

Environmental Audit Committee

Oral evidence: Sustainable Seas, HC 980

Tuesday 16 October 2018

Ordered by the House of Commons to be published on 16 October 2018.

[Watch the meeting](#)

Members present: Mary Creagh (Chair); Geraint Davies; Mr Philip Dunne; Zac Goldsmith; Mr Goodwill; James Gray; Caroline Lucas; Kerry McCarthy; John McNally; Joan Ryan; Alex Sobel.

Questions 228 – 363

Witnesses

I: Fiona Ball, Head of Inspirational Business, Sky Group, Charles Clover, Great British Oceans Coalition, and Will McCallum, Head of Oceans, Greenpeace.

II: Professor Gideon Henderson FRS, Chair of Future Ocean Resources, Royal Society, Michael Lodge, Secretary-General, International Seabed Authority, and Christopher Williams, Managing Director, UK Seabed Resources Ltd.

Written evidence from witnesses:

- [Great British Oceans - written evidence](#) | [PDF version](#) ( 130 KB) 
- [Greenpeace UK - written evidence](#) | [PDF version](#) ( 68 KB) 
- [The Royal Society - written evidence](#) | [PDF version](#) ( 69 KB) 
- [UK Seabed Resources Ltd - written evidence](#) | [PDF version](#) ( 111 KB) 

Examination of witnesses

Witnesses: Fiona Ball, Charles Clover and Will McCallum.

Q228 **Chair:** I welcome today's witnesses to this, our third evidence session in our inquiry into sustainable seas. Our first panel will explore the threat to the ocean from plastic pollution and corporate social responsibility—as in, not a threat but a good thing. Can I ask our witnesses to introduce themselves from my left, starting with William, please?

Will McCallum: My name is Will McCallum. I am the head of oceans at Greenpeace UK and lead our global campaign on the Antarctic.

Fiona Ball: I am Fiona Ball. I am the group head of inspirational business at Sky Group and Sky Ocean Rescue.

Charles Clover: I am Charles Clover, executive director of the Blue Marine Foundation, but today I am representing a coalition called the Great British Oceans Coalition.

Q229 **Chair:** You are all very welcome. Ms Ball, perhaps I could start with you. Sky has been running its ocean rescue programme for the last couple of years. Can you tell us a little bit about what motivated the business to choose oceans as their focus?

Fiona Ball: Sky has a relatively small environmental footprint as an organisation, but six or seven years ago we realised that although our footprint is small, we have a huge opportunity as a broadcaster to engage our consumers and viewers on environmental issues. We did that six or seven years ago with a campaign called Sky Rainforest Rescue, which we did with WWF for six years around rainforest issues. That was a huge success, and when that came to an end we really wanted another environmental issue that we could look at. We do a lot of consumer surveys each month that go out to 25,000 of our customers. We ask them, "Which is your environmental issue that you are concerned about?" The top two things that came up were water pollution and ocean pollution, followed very closely by climate change issues.

We had a look at this in a little bit more detail. At the same time, our news team were out in Bermuda two years ago doing a piece to camera, nothing to do with ocean pollution or plastics or anything, but they did find an awful lot of plastics in the ocean and they thought that this was potentially something that we could have a look at in a bit more detail. Two years ago, in January 2017, we decided to launch something called Sky Ocean Rescue with the whole idea of using our channels to engage our consumers around the issues of ocean health and particularly around plastic and plastic pollution.

Q230 **Chair:** I am very interested in this panel that you talk to, these 25,000 people. I am very interested that they are interested in climate change



because whenever the pollsters come to us as politicians, they say climate change and environmental concerns are way down the list compared to other things. What sort of questions are you asking and what sort of feedback are you getting? Is climate change still a concern on that monthly panel that you are doing?

Fiona Ball: Yes, it is still a concern. The questions are specifically around which environmental issue you are concerned about, so it is not looking at the broad, "What are you concerned about?" It is specifically looking at environmental issues.

Q231 **Chair:** Have their concerns changed over the nearly two years that you have been running the ocean rescue programmes?

Fiona Ball: Concerns have changed. Previously, energy efficiency and climate issues probably five or six years ago were higher up the agenda. Rainforest protection was higher, which is why we did something six or seven years ago with WWF around Sky Rainforest Rescue. Ocean pollution is definitely something that is new to the cause.

Q232 **Chair:** Excellent. You have achieved quite a large reduction in single-use plastics in the first year. We have noticed it all as we go to you as a broadcaster. We are trying to achieve some of those early wins, the reduction in single-use plastics, in Parliament. What aspects of your programme to drive out single-use plastics have you found most challenging?

Fiona Ball: We have a target to reduce single-use plastics across our operations, our products and our supply chain by the end of 2020. For front of house operations and also our products, our Sky own-branded products, we are going to do that by the end of this calendar year, so we are fast-tracking that. The easiest areas with respect to packaging are ones that we can just eliminate, so we can just have a look at redesigning our packaging. The most difficult aspects are those that are related to our front of house operation, particularly around catering or packaging. Things like shrink wrap or food containers are the most challenging ones that we have.

Q233 **Chair:** I was surprised that you had not moved to compostable cups when I went there last time given that you have been running this campaign for 18 months. We have managed to make that change in Parliament, which has exactly the same issues with arguably more visitors coming through than you would have coming into your operations. Why has that been a stumbling point?

Fiona Ball: We have gotten rid of cups in their entirety. We have not swapped to compostable materials. We used to use 7 million cups for hot drinks and stuff, and we have given all of our employees a reusable container, so now we do not have any cups.

Q234 **Chair:** They have gone?

Fiona Ball: They have all gone.



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Chair: I definitely saw Huhtamaki cups when I was there earlier this year.

Fiona Ball: Yes, so they have all gone. We have also done the same with drinks and water cups. We have lots of water fountains everywhere. Our biggest thing is around reducing and eliminating those things that we think we can eliminate rather than switching to alternatives.

Q235 **Chair:** Okay. How can the Government get other companies to take plastic as seriously as you are taking it? What leadership do you want to see from the Government?

Fiona Ball: We need to act and we need to act really quickly in order to make a difference. There are a number of initiatives in the UK and globally around global commitments that companies are voluntarily signing up to on reducing the amount of plastic packaging particularly by 2025. I think this commitment is really good. At the moment I do not think it is specific enough. I do not think there is terminology around unavoidable or problematic plastics. 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.

There are a number of businesses that are showing real leadership around this particular area, and these businesses should be encouraged to come together to help find the challenging problems. There are some easy wins, but there are also some that are going to take a little bit more time to work out the solution. We do have something called Sky Ocean Ventures at Sky, which we launched last year, which is an investment of ourselves over the next five years of £25 million. It is specifically looking at the challenges that we face where there is no alternative currently; for example, shrink wrap when you have packaging and stuff delivered. That help in facilitating and bringing together some leading businesses to look at the challenges would also be really useful.

Chair: Okay. Robert had a quick question.

Q236 **Mr Goodwill:** It is just a supplementary. I absolutely applaud the leadership that you are taking, but in terms of the disposable cups that you were previously using, how many of those actually ended up in the ocean from your Sky waste stream?

Fiona Ball: I hope none of them from the Sky waste stream because we have good waste facilities in place. The issue is that still 60% of these cups are not recycled for some reason or other. Some of that is around litter, but there are statistics that there is 8 million tonnes of single-use plastic that is entering our oceans, so we obviously still do have a problem.

Q237 **Mr Goodwill:** To some extent, could we be guilty of maybe patting ourselves on the back and feeling good about the fact that we are making



these changes when the real problem is in the developing world and those rivers in China and India where waste is just being tipped wholesale into that ecosystem? Are we maybe to some extent diverting our attention from where the real problem is, which tends not to be in the waste streams coming out from offices and factories here in the UK?

Fiona Ball: I think that we all need to take responsibility. Any kind of environmental issue, whether you are looking at climate change or ocean plastic, is for every business and every country to take responsibility for. You cannot just pass it on to another country. We do produce a huge amount of single-use plastic that is not used again and that is not recyclable. A lot of it is not recyclable in this country where we can easily reduce that as businesses. I think that we all need to take responsibility.

Q238 **Chair:** The evidence that we had as a Committee when we looked into this was that only one in 400 of those single-use cups are recycled, so they are going to landfill or incineration. Anyone who thinks we do not have a problem just needs to go along the Embankment and cycle along the path because every day there are cups blowing into the river from revellers the night before who just neatly place their stuff on the side of the kerb and expect some magic person to pick it up. We know that tons of plastics are entering our seas from the Thames, from the river outside this Committee room.

Perhaps I can widen this. Obviously, Mr McCallum, you have written a book about how to give up plastic. What are your top three tips?

Will McCallum: My top three tips to Government are everything needs to come from this idea of reduction and reduction should be at the heart. It is interesting what you said around this being a problem on the other side of the world when 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.

Our top three tips are closing the loop, and the best way to do that is to make it smaller and simpler, so statutory reduction targets in the Environment Bill, getting rid of plastic that is not recyclable or not widely recycled. That definition of single-use plastics that we would love to see from Government should include things like black plastic trays. The material may well be recyclable but in practice the infrastructure is not there.

Finally, a tax on virgin plastic production would help companies to move away from the need to produce single-use plastics using virgin plastic. It would support those companies implementing recycled content targets in their packaging, and it would provide an incentive to recapture all of that material that at the moment we are sending abroad.

Q239 **Chair:** Interesting. Mr Clover, do you have any thoughts on this?



Charles Clover: As a correspondent, I spent a lot of time, over 20 years, trying to get people to recycle. *The Telegraph*, which I then worked for, was responsible for the 25% recycling target that we had in the 1990s. I have watched this happen for a very long time and I am rather shocked that it has taken us so long to go back to where we were in about 1970. Friends of the Earth UK began with a campaign to get Schweppes to take back their non-recyclable bottles, and we are back at the same point.

Chair: Nothing new under the sun. Vietnam also has a lot of civil unhappiness about the fact that there are huge amounts of stuff now being dumped there that is building up. The only reason Thailand is not stopping it is because the licences were issued until 2021. This is very much our problem because the window is shutting on this export market. That is very, very clear.

Q240 **Caroline Lucas:** I have a question for Charles Clover in the first instance about his views around how effective he thinks the UK's current system of marine protection areas is in terms of delivering equitably managed and ecologically representative joined-up protected areas.

Charles Clover: Thank you; good question. I think that the current system around this is around the UK coasts and in our EEZ, not in overseas territories, I assume. The current system is tragically unambitious in our inshore waters and tragically ineffective beyond the 12 miles. Perhaps I should be a little bit more clear about that.

In terms of inshore waters, our system both of European marine sites and MCZs in English waters is based on protecting bottom features rather than protecting ecosystems and mobile species. I think this is pretty unambitious. The way in which they are enforced is better than in Scotland and Wales. We have these things called IFCA, which are quite good. If you go to Scotland and Wales, you will find people flouting MPA regulations on a daily basis because they have a gentlemen's agreement to fish somewhere that is actually protected. The IFCA are the only bright spot in England, but the fact is that in England's waters—that is, inshore and offshore—92% of MPAs in England's EEZ are open to bottom-trawled or bottom-dredged gears, mobile gears, and that really says it all. If you call that protection—

Q241 **Chair:** Can you tell us what IFCA stands for?

Charles Clover: IFCA is inshore fisheries and conservation authorities.

Chair: Yes, we did that two years ago.

Charles Clover: They are the best that we have in the UK system of balancing public interests and private fishing interests. The fact that they do not have them in Scotland and Wales is conspicuous.

We do not have a good system. It is tragically unambitious and we need to reboot that system, in our view, by re-engaging the public and acting in the public interest, in this equitable interest, which means more access



for all to things like marine conservation by having marine parks. We think that marine parks that included some of these very technical designations that we have at the moment but were about Plymouth Sound or Lyme Bay or the north-east around Lindisfarne or somewhere like that—landscapes that already mean something to people like national park landscapes do on land—would make a lot of sense in the sea. There is a review of national parks going on at the moment that is going to look at that, I hope.

Secondly on actions needed, we need a strategy to promote restoration. At the present stage, we do not have that and restoration is the most difficult thing to do. We are trying to do the Government's job for them as a little coalition of charities in the Blackwater Estuary. The marine management organisation is charging us £8,000 a year as a licence to lay cultch; that is to put back shellfish shells for the native oysters. That is the specific intention of the MCZ—marine conservation zone—to restore. We are being charged to put them back as if we were a polluter.

We do not do restoration right in this country. We should look at the United States where they do it much better. There are multiple obstacles to conservation happening and most of the network is set up to maintain rather than to restore. We need a restoration strategy around Britain, not a maintenance strategy. We are in danger of institutionalising degradation if we do not restore ecosystems.

The third thing is that we need to make sure that environmental law is not trumped by fisheries law when we take charge of our own waters after Brexit. It would be nice if we gave that gift to the European Union before we leave because the overreaching officials in Brussels have set fisheries law in ways that trump environmental law.

An example of this is the fact that there are pulse trawlers working on the Dogger Bank, which is one of the largest MPAs in Europe. This is an experimental technique that should never have been allowed anyway, but should particularly never have been allowed in MPAs, but the fisheries officials did not set that when they granted the licence.

That is an example of fisheries law trumping environmental law. You would not be able to do it if you were an oil company. You would have to observe the law. Fisheries for some reason does not. We must not have that situation after Brexit either because we have absorbed the status quo from Europe or because we allow people from Europe to negotiate custom and practice that they have had when they come back to fish in our waters.

Q242 Caroline Lucas: Thank you. There was a lot in there. Just beginning to pull a few of those threads, in particular about the issue of policing, I was going to ask Will as well about whether he thinks MPAs are adequately policed. We have heard that the IFCAs are working reasonably well, but I know that WWF was worried about what it calls paper parks, in other words these things not being properly enforced. What is your view on



that?

Will McCallum: Our view at the moment is that they are not being properly policed. The competent authorities are not receiving the adequate levels of funding to monitor and to police. We will come on to the Blue Belt later, but we know of plenty of examples in the Blue Belt of lack of adequate policing, yet the technology is there. The technology is getting cheaper to properly police and we see that. We see that Government have in some instances begun to grow that technological capacity. There is room for naval capacity to be used in the proper policing of MPAs and that is an area that we would say could be more explored. At the base, 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.

Q243 **Caroline Lucas:** Is there just a lack of capacity?

Will McCallum: Yes, fundamentally it is a lack of capacity. It is a lack of proper funding. It is the same on land as it is at sea. SSSIs on land in the UK woefully are not monitored, not policed. We see fly tipping everywhere and the same is almost certainly happening in our sea, but we do not even have the data to begin.

Q244 **Caroline Lucas:** I was going to ask all of you: are there activities that should be banned within all MPAs just as a straightforward ban? In a sense, I guess you have talked about that with the electric pulse fishing, but is there anything else that would just be like a blanket?

Will McCallum: I can start. Deep-sea bottom trawling is something that is disturbing ecosystems that take a very long time to mature. They are also refugia. At a time where the ocean is changing temperature quickly, where ecosystems are facing more and more threats, the deep-sea ecosystems are vital for restoring and protecting our oceans. Pulse trawling is an experimental fishery. It is not one that Greenpeace supports.

Charles Clover: You have to ask yourself why in a marine protected area you are allowing various industrial techniques that destroy habitat as well as catch mobile species. We are only asking for a small number of marine protected areas across the face of the Earth. Now Michael Gove is starting to ask for 30%. That is not 100%. Why, if we are going to have industrial techniques in all the other 70%, do we have to have destructive techniques in the 30%?

Q245 **Caroline Lucas:** In terms of that dilemma that you have identified between the fishing interests on one side and the conservation on the other—and you have said that fishing always trumps the conservation—is it because there is not a mediation process that is good enough or is it just simply that whenever the economics comes into it, then European authorities always—



Charles Clover: This is a specific European problem that exists beyond the 12. It has existed since 1997 when the Fisheries Directorate and the Environment Directorate met in Bergen. I was there, and they would not talk to each other for three days because they could not decide who was going to talk first, who was more important. It is literally a pecking order issue in Europe.

Q246 **Caroline Lucas:** Well, I suppose that means it ought to be easy to sort out as well, maybe. Fiona Ball, you were explaining earlier that you are funding MPAs through your work with WWF. Had you specifically identified MPAs as an area of inaction by the Government? Is that why you are focusing on that specifically?

Fiona Ball: No, what we wanted to do about funding MPAs was to ensure that as part of Sky Ocean Rescue it was not just about using our voice to tell people about the story and what people should do and then changing our own behaviour in our business. It was also the restorative side of things—helping our oceans restore in ocean health and investing some of our funding into ensuring that the management plans that were in place for marine protected areas across our territories that we operate in—around Germany, Italy and the UK—had funding to make sure that they were managed effectively.

Q247 **Caroline Lucas:** Finally, Charles Clover, you have already briefly referenced the 30% of Mr Gove's aspiration and that is certainly better than abstaining, as I think the Government did a couple of years ago. To play devil's advocate, if we are struggling enough to protect 10% in an effective way, where is the balance of our priorities in terms of lobbying for change? Should we be expanding the area before we make sure that what we are actually doing in the 10% is more effective than it is right now?

Charles Clover: The 30% is in my 2004 book "The End of the Line". The 30% has been around for a long time because it is a scientific target for protecting the biodiversity of the sea.

Q248 **Caroline Lucas:** So the Government were wrong two years ago when they said that they were abstaining?

Charles Clover: The 10% was a political target, which goes back a long way to the World Conservation Strategy and the number that people thought people would be happy with. Thirty per cent is a scientific target, so Michael Gove supporting it is an advance because, as you say, in Hawaii two years ago an official from DEFRA went all the way there and abstained from supporting that target.

It is an advance, but what it does is it throws a focus on what we mean by protection. As you rightly say, there is no point in having a paper park. What does 30% protection for the world's oceans mean? Britain is in the position of being able to protect quite a lot of the world's oceans because of the accident of history that it has a lot of islands with EEZs around them out there in representative parts of the seas. Obviously, for



that reason we can take a lead and we can do more than most other nations, so we should do more. That 30% target is throwing the focus right back on what we mean by protection and, as you can see from UK waters—and we may come on to the Blue Belt—what we understand by protection is in chaos and needs to be sorted out.

Will McCallum: Not moving towards 30% will reduce the effectiveness of that 10% anyway. Thirty per cent as a scientific target is really what scientists are telling us we need in order to properly conserve and protect and restore the biodiversity of the ocean. That 10% becomes even less useful as we look at the threats that the ocean is facing going forward.

Chair: Geraint, your declaration of interest.

Q249 **Geraint Davies:** I am a member of the all-party group on marine conservation. I hope everyone is interested in that.

I want to ask about the specific example of the 300,000 tonnes of potentially radioactive mud that is being dredged up off north Devon and dumped off Cardiff Grounds site. Something like 110,000 tonnes has been dug up already, and I am told by Professor Dominic Reeve at Swansea University that it is unclear whether the testing that has been done has gone down to the level that the dredge is actually occurring and, secondly, that the testing is only gamma testing and not alpha and beta. I do not know whether you have any concerns in relation to that or in relation to marine protected areas generally, namely the relationship between digging up lots of mud that may have contaminants in it and marine environmental habitats for the future, apart from public health. Have you any views on this? You may not.

Charles Clover: I do not have any views on that example because it is not one that is familiar to me, but I am concerned about the MMO's licensing procedures for digging things up and dumping them somewhere else. They have obviously failed in places like Whitsand Bay, which was a marine protected area where contaminated dredgings from Devonport docks were being dumped right beside an MPA. It took two judicial reviews for the MMO to realise that that was not a very clever idea. The same thing has happened with the Goodwin Sands. Something is wrong in our consenting procedures is all I would say as a general point. I do not know anything about your particular example. I am sorry that I do not.

Q250 **Geraint Davies:** Will, do you have any comment about this?

Will McCallum: I am afraid I also do not know that particular example. I would just say that carried with the risk of potentially radioactive material we would also have the risk of polychlorinated biphenyls, PCBs, and the recent research that came out two weeks ago showing that half of the world's orca population are at risk of extinction as a result of PCB aggregation in blubber, reducing their ability to reproduce, lowering their immune system. That is something that dredging and pulling up waste from the seabed sediment also increases the likelihood of.



Q251 **Geraint Davies:** Apart from that there may be contaminants from the industrial era, heavy metals and this sort of thing, and apart from radioactive issues, is there a general view about dredging itself in terms of disruption of marine habitats or not?

Charles Clover: It is clearly essential but it also is extremely disruptive. We have a licensing procedure but that does not seem to be taking into account environmental factors or public concern to an adequate degree.

Q252 **Geraint Davies:** Do you think the precautionary principle would be appropriate here? Government so far in this particular example that people do not know about have said, "We have done the minimum required under the law". In particular, as I say, in this case they have not used alpha and beta, they have used gamma detection or whatever—different types of radiation—and said, "That is all we are required to do in this case". In general, do you think in the case of the environment we should basically take the precautionary principle and not do anything that potentially risks the environment?

Charles Clover: Yes, that would seem entirely sensible, particularly in the case of protected areas.

Q253 **Chair:** Can I come back on your 30%? When we had Professor Boyd here, he explained that it is not the size of the protected areas around overseas territories that is important, but whether it is having an impact. DEFRA's chief scientific adviser did not seem to say, when he gave evidence to this Committee, that 30% was a scientific target. He seemed to be saying that is was more what Governments were clustering around. We certainly did not get that from his evidence.

Charles Clover: It is a scientific target. It has taken 20 years or so to evolve into a scientific target. It is part of a well-referenced resolution, which the British Government was happy to extend two years ago. It is full of scientific references that that is what you need. There is a problem here, and it needs to be sorted out by Ministers, which is that bits of the Government think differently from other bits of the Government about things that are already accepted Government targets under international conventions. We have had a target of 10% of the world's oceans that we should be promoting the protection of in marine protected areas since 2010. Try telling bits of the Government estate, try telling the British Antarctic Survey, try telling bits of the Foreign Office, that we are committed to this under international conventions, which we have signed.

Q254 **Chair:** My point was that DEFRA's chief scientific adviser is not committed to it, as a scientist.

Charles Clover: I am not sure what point he is trying to make. On most occasions, I have great sympathy with what Ian Boyd says.

Chair: We will maybe write to him.

Caroline Lucas: I have the quote here. What he said was: "My suspicion—this is a suspicion—is we probably felt that the 30% was not



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an evidence-based target and that we probably ought to have some more evidence around that. Just saying 30%—why not 40%? Why not 50%? Why not 20%? I cannot tell you why 30% is a good target.”

Chair: Yes, that is DEFRA’s chief scientist. He cannot tell us—

Charles Clover: There are loads of references. I suggest he goes and looks them up.

Chair: I will write to him.

Charles Clover: We will send them to him.

Will McCallum: One reference is Callum Roberts and Bethan O’Leary’s paper from 2016. It was a literary review of 144 different papers that all pointed towards 30% as a viable target. The crucial thing is that that is not 30% of random ocean. That is 30% that is representative of the oceans’ ecosystems. Perhaps he does have a point. We do not want to just draw lines on a map in order to make up the numbers. 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.

In terms of size, this is a critique often levelled at large-scale MPAs. The bigger the MPA is, the bigger the buffer zone you are creating between potential threats and what it is you are trying to protect so that 30% of representative ecosystems could look like a larger square mileage, so to speak.

Chair: Okay, thank you. It just struck me, when you were saying it is a scientific thing, that we had heard from the scientist who had not defended the 30%.

Q255 **Zac Goldsmith:** I don’t know whether it is relevant but I will declare my support for and membership of the On The Hook campaign, which is trying to get the MSC to improve its approach.

I am going to talk about another one of our commitments—the Blue Belt—but before I do that, Charles Clover, can you, in a nutshell, describe the difference between a marine park and a marine protected area? You referenced marine parks in the beginning, but what is the practical difference between the two?

Charles Clover: A marine protected area is a kind of generic, internationally accepted term for all sorts of marine protected areas. A marine park is a specific thing, a subset of that, but it imbibes a sense of terrestrial national parks, marine parks, which is useful and resonant with the public, whereas marine protected areas generally are not.

Q256 **Zac Goldsmith:** Does it imply a greater level of protection, as you would expect on a terrestrial national park, a nature park?

Charles Clover: Ultimately, I think, it does because it comes from the national parks movement. It comes from the Serengeti and the Kruger in Africa, and they attempt to protect whole ecosystems. It does not mean,



however, that you have to totally protect that ecosystem if the science says that you do not need to. You could have low-level fishing or low-level operations in there, if the community need them. You have that within the national parks framework. That is why it is useful, I think.

Q257 Zac Goldsmith: Thank you. I want to talk about the Blue Belt. The commitment was, and remains, to protect 4 million square kilometres and that includes a large number of overseas territories—Chagos, Pitcairn, Ascension, Tristan da Cunha, St Helena, the South Sandwich Islands. My understanding is that in Chagos and Pitcairn, things are going pretty well—I stand to be corrected if they are not—but in relation to the other areas that I have just listed, there are problems. My question to you first, and this is to Will as well, is how are we doing in relation to that aspiration, that goal, that target—the 4 million square kilometres of protection.

Charles Clover: We are already falling short of expectations on the 4 million square kilometres of protection announced by Sir Alan Duncan two years ago, for one very simple reason and that is that the most senior experts that we could ask in the UK who were responsible for deciding what a marine protected area is, have decided that the South Georgia and South Sandwich Islands MPA is only 2% of what is internationally recognised as a marine protected area.

Q258 Zac Goldsmith: That is IUCN?

Charles Clover: That is IUCN—the International Union for Conservation of Nature—which set the guidelines by which MPAs are judged. They are the people we should be looking to to decide whether we have achieved protection. Four million square kilometres were supposed to have been protected. One million has been deducted. That is for the Government to make sure that the 1 million is protected under internationally acceptable rules. That would be quite easy to do. The fact is that it could be quite easily done, but there is resistance somewhere in the Foreign Office. I have seen this kind of thing happen before. Little ghettos manage to stop what is actually Government policy, what Ministers have said they wanted, for some footling reason that they have dreamt up. This is what is going on and they need sorting out.

Q259 Zac Goldsmith: I know we are going to be coming to the South Sandwich Islands but I think James Gray will probably have a different view on this. If you don't mind, I would like to ask a question before I come to some of the other areas.

Charles Clover: Could I do the other areas as well because you asked a question but we have not done the other bits?

We have been trying to do this and we have not really finished doing it, but if you look at that 4 million square kilometres, according to IUCN guidelines—these are being republished this autumn so everyone is going to know what they are—there are some things that are concerning and



which do mean that we are falling short of expectations in creating a Blue Belt.

The biggest problem is in the South Georgia and South Sandwich Islands. That means 1 million square kilometres are automatically deducted, because they do not qualify. There are other problems. Even in the British Indian Ocean Territory, they do not have a management plan yet. I am pretty sure no extractive activities are going on and there is probably a very small amount of IUU being enforced, but it does not have a management plan. South Georgia and South Sandwich Islands says it has a management plan, but the IUCN says that it does not comply because it is not focused on the protection of nature. A marine protected area is for the protection of nature. You can have fishing in it, in some categories, because there are communities there and they need to live, but the fishing should be subject to that protection of nature.

St Helena, which I happen to know well because Blue is particularly focused there, has no management plan that is enforced. There is a draft. It has no fisheries ordinance, although we have offered to help them draft one. It has no effective enforcement of the IUU that is taking place.

Q260 **Zac Goldsmith:** St Helena has just granted a licence to a longline fleet—a Falklands-based company.

Charles Clover: I cannot understand why St Helena should have given Argos, a Falklands-based company, licences within their category 6 IUCN—

Q261 **Zac Goldsmith:** Why do you think that has been allowed to happen?

Charles Clover: There is historical murkiness about the way St Helena is governed that I could not possibly explain.

Q262 **Zac Goldsmith:** How bad is that, from a point of view of the integrity of the protected area? How significant is it?

Charles Clover: Well, there are a lot of very good people there, rubbing along very well, but they have a chaotic system of government by committee and a lot of the people on the committees know each other. I do not know the answer to why Argos has been given licences by a territory that is supposed to be an entire marine protected area.

Q263 **Zac Goldsmith:** Before we move on from St Helena, what should be the response of the British Government to that issue in St Helena? What can the British Government do?

Charles Clover: We hope to do all these things with the territories. These things are territory-led. The territory wanted a marine protected area and its fishing industry wanted a marine protected area so that it could protect its sustainable fishing against the incursions from outside. We are working with the people of St Helena. It is in the interests of the people of St Helena that industrial capacity that negates that marine protected area does not get based there. I would suggest that the British



Government, the Foreign Office, should explain that to them, very forcefully. However, the Foreign Office, as I keep saying, does seem to have some difficulty about grasping internationally understood guidelines on marine protected areas.

Q264 **Zac Goldsmith:** Then the other two. Tristan da Cunha: my understanding is that the funding is about to run out in a year and a half. Is that right?

Charles Clover: The funding for all the Blue Belt runs out well ahead of the end of this Parliament. It runs out in 2020. Why it does, I do not know. I think there is a funding bid this autumn—from DEFRA, not the Foreign Office—to take that to 2022, which is the end of this Parliament, and that really does need to be done because places like Tristan da Cunha and Ascension, who are looking to create MPAs, need the funding, need that reassurance. If they are going to drop off a cliff in 2020, for no rational reason, they are going to be quite alarmed.

Q265 **Zac Goldsmith:** Finally, Ascension. Before we come back to South Sandwich Islands, Ascension is 50% designated at the moment, so the first question for you is what shape is that 50% in? Secondly, what is preventing the extension of that to 100% of Ascension's waters, given that we know that would release quite a substantial amount of funding from philanthropy and conservation organisations?

The first question is what is the 50% looking like, and secondly, why not 100%?

Charles Clover: I am reassured by the Foreign Office that 50%, or slightly more than 50%, of Ascension's waters is going to be designated as an MPA next year. What shape that will be in, you had better ask them. At the moment, it is half of the orange.

As to the 100%, the only use that Ascension's population has for its EEZ, apart from just general enjoyment of the very considerable wildlife that exists there, is money. If a marine protected area could enable the population to do lots of things that they could not do otherwise—and provide more money than selling commercial fishing licences, and I think that there is an overwhelming case that protection would provide that money—then there is a huge logic for designating 100% of Ascension's waters because Ascension has no indigenous commercial fishing fleet.

Q266 **Zac Goldsmith:** I do not want to tread on my colleague's toes, because he wants to ask questions about the South Sandwich Islands, so I am going to ask one general question and then, maybe, reserve the right to come in at the end, if that is okay.

The general question is really on the politics of this. From your perspective as a campaigner who has had meetings with senior politicians and most of the civil servants involved, what is preventing the Government from more enthusiastically adhering to the targets that it set itself? Is it the politics? Is it the back office of civil servants? My understanding is that there has been ministerial pressure in the right



direction but that has been resisted by elements of the Foreign Office civil servants in particular. I understand that not all Ministers over the last few years have been completely signed up to this agenda. From your perspective, however, what are the blocks? Why are we struggling with something that is a no-brainer, from the Government's point of view, from the nature point of view, and also from a PR point of view? It is a very popular campaign, so what are the blocks, in your view?

Charles Clover: It baffles me, too. We have signed up to the Blue Belt, some 284 MPs, all of whom are supportive of a very large protected area within the South Georgia and South Sandwich Islands MPA, so I do not understand why a few officials are going against that huge weight of parliamentary opinion. I do not understand it.

Q267 **Zac Goldsmith:** How are they able to do that?

Charles Clover: How are they able to do that I think is by raising frequent and not very plausible objections and because Government is not functional on this oceans thing yet. It does not co-ordinate properly. It did briefly when the responsibility for oceans was in the Cabinet Office, but now it is a matter of different baronies, different siloed interests all talking among each other and no one ruling who is right. It has gone back to dissonance and chaos and the Blue Belt was set up at an aspirational stage by aspirational Ministers. I wonder how aspirational the Ministers in the Foreign Office are about it now.

Chair: We are going to move on from speculation. James.

Q268 **James Gray:** Chair, I have first of all to declare an interest, I had a visit to South Georgia this year paid for by the all-party parliamentary group for the polar regions, of which I am chairman, as far as the flights were concerned, and then on the MS Pharos paid for by the Government of South Georgia and Sandwich Islands. I have a slight non-financial interest. I am also an unpaid adviser to the Commissioner of South Georgia.

A couple of quick points. First of all, on these 284 MPs who signed the EDM, I think I was probably one of them, but I am not sure that EDMs count for all that much really and I think waiting —

Charles Clover: It is not an EDM.

Q269 **James Gray:** What was it then?

Charles Clover: It was a charter. It is a new thing and it exists on Twitter. As you will be aware as an MP, a tweet to you, an MP, is something you have to reply to, I understand, under parliamentary rules, whereas an EDM, hey, they are —

Q270 **James Gray:** There is no rule at all that says you have to reply to a tweet.

Charles Clover: There was an early-day motion in favour of—



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Q271 **James Gray:** Just a correction: there was absolutely no rule whatsoever to suggest that we have to reply to a tweet. No, that is not correct, I am afraid to say. The thing about that question —

Charles Clover: Can I be specific? People tweeted their MPs and they got a reply as to whether the MP supported a charter. This is not an EDM.

Q272 **James Gray:** I think we need to be careful about how much weight we give that particular question.

Charles Clover: People have thought about it long and hard, we have spent quite a lot of time talking to people about the difficulties and overcame them and that is why there are 284 MPs supportive of that charter, which is a larger number than any since the climate change campaign.

Q273 **James Gray:** Of which I am certain I am one, but you can be absolutely certain I am not signed up to the issue of krill fishing in the South Sandwich Islands. That is just a very passing remark on the 284; I am not sure how much weight we should place on it. Now, with regards to the MPA around the South Georgia and South Sandwich Islands, I am right in thinking, I think, that you are content that the MPA sustainable fishery around South Georgia is working reasonably well. You have no ambition to change that.

Charles Clover: To an extent, this is a trick question because the Government declared a marine protected area encompassing South Georgia and South Sandwich Islands in 2012. Does the one that is there now conform to the IUCN definitions of a marine protected area? No, for reasons we have discussed, it does not. How would you fix that, because IUCN does say —

Q274 **James Gray:** Well, hang on, my question is simply—

Charles Clover: I am trying to answer your question.

James Gray: No, my question is very simple, as the global oceans coalition, are you content with the current fisheries regime around South Georgia?

Charles Clover: Not entirely because of the IUCN definition, but I think there is a way around this. The IUCN definition says no industrial fishing should take place within marine protected areas. Now, it is an extremely well-regulated fishery but nobody can doubt that 40-metre or 70-metre trawlers, I think they are, are industrial. I do not think anyone is going to dispute that.

Q275 **James Gray:** Because they still regulate and licence —

Charles Clover: Is your proposal—we will get on to the licences in a minute—that these vessels are fishing so sustainably on such small quotas that their obvious industrial nature does not matter and therefore the IUCN guidelines have been complied with?



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Q276 **James Gray:** All fishing is industrial, of course.

Charles Clover: No, it is not. It is absolutely not.

Q277 **James Gray:** Apart from the sight of a schoolboy with a fishing rod, all fishing is done to make money; that makes it industrial.

Charles Clover: I do not think it does. IUCN have not defined what industrial means, it is for members of the Foreign Office and the South Georgia Government to have a discussion about what industrial means in the context of South Georgia. I would be extremely sympathetic to people who were going to South Georgia if they were told that they had to go there in a canoe, because the seas around South Georgia are extremely dangerous—

James Gray: Tell me about it!

Charles Clover: You have been there. So that would be an absurd thing to say. It is an uninhabited territory, which Britain does not need to fish except for revenue, and it is also declared as an MPA by Britain. These two things are incompatible and must be resolved in a conversation, which the Foreign Office is so far refusing to have.

Q278 **James Gray:** For revenue, as you say, but the entire revenue of South Georgia, the Government of South Georgia and South Sandwich Islands, is dependent on fishing. It is revenue from the fishing licences that allows us to preserve and maintain —

Charles Clover: It is also an area of enormous biodiversity —

Q279 **James Gray:** I am sorry, forgive me, if I may?

Charles Clover: Of course.

James Gray: It allows us to preserve and maintain the onshore parts of South Georgia. I want to leave South Georgia to one side for a moment; I also do want to come on to Weddell Sea where something can be done quite quickly, as my colleagues —

Charles Clover: But, James, I do not say that there should be no fishing in South Georgia.

Q280 **James Gray:** That was my understanding. However, with regard to South Sandwich Islands, it is a rather different picture. You are of the view that there should be no fishing at all.

Charles Clover: In order to rectify the position the Government has got itself into of creating an MPA —

Q281 **James Gray:** I am asking what you want. Are you saying there should be no fishing in South Sandwich Islands?

Charles Clover: I think there should be no fishing in South Sandwich Islands, or very little.



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Q282 **James Gray:** How much is it right now? How much fishing is there right now?

Charles Clover: Absolutely none as far as I am aware.

Q283 **James Gray:** Exactly. In effect, we are achieving the MPA even though theoretically it could be allowed. The only fishing that ever occurs in the South Sandwich Islands is for scientific purposes under CCAMLR. Therefore, why ban it?

Charles Clover: Well, because it is not an MPA unless you do.

Q284 **James Gray:** The fact is that there is no fishing off the South Sandwich Islands but you want to ban it just in case at some time or other it occurred?

Charles Clover: I want the Government to live up to what it declared in 2012 and the worthies of IUCN have said that a way of doing that would be to make half of the South Georgia and South Sandwich Islands, a marine protected area declared in 2012, a fully protected area.

Q285 **James Gray:** You are seeking to ban something that does not currently happen but, with that, you would also ban the scientific fishing, which we do carry out in very, very small quantities in the water around the South Sandwich —

Charles Clover: If it was necessary to maintain the fishery in South Georgia I would have no objection.

Q286 **James Gray:** It is the Sandwich Islands I am talking about. We do carry out that scientific fishing there, on which CCAMLR rely, and if we were not allowed to do so it would be no longer the Government —

Charles Clover: That is not incompatible with the MPA.

Q287 **James Gray:** Mr Clover, if I may just make the point, if indeed —

Charles Clover: Sorry, I thought you were asking me a question,

James Gray: I will indeed ask you the question but I am trying to get a moment or two to get a word in edgeways and I want to do so. You have agreed that there is no commercial fishing off the South Sandwich Islands. The only fishing that does occur there is scientific fishing, which is carried out to the benefit of CCAMLR. If that were also to be banned, it would no longer be the Government of South Georgia and South Sandwich Islands who decided who did that fishing; it would now be CCAMLR. Signatories to CCAMLR of course include places like Argentina, Russia and China. It would therefore be perfectly possible that all sorts of scientific research vessels for those other nations would carry out fishing research in British waters in the South Sandwich Islands. Is that not correct?

Charles Clover: I do not know whether it is correct, James, to be quite honest. I just think that is a bit of a distraction from the fact that



scientific research within an MPA is entirely allowable. The fact is this area could easily be protected and not be this huge corrosive problem for the rest of the Blue Belt because this MPA is probably the best one we have in British overseas territories waters and the one with the lowest population. It has no population as far as I am aware, apart from a few scientists. So it is the easiest thing to do, it has the best biodiversity, and still we are not protecting it. What message is that to the world? If we are going to have a 30% target, if we are going to say we are going to protect 30% of the world's waters, and we cannot even do South Georgia properly, what is the point?

Q288 **James Gray:** You keep saying "South Georgia"— you do not mean South Georgia; you mean the South Sandwich Islands.

Charles Clover: South Georgia and the South Sandwich Islands MPA.

Q289 **James Gray:** So you mean South Sandwich; you agreed the South Georgia fisheries are sustainable —

Charles Clover: Take me as saying that every time, but I am not going to say all these words every time.

Chair: I am going to move on to questions from Robert on the south Weddell Sea please.

Q290 **Mr Goodwill:** Thank you very much indeed. I would like to turn to the Weddell Sea that Mr Gray just mentioned, which, at over a million square miles, is potentially one of the largest conservation areas that we could have in the world. Could I ask Mr McCallum how important is the designation of the Weddell Sea protected area and how does it link to the other ambitions for ocean conservation?

Will McCallum: So the Weddell Sea, like you said, is a fairly unique habitat. The proposal on the table at the moment is to protect 1.8 million square kilometres. It is an EU proposal, so the UK is a co-proponent. The UK has been a very positive force in raising the level of debate around the Weddell Sea and public ambition around it. At the moment it is facing significant challenges and it is facing them from different delegations that are part of CCAMLR and—

Q291 **Mr Goodwill:** Which, in particular, are the problematic ones?

Will McCallum: Yes, so Norway we know has repeatedly made the case that the proposal should be split in two, so divided east of the prime meridian and for the area east of the prime meridian to be taken out of the general proposal. This is damaging on a few counts. On CCAMLR process, CCAMLR has a mandate, which it gave itself many years ago, to create a large-scale network of MPAs using the best available science. The proposal as it stands is an ambitious proposal using the best available science and Norway's contention is that the area east of the prime meridian does not have enough data. That is not an argument that washes when you look at that mandate of using the best available



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science. Practically it also has consequences. If you take that area out, you are removing half the gyre, the Weddell Sea is unique as an ecosystem because of this gyre system, so if you take out half the gyre you are not protecting the ecosystem and the conservation objectives of an MPA are to protect the ecosystem, not to protect —

Q292 **Mr Goodwill:** Can you just explain how the gyre works?

Will McCallum: So the gyre moves clockwise around the ocean and essentially the unique inflow of ocean currents—I will send this briefing over to the Committee when we are finished—just creates a series of unique habitats and ecosystems.

Q293 **Mr Goodwill:** It is a churning of the ocean, in effect?

Will McCallum: A churning of the ocean. It is what protects it very much from variability. The Weddell Sea is the coldest sea on Earth, and that gyre, with the ice moving around, keeps it cold and keeps these habitats much more secure and protected from human impact, from climate change and from solidification. The Weddell Sea is very unique in that respect. Splitting it in two, as well as being a sort of affront to the CCAMLR process of using the best available science, also disrupts the purpose of that MPA, which is to protect the ecosystem in its entirety.

On those bases what the UK can be doing, and I presume is doing, is standing strong against those attempts. The UK is a proponent of the proposal —

Q294 **Mr Goodwill:** Who have Norway got lined up with them then?

Will McCallum: We do not know. We know that there are other players within CCAMLR who would love to see MPAs, marine protected areas, stay in negotiations for many years; that gives much more opportunity to be weakened and it gives much more opportunity for new fishery research zones to be added in, for boundaries to be shrunk. We have Norway, and we have voiced opposition from more traditionally tricky Governments—Russia has repeatedly said they do not see the purpose of MPAs—and the UK has been a positive force and we hope that it continues to be one.

Q295 **Mr Goodwill:** In terms of the importance to the marine ecosystem in that area, just how important is the Weddell Sea to the food chain, particularly looking at krill and the Antarctic silverfish, which I guess are the two main base feed species for other larger mammals and fish?

Will McCallum: In a way the arguments for the Weddell Sea MPA are partly arguments for a network. The Weddell Sea is not an MPA in isolation; CCAMLR's mandate is to create a network of large-scale marine protected areas in order to protect Antarctic marine resources. The Weddell Sea is part of that network and migratory species moving through it benefit from this network approach.

The other arguments for the Weddell Sea are very similar to the arguments for South Sandwich—this is a unique habitat. The modelling



done by the Alfred Wegener Institute suggests there could be as many as 14,000 species living there. They have endemic species. As one of the coldest seas, the fish are swimming with antifreeze in their blood; this is an amazing habitat and at the moment is fairly free from human impact. When we are looking at future-proofing—

Q296 **Mr Goodwill:** Literally 75% is covered in ice anyway, isn't it?

Will McCallum: Exactly, much of it is covered in ice. How long it remains covered in ice we do not know, so we are future-proofing, we are spreading the risk, we are creating these refugia that allow marine habitats to survive and be more resilient to the threats that they are facing.

Q297 **Mr Goodwill:** I don't know whether Mr Clover might want to comment, but is the UK doing enough within CCAMLR to make this point or are we standing back a little?

Charles Clover: I am quite impressed by what we have done in CCAMLR but I will defer to Will on the Weddell Sea.

Q298 **James Gray:** Last year we won our battle in CCAMLR with regard to the other MPAs around Antarctica. What do you think occurred then that may not occur with regard to the Weddell Sea? In other words, more direct than that, I think I am right in saying a couple of years back America directly intervened with Russia and China to persuade them to support us. Is there a chance that something similar might happen with regard to Weddell?

Will McCallum: Absolutely, I am glad you said that. 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. That is what we are hoping to see from the UK Government going forward through the UN High Seas Treaty, in trying to get this network of large-scale marine protected areas in the Antarctic. The Weddell Sea is one and there are other proposals around the peninsula, around east Antarctica. 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.

Mr Goodwill: For the record we should, for anyone watching the Parliament channel at 3 o'clock in the morning, make it clear that CCAMLR is the Convention for the Conservation of Antarctic Marine Living Resources and there will be voting later this month on this important issue. Thank you.

Chair: Thank you very much. Final question, Joan, thank you.



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Q299 Joan Ryan: To Mr McCallum, Greenpeace obviously supports the target to designate 30% of the oceans by 2030 in the UN High Seas Treaty. Are there are other outcomes and protections that the UK Government should be pushing for during the UN negotiations? I know Greenpeace want us to stop discussing the abstract concepts and get on to making this agreement. Do you think two years is going to be enough?

Will McCallum: I hope two years is enough. At the moment, similar to what Fiona was saying, we do our own polling around public attitudes towards the oceans. Awareness, not just in the UK but globally, is at an all-time high around oceans and that means that momentum is there. It means right now people in these negotiating rooms have a far greater mandate for ocean conservation, for ocean protection, than they have ever had before. We have to take that opportunity, so I do hope that two years will be enough. The treaty is something that we hope will last in perpetuity and so the 30% target—that is 30% by 2030—we are not calling for that to be within the treaty itself. That is a separate target through the Convention on Biological Diversity, through UK legislation. Within that High Seas Treaty we are going to see a text within the next six months and we are going to get a sense of the direction of travel.

What we hope the UK Government will push for is a legally-binding instrument. We need a decision-making body, a conference of parties, that is able to meet on an annual basis with a review conference every five years that is designating these marine protected areas on the high seas; that is overseeing environmental impact assessments by other competent authorities like regional fisheries management organisations, like the International Seabed Authority, like the International Maritime Organisation. The treaty has the potential to help us be far more joined up in our thinking about how we govern this vast area of ocean. It is half of the planet and there are such significant gaps in how we manage it that the treaty is trying to address.

It is an ambitious ask for two years but there has been seven years' preparation until we got to this point. There is a lot of thinking out there. We as Greenpeace have been involved right since the very start but so has the UK Government, and so has the EU. We know what these arguments are and we are working fast to do it. It is really the diplomacy that needs to happen now, not the thinking behind what should be in the treaty. That is already there.

Q300 Joan Ryan: Do you think that we also need a new international body to be established? I am thinking of regulation. There has been a lot of criticism that existing arrangements will not suffice. There are others who want to look away from that.

Will McCallum: Absolutely. Yes, there is still going to be a role for these regional bodies, for these species-specific fisheries management organisations. They are experts, even though in many cases they are not doing it that well at the moment, but they are still managing their resource and we would expect them to continue to do that. However, we



do need that oversight. What is lacking in our ability to deliver the objectives of the UN Convention of the Law of the Sea is that oversight that joins up this thinking. As an example, OSPAR, which is very much lauded internationally, is the regional fisheries management organisation that we are perhaps most active in. Only seven of its 440 MPAs are in areas beyond national jurisdiction. There is still that unwillingness for regional fisheries management organisations to break eggs, to designate these marine protected areas, because it is hard and so setting up that new body will provide the mechanism to protect and restore biodiversity on the high seas.

Q301 **Joan Ryan:** Mr Clover, do you want to comment on the ineffectiveness of current regulatory bodies?

Charles Clover: The high seas have no effective regulatory bodies other than tuna management organisations, so if we are going to have MPAs on the high seas we need something. This is a great opportunity for Britain. If Britain is going to say it is going to champion the protection of 30% of the world's oceans, we are only going to manage to do that if we champion the protection of the high seas too. It is something that we are going to be able to do more effectively after Brexit because we will not be bound by the duty of sincere co-operation with some of the world's biggest fishing nations—Spain, Portugal and France. We will have a distinct voice and we can choose to use it in these high seas negotiations, and I hope we do.

Q302 **Joan Ryan:** Can I ask you all—you can fight among yourselves as to who goes first—do you foresee any conflicts of interests for the UK between negotiating protection for the high seas and its ambitions for deep-sea mining in these areas? We have touched upon some of this but I wondered if you could address it head on.

Will McCallum: Absolutely there is a conflict and we are looking to this international oceans strategy that we know the Government is drafting to really set the agenda and set the direction of travel. We know with deep-sea mining the International Seabed Authority, they are not equipped to make these decisions in isolation. If we want to protect there has to be that oversight of activities like this. Two recent papers on deep-sea mining, one in *Nature Geoscience*, the other in *Frontiers in Marine Science*, both conclude that there is no way a deep-sea mining industry can operate in the high seas without significant damage to biodiversity, possibly the loss of unique endemic species around hydrothermal vents. The ambition for deep-sea mining, I think, needs to be put on pause while there is a proper thorough investigation as to whether or not we need to do this. 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 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.



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Q303 **Joan Ryan:** With the economics involved, is that going to happen? The Forsyth Report states that seabed mining could still be worth £40 billion to the UK over the next 30 years.

Will McCallum: I just do not understand how they have come out with that figure. This is not happening yet. Anyone who has spent any time in open ocean knows the challenges of operating in the deep sea. This is very challenging technology and it is still in pilot phase. Could we not produce a report that showed the equivalent level of potential income to be derived from recycling these mobile phones properly? I do not know. There are many avenues to explore.

Q304 **Joan Ryan:** Do any other members of the panel want to come in on this?

Charles Clover: 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. The inadequacy of the legislation that we are talking about is the equivalent of mining the Giant's Causeway or Westminster Abbey. You have to stop somewhere and you have to have a sensible way of deciding where that place is. The idea that you should go and try to promote something that has been economically impossible since it was first mooted in the 1970s over sensible protections is beyond belief. The Foreign Office in its oceans strategy, which I have heard about and had sight of a copy of, needs to deal with that and at the moment it is totally inadequate. It does not even mention the words "marine protected areas"; it does not, as far as I can see, mention Blue Belt, which is a principal environmental commitment of this Government.

Again, the Foreign Office is not actually doing what is the Government's policy. It is empowering a little sect to promote vested interests as far as I can see, whereas the interests of the public are preserving the heritage sites of deep ocean.

Q305 **Mr Philip Dunne:** Can I just ask a quick 0supplementary? Could you just clarify your comment about the Poland licence for the Lost City? From the map that we have been presented with that shows the ISA exploration contract areas, I am not sure where the Lost City is. Which sea you are describing?

Charles Clover: It is on the Mid-Atlantic Ridge. Putting a tail on this particular donkey is quite complicated. Maybe we should do it later, but that is where it is.

Q306 **Mr Philip Dunne:** Could you write to us to explain it? I do not think we have any evidence about that.

Charles Clover: There is a paper in *Science* about it. They were quite cross.

Q307 **Joan Ryan:** My final question is a bit more general than specific. It is to



all of you. What would you most like to see in the Government's forthcoming ocean strategy—some of it has been covered but if you could crystallise it—that was announced by the Foreign Secretary in June this year?

Chair: Does Ms Ball want to answer?

Fiona Ball: I think the ambition is there with respect to the 30% protection of marine protected areas. What I would like to see more of is a focus on investment and what we mean by “managed effectively” around those, so much more about how realistically we are going to achieve that.

Will McCallum: I would say the 30%. The ambition is there, the Government has put its weight behind that 30% and the strategy should be a strategy for how we deliver that 30% of strongly-protected areas. How we get there is a path that includes a network of large-scale marine protected areas in the Antarctic, it includes a legally-binding instrument in the High Seas Treaty, it includes delivering on the Blue Belt, and it includes raising the bar of ambition for our inshore marine conservation zones. A combination of all of those and then a recognition that, in order to tackle the other threats facing our oceans—climate change and plastic pollution—strong action needs to be taken on land at the source to reduce the flow of plastic into the ocean and to reduce our dependence on fossil fuels.

Q308 **Joan Ryan:** Do you want to have the last word?

Charles Clover: Britain has the opportunity to promote that 30%. It is not in the ocean strategy at the moment and we have the opportunity to exert soft power through science and conservation in ways that we do not in virtually any other arena, so we should grasp that opportunity.

Chair: Thank you all indeed very much. We are going to move into our second panel, thank you.

Examination of witnesses

Witnesses: Professor Henderson, Michael Lodge and Christopher Williams.

Q309 **Chair:** I welcome our witnesses to this, our second panel and final panel on our sustainable seas inquiry. We are going to be looking at the subject of international seabed mining, so we are looking forward to hearing what you all have to say. Can I ask you to introduce yourselves from my left, starting with Mr Lodge?

Michael Lodge: Yes, good morning. I am Michael Lodge and I am the Secretary-General of the International Seabed Authority.



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Professor Henderson: I am Professor Gideon Henderson. I am based at the University of Oxford and I chaired the Royal Society report looking at future ocean resources, including deep-sea mining.

Christopher Williams: Good morning, I am Christopher Williams. I am the managing director of UK Seabed Resources, a subsidiary of Lockheed Martin UK, and we hold exploration licences for polymetallic nodules on the Abyssal Plain of the Eastern Pacific.

Q310 **Chair:** Thank you all very much. Can I start with you, Professor Henderson? Can you give us an overview of the current status of deep-sea mining, as identified in the Royal Society's recent evidence review? Where are we in the state of our knowledge and where should future research be going?

Professor Henderson: I can certainly try to do that. Our report was published almost a year ago. Some of what I will say is perhaps out of date but much is not. There are three distinct types of resources that have been identified on the sea floor, two of which, in particular, are attracting industrial attention at the moment. One is massive polymetallic sulphides, which are typically found in middle water depths of a couple of kilometres or sometimes shallower. The other one that is attracting a lot of attention is polymetallic nodules, which are typically found in very deep water. The former category is sometimes found within EEZs and also found outside them. The latter category is nearly always in the area beyond national jurisdiction.

There is active exploration of both of those types—in fact, all three types of resource, some of which are in EEZs—some of which has been authorised by the ISA. There is not yet the commercial operation to exploit in the area beyond national jurisdiction, although there has been some recovery around Japan of limited amounts of metal.

This desire to mine the deep sea is motivated by the need for some particular metals, which are found at high grade in the ocean. But I perhaps would echo something I heard from the previous panel, which is that it is extremely challenging technologically to mine it. That is one of the significant impediments to current mining.

That is a good summary to start.

Q311 **Chair:** Mr Lodge, how quickly do you expect the deep-sea mining industry to grow internationally?

Michael Lodge: It is very difficult to predict and it is not our function to predict it. As Professor Henderson has said, there is an increase in—

Chair: Who is Rufus Henderson? Sorry, you said—Professor Henderson, sorry.

Michael Lodge: Professor Henderson, next to me. There has been an increase in recent years in the amount of exploration activity taking place



but it is very important to bear in mind that there is no deep-sea mining taking place at present.

There is shallow-water mining for aggregates and diamonds, for example, off the coast of Namibia but there is no deep-sea mining taking place anywhere in the world. The reason for that is that it is incredibly challenging. It is very remote. It is very deep. It is technologically challenging. It is environmentally challenging. There is, as yet, no clarity on international regulation. That is one of the things that the International Seabed Authority is currently working towards, to put a regulatory regime in place for exploitation. We have a regulatory regime for exploration, which has been in place for a number of years, and is working rather well, and has encouraged this activity.

We are currently working on the regulations for exploitation, which will govern every aspect of exploitation from the contracting process, the environmental management process, environmental impact assessment, monitoring and, of course, financial terms and conditions, which will ultimately be determinative of whether there will be commercial interest going forward.

Chair: You are the regulator.

Michael Lodge: We are the regulator.

Q312 **Chair:** It is reasonable to ask you how quickly you think it will develop. You say your exploration regulation licences have worked well because it has encouraged activity. Is that your definition of success?

Michael Lodge: One legal nicety is that it is a contract rather than a licence, but we issue contracts of limited duration—15-year exploration contracts. This is promoted activity. Exploration consists of basically two aspects. One is defining the existence of a mineral resource, which is not obvious without detailed exploration, and defining an environmental baseline.

In terms of the amount of deep-sea research and science that has been promoted through those activities it is a tremendous amount. There is a lot of investment going into exploration and, as a result, a lot of information is being produced; a lot of data has been produced about the deep sea that we would not otherwise have.

Q313 **Chair:** How many contracts have you issued?

Michael Lodge: There are 29 contracts in existence at the moment.

Chair: Could you send us the details of which companies and countries have been licensed?

Michael Lodge: I can certainly provide those. Again, it is important to bear in mind that they are not all companies. The entities that are qualified to obtain contracts from the authority are either state enterprises—such as the French research organisation IFREMER—or



private entities providing that they are sponsored by states. That is the category of UK Seabed Resources, for example.

Q314 **Chair:** When was the first contract issued; you say they are 15-year contracts?

Michael Lodge: That is not straightforward because this is an activity that has been taking place since the 1960s or 1970s prior to the entry into force of the UN Convention on the Law of the Sea. The authority was created by the convention and regulation now takes place under the Law of the Sea Convention, but there had been some preparatory activity by a number of international consortia prior to the entry into force of the convention. This exploration has been taking place in some parts of the seabed for in excess of 40 years.

Chair: Have those rights been grandfathered in?

Michael Lodge: Those rights have been grandfathered in through the authority. The authority began its operations in 1994, as an autonomous organisation. Exploration regulations were adopted in 2000 and we went into the current contractual system in 2001. Those contracts in some cases have been running for just over 15 years.

Q315 **Chair:** Mr Williams, you have two exploration licences. Can you say where they are for and what you have found?

Christopher Williams: Our exploration licences are for polymetallic nodules. They are approximately 4,000 metres deep in the eastern Clarion-Clipperton zone. One of our exploration contract areas is right over to the east and one is more in the central Clarion-Clipperton zone. What we have found so far is that the resources that we believed were there from our previous exploration work in the 1970s are still there, which is reassuring. We have also primarily been focused on establishing our environmental baseline, as the Secretary-General alluded. We have been discovering a great deal about the communities of organisms that live on the seabed. That has been our primary focus.

Q316 **Chair:** How many scientists do you employ in that research?

Christopher Williams: Since 2012, when we began our environmental baseline work, we have probably employed in the region of 30 or 40 scientists.

Chair: Full-time or contracted in from Oxford University?

Christopher Williams: Contracted in either to man and conduct experiments onboard environmental cruisers or to provide the post-cruise analysis. Over that period we have had a number of longer-term relationships with institutions. For example, Plymouth University, the Natural History Museum in London, Southampton University, the National Oceanography Centre and Heriot-Watt University, where we have maintained a long-term analysis capability for deep-sea organisms.



Q317 **Mr Philip Dunne:** Mr Lodge, could you explain why it has taken so long—you said the initial licences for exploration were granted in the early 1960s—before any extraction has taken place? When would you envisage extraction might commence?

Michael Lodge: Why has it taken so long? Because this is incredibly difficult and very challenging. This enterprise is almost as challenging as going to the moon. We are operating in extreme conditions, at extreme depths, 5 kilometres deep, so the technological challenges have been tremendous. Those are making progress. There has been tremendous improvement in technology over the past 10 years, particularly over the past five years. It has also been incredibly expensive. The capital costs for an exercise such as this are enormous. The recurrent expenditure is enormous. There was a long period in the late 1970s and 1980s when the economic conditions clearly did not justify this kind of expenditure. The mineral prices were very low and nobody was willing to risk this sort of capital.

That picture is changing. We can see that with the growing demand, growing industrialisation, population growth in places like China and Brazil, for example, and India, that long-term metal trends look much more positive. There is also a huge demand for the sort of minerals that you will find in the seabed—primarily copper, cobalt, nickel, manganese—particularly to drive future renewable economy.

One of your last witnesses mentioned cell phones. They may be a factor but they are certainly not the major factor. You are looking at things like wind turbines and electric cars, which use a tremendous amount of these critical minerals. The grades in the sea are many orders of magnitude higher than the grades on land.

If you look at land-based supplies, we are not geologically going to run out of minerals but minerals are becoming more expensive to access on land, are in more remote locations and are of much lower grade. A typical grade of copper in Chile, for example, at the moment is about 0.01% whereas you may be looking at 4% or 5% in the seabed.

You also have problems with land-based resources such as—there is a lot of publicity at the moment around child labour in the Congo, for example, in terms of accessing cobalt. The economics are looking better.

That is rather long-winded, I know, and I do not have a crystal ball. I do not think anybody is about to start this tomorrow. There is still quite a long way to go in terms of proving the technology and proving the economics, but the interest has grown tremendously so you have not only the UK but also countries like Belgium investing heavily, and Germany, China, Korea, Japan. As Professor Henderson mentioned, the Japanese did a very successful pilot test earlier this year, which seems to show that the technology is working quite well, but you still have to scale that technology up and make that investment of what is likely to be



hundreds of millions of dollars. We are not quite there yet. Whether this will happen in five years or 10 years, I cannot say.

- Q318 **Mr Philip Dunne:** Mr Williams, who is a commercial operator, is clearly thinking about this from a profit and loss perspective. What does Lockheed Martin see as the benefits for deep-sea mining in the future?

Christopher Williams: Some of the benefits are clearly economic and as a commercial company, you are quite right that we will need a return on the investment that is going to be put in. But there are broader economic benefits, not only for the UK. We are a UK-registered company and the target is to employ as much of the UK supply chain as possible into this enterprise, and there is significant substance behind the £40 billion figure that was referenced earlier.

This is slightly more to the Secretary-General's point, but there is a benefit more broadly to the common heritage of mankind. The minerals are considered under the ownership of humankind as a whole and, in accessing those minerals and bringing them into the market, part of our mission, part of our mandate, is to ensure that the benefits of that accrue more generally to humanity. I would certainly highlight that as a broader benefit to humankind that is not just retained within private commercial structures.

There is also a significant benefit that we are already seeing through the exploration activities in terms of marine science. We have learned more about the Abyssal Plain due to seabed mining exploration than any other activity. We are learning more and more all the time. Efforts are accelerating. That has been good for science. It has been particularly good for UK science, which is perceived to have a leading role in this. Some of the institutions I referenced earlier are very engaged with the ISA and the wider seabed mining community.

- Q319 **Mr Philip Dunne:** Are there any UK ambitions—Professor Henderson, you might be able to answer this question—to harvest marine genetic resources.

Professor Henderson: I believe there are ambitions. In fact there is activity in the UK already to harvest genetic resources. That is a very different undertaking in terms of the scale at which it needs to be done, because the harvesting involves typically removing relatively small amounts of material from the ocean, so the environmental implications are dramatically different from deep-sea mining.

- Q320 **Mr Philip Dunne:** Mr Williams, your licence does not allow for that kind of exploitation.

Christopher Williams: It does not. I think we are specifically excluded from conducting any marine genetic research.

- Q321 **Mr Philip Dunne:** Going back to the point that Mr Lodge is making about alternative sources for these minerals and the high grade under the



ocean, Professor Henderson, do you have any view about whether exploration should happen elsewhere first, and that resource should be exhausted on land, for example, or from recycling before we look under the ocean?

Professor Henderson: There are two basic questions to that, one of which is the economics of it, which we have already touched on. The other one, of course, is the environmental damage that is done as a consequence and mining is, by its very nature, not a sustainable activity. You are removing something from the planet that you are not putting back again, but of more concern whenever you mine is the damage that you cause to the broader environment in that process. That happens everywhere.

It happens particularly in an area of ignorance when we do it in the deep sea because we know so little about the deep-sea ecosystem, so little about the environment. I would support what my colleague has just said about the fact that the exploration has allowed us to learn more about the deep sea, but that is from a position of really quite profound ignorance. We know so little about it.

That is in contrast, of course, to what we see on land when we plan to mine. We understand the environment. We know how to do an environmental impact assessment. When we set out to mine under water we know very much less about the environment, so it is very hard to put an environmental impact assessment together. That is one of the things I think is limiting the ISA's progress, and correctly so, and part of that environmental impact assessment process needs to be a look at the regional management of an area, not just the local environment of the specific mining activity.

Q322 **Mr Philip Dunne:** Final question: Mr Williams, as you hold your licences under the auspices of the UK Government, what do the UK Government stand to benefit from the development of your licence?

Christopher Williams: A number of things. In this initial exploration phase, I think the UK stands to assume a leadership position in terms of establishing those environmental standards—the best methodologies for conducting an environmental impact assessment and environmental baseline work—and it stands to gain diplomatic and scientific leadership as we conduct and hopefully complete the exploration phase in the coming years.

Longer term there are economic benefits, first of all, from the revenue that the mining activities will generate, the £40 billion number that has been referred to previously. There are also benefits—

Q323 **Mr Philip Dunne:** Is that £40 billion the UK benefit or is that the global benefit?



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Christopher Williams: No, that is the UK benefit. That is actually the benefit from just one operation. That benefit could be multiplied if more than one operation was conducted simultaneously.

Q324 **Chair:** Where does that number come from?

Christopher Williams: It comes from a fairly straightforward multiplication of the annual revenue generated by a 3 megaton operation, which is the baseline assumption for a seabed mining operation multiplied over 30 years of mining.

Q325 **Chair:** It is 40 billion over 30 years?

Christopher Williams: That is correct.

Q326 **James Gray:** Can I ask you to focus on one area, namely, rare earths and suggest that, in addition to economics and environmental questions, there may be a geopolitical question here? What percentage of the world's rare earths is currently within the borders of China? What percentage is in Greenland and what percentage might be elsewhere in the world? It may be a difficult question to answer because it is a very broad question but, roughly speaking, in other words, is there a geopolitical reason for seeking a new source for rare earths as well as an economic or environmental one?

Professor Henderson: We are all looking at each other.

James Gray: A general answer will do rather than—

Professor Henderson: You picked on the rare earth but there are others, such as perhaps cobalt, where most of the mining activity currently goes on in a relatively small number of countries, so you can certainly perceive a geopolitical reason why you might want to diversify the resource for that reason, but it is true for all of those metals that you could continue to exploit them elsewhere on land as well as under the ocean.

Q327 **James Gray:** A very significant quantity of these things are in China, are they not?

Professor Henderson: That is my understanding. That is because they have already established a portfolio of substantial mines in relatively high grade rare earth element deposits. Some such similar deposits exist and slightly lower grade deposits exist in other countries, which could be exploited.

Q328 **James Gray:** If there were to be some reason at some stage in the future for the Chinese to cut off supply of some of these metals, having an alternative source of them might be a useful thing.

Professor Henderson: That is a general point that I think is well made. Whether that necessitates mining on land in other countries or mining under the ocean is another question, which taps into the questions about economics and environment that we talked about earlier.



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Christopher Williams: May I just add to what Professor Henderson has said? He is quite right, there are supplies—particularly rare earth elements and cobalt but other minerals as well—that are quite constrained geopolitically, and the British Geological Survey conducts a regular report on what it calls critical mineral supplies and identifies all of these issues.

For the UK economy there is an opportunity to, yes, diversify supply and potentially secure supply, but for none of these minerals is there a realistically economically significant deposit within UK territory, so there is an opportunity for the UK to become an importer of all of these materials currently to becoming a significant global net exporter of nickel, manganese, rare earth elements, cobalt.

Michael Lodge: I would just add to that, of course, that every country has its own critical minerals survey or equivalent, so this particular driver would not only affect the UK but may well affect, for example, Germany, which has limited supplies and is highly import dependent, and Japan is entirely import dependent and so on. This is not just a driver for the UK but it is certainly a factor.

Kerry McCarthy: If I can return, Professor Henderson, to environmental impact assessments.

Chair: Kerry, do you want to declare your interests?

Q329 **Kerry McCarthy:** Oh, yes, sorry. I am a vice-chair of the oceans conservation all-party group. I am a supporter of Greenpeace. I was involved in supporting the On The Hook campaign but I have stepped back from that now. I think that is it. I have a Sea Shepherd lanyard on and that might betray some of my sympathies.

On the environmental impact assessments, you have already said that they are difficult to carry out. How adequate can an environmental impact assessment actually be when we are talking about the deep sea?

Professor Henderson: That is a difficult question to answer. As I have said before, there is a considerable amount of ignorance about what is down there, how unique it is, how widely distributed the species are, how the species function and how the ecosystems function in terms of the turnover, so that makes it challenging to do.

We are gathering an increasing awareness of the extent of the regional damage that is done by mining activity and how far field that is, because there has been a concern about just how far the material that is kicked up by the mining process can move through the water and how widespread the impact is. We are getting some geographical sense of how broad that is now. What I think is still missing at the moment is a sense of the diversity of the ecosystem, regionally and spatially. That is a challenging thing to do.



I would consider 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? That is difficult to answer and it certainly needs to be done in the context of a regional management plan rather than just a local impact assessment.

Q330 Kerry McCarthy: You might say it is a small percentage of the area, but if we were talking about, say, sites of special scientific interest or outstanding natural beauty on land, or land that is protected in other ways, you would not say, "Well, there are plenty of other sites that are not going to be touched; therefore, it is okay to go in there".

Professor Henderson: I agree completely. At the beginning of my remarks in this session I commented on the two major resource types that are being looked at. One of them is massive sulphites that are typically found in relatively shallow—only a couple of kilometres—water and they are often rather unusual environments. You heard mention in the previous session of the Lost City. It would be correct to describe that as a treasure of the deep sea, and there are similar examples.

In that general environment, it is particularly not clear how unique each of those systems is. If you go from the Lost City to Rainbow or TAG—one of the other equivalents—we don't really know how diverse and how different the ecosystem is. It might be that mining one of them will cause catastrophic damage.

The situation is rather different in polymetallic sulphides, which are spread across very large areas of the very deep—5 kilometre deep—ocean, where it is more likely that there is some uniformity of ecosystem, so mining one part of it would be like mining the plains of some part of the land surface. That is somewhat supposition and we need more work to really be sure of the facts.

Q331 Kerry McCarthy: I was on the Deep Sea Mining Bill Committee a few years ago, and one of the reasons why I pressed for this inquiry today is I do not feel that Parliament did justice to the issue back then. One of the concerns is, if you are talking about sites on land anyone can go and see what those sites look like, but with carrying out environmental impact assessments perhaps 5 kilometres down, you are very much relying on the people who are doing the assessment. Do you think there is a need for more independence? Am I right in saying at the moment it is the companies that have the contracts, the licences, that carry out the environmental impact assessments and then that goes back to the ISA for some sort of evaluation? Is that how it works at the moment?

Professor Henderson: I can attempt to answer that but I will defer to my colleagues who will know more than I do. I certainly think that there should be a requirement for some independent assessment and for some



independent scientific advice. Environmental impacts at local and regional scale need to be informed by best current science and that will involve international scientific input. On the structure itself I am afraid I must defer to—

Q332 Kerry McCarthy: Do you want to come in on the way the structure works?

Michael Lodge: Yes, sure. I would agree with many of the comments that were made by Gideon Henderson. This is a global issue and a global problem. If you look at the area of jurisdiction of the International Seabed Authority it is 54% of the global ocean sea floor, so it is a tremendous area. The 29 exploration contracts that we have issued cover only 0.05% of that 54%, so a tiny area of a very, very big area. I completely agree with Professor Henderson that a regional approach is needed, and that is exactly what the International Seabed Authority is doing.

Furthermore, a global approach to science is needed. We have very, very good science coming from the UK and I would certainly agree that the contribution of UK institutions and UK scientists has been enormous—it is world class and there are many leaders in their fields—but this is an issue of such magnitude that you need global science to understand these problems. That is what a very, very important part of the mandate of the International Seabed Authority is: to promote global marine scientific research so that we will be in a position to carry out these environmental impact assessments in due course.

Furthermore, we will be in a position to introduce regional environmental management plans. We already have a regional environmental management plan for the area where UK Seabed Resources is operating in the Clarion-Clipperton zone in the Pacific, which includes 1.6 million square kilometres of areas that are effectively protected areas set aside from mining.

We are working at the moment to start to develop similar environmental management plans for the mid-ocean ridges, which Professor Henderson mentioned are the host for polymetallic massive sulphites. This is at a much earlier stage of exploration than polymetallic nodules, which are at a reasonably mature stage of exploration.

Q333 Kerry McCarthy: When you say you will be able to carry out environmental impact assessments, when do you feel that you will be in a position to do so?

Michael Lodge: This is going through a regulatory process at the moment. We are developing regulations to govern the exploitation phase, which includes the provisions of an environmental impact assessment—a template for an environmental impact assessment that will be required. We are a global body. We have 168 member states, so we have to



achieve consensus of 168 member states, which is not a very simple process. It is not a very short process.

We started the process of regulatory development in 2015. There is a draft mining code out for public consultation. In fact, it is the third round of public consultation at the moment, and the ISA council—our governing body—has declared a target date of 2020 to complete negotiations on the mining code. Of course, whether that can be achieved, as I say, it is a question of getting consensus among 168 countries, which is not straightforward.

Q334 Kerry McCarthy: At the moment we have seen an environmental impact assessment that states that impacts could either be tolerable or lethal to deep-sea fauna, which is obviously quite a wide spectrum. If you saw an environmental impact assessment that said that, at what point would you actually rule out granting an exploitation licence for a mining operation?

Michael Lodge: The obligation of the authority or rather the member states, and the requirement in the Convention on the Law of the Sea, is to prevent serious harm. Where you set the threshold of serious harm is one of the issues that is currently being discussed by global scientists to reach consensus on where that threshold actually is in an operational sense.

Q335 Kerry McCarthy: Exploitation licences will not be granted until you have thrashed out all these issues?

Michael Lodge: There is no possibility of granting an exploitation licence until the regulatory framework is in place, because there is no capacity to issue that licence, or rather that contract, until those regulations are in place. Furthermore, I do not think any commercial investor would want to make such an investment until they understand what the regulatory framework is.

Q336 Kerry McCarthy: Can I ask both of you—and perhaps start with Mr Williams—with the 0.05% that you said was covered, on what basis are those areas selected? Is it just because there is evidence to suggest that there are resources there that would make it economically viable, or is there a judgment done on the importance to the ecosystems first? You have already said that there are some areas that are protected from exploration licences. I am just interested in the process. Does a company come to you and say, “We are interested. We feel that it could be economically viable to mine there and we want to start looking at the area”? How are those areas chosen?

Michael Lodge: Economic viability is not so much of an issue at this stage because this is exploration, which consists in those two phases of identifying whether there is a mineral resource and what is the environmental baseline. The regulations prescribe a maximum size of area that can be granted for exploration for each type of resource. A company or a state or a state enterprise will come to propose an area, which is probably calculated or assessed on the basis of a desktop study,



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no more than that because, until you have explored it, you don't know what is there. You don't know what is there ecologically either.

That is why environmental baselines are so important. All you do is you can pick a prospective area where geologically you think there may be something there. You go and you spend your money, hundreds of millions of dollars, and you may find that there is nothing there in the end at all, or you may find that there are very good prospects.

We are happy to allocate areas but what we insist is done is that data is provided to the authority, particularly the environmental data. The environmental baseline data that is provided to us is made public.

Q337 **Kerry McCarthy:** From a desktop study at that stage?

Michael Lodge: No, once the exploration campaign begins.

Q338 **Kerry McCarthy:** But you grant the licence before you are looking at the environmental baseline?

Michael Lodge: Yes, because there is no way of knowing what is there. Nobody is going to do this kind of deep-sea research without some kind of economic motivation. Nobody does it out of charity. It is not possible to know what is there without substantive exploration and environmental study, and that is what we aim at getting from the exploration phase, so we have actually—

Q339 **Kerry McCarthy:** Under a different set-up, you could go to scientists and get expert opinion on the environmental impact. Is that just not economically feasible? You have to have the companies that have potential future financial interest to do that.

Michael Lodge: Yes. It is a black hole. We don't know anything. It is guesswork.

Q340 **Kerry McCarthy:** I suppose what I am getting at—if I ask Mr Williams—is that your company will be carrying out the environmental impact assessment and reporting back to the ISA, but you have a vested interest having spent huge amounts of money on this. I guess you have to pay a certain amount for the licence. You have to do the exploratory work. You have to carry out the EIA. You kind of have a vested interest in eventually getting your hands on the minerals that are down there. That goes without saying. Therefore, can you honestly say that the environmental impact assessment you carry out is going to be carried out in good faith? I suppose that is what I am asking.

Christopher Williams: Yes. It is true that it is very expensive to conduct this work. We have spent £10 million so far on two environmental cruises, so that gives you a rough order of magnitude and we are perhaps half way through not even our baseline survey, so it is an expensive undertaking. As we go into the environmental impact assessment that will also include some prototype testing in situ so that



we can see what sort of impacts are generated on the sea floor. That will be more expensive still.

Compared to the capital expenditure required to actually build the equipment, that front-end expenditure is very, very small. If we somehow did a non-robust environmental impact assessment or one that in time could be provably false then we find ourselves in a position where we are performing to a set of environmental standards, as set out in our environmental management and monitoring plan, that we could not live up to and then we would be risking that entire capital expenditure on equipment and that would not make commercial sense.

Q341 **Kerry McCarthy:** As we have already heard, nobody knows what is down there; nobody else is carrying out their own investigations. What sort of scrutiny is there of whether your environmental impact assessment is robust without an independent—

Christopher Williams: First of all, to add some colour to this, on the two environmental cruises we have conducted so far our role has primarily been funding those cruises. We provide the money and we provide some programme management and we help to frame the International Seabed Authority's requirements for that baseline into a scientific programme. We then hand it over to professional scientists to devise the experimentation and collect the samples and collect the data, and then analyse those data.

Those data are then peer reviewed and published in journals. So far we have contributed data to 50 published journals or international conference presentations. The idea that contractors are sitting on top of all this data and only allowing out what suits our purposes is provably false. As we go into the—

Q342 **Kerry McCarthy:** It is not seen as commercially confidential or anything like that?

Christopher Williams: No. In fact, I believe that is a stipulation in the regulations.

Michael Lodge: We require all environmental data to be public and we set the parameters that must be measured. For example, for the environmental baseline work that Chris is describing, we require, I think, 100 different environmental variables to be measured and reported to the ISA. That is not just the UK. That is all our contractors, and that is made public through the ISA database and is available to global scientific researchers and is the basis for an awful lot of scientific study that has been done.

Kerry McCarthy: Thank you.

Q343 **Geraint Davies:** May I simply ask: how can the inclusion of set aside areas of particular environmental interest adequately mitigate the environmental impacts of deep-sea mining? Can I ask Mr Lodge that first?



Do they work and do we know enough about them? There are areas of particular environmental interest set aside.

Michael Lodge: Yes. I am not a scientist so perhaps Professor Henderson might have a view on this, but all I can say is that those areas that so far have been set aside in the Pacific Ocean, in the Clarion-Clipperton zone, were recommended on the basis of global scientific advice—the best available scientific advice—through a very exhaustive process. They together constitute a representative network that is aimed at protecting the biodiversity of the entire bio-region as advised by scientists. They slightly exceed the 30% target that the previous panel was talking about for that particular bio-region.

That plan is a long-term plan. Of course, it needs to be reviewed from time to time. It is up for review right now, in fact, and we will go through a review process, so you will hear from the global scientific community as to how well it is working and how it is maturing in terms of the new data that is being generated from the scientific research cruises by UK and other contractors. We are adding to the data all the time, so we are learning more and more.

Q344 **Geraint Davies:** How are those areas designated—it sounds like the definitions are changing and we are still in—

Michael Lodge: They were designated through a fairly exhaustive scientific process involving many scientists from around the world, with a number of international workshops sponsored by the International Seabed Authority. Then on the basis of a discussion through the organs of the authority—we have a legal and technical commission, for example, that reviews these proposals and evaluates them.

Q345 **Geraint Davies:** Yes. We were told in a previous evidence session by Professor Mills of Southampton University that there is no knowledge of what the impact of the areas of particular environmental interest will be. Can I ask Professor Henderson how you would respond to that? Mr Lodge seems to be implying there is this huge amount of scientific knowledge that is available that we know about, and yet Professor Mills said we don't seem to know much about it. What was your understanding?

Professor Henderson: I am trying to interpret what Professor Mills said, but my—

Q346 **Geraint Davies:** He says that there is no knowledge on the impact that areas of particular environmental interest will have.

Professor Henderson: Again I will focus my remarks on the polymetallic nodules, which we have spent most of our time talking about. There are large set aside areas. If you think of the land surface as an analogue you would know if you were to destroy a bunch of forest when you made a mine we would have a pretty good idea of what it would do to forests 100 kilometres away. We would be able to assess that.



At the moment, what we know about the deep sea is much less than that, so what we know less well is if we mine in one place will it have a far field effect on the other site and is the other site genetically, in ecosystem terms, identical? We know that for the forest. We could go and measure it more easily. There is a level of ignorance about what we find on the sea floor about how different the different patches are and how much mining activity in one area would impact a far field site, so in that respect I think that is probably what Professor Mills was referring to.

The way to address that ignorance is to start to look at these areas, and I would support what has been said here: the exploration is enabling us to do that extensively in the areas where people are thinking about recovery. There is very much less research, from my understanding, in areas that are set aside so that is probably a—

- Q347 **Geraint Davies:** We will be asking you about that in a moment, Mr Williams, but can I finally ask Professor Henderson: other than setting aside areas, how can the environmental impact from exploitation of deep-sea minerals best be mitigated? What you have already been talking about is that obviously there is an issue about the environmental impact in the immediate vicinity. Then there is the wider regional issue and setting aside. Is there anything else you would add? I am interested, of course, to hear from Mr Williams whether he is more interested in the localised area rather than having an enormous amount of money spent from the point of view of a company on a whole region ecosystem.

Professor Henderson: My perception is that mining of a particular area for polymetallic nodules will do substantial damage to that local environment on the seabed, and that is pretty much unavoidable in the recovery of the nodules. Where there is a potential for real limitation of damage is in the far field effects. Whatever mining activity is pursued, if it generates a lot of plume material from the seabed activity or during the transport of material to the surface and decanting at the surface, it is basically the mess made in that process that has the potential for far field effects, which is probably possible to mitigate against in a way that is not possible for the actual intervention at the sea floor.

- Q348 **Geraint Davies:** If you have 5% or 30% or whatever that is set aside, there could be something on the edge of that 30% that is billowing out enormous amounts of marine pollution, which is then, through tide and wave activity, just sweeping in. It seems a bit ridiculous, because that 30% is not then protected. Does that imply that if you have 30% designated, in a real sense you then have to have a buffer zone between the 30% and where you should be allowed to exploit, to avoid that movement?

Professor Henderson: You are talking about far field effects. There has been substantial scientific advance on just how fast some of these far field effects are going. That has been an area of advancement. From that sort of research, we have more of an idea of how big a buffer zone you would need. There are some aspects of that which are still unknown, but



we certainly are beginning to understand it more. Where we remain, in my view, more ignorant, is on the nature of the diversity of the sea floor ecosystem, the activity—

Q349 **Geraint Davies:** On that last one about cross-contamination, is that something—

Michael Lodge: In fact, the areas of particular environmental interest that have been defined so far do already include that buffer zone. They have been designed taking into account the need for the buffer zone that you describe. I do agree that whether or not that is the correct assessment is still under evaluation.

Your other question, sorry?

Q350 **Geraint Davies:** Can Mr Williams perhaps respond to those sector points about whether the set aside impact areas of particular environmental interest will work and what else can be done to protect the environment.

Christopher Williams: For the set aside areas, the areas of particular environmental interest, it is important that those do work for us as contractors as well as for the regulator. We spent some time on our second research cruise in one of those set aside areas. A big focus of our efforts at the moment is understanding population connectivity—whether the rare species that I find in my mining area is rare in my mining area only, whether it is endemic, or whether it occurs quite widely across the Clarion-Clipperton zone. That is a big focus of our research. Clearly, we want to avoid impacting endemic species.

I would add that even within our mining contract area, we will define an impact zone. That would be the zone that would be impacted both by the collection of the nodules and also the further field effects—the plume. We will also be identifying representative areas—those that very closely match the geophysical characteristics and the biological communities that are within our contract area—which we will then set aside and preserve, essentially to provide a scientific control but also a potential source of recolonisation once the mining is complete.

As well as those well-publicised set aside areas—the 1.4 or 1.6 million square kilometres that the Secretary-General referenced—there will be additional set aside areas within the mining areas.

Regarding mitigation, Professor Henderson is absolutely right. In the areas where the nodules are going to be collected, those nodules are themselves a habitat. There are species that live on them. Those species will be impacted, clearly, by the removal of that habitat. We have some indications as to how that goes. There is a German experiment called DISCOL, which returned to a test site 30 years on and looked at the recolonisation. It was a mixed picture and there clearly are long-term impacts.



In terms of the plume, we have an increasingly good idea as to how that plume behaves on the sea floor. There have been experiments for more than four decades on that and we are seeing not just desktop modelling studies, but observational studies. There are more experiments planned for next year. We can be very confident, I think, that the buffer zone that the Secretary-General referenced—the 100 kilometres—is more than adequate to protect the set aside areas from any far field effects.

Q351 **Chair:** Can I clarify; was the German experiment Gjerde et al, where they looked at some tracks that had been laid in 1989 and found that impacts could cause extinctions in populations?

Christopher Williams: That is correct, yes, the DISCOL experiment.

Q352 **Chair:** So, when you say “mixed picture”, it was an extremely negative picture really.

Christopher Williams: They highlighted the impact on sessile organisms, those that cannot move, and particularly those that live on the nodules, and clearly those have been impacted. Within that area—

Q353 **Chair:** The nodules will be taken off and the organisms that cannot move will be the ones that will be destroyed, up to and including the point of extinction. That is the impact.

Christopher Williams: Extinction within the mining area, but that presupposes that those animals do not exist outside the mining area. That is one of the major areas of our research at the moment.

Chair: Okay. I was trying to get to the mixed picture side of things.

Q354 **John McNally:** I am mindful of the time. Can I declare that I am a member of the Off The Hook campaign as well?

My questions are basically on regulations and safeguards surrounding the whole business.

I wonder if Mr Lodge could explain to us how the new exploitation regulations will incentivise compliance and ensure that parties are held responsible for environmental damage.

Michael Lodge: Yes. The regulations are a work in progress. They have to be adopted by international consensus of 168 member states. Those states have very different interests. Some are clearly contractors or have interests in deep-sea mining. Others have interests in land-based mining and see deep seabed mining as competition. Overall, the regulations are extremely rigorous. They contain detailed environmental requirements, including environmental impact assessments, environmental management and monitoring plans, all of which are subjected to public scrutiny and also scrutiny through the expert bodies that are established by the ISA, for example its legal and technical commission, which is responsible for reviewing these environmental plans and either approving them or not approving them, and ultimately by the decision-making process by the council.



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Q355 **John McNally:** How would they be held responsible for any environmental damage? The crux of the matter is how do they know, for example, if maybe one company has invested lots of time and money into this and then somebody else is not meeting the standard? How do you differentiate between one and another? If I am investing a lot of time and money, I want to make sure that you are doing exactly the same thing.

Michael Lodge: Every contractor is held to the same standard and every contractor has to report its activities. Ultimately, once exploitation starts, the ISA itself will have its own inspection and monitoring regime. We are entitled to inspect the operations of each contractor, including at-sea inspections if that is necessary, to see what is taking place. We have access to independent scientific advice to evaluate the environmental management of each contractor, and we can take action through the ISA council, which can include financial sanctions, even to the extent of licence suspension. Of course, it is an international organisation so all that is subject to an international dispute settlement mechanism under the Convention on the Law of the Sea.

Q356 **John McNally:** Prior to anything happening?

Michael Lodge: Yes.

Q357 **John McNally:** Okay. It is very important, Mr Lodge, that you have to ensure that there is independent scrutiny of the industry and its impact. How will you do that and make us, and everybody, rest assured that this will be an absolutely totally independent body?

Michael Lodge: We have to set up independent monitoring, as I mentioned. The body that oversees this comprises elected international experts. At the moment, the legal and technical commission comprises 30 individuals who are elected internationally on the basis of their expertise and independence.

Q358 **John McNally:** Professor Henderson, in your opinion is the International Seabed Authority acting as both poacher and gamekeeper here? Do we need another body in addition to the ISA to regulate the industry?

Professor Henderson: There is a danger that they are acting as poacher and gamekeeper and I do think it is very important that the processes that are established to monitor and to continue to monitor, are visibly independent and populated by people who are internationally trusted, and that they incorporate substantive scientific evidence and expertise.

Q359 **John McNally:** Thank you. Last question. Will the UK Government need to update any legislation as the deep-sea mining regulations are developed? Anybody?

Christopher Williams: I believe that the 2014 Act covers exploitation activities. The Government will want to look at the regulations as they are adopted by the International Seabed Authority and look at how most effectively to transpose those regulations into UK law, most likely through



secondary legislation. Clearly, Parliament and the Government will want to take a view on it.

John McNally: Thank you.

Q360 **Chair:** It seems to me that there is a paradox here. Mr Williams, you were talking about the benefit to humankind and yet it seems that we are going to go and take this stuff off the seabed and potentially cause localised extinction, and yet we are not doing anything about the stuff that we could have taken in microscopic quantities, and which could have been used in health impacts—for example, the weird and wonderful algae that could have medical uses. I wonder, Professor Henderson, if you think that the United Nations through its organisations has the right priority and focus here.

Professor Henderson: That tension between the genetic resource, which we do not yet fully understand or know about, and exploitation of the deep-sea environment, was quite a theme of the Royal Society's report on ocean resources. Clearly, it is an issue that needs to be thought about when we mine the ocean. Are we removing genetic richness and species biodiversity as we do that? That is critically important.

You have talked about extinction. It is local. If mining were to be done in as low an impact way as we would want, the extinction would never be that of a whole species. There might be extinction in a local region, but it would not be of a whole species or an ecosystem, so perhaps you would not be removing the ability to study that genetic resource in the future or to use it. The problem with what I am saying, though, is that we do not yet know how diverse the seafloor is and how regionally variable it is. We do not yet know how much damage you do when you mine in one area, or how big an area you can mine before you cause species to become extinct.

Q361 **Chair:** Mr Lodge, obviously you are the servant of the Government but what are your thoughts on that paradox: that we are pouring tens of millions of pounds into something that is extractive and non-renewable and yet there could be things down there that we do not yet know about?

Michael Lodge: I agree again with Professor Henderson. The deep seabed is a very big place so there is plenty of scope for both activities to take place without necessarily overlapping.

The fundamental point I would make is that if there was no International Seabed Authority, if deep-sea mining was beyond national jurisdiction and was not regulated under the Convention on the Law of the Sea, then it would be a free for all and it would potentially be taking place without any regulation at all because anybody could go out there, because it would be beyond national jurisdiction, and do what they wanted in whatever way that they wanted. In that sense, the international regime, which brings in 168 countries—the vast majority of the member states of the UN—ensures that exploitation is done in a way that is responsible and within the most rigorous controls, that the need for a regional approach is



taken into account, and that the science is not just the science from one contractor but we can compare it. To take the example that Mr Williams was talking about, we can compare what is happening in the UK area with what is happening in the Chinese area and the German area, and so on, so that we can start to understand the regional ecosystems, and that exploitation is also done in a way that benefits humanity as a whole, both in terms of the sharing of the economic return but, perhaps even more importantly, in terms of the sharing of the global understanding of deep-sea ecosystems.

Q362 **Chair:** Okay. Thank you. Mr Williams, does Lockheed Martin receive any subsidy from the UK Government for its operations?

Christopher Williams: No. UK Seabed Resources has been wholly internally funded.

Q363 **Chair:** But they are obviously using the licence on behalf of the British Government. It is a state-issued licence.

Christopher Williams: It is a state sponsored contract, technically, yes. It is sponsored but not financially. The only support we receive is diplomatic, through the International Seabed Authority.

Chair: Okay. That is very helpful. I believe you are awaiting the arrival of your very own special delivery, so thank you very much indeed for taking the time out. We wish you luck with your new baby whenever he or she arrives.

Thank you all very much indeed.