021.

80. The Government claims to have met its targets for marine conservation in the UK, but its approach to marine protection is not working, with too many harmful activities such as bottom trawling occurring across too wide an area. Fisheries are not adequately incorporated into marine planning and few Marine Protected Areas have management plans in place. Monitoring of the success of protected areas is also inadequate. The Government is complacent: its goal should not only be to designate protected areas, but to ensure they are achieving the desired effect to improve ecological status. We heard that an adaptive management approach could tackle the multiple stressors which threaten the marine system. We welcome Defra's review of ecological status of UK seas and recommend that in response to this report, it sets out how its new strategy will deliver more integrated marine planning, restoration and adaptive management to achieve ecologically diverse, healthy and productive seas. It should also set out its timetable for when all marine protected areas will have management plans and monitoring in place.

Overseas Territories Blue Belt Programme

81. The UK has constitutional and legal responsibility for 14 Overseas Territories (OTs). Except for Antarctica, they are all islands or groups of islands (see Figure 2).²⁵⁶ The OTs are home to over 90 per cent of the UK's marine biodiversity and they are fundamental to regional and international marine conservation.²⁵⁷ Some of their species and habitats are found nowhere else on earth. 94 per cent of British endemic species are found within the OTs and 85 per cent of the Critically Endangered species that the Government is responsible for are found within the Territories.²⁵⁸

82. The Government's Blue Belt Programme aims to establish protection for over four million square kilometres of marine environment.²⁵⁹ It is delivered by the Foreign and Commonwealth Office, the Centre for Environment, Fisheries and Aquaculture Science (CEFAS) and the Marine Management Organisation (MMO), however the MPAs are

254 Department for Environment Food and Rural Affairs ([SSI0125](#))

255 HM Government. 2018. [A Green Future: The Government's 25 year plan to improve the environment](#), p108. The main goal of the [Marine Directive](#) is to achieve Good Environmental Status of EU marine waters by 2020. The Directive defines Good Environmental Status (GES) as: "The environmental status of marine waters where these provide ecologically diverse and dynamic oceans and seas which are clean, healthy and productive"

256 The OTs are Anguilla (Caribbean), Bermuda, British Antarctic Territory, British Indian Ocean Territory, Cayman Islands (Caribbean), Falkland Islands, Gibraltar, Montserrat (Caribbean), Saint Helena, Ascension and Tristan da Cunha (south Atlantic), Pitcairn Islands (southern Pacific), South Georgia and the South Sandwich Islands (far south Atlantic), Sovereign Base areas of Akrotiri and Dhekelia on Cyprus, Turks and Caicos Islands (Caribbean).

257 MMO and CEFAS. [Blue Belt Programme annual update 2017/18](#)

258 A critically endangered (CR) species is one which has been categorised by the IUCN as facing an extremely high risk of extinction in the wild. MMO and Centre for Environment Fisheries and Aquaculture Science. [Introducing the Blue Belt Programme](#). 2017

259 Foreign and Commonwealth Office, Marine Management Organisation and Centre for Environment Fisheries and Aquaculture Science [The Blue Belt programme](#). [Accessed 24/10/2018]

designated in accordance with domestic legislation.²⁶⁰ The programme is initially focused on seven territories and archipelagos (Figure 2). Lord Ahmad told us that over three million square kilometres have now been protected.²⁶¹

Figure 2. UK Overseas Territories engaged in the Blue Belt Programme.²⁶²



83. The South Georgia shelf has been identified as the most biodiverse region of the Southern Ocean.²⁶³ Charles Clover, from the Great British Oceans coalition told us about the campaign to create a fully protected MPA in the South Sandwich Islands (see box). He considered the main barrier to its designation was resistance in the Foreign Office.²⁶⁴ We put this concern to Lord Ahmad and he responded that the MPA is currently under consideration by the Foreign Secretary who “hopes to make a decision on that MPA very shortly”.²⁶⁵

South Sandwich Islands MPA

We heard from the Great British Oceans coalition,²⁶⁶ that the pledge to fully protect the South Sandwich Islands MPA (over 1 million square kilometres) has not materialised. In 2012, the Government of South Georgia and the South Sandwich Islands declared all 1.04 million km² of its exclusive economic zone a Category VI IUCN Marine Protected Area.²⁶⁷ The IUCN delivered the opinion that the MPA

260 MMO and CEFAS. [Blue Belt Programme annual update 2017/18](#)

261 [Q365](#)

262 Adapted from MMO and CEFAS. 2017. [Introducing the Blue Belt Programme](#)

263 JNCC. 2011. [South Georgia and South Sandwich Islands UK Overseas Territories and Crown Dependencies: 2011 Biodiversity snapshot](#)

264 [Q258](#)

265 [Q365](#); [Q373](#)

266 A coalition of the Blue Marine Foundation, Greenpeace, Marine Conservation Society, The Pew Trusts, RSPB and Zoological Society of London

267 Category VI is a protected area with sustainable use of natural resources, the least stringent of its protected categories. [IUCN categories](#)

only qualifies according to internationally agreed standards in two per cent of its area because of a lack of dedication to nature conservation and because it allows industrial fishing.²⁶⁸

The Great British Oceans coalition is calling for the full protection of 500,000 square kilometres around the South Sandwich Islands. It says that the UK Government can fully protect this “biodiversity hotspot” within existing domestic legislation and this could be achieved “without the displacement of any current fishing activity or resulting loss of Government revenues, and within existing legislation and budgets”.²⁶⁹

The IUCN are shortly to publish a guidance document, clarifying what it advises to be permissible actions within the varying categories of MPAs.²⁷⁰

84. The Government of South Georgia and the South Sandwich Islands (SGSSI) subsequently announced on 12 December 2018 that a set of additional measures to enhance the MPA would be implemented.²⁷¹ The measures, which draw on recommendations arising from the recent five yearly review of the SGSSI MPA (conducted by a panel comprising scientists, as well as representatives from the fishing and tourism industries, and environmental groups), include:

- no-take zones (closed to all commercial fishing activity) are to be expanded to cover 23 per cent of the MPA (up from two per cent), including key biodiversity hotspots at the South Sandwich Islands and South Sandwich Trench;
- a two month extension (from five to seven months) to the seasonal closure of the highly regulated fishing for Antarctic krill;
- a ban on carriage and use of heavy fuel oil by vessels operating around SSI and by 2020, the entire SGSSI Maritime Zone; and
- to enshrine in legislation the prohibition on the commercial extraction of mineral resources.

85. Research has shown that MPAs are effective if they are properly managed: Large, long-term, ‘no-take’ reserves that are isolated by deep water or sand and backed up with strong enforcement have five times more large-fish biomass than unprotected areas.²⁷² Will McCallum, Head of Oceans at Greenpeace said that there are “plenty of examples” in the Blue Belt where adequate enforcement is lacking, yet remote technology such as satellite tracking is available which could be used alongside increased naval capacity for policing.²⁷³ He went on to say that the issue was a lack of management plans:

268 [Qq257–258](#); [Q273](#), Great British Oceans ([SSI0134](#))

269 [Q259](#); Great British Oceans ([SSI0134](#))

270 Pew Trusts ([SSI0014](#))

271 Government of South Georgia and the South Sandwich Islands. Press release: [South Georgia & the South Sandwich Islands MPA Enhancements](#), 12 December 2018

272 Edgar, G. J. et al. [Protect the neglected half of our blue planet](#). 2014. Nature 506, 216–220

273 [Q242](#): see also Pew Trusts ([SSI0014](#))

... many of the protected areas or so-called protected areas around our coast just do not have a management plan, and at the very least we cannot claim these areas are protected if we are not properly managing them. Otherwise they are just lines on a map.²⁷⁴

86. Charles Clover told us that the British Indian Ocean Territory does not have a management plan and we heard that UK Government enforcement and management is almost completely absent from Caribbean OT seas beyond 12 nautical miles.²⁷⁵ Professor Boyd told us that it is not the size of the protected areas around the OTs that is important, but whether they are having the desired effect. He considered more monitoring and evaluation was necessary.²⁷⁶ Funding for the Blue Belt Programme will cease from 2020.²⁷⁷ We heard from witnesses that the programme will still need monitoring, management and enforcement after this time which the Government acknowledges is expensive.²⁷⁸ The Marine Conservation Society note that other sources of funding are not enough to support the programme:

... the scale of funding available through Darwin Plus (available to all UKOTs)²⁷⁹ is utterly insufficient with respect to the scale of the problems facing Caribbean UKOTs alone, and access to BEST [Biodiversity and Ecosystem Services in Territories] funds is likely to cease post-Brexit.²⁸⁰

87. We put the concern that there were inadequate management plans and policing of protected areas to Lord Ahmad. In response he said that support is being provided for management plans and indicated that satellite technology is being used for enforcement in some of the OTs:²⁸¹

... we are fully conscious of the fact that protecting them is about unreported and unregulated fishing. With designated and enhanced surveillance from satellites, we can now see, through our National Maritime Information Centre for example, designated boats in particular areas. The key territories covered through such satellite technology include the Ascension Islands, St Helena, Tristan de Cunha and [British Indian Ocean Territory], and assessments of each territory's marine habitats are also made. We are using technology to assess that.²⁸²

Lord Ahmad later added that satellite coverage is being tasked on a “risk and intelligence-led basis” across the programme to target the times and areas that represent the highest risk for each of the OTs.²⁸³ He confirmed that the Blue Belt programme would continue but that funding beyond 2020 could not be guaranteed:

274 [Q242](#)

275 Marine Conservation Society ([SSI0115](#))

276 [Q31](#); [Qq40–41](#)

277 [Q365](#); MMO and Centre for Environment Fisheries and Aquaculture Science. [Blue Belt Programme annual update 2017/18](#).

278 [Q264](#); MMO and Centre for Environment Fisheries and Aquaculture Science. [Blue Belt Programme annual update 2017/18](#).

279 The OT Environment and Climate Fund, also known as Darwin Plus, provides funding for environmental projects in UK Overseas Territories.

280 Marine Conservation Society ([SSI0115](#))

281 [Q369](#)

282 [Q382](#); see also [Letter from Lord Ahmad of Wimbledon to Mary Creagh](#), 11 November 2018

283 [Letter from Lord Ahmad of Wimbledon to Mary Creagh](#), 11 November 2018

We are looking very closely at specific areas of funding beyond 2020. We are cognisant that we need to see a continuation of ensuring sustainability of our MPAs and that is an area we continue to look at. At the moment, there is a £20 million allocation until 2020. Beyond that I cannot confirm what that level of funding will be.²⁸⁴

88. Not all Marine Protected Areas established by the Blue Belt programme are meeting international best practice guidelines by the IUCN. We are concerned that the UK's MPAs are missing key components to meet protected area demarcation, and that the UK missed its OSPAR commitment to establish a network of well-established MPAs by 2016. Whilst designating Marine Protected Areas is important, their benefits will only be realised if they are effectively managed. They must be monitored to deter illegal activity and to establish if species and habitats are recovering, to inform future designations and adaptive management decisions. *The Government must, as a matter of urgency, guarantee sustainable levels of funding for the Blue Belt Programme post 2020, to ensure monitoring, management and enforcement of marine protected areas. We recommend the Government should work in collaboration with all Overseas Territories with MPAs to set up a fully integrated monitoring and surveillance regime for satellite tracking of illegal, unreported and unregulated fishing. In particular, the UK Government should support the Ascension Island Government in designating 100 per cent of its Exclusive Economic Zone as an MPA as the Secretary of State for DEFRA told us he is considering.*

89. The South Sandwich Islands present an opportunity to protect one of the most biodiverse areas in the UK's jurisdiction. Adding this area as a 'no take' designation would add half a million square kilometres to the Blue Belt. We welcome the South Georgia and South Sandwich Islands Government's announcement on 12 December 2018 to extend the 'no-take zones' to cover 23 per cent of the MPA, while also implementing additional measures to enhance marine protection around South Georgia and the South Sandwich Islands. This will extend the MPA and close around 170,000 square kilometres to commercial fishing. *The Government should continue to work with the South Georgia and South Sandwich Islands Government to work towards designating 100 per cent of the South Sandwich Islands MPA as a 'no take' area for commercial fishing while recognising the need to licence very limited fishing for scientific purposes. This would help to realise the Government's ambitions to protect four million square kilometres of ocean.*

6 International Leadership

Government ambition to increase global Marine Protected Area coverage

90. In September 2018, Defra and the Foreign Office announced that the UK has an ambition for 30 per cent of the world's seas to be safeguarded in Marine Protected Areas (MPAs) by 2030.²⁸⁵ To achieve this will require international cooperation which the Government intends to seek at the next Conference of Parties of the Convention on Biodiversity in Beijing in 2020 (see Annex B for more information).

91. Protecting at least 30 per cent of the world's oceans by 2030 is supported by conservation bodies as the necessary level of preservation to support healthy marine biodiversity and avoid the worst effects of climate change.²⁸⁶ Witnesses such as Will McCallum, Head of Oceans at Greenpeace suggested that it cannot be any 30 per cent of ocean, it must be a network of ecologically representative MPAs, including the deep sea:

the crucial thing is that that is not 30% of random ocean. That is 30% that is representative of the oceans' ecosystems ... We want to find and identify those ecosystems that are refugia, that are facing the greatest threats and that is where we start to build up.²⁸⁷

Professor Mills from the University of Southampton considered that there was not enough evidence to support a 30 per cent target and Professor Boyd suspected that it was not based on evidence.²⁸⁸ He later clarified that an MPA network with a range of protection levels (including highly protected areas) has good foundations in scientific evidence, however, the basis for a 30 per cent target consisting solely of no-take zones is more limited.²⁸⁹

92. According to the Marine Conservation Institute only 3.7 per cent of the world's oceans are protected in implemented and actively managed MPAs, and approximately two per cent is strongly protected in no-take marine reserves.²⁹⁰ Given what we had heard throughout the inquiry about the level of management and enforcement of UK MPAs around the world, we asked Lord Ahmad what level of support the Government will provide towards international enforcement of these new global MPAs. He responded:

I have just returned from the Our Ocean conference in Indonesia and [the 30 per cent target] was a commitment we made. If you look at the British example—and it is important on the world stage to also reflect domestically on what has been achieved—24% of our coastal areas are now designated MPAs and we are totally committed to the target of MPAs being created

285 Defra. 2018. [Gove calls for 30 per cent of world's oceans to be protected by 2030](#), 24 Sept 2018

286 Professor Callum Roberts ([SSI0077](#)); Greenpeace ([SSI0086](#)); Great British Oceans ([SSI0134](#)); see also Professor Ian Boyd, Chief Scientific Adviser at the Department for the Environment, Food and Rural Affairs ([SSI0137](#)); O'Leary, B et al. 2016. [Effective coverage targets for ocean protection](#). Conservation Letters.

287 [Q254](#); see also EU ATLAS Project ([SSI0037](#))

288 [Qq37–39](#); [Q83](#)

289 Professor Ian Boyd, Chief Scientific Adviser at the Department for the Environment, Food and Rural Affairs ([SSI0137](#))

290 Marine Conservation Institute. 2018. Atlas of Marine Protection: How Much of our Ocean is Protected? <http://www.mpatlas.org> [Accessed 30 October 2018]

across 30% of the coastlines by 2030. That is a statement we have made at an international conference and will be reflective of the international strategy that we are currently working on.²⁹¹

The Weddell Sea, Antarctica

93. The UK Government has been a strong driver in creating an MPA in the Southern Ocean. The Weddell Sea is a deep bay of around 2.8 million square kilometres of the Antarctic coastline that contains the Weddell Gyre, a unique circulation of ocean currents that protects unique habitats and species from human impact, climate change and solidification.²⁹² There is a proposal to protect an area of around 1.8 million square kilometres of the sea which would be the world's largest marine protected area.

94. The MPA has been proposed by the EU and developed by the German Government but must be negotiated via Members of the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR).²⁹³ CCAMLR was established in response to increasing commercial interest in Antarctic krill resources, a keystone component of the Antarctic ecosystem, and a history of over-exploitation of several other marine resources in the Southern Ocean (see Annex A).²⁹⁴ Greenpeace told us that krill fleets do not currently fish in the Weddell Sea, but companies view future ice melt as a commercial opportunity, so are lobbying against marine protection in areas of potential expansion.²⁹⁵ CCAMLR negotiations on the Weddell Sea MPA in October 2018 were unsuccessful due to “delaying tactics” from Norway, Russia and China, who have interests in the krill fishery industry.²⁹⁶ We asked Lord Ahmad how the Government would proceed to ensure Norway, Russia and China commit to the expansion of MPAs in the Southern Ocean. He told us:

We need the agreement of all concerned. We have a view that I have expressed, but we cannot act unilaterally in this regard. We need countries to come on board in support of ensuring that Antarctica, as a resource, is protected for all and we will continue to lobby in that respect. Clearly, there was a disagreement by the three countries you have mentioned, but that was not our view.²⁹⁷

Lord Ahmad also told us that he will be raising the issue directly with the Foreign Minister of Norway at his next meeting.²⁹⁸

The High Seas - Areas Beyond National Jurisdiction

95. The “high seas” or areas beyond national jurisdiction (ABNJ) are areas of the ocean 200 nautical miles from individual countries’ shorelines and the boundaries of their national waters. This accounts for 58 per cent of the ocean which has little in the way of

291 [Q390](#)

292 [Qq291–293](#)

293 The Weddell Sea is one of nine planning regions in the convention area which covers the entire Southern Ocean (see Annex A for more information).

294 CCAMLR. 2018. [About CCAMLR](#) [Accessed 26/11/2018]; see also [Q50](#); [Q64](#)

295 Greenpeace ([SSI0086](#))

296 Greenpeace ([SSI0086](#)) and [Antarctic’s future in doubt after plan for world’s biggest marine reserve is blocked](#). The Guardian, 2 Nov 2018

297 [Q394](#) and [Q391](#)

298 [Q401](#)

safeguards to protect the greater marine ecosystem.²⁹⁹ We heard that although there are management bodies in the ABNJ,³⁰⁰ there is still an unwillingness to designate MPAs, for example, only seven out of 440 MPAs designated by OSPAR are in the high seas.³⁰¹

96. In September 2018, the UN began an Intergovernmental Conference on the conservation and sustainable use of marine biological diversity in the high seas also known as the High Seas Treaty (see Annex A).³⁰² This is the first substantive marine inter-governmental conference, starting a process of negotiations up to 2020.³⁰³ The High Seas Alliance—a partnership of 37 NGOs and the IUCN—is campaigning for a legally binding instrument akin to a “Paris Agreement for the Ocean” that would have the authority to create large marine protected areas in the high seas with robust management and enforcement.³⁰⁴ We heard that the negotiations present a rare opportunity to protect the seas.³⁰⁵

97. Will McCallum described the need for a new body to be established to help designate MPAs and oversee other competent authorities “like regional fisheries management organisations, like the International Seabed Authority, like the International Maritime Organisation”.³⁰⁶ Professor Callum Roberts, from the University of York, also describes the need for an effective management body to “oversee implementation, monitoring and effective enforcement of these protected areas”.³⁰⁷ He notes that Regional Fisheries Management Organisations, as presently constituted, “are not suited to undertake a biodiversity protection role” as they have failed to exercise their powers to properly manage the fish stocks under their jurisdiction.³⁰⁸ An example of this is the International Commission for the Conservation of Atlantic Tuna (ICCAT), which manages bluefin tuna (as well as shark and swordfish) fisheries and has allowed the species to decline to just 3 per cent of the 1960 total.³⁰⁹ The lack of an oversight body was also raised during our hearings on deep sea mining.³¹⁰ We heard that the International Seabed Authority could also be overseen by another body to manage and oversee the commercial exploitation of marine resources in ABNJ as well as the sharing of benefits arising from such activity.³¹¹

98. We put the suggestion of a new oversight body for the oceans to Claire Perry, who said, “I am not sure I have a view yet as to what the right international model would be”.³¹² Defra explained that the Government’s negotiating position is to deliver an outcome that

299 [Q301](#); Pew Trusts ([SSI0014](#)); [The Ocean’s last chance](#), The Guardian, 5 Aug 2018

300 There are around 20 organisations regulated under the United Nations Convention on the Law of the Sea. [The Ocean’s last chance](#), The Guardian, 5 Aug 2018

301 [Q300](#); As of 1 October 2016. OSPAR Commission. [Summary Status of the OSPAR Network of Marine Protected Areas 2016](#);

302 UN. 2018. [Intergovernmental Conference on Marine Biodiversity of Areas Beyond National Jurisdiction](#) [Accessed 26/11/2018]

303 Greenpeace UK ([SSI0132](#))

304 [Q299](#) see also RSPB ([SSI0063](#)); Pew Trusts ([SSI0014](#)); Greenpeace UK ([SSI0132](#)); National Geographic. 2018. [The UN Starts a Conservation Treaty for the High Seas](#) and High Seas Alliance. [A legally binding instrument for conservation of marine biodiversity on the high seas](#) [Accessed 26/11/2018] see also Marine Biological Association ([SSI0028](#))

305 [Qq299–301](#); Marinet Limited ([SSI0032](#));

306 [Q299](#)

307 Professor Callum Roberts ([SSI0077](#))

308 Professor Callum Roberts ([SSI0077](#)); see also [Q301](#) [Charles Clover]

309 Professor Callum Roberts ([SSI0077](#)) and [The Ocean’s last chance](#), The Guardian, 5 Aug 2018

310 [Q87](#) [Professor Mills]; The National Oceanography Centre ([SSI0079](#)); [Q302](#)

311 Centre for Marine Ecological Resilience and Geological Resources (MERGeR), Nottingham Law School, Nottingham Trent University ([SSI0117](#)), para 3.3

312 [Q389](#)

sets up a clear means of designating MPAs in ABNJ,³¹³ does not hinder the development of emerging marine industries, and complements the existing arrangements and work of competent bodies such as the International Maritime Organization, Regional Fisheries Management Organisations and Regional Seas Conventions.³¹⁴

99. Lord Ahmad said that he had been “quite shocked” by the threats to the ocean and these need to be reflected in discussions, “whether through multilateral discussions or bilaterally”.³¹⁵ Currently UK input to the UN negotiations is coordinated by the EU. It remains unclear whether the UK will remain within the EU negotiating bloc under duty of cooperation after March 2019.³¹⁶ Will McCallum stressed the need for high level diplomacy across all international marine negotiations:

What we are seeing across the board, whether this is in the UN High Seas Treaty, whether it is in CCAMLR, whether it is in any of these regional governance issues, is the need for high-level ministerial diplomacy. We are not seeing the civil service, junior-level diplomacy, having the same impact. What we saw with the Ross Sea was John Kerry travelling around the world essentially making the case for it to everyone... If I am honest, I don't think it is possible unless you have the Foreign Secretary or leader of state-level intervention. That is what is required with other countries sitting at the table.³¹⁷

100. **The Government's ambition to protect 30 per cent of the world's oceans by 2030 will only be meaningful if it commits to an ecologically coherent network of Marine Protected Areas and commits to government-backed monitoring and enforcement. Given what we have heard about the monitoring and enforcement of existing marine protected areas we are yet to be convinced that the Government's plans will result in more than just lines on a map. While we welcome the Government's clarification that the 30 per cent target will be included in its International Oceans Strategy, it must also set out how it will identify priority areas for protection and what levels of funding it will commit to international enforcement. In advance of the next conference of parties of the Convention on Biodiversity in Beijing 2020, the UK should use the highest levels of Government, including the Foreign Secretary, to mobilise its diplomatic network and use its position as Chair of the Commonwealth to advocate for its targets for marine protection.**

101. **The failure of the negotiations to protect the Weddell Sea highlight the importance of protecting and managing the seas within the UK's jurisdiction, particularly the opportunity to create MPAs in the Southern Ocean without multi-lateral negotiations. The difficulty of protecting the Weddell Sea also shows the scale of the challenge to negotiate the Government's target to achieve 30 per cent of the ocean in marine protected areas by 2030. To tackle the threats to the ocean and overcome conflicts of interest between different nations and their commercial interests will require high level ministerial diplomacy. We welcome the Minister's commitment to pursue bi-lateral**

313 Building on the work undertaken by Regional Seas Conventions such as OSPAR (see Annex A)

314 Department for Environment Food and Rural Affairs ([SSI0125](#))

315 [Q391](#)

316 EU ATLAS Project ([SSI0037](#))

317 [Q298](#)

diplomacy with Norway. Ministers must also commit to diplomacy with Russia and China to reinvigorate the negotiations to establish the world's largest marine reserve in the Weddell Sea, Antarctica.

102. *The UN High Seas treaty presents a huge opportunity for global ocean protection. The Government should work to increase ambition within the EU for the High Seas treaty and clarify the UK's negotiating position should the UK begin to negotiate outside of the EU. The Government should call for the creation of a legally-binding 'Paris Agreement for the Sea', including a conference of parties, that meets annually with a review conference every five years, to designate marine protected areas. The Government should also support the establishment of a new body to oversee Environmental Impact Assessments by other competent authorities including species specific management organisations, regional fisheries management organisations, the International Seabed Authority and the International Maritime Organisation. The Government should use its International Oceans Strategy to set out this position.*

Conclusions and recommendations

Threats to the Ocean

1. Meeting the UN Framework Convention on Climate Change Paris Agreement is critical for the future health of the oceans. A two-degree temperature rise will significantly harm biodiversity and fish stocks and destroy 99 per cent of global coral reefs. We welcome the Government's updated actions and milestones for the Clean Growth Strategy and its request for advice on meeting the Paris Agreement. *The Government must not delay in implementing the Committee on Climate Change's advice on how to meet the ambitions of the Paris Agreement whether through legislative means or otherwise. It should set out its plans in the first half of 2019. This should include setting a net-zero target by 2050 at the very latest.* (Paragraph 18)
2. Human induced carbon dioxide emissions are causing ocean acidification, warming and deoxygenation. This will have major implications for fisheries and biodiversity around the UK and some of the UK Overseas Territories which are reliant on coral reefs for their livelihoods and resilience to extreme weather events. We heard that there is limited knowledge of how these dangers are affecting the biodiversity of our waters and, we are disappointed that monitoring of ocean acidification is no longer being funded by the Government. *In line with the Science Advisory Council's advice to Defra on future ocean acidification monitoring, the existing UK time series for ocean acidification should be maintained on a long-term basis and additional UK sites for ocean acidification monitoring should be established to cover other important habitats. The Government must also use its expertise internationally to help Overseas Territories and Commonwealth countries understand and assess, including through monitoring, their vulnerabilities to ocean acidification, warming and deoxygenation particularly with regards to the impact to biodiversity and fisheries.* (Paragraph 19)
3. Many of the chemical pollutants found in the ocean are from land-based sources. It is worrying that the UK is lagging behind other countries in the EU with regards to nitrate pollution, and much greater progress must be made to reducing land-based sources of chemical pollution. *The Government should, as part of its Environment Bill, produce legally binding targets on water quality in-line with or exceeding those set out in the EU Water Framework Directive. These targets should be underpinned by clear milestones.* (Paragraph 26)
4. Once in the marine environment, Persistent Organic Pollutants can travel across the globe. They therefore require global commitments and coordination to eliminate, restrict or reduce their use. Although Polychlorinated Biphenyls (PCBs) have been banned in the UK for over 30 years, they remain high in estuarine and coastal environments. This highlights the importance of the precautionary approach to chemical regulation and use. *In addition to meeting its obligations under the Stockholm Convention, the Government should to use its expertise and influence in the international community to pressure non-ratifying states to eliminate the use of Persistent Organic Pollutants and ensure that those which have signed the Treaty are complying with its requirements.* (Paragraph 27)

5. Around 70 per cent of all the litter in the oceans is made of plastic and, if no action is taken, it will treble within the next ten years. There are a wide range of risks associated with marine litter and plastic pollution including direct entanglement or ingestion by seabirds and marine life and the suffocation of coral reefs and life on the seabed. Plastics break down to form microplastics which have the potential to enter the food chain and act as vectors for toxins. There is a lack of data on their serious long-term harm and the health implications of these plastic particles entering the food chain. (Paragraph 34)
6. There is much more that the Government could do to prevent waste reaching the ocean, both domestically and by not exporting waste to countries with poor recycling infrastructure. Supporting Indonesia and Malaysia to reduce plastic while simultaneously exporting contaminated plastics to them shows the lack of a lined-up approach at the heart of the Government's strategy. We welcome the Government's Resources and Waste Strategy which puts more onus on producers to pay for the costs of recycling and disposal of waste. Yet much of the strategy remains subject to consultation and will not be implemented for several years. We are disappointed that the plastic bottle deposit return scheme promised in 2017 will not be ready until 2023. Action needs to be taken much sooner to meet the Sustainable Development Goal target to prevent and significantly reduce marine pollution of all kinds by 2025.

We recommend that the Government should:

- *bring forward the 2042 target date to achieving zero avoidable plastic waste and set binding interim targets in its upcoming Environment Bill which meet or exceed targets set by the European Union, in consultation with the Welsh, Scottish and Northern Irish Governments and the proposed Office for Environmental Protection;*
- *expedite the deposit return scheme and extended producer responsibility schemes proposed in the Resources and Waste Strategy as soon as practicable and before the end of this Parliament;*
- *provide a clear definition of 'single use' plastics and 'avoidable' plastics;*
- *ban single use plastic packaging that is difficult or impossible to recycle;*
- *introduce a 25p latte levy on disposable coffee cups and for all coffee cups to be recycled by 2023; and*
- *set out how it will create and fund the necessary infrastructure to support a domestic recycling industry to help end of export of contaminated waste/ recycling.* (Paragraph 35)

Sustainable Fisheries

7. The Marine Stewardship Council standard is the market leader and the most rigorous certification in the seafood sector. We heard evidence that it is driving incremental change towards sustainable fish stocks through improvements in fishing practices, but there were concerns with the holistic assessment of fisheries and the inclusion of small scale fisheries. *To ensure continued consumer confidence*

in the Marine Stewardship Council certification, we recommend the MSC addresses specific criticisms raised by WWF, Prof Callum Roberts and others into its five-year review and strengthens its standard accordingly. These criticisms include its unit of assessment, the need to factor in carbon from ships into its standard, concerns about shark finning (where we look forward to the publication of data verifying the reduction of this practice in 2019) and barriers to entry for small scale fisheries. The review should be transparent and ideally independently evaluated. Ultimately voluntary, market-based schemes will never be applicable or relevant to every fishery. The responsibility for managing and overseeing fisheries and ensuring their sustainability lies with policymakers both at the national and international level, whether it be individual governments or regional bodies such as the European Union. (Paragraph 46)

8. By 2030 as much as 63 per cent of fish for human consumption could come from aquaculture. Salmon is a net producer of protein and can be a sustainable source of food provided that its feed is sustainably sourced, and its environmental impacts are mitigated. We welcome and support the precautionary approach of the Scottish Parliament's Environment, Climate Change and Land Reform Committee suggesting that independent assessments are needed on the environmental sustainability of the predicted growth of the sector and a full cost-benefit analysis of closed containment systems. We also welcome the Scottish Environmental Protection Agency's proposals for a revised regulatory regime, including the sustainable siting of fish farms and tighter standards for the release of organic waste. The Government has recognised that aquaculture and marine conservation are interconnected economic and environmental issues and we look forward to this being reflected in its International Oceans Strategy to help ensure that wild fish stocks recover from overfishing. (Paragraph 55)

Chapter 4: Deep sea mining

9. Deep sea mining would have catastrophic impacts on the seafloor site and its inhabitants. We heard that Environmental Impact Assessments are very difficult to undertake for the deep sea and that there was little evidence that mitigation measures such as setting aside areas of the seafloor will mitigate the damage and allow for the recolonisation of habitats and species recovery. Licences have been granted by the International Seabed Authority to permit exploration in unique habitats, but we consider the exploitation of resources must be prohibited in unique ocean environments, such as hydrothermal vents, until it can be determined that adequate mitigation techniques are available. We are concerned that the ISA, the licensing body for seabed exploration, also stands to benefit from revenues, which is a clear conflict of interest. *The Government must commit not to pursue licences for polymetallic sulfides/ seafloor massive sulfides found at active hydrothermal vents within its own jurisdiction and internationally. The UK should utilise its substantial experience in regulating marine industries and its influence with the International Seabed Authority (ISA) to impose a moratorium on exploitation licences in these areas as ISA develops its exploitation guidelines. Outside of these unique areas, the Government should proactively work with ISA to ensure Environmental Impact Assessments are robust, based on the precautionary principle and use the best available scientific evidence. (Paragraph 70)*

10. The case for deep sea mining has not yet been made. *We welcome the Government's review on the economic case for extracting minerals from the seabed. This should include a full review into the necessity for deep sea mining for rare earth metals, based on the availability of these materials in old and discarded products.* (Paragraph 71)

Marine Conservation

11. The Government claims to have met its targets for marine conservation in the UK, but its approach to marine protection is not working, with too many harmful activities such as bottom trawling occurring across too wide an area. Fisheries are not adequately incorporated into marine planning and few Marine Protected Areas have management plans in place. Monitoring of the success of protected areas is also inadequate. The Government is complacent: its goal should not only be to designate protected areas, but to ensure they are achieving the desired effect to improve ecological status. We heard that an adaptive management approach could tackle the multiple stressors which threaten the marine system. *We welcome Defra's review of ecological status of UK seas and recommend that in response to this report, it sets out how its new strategy will deliver more integrated marine planning, restoration and adaptive management to achieve ecologically diverse, healthy and productive seas. It should also set out its timetable for when all marine protected areas will have management plans and monitoring in place.* (Paragraph 80)
12. Not all Marine Protected Areas established by the Blue Belt programme are meeting international best practice guidelines by the IUCN. We are concerned that the UK's MPAs are missing key components to meet protected area demarcation, and that the UK missed its OSPAR commitment to establish a network of well-established MPAs by 2016. Whilst designating Marine Protected Areas is important, their benefits will only be realised if they are effectively managed. They must be monitored to deter illegal activity and to establish if species and habitats are recovering, to inform future designations and adaptive management decisions. *The Government must, as a matter of urgency, guarantee sustainable levels of funding for the Blue Belt Programme post 2020, to ensure monitoring, management and enforcement of marine protected areas. We recommend the Government should work in collaboration with all Overseas Territories with MPAs to set up a fully integrated monitoring and surveillance regime for satellite tracking of illegal, unreported and unregulated fishing. In particular, the UK Government should support the Ascension Island Government in designating 100 per cent of its Exclusive Economic Zone as an MPA as the Secretary of State for DEFRA told us he is considering.* (Paragraph 88)
13. The South Sandwich Islands present an opportunity to protect one of the most biodiverse areas in the UK's jurisdiction. Adding this area as a 'no take' designation would add half a million square kilometres to the Blue Belt. We welcome the South Georgia and South Sandwich Islands Government's announcement on 12 December 2018 to extend the 'no-take zones' to cover 23 per cent of the MPA, while also implementing additional measures to enhance marine protection around South Georgia and the South Sandwich Islands. This will extend the MPA and close around 170,000 square kilometres to commercial fishing. *The Government should continue to work with the South Georgia and South Sandwich Islands Government to work towards designating 100 per cent of the South Sandwich Islands MPA as a 'no*

take' area for commercial fishing while recognising the need to licence very limited fishing for scientific purposes. This would help to realise the Government's ambitions to protect four million square kilometres of ocean. (Paragraph 89)

International Leadership

14. The Government's ambition to protect 30 per cent of the world's oceans by 2030 will only be meaningful if it commits to an ecologically coherent network of Marine Protected Areas and commits to government-backed monitoring and enforcement. Given what we have heard about the monitoring and enforcement of existing marine protected areas we are yet to be convinced that the Government's plans will result in more than just lines on a map. *While we welcome the Government's clarification that the 30 per cent target will be included in its International Oceans Strategy, it must also set out how it will identify priority areas for protection and what levels of funding it will commit to international enforcement. In advance of the next conference of parties of the Convention on Biodiversity in Beijing 2020, the UK should use the highest levels of Government, including the Foreign Secretary, to mobilise its diplomatic network and use its position as Chair of the Commonwealth to advocate for its targets for marine protection. (Paragraph 100)*
15. The failure of the negotiations to protect the Weddell Sea highlight the importance of protecting and managing the seas within the UK's jurisdiction, particularly the opportunity to create MPAs in the Southern Ocean without multi-lateral negotiations. The difficulty of protecting the Weddell Sea also shows the scale of the challenge to negotiate the Government's target to achieve 30 per cent of the ocean in marine protected areas by 2030. *To tackle the threats to the ocean and overcome conflicts of interest between different nations and their commercial interests will require high level ministerial diplomacy. We welcome the Minister's commitment to pursue bi-lateral diplomacy with Norway. Ministers must also commit to diplomacy with Russia and China to reinvigorate the negotiations to establish the world's largest marine reserve in the Weddell Sea, Antarctica. (Paragraph 101)*
16. The UN High Seas treaty presents a huge opportunity for global ocean protection. *The Government should work to increase ambition within the EU for the High Seas treaty and clarify the UK's negotiating position should the UK begin to negotiate outside of the EU. The Government should call for the creation of a legally-binding 'Paris Agreement for the Sea', including a conference of parties, that meets annually with a review conference every five years, to designate marine protected areas. The Government should also support the establishment of a new body to oversee Environmental Impact Assessments by other competent authorities including species specific management organisations, regional fisheries management organisations, the International Seabed Authority and the International Maritime Organisation. The Government should use its International Oceans Strategy to set out this position. (Paragraph 102)*

Annex

Section A: Governance of the sea

UN Convention of the Law of the Sea (UNCLOS)

The UK is party to the United Nations Convention on the Law of the Sea (UNCLOS), also called the Law of the Sea Convention or the Law of the Sea treaty, is the international agreement that resulted from the third UN Conference on the Law of the Sea (UNCLOS III), which took place between 1973 and 1982. The Law of the Sea Convention defines the rights and responsibilities of nations with respect to their use of the world's oceans, establishing guidelines for businesses, the environment, and the management of marine natural resources.

OSPAR Commission

OSPAR is the mechanism by which 15 Governments and the EU cooperate to protect the marine environment of the North-East Atlantic. OSPAR started in 1972 with the Oslo Convention against dumping and was broadened to cover land-based sources of marine pollution and the offshore industry by the Paris Convention of 1974. These two conventions were unified, updated and extended by the 1992 OSPAR Convention (It is so named because of the “OS” for Oslo and “PAR” for Paris). The new annex on biodiversity and ecosystems was adopted in 1998 to cover non-polluting human activities that can adversely affect the sea. The UK ratified OSPAR in 1998 and implementation is coordinated by Defra with contributions to OSPAR Committees by a variety of government departments, the devolved administrations and agencies. In its 2016 update OSPAR reported a total of 448 protected areas, representing 5.9 per cent of the OSPAR Maritime Area.³¹⁸

Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)

The UK was one of the original 12 countries to sign the Antarctic Treaty in 1959, ensuring the frozen and near-pristine continent was set aside for peace and science.³¹⁹ The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) was established under the Antarctic Treaty System in 1982 with the objective of conserving Antarctic marine life. This was in response to increasing concern about the sustainability of krill fishing and the impact on the wider Southern Ocean ecosystem. CCAMLR is an international commission with 25 Members, and a further 11 countries have acceded to the Convention. Based on the best available scientific information, the Commission agrees a set of conservation measures that determine the use of marine living resources in the Antarctic. In October 2018, CCAMLR met to negotiate the Weddell Sea marine sanctuary proposed by the EU and developed by the German Government.

318 OSPAR. 2017. [Summary status of the OSPAR Network of Marine Protected Areas](#)

319 Secretariat of the Antarctic Treaty. 2011. [The Antarctic Treaty](#).

The UN High Seas Treaty

In September 2018, the UN began an Intergovernmental Conference on the conservation and sustainable use of marine biological diversity in the ‘high seas’—marine Areas Beyond National Jurisdiction (ABNJ)—under the UN Convention on the Law of the Sea.³²⁰ This seeks to achieve cooperation for the first time for the 58 per cent of the ocean which effectively has no protection.³²¹ The first session was held between 4 and 17 September 2018, the second and third sessions will take place in 2019 and the fourth session in the first half of 2020.

Section B: UK marine targets

Convention on Biological Diversity

The UK is a signatory to the Convention on Biological Diversity (CBD) signed by 150 government leaders at the 1992 Rio Earth Summit. It is the first global treaty to provide a legal framework for biodiversity conservation. In a follow up conference in 2010, the Parties adopted a new Strategic Plan for Biodiversity 2011–2020 along with its 20 ‘Aichi targets’.³²² The Aichi targets set out 20 challenging targets under five strategic goals. Parties are invited to set their own targets within this flexible framework, considering national needs and priorities.

Aichi Targets

Under the Convention on Biological Diversity, signatories must achieve Strategic Goal C: “To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity”. Target 11 relates to the marine environment:

Target 11: By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.³²³

UN Sustainable Development Goals

The UK also has commitments under the UN’s Global Goals for Sustainable Development or Sustainable Development Goals (SDGs) to promote the health of the ocean, including Goal 14 ‘Life below water’: Conserve and sustainably use the oceans, seas and marine resources for sustainable development. SDG 14 Targets include:

14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, particularly from land-based activities, including marine debris and nutrient pollution

320 UN. [International conference on marine biodiversity](#). 16 April 2018

321 [The Ocean’s last chance](#), The Guardian, 5 Aug 2018

322 Secretariat of the Convention on Biodiversity. [Strategic Plan for Biodiversity 2011–2020 and the Aichi Targets](#)

323 [Convention on Biological Diversity](#)

14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration, to achieve healthy and productive oceans

14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels

14.4 By 2020, effectively regulate harvesting, and end overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices and implement science-based management plans, to restore fish stocks in the shortest time feasible at least to levels that can produce maximum sustainable yield as determined by their biological characteristics

14.5 By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on best available scientific information

14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, and eliminate subsidies that contribute to IUU fishing, and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the WTO fisheries subsidies negotiation

14.7 By 2030, increase the economic benefits to SIDS and LDCs from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism

14.A Increase scientific knowledge, develop research capacities and transfer marine technology taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular SIDS [Small Island Developing States] and LDCs [least developed countries].

14.B Provide access of small-scale artisanal fishers to marine resources and markets

14.C Ensure the full implementation of international law, as reflected in UNCLOS for states parties to it, including, where applicable, existing regional and international regimes for the conservation and sustainable use of oceans and their resources by their parties.³²⁴

Section C: Protected area designations

Marine Conservation Zones (MCZs) are designated under the *Marine and Coastal Access Act 2009* and *Marine Act (Northern Ireland) 2013*. MCZs protect a range of nationally important marine wildlife, habitats, geology and geomorphology, and can be designated anywhere in English and Welsh territorial and UK offshore waters.³²⁵

Special Areas of Conservation (SACs) are designated under the *Habitats Directive 1992*. SACs with marine components are sites that contain qualifying marine habitats or species. There are currently 115 SACs with marine components that cover about 14 per cent of the UK's marine area.³²⁶

Special Protected Areas (SPAs) are designated under the *Bird Directive 2009*. There are 109 SPAs with marine components in the UK including four wholly marine SPAs.³²⁷

Nature Conservation Marine Protected Areas are designated under *The Marine (Scotland) Act 2010*. In July 2014, 30 Nature Conservation MPAs were designated in the seas around Scotland, of which 13 are offshore.³²⁸

Also included in the UK's MPA network are Sites of Special Scientific Interest (SSSIs) that extend below the low water mark, Ramsar Sites designated under the *Ramsar Convention on Wetlands 1971*, and Fisheries closures including those under the *Inshore Fishing (Scotland) Act 1984*, regulatory measures under the North-East Atlantic Fisheries Commission and regulations under the Common Fisheries Policy.³²⁹

325 JNCC. 2018. [Marine Conservation Zones](#) [Accessed 21/11/2018]

326 JNCC. 2018. [Special Areas of Conservation with marine components](#) [Accessed 21/11/2018]

327 JNCC. 2018. [Special Protected Areas](#) [Accessed 21/11/2018]

328 JNCC. 2018. [Nature Conservation Marine Protected Areas](#) [Accessed 21/11/2018]

329 MCCIP. 2015. Implications for the implementation of marine biodiversity legislation

Formal minutes

Tuesday 8 January 2019

Members present:

Mary Creagh, in the Chair

Geraint Davies	Caroline Lucas
Philip Dunne	Kerry McCarthy
Zac Goldsmith	John McNally
Robert Goodwill	Alex Sobel
James Gray	

Draft Report (*Sustainable Seas*), proposed by the Chair, brought up and read.

Paragraphs 1 to 102 read and agreed to.

Annex agreed to

Summary agreed to.

Resolved, That the Report be the Fourteenth Report of the Committee to the House

Ordered, That the Chair make the Report to the House.

Ordered, That embargoed copies of the Report be made available, in accordance with the provisions of Standing Order No. 134.

[The Committee adjourned]

Witnesses

The following witnesses gave evidence. Transcripts can be viewed on the [inquiry publications page](#) of the Committee's website.

Wednesday 5 September 2018

Dr Patrick Vallance, Government Chief Scientific Adviser, **Professor Ian Boyd**, Chief Scientific Adviser, Department for Environment, Food and Rural Affairs [Q1–57](#)

Dr Abigail McQuatters-Gollop, Lecturer in Marine Conservation, University of Plymouth, **Professor Rachel Mills**, Dean of the Faculty of Natural and Environmental Sciences, University of Southampton, **Professor Colin Moffat**, Office of the Chief Scientific Advisor, Scottish Government [Q58–95](#)

Tuesday 11 September 2018

Charles Redfern, Fish4Ever, **Rupert Howes**, Marine Stewardship Council, **Sönke Fischer**, Accreditation Services International, **Dr Louise Heaps**, WWF [Q96–157](#)

Guy Linley-Adams, Salmon and Trout Conservation Scotland, **Dr Adam Hughes**, Scottish Association for Marine Science, **Ben Hadfield**, Managing Director, Marine Harvest (representing the wider Scottish Salmon Producers' Organisation) [Q158–227](#)

Tuesday 16 October 2018

Fiona Ball, Head of Inspirational Business, Group, Sky plc, **Charles Clover**, Great British Oceans Coalition, **Will McCallum**, Head of Oceans, Greenpeace [Q228–308](#)

Professor Gideon Henderson FRS, Chair of Future Ocean Resources, Royal Society, **Michael Lodge**, Secretary General, International Seabed Authority, **Christopher Williams**, Managing Director, UK Seabed Resources Ltd [Q309–363](#)

Monday 5 November 2018

Lord Ahmad of Wimbledon, Minister of State for the Commonwealth and the UN, Foreign and Commonwealth Office, **Rt Hon Claire Perry MP**, Minister of State for Energy and Clean Growth, Department for Business, Energy and Industrial Strategy [Q364–464](#)

Published written evidence

The following written evidence was received and can be viewed on the [inquiry publications page](#) of the Committee's website.

SSI numbers are generated by the evidence processing system and so may not be complete.

- 1 Accreditation Services International ([SSI0130](#))
- 2 Accreditation Services International GmbH ([SSI0019](#))
- 3 Adaptation Sub-Committee of the Committee on Climate Change ([SSI0053](#))
- 4 Advisory Committee on Protection of the Sea ([SSI0069](#))
- 5 Alistair Carmichael MP and Ian Murray MP ([SSI0129](#))
- 6 Animal Welfare Institute ([SSI0066](#))
- 7 Aquaculture Initiative EEIG ([SSI0071](#))
- 8 Arup ([SSI0038](#))
- 9 Association of Inshore Fisheries and Conservation Authorities ([SSI0013](#))
- 10 Austral Fisheries Pty Ltd ([SSI0002](#))
- 11 Bailey, Megan ([SSI0078](#))
- 12 Bannister, Dr Robert Colin ([SSI0092](#))
- 13 Berry, Mr Allan ([SSI0112](#))
- 14 BirdLife South Africa ([SSI0025](#))
- 15 BLOOM ([SSI0107](#))
- 16 Bloom ([SSI0146](#))
- 17 Blue Marine Foundation ([SSI0073](#))
- 18 Blue Marine Foundation ([SSI0141](#))
- 19 Born Free Foundation ([SSI0051](#))
- 20 British Ecological Society ([SSI0076](#))
- 21 British Marine Aggregate Producers Association ([SSI0106](#))
- 22 British Retail Consortium ([SSI0120](#))
- 23 British Sub-Aqua Club ([SSI0126](#))
- 24 California Environmental Associates ([SSI0010](#))
- 25 Centre for Marine Ecological Resilience and Geological Resources (MERGeR), Nottingham Law School, Nottingham Trent University ([SSI0117](#))
- 26 Centre for Sustainable Aquaculture Futures ([SSI0111](#))
- 27 Certification and Ratings Collaboration ([SSI0067](#))
- 28 Changing Markets Foundation ([SSI0124](#))
- 29 China Aquatic Products Processing and Marketing Alliance ([SSI0005](#))
- 30 Copley, Dr Jon ([SSI0050](#))
- 31 Curtis, David ([SSI0001](#))
- 32 Deepwater Group ([SSI0064](#))
- 33 Department for Environment Food and Rural Affairs ([SSI0125](#))

- 34 Devon and Severn Inshore Fisheries and Conservation Authority ([SSI0147](#))
- 35 Earth Island Institute ([SSI0040](#))
- 36 Environment Links UK ([SSI0102](#))
- 37 Environmental Defense Fund ([SSI0081](#))
- 38 EROSKI ([SSI0075](#))
- 39 Erzeugergemeinschaft der Deutschen Krabbenfischer GmbH ([SSI0023](#))
- 40 Erzeugerorganisation schleswig-holsteinischer Muschelzüchter e.V. ([SSI0022](#))
- 41 EU ATLAS Project ([SSI0037](#))
- 42 Fair Seas Limited ([SSI0044](#))
- 43 Fauna & Flora International ([SSI0105](#))
- 44 Fidra ([SSI0082](#))
- 45 Fish4Ever ([SSI0012](#))
- 46 Friends of the Sound of Jura ([SSI0030](#))
- 47 FUNDACION AZTI ([SSI0061](#))
- 48 Global Ocean Biodiversity Initiative ([SSI0113](#))
- 49 The Global Sustainable Seafood Initiative ([SSI0055](#))
- 50 Government Office for Science ([SSI0135](#))
- 51 Great British Oceans ([SSI0134](#))
- 52 Greenpeace ([SSI0086](#))
- 53 Greenpeace UK ([SSI0132](#))
- 54 International Institute for Environment and Development ([SSI0033](#))
- 55 International Pole & Line Foundation ([SSI0103](#))
- 56 International Seabed Authority ([SSI0142](#))
- 57 ISEAL Alliance ([SSI0072](#))
- 58 Ishimura, Dr Gakushi ([SSI0042](#))
- 59 Jennings, Dr Simon ([SSI0020](#))
- 60 Kaiser, Professor Michel ([SSI0054](#))
- 61 Kallio, Veli Albert ([SSI0121](#))
- 62 Kawashima, Yumie ([SSI0008](#))
- 63 Kirk, Professor Elizabeth ([SSI0031](#))
- 64 Kirkham, Nicholas ([SSI0059](#))
- 65 Make Stewardship Count ([SSI0097](#))
- 66 Marine Biological Association ([SSI0028](#))
- 67 Marine Biology Research Group, University of Southampton, ([SSI0087](#))
- 68 Marine Concern ([SSI0026](#))
- 69 Marine Conservation Society ([SSI0096](#))
- 70 Marine Conservation Society ([SSI0115](#))
- 71 Marine Stewardship Council ([SSI0095](#))

- 72 Marine Stewardship Council ([SSI0143](#))
- 73 Marinet Limited ([SSI0032](#))
- 74 Met Office ([SSI0057](#))
- 75 Mundus maris - Sciences and Arts for Sustainability ([SSI0080](#))
- 76 The National Oceanography Centre ([SSI0079](#))
- 77 New England Seafood International Ltd ([SSI0068](#))
- 78 Ninnes, Chris ([SSI0089](#))
- 79 Nomad Foods Europe ([SSI0083](#))
- 80 North Atlantic Fishing Company Limited ([SSI0003](#))
- 81 Norwegian Fishermen's Association (NFA) ([SSI0024](#))
- 82 Ocean and Earth Sciences, University of Southampton ([SSI0088](#))
- 83 On The Hook ([SSI0094](#))
- 84 On the Hook ([SSI0133](#))
- 85 Open Seas ([SSI0090](#))
- 86 Oregon Trawl Commission ([SSI0099](#))
- 87 Page, Richard ([SSI0027](#))
- 88 Pedersen, Mark ([SSI0046](#))
- 89 Pew Trusts ([SSI0014](#))
- 90 Plymouth Marine Laboratory ([SSI0048](#))
- 91 Princes Limited ([SSI0039](#))
- 92 Professor Ian Boyd, Chief Scientific Adviser at the Department for the Environment, Food and Rural Affairs ([SSI0137](#))
- 93 Redfern, Charles ([SSI0144](#))
- 94 Restrepo, Victor ([SSI0018](#))
- 95 Rice, Dr James (Jake) ([SSI0060](#))
- 96 Roberts, Professor Callum ([SSI0077](#))
- 97 Royal Forest & Bird Protection Society of New Zealand Inc ([SSI0045](#))
- 98 The Royal Society ([SSI0122](#))
- 99 RSPB ([SSI0063](#))
- 100 Salmon and Trout Conservation Scotland ([SSI0128](#))
- 101 Scomber consultancy ([SSI0016](#))
- 102 Scottish Pelagic Fishermen's Association ([SSI0108](#))
- 103 Scottish Salmon Producers' Organisation ([SSI0127](#))
- 104 Scottish Salmon Producers' Organisation ([SSI0131](#))
- 105 Scottish Salmon Watch & Global Alliance Against Industrial Aquaculture ([SSI0011](#))
- 106 Scottish White Fish Producers Association ([SSI0007](#))
- 107 Scuba Industries Trade Association ([SSI0109](#))
- 108 Seabed User & Developer Group ([SSI0116](#))

- 109 Seabed User and Developer Group ([SSI0114](#))
- 110 SeaChoice ([SSI0085](#))
- 111 Sharkproject International e.V ([SSI0098](#))
- 112 Society for Applied Microbiology ([SSI0119](#))
- 113 South African Deep-Sea Trawling Industry Association ([SSI0049](#))
- 114 Southern Inshore Fisheries and Conservation Authority ([SSI0093](#))
- 115 St Helena Government ([SSI0140](#))
- 116 Sustain: The Alliance for Better Food and Farming ([SSI0110](#))
- 117 Sweet, Dr Michael ([SSI0056](#))
- 118 Taronga Conservation Society Australia ([SSI0047](#))
- 119 Terra Moana Ltd ([SSI0017](#))
- 120 Thai Union PCL ([SSI0104](#))
- 121 Thuenen Institute of Baltic Sea Fisheries ([SSI0062](#))
- 122 UK Overseas Territories Conservation Forum ([SSI0091](#))
- 123 UK Seabed Resources Ltd ([SSI0118](#))
- 124 University of Exeter ([SSI0065](#))
- 125 University of Exeter ([SSI0074](#))
- 126 University of Plymouth Marine Institute ([SSI0070](#))
- 127 Wageningen Marine Research ([SSI0015](#))
- 128 Western Australian Fishing Industry Council ([SSI0006](#))
- 129 The Wildlife Trusts ([SSI0021](#))
- 130 Willems, Tomas ([SSI0036](#))
- 131 World Animal Protection ([SSI0052](#))
- 132 World Wise Foods ([SSI0138](#))
- 133 WWF-UK ([SSI0101](#))
- 134 Zoological Society of London ([SSI0058](#))

List of Reports from the Committee during the current Parliament

All publications from the Committee are available on the [publications page](#) of the Committee's website. The reference number of the Government's response to each Report is printed in brackets after the HC printing number.

Session 2017–19

First Report	Plastic bottles: Turning Back the Plastic Tide	HC 339
Second Report	Disposable Packaging: Coffee Cups	HC 657
Third Report	The Ministry of Justice: Environmental Sustainability	HC 545
Fourth Report	Improving air quality	HC 433
Fifth Report	UK Progress on Reducing F-gas Emissions	HC 469
Sixth Report	Green finance: mobilising investment in clean energy and sustainable development	HC 671
Seventh Report	Greening Finance: embedding sustainability in financial decision making	HC 1063
Eighth Report	The Government's 25 Year Plan for the Environment	HC 803
Ninth Report	Heatwaves: adapting to climate change	HC 826
Tenth Report	Hand car washes	HC 981
Eleventh Report	UK Progress on Reducing Nitrate Pollution	HC 656
Twelfth Report	The Changing Arctic	HC 842
Thirteenth Report	Sustainable Development Goals in the UK follow up: Hunger, malnutrition and food insecurity in the UK	HC 1491
First Special Report	The Future of Chemicals Regulation after the EU Referendum: Government Response to the Committee's Eleventh Report of Session 2016–17	HC 313
Second Special Report	Marine Protected Areas Revisited: Government Response to the Committee's Tenth Report of Session 2016–17	HC 314
Third Special Report	Sustainable Development Goals in the UK: Government Response to the Committee's Ninth Report of Session 2016–17	HC 616
Fourth Special Report	Plastic bottles: Turning Back the Plastic Tide: Government Response to the Committee's First Report	HC 841
Fifth Special Report	Disposable Packaging: Coffee Cups: Government's Response to the Committee's Second Report	HC 867
Sixth Special Report	The Ministry of Justice: Environmental Sustainability: Government's Response to the Committee's Third Report	HC 982
Seventh Special Report	Improving air quality: Government Response to the Committee's Fourth Report	HC 1149

Eighth Special Report	UK Progress on reducing F-gas Emissions: Government's Response to the Committee's Fifth Report Eighth	HC 1406
Ninth Special Report	Green finance: mobilising investment in clean energy and sustainable development: Government Response to the Committee's Sixth Report	HC 1450
Tenth Special Report	Heatwaves: adapting to climate change: Government Response to the Committee's Ninth Report	HC 1671
Eleventh Special Report	Greening Finance: embedding sustainability in financial decision making: Government Response to the Committee's Seventh Report	HC 1673
Twelfth Special Report	The Government's 25 Year Plan for the Environment: Government Response to the Committee's Eighth Report	HC 1672