



The marine environment after Brexit: the future for science and policy. A joint workshop organised by the British Ecological Society and Marine Biological Association on the 31 October 2017.



# The marine environment after Brexit: the future for science and policy

## A summary of the workshop.

On March 29th 2017 the UK triggered Article 50, with the Prime Minister Theresa May informing the European Union (EU) that the UK would be leaving the EU by March 29th 2019. The UK's decision to leave the European Union will have a major impact on environmental policy and legislation, as well as consequences for the way scientific research is undertaken: nowhere will this be more acutely felt than in the marine environment, where international co-operation and agreement is crucial.

The British Ecological Society (BES) and the Marine Biological Society (MBA) brought their members together, along with other interested scientists and environmentalists, for a one-day workshop to:

1. Identify the key challenges and opportunities for marine environmental policy in the UK after Brexit;
2. Identify the role of marine biological and ecological science in addressing these challenges, including existing knowledge and future research needs;
3. Identify the priorities for enhancing the UK's status as a world leader in marine science and maintain effective international collaboration.

In this workshop summary, we draw out the key messages identified during the workshop.

### Recommendations:

1. **Appoint a Minister of the Marine Environment**
2. **Monitoring, management and enforcement should be adequately resourced**
3. **A reorganisation of funding mechanisms post-Brexit**

### The marine environment

#### Economic growth and marine environmental protection – a false dichotomy

Marine environmental protection should not be seen as being in conflict with the desire to protect and grow the UK economy in the event of Brexit. Any exploitation or development of the marine environment must be sustainable or any short-term economic benefits designed to boost a post-Brexit economy will be outweighed by long-term negative economic impacts.

The same can be said with regard to any reduction in funding for marine environmental protection as part of a 'Brexit economy' – this could provide a short-term economic gain but with long-term detrimental impacts. The marine environment is already changing as a result of human pressures and because current exploitation levels are unsustainable.

**It is important therefore that the long-term benefits of a healthy marine environment are seen as being at the forefront of any long-term plans for the use of the UK marine area.**

#### The UK can be a world-leader in marine environmental protection

The UK has built up considerable scientific expertise in the area of marine environmental protection and has been a world-leader in developing appropriate legislation for managing its seas (the UK was the first country in the world to successfully introduce a single piece of legislation to protect the marine environment). There is a need to continue to build on what has been achieved in recent years and lead internationally in further development of environmental protection and sustainability. The UK can therefore maintain its reputation as **a world leader in science-based marine environmental protection** (in contrast to the 'dirty man of Europe' reputation the UK had in previous decades). Continued investment will enable the UK to retain an influence at the European level in the

implementation of legislation such as the Marine Strategy Framework Directive, which will impact seas around the UK due to the highly connected nature of the marine environment. The perception has often been that ambition related to the environment was driven by the EU but **the UK can demonstrate that it is at the forefront in environmental thinking and practice.**

Marine environmental protection is not just about scientists, policy-makers and industry. Coastal communities along with environmental and marine organisations, are aware as never before of the threats and pressures facing the marine environment such as pollution, over-fishing, biodiversity loss and climate change to pick a few. **Engaging the public more widely about the value of the UK coasts and seas would facilitate a bottom-up approach to marine conservation.** Brexit should be used as an opportunity to increase 'buy-in' more widely so that ambitious aims for sustainability and protection are coming from the UK public rather than being seen as being imposed in a top-down manner.

#### Coordination and oversight – getting it right for the UK

The UK can use the opportunity to increase the effectiveness of its marine management by **no longer treating marine environmental protection as separate from the issue of fisheries management and legislation.** A new system can incorporate both aspects along with strong links to independent science advice and an increased focus on regionalisation. This will mean close collaboration with the devolved administrations to ensure our seas and coasts are managed in a coordinated manner. In addition, scientists can be facilitated to engage with all stakeholders involved in coastal management. **Greater coordination and better integration between all stakeholders, scientists and government should provide an opportunity for greater flexibility and speed in decision-making.**

It is also important that **monitoring, management and enforcement is adequately resourced and carried out by the Marine Management Organization, Welsh Government, Marine Scotland and the NI Department of Agriculture, Environment and Rural Affairs (DAERA).** There is little point having good marine environmental legislation if there is inadequate enforcement and oversight. Being a member of the EU meant strong disincentives in failing to meet environmental standards (specifically infraction and the role of the European Court of Justice). Equivalent enforcement mechanisms to ensure compliance must be put in place post-Brexit. This should also include useful reporting mechanisms so that marine environmental assessments are a meaningful tool for informing management. Michael Gove's announcement of a 'watchdog' for the environment was therefore welcomed and it is vital that it includes a strong remit for on the marine environment. This will however also entail ensuring this new body complements existing mechanisms (e.g. The Marine Management Organization) and with the Devolved Administrations.

#### Marine research

##### The UK, Europe and beyond – the necessity of collaborative research

The marine environment is a large interconnected environment that can best be understood by integrating scientific knowledge and expertise over appropriate geographical scales. Many of the challenges faced, such as climate change and pollution (including plastics) require a large-scale multi-disciplinary collaborative approach. **Everything from marine monitoring through to indicator development and data-collation is therefore done collaboratively** in order to achieve the best outcomes scientifically and in the most cost-effective manner.

The EU has therefore established a number of well-known mechanisms to facilitate this collaboration, such as the [EU-COST programmes](#) and the ability to work in consortia in EU Framework programmes such as [Horizon 2020](#). **It is therefore imperative that equivalent mechanisms to facilitate collaborative research between the UK and the EU are established post-Brexit, and that the ability to engage in existing EU networks is retained.** The UK will not be able to deliver the science required by working in isolation.

In addition, **there should be a renewed focus on supporting global collaboration.** Marine scientists are familiar with support mechanisms for engagement in Europe but it is more challenging to establish networks with countries such as the USA and with developing nations. The independent marine scientific research sector needs support to develop and foster these international links. This support should extend to current international networks such as [International Council for the Exploration of the Sea \(ICES\)](#) and [the Convention for the Protection of the Marine Environment of the North-East Atlantic \(OSPAR\)](#). This is a useful international network bring marine science experts together, but support for engagement is covered by the individuals and organisations who wish to attend.

Brexit should also be used as an opportunity to improve collaboration at the UK level. For example, strengthening links between policy-makers, environmental managers, independent scientists and the fishing industry should be a priority. A new way of managing seas sustainably with science at the heart of flexible and speedy decision-making should be a focus post-Brexit. This will also require looking at how devolved administrations departments and agencies work together. Mechanisms such as Marine Science Coordination Committee should be repurposed and strengthened in light of Brexit.

#### Plugging the gap – funding for marine scientific research in the UK

The UK marine science community has benefited from a range of European funding including framework programmes, European Research Council grants and structural funds. For example, under the FP7 (2007-2013) programme the Commission contributed an average of €350 million a year towards marine and maritime research. More recently a survey of marine organisations found that between 10 and 25% of their income came from the EU<sup>1</sup>. There is concern therefore that reduction in EU income could impact the UK's status as a world-leader in marine research. **A solution will be to negotiate continued access to EU funding or to ensure equivalent funding is provided at the UK level and maintain the UK's reputation as a world-leader in marine science.**

#### Marine scientific research – a strategic priority

An important point concerning marine science is that it has been highlighted many times as receiving inadequate funding. For example, a 2007 select committee report stated “In 1986 a House of Lords Select Committee on Science and Technology examined marine science and technology in the UK and concluded that it was poorly co-ordinated, fragmented and underfunded. We echo those conclusions today”. Any analysis of funding for marine science compared with other science areas shows that ‘underfunding’ is a perennial problem. **A reorganisation of funding mechanisms post-Brexit is a good opportunity to address this imbalance.** A significant focus on marine research would help maintain the UK's reputation as a place to come and carry out marine science. There is a desire in the marine science community to see the UK as an important hub for marine research with potential for the UK to be at the heart of a blue-growth agenda as well as leading innovative research.

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<sup>1</sup> Marine Biological Association written evidence submitted to the House of Lords Science and Technology Select Committee inquiry into Leaving the EU: implications and opportunities for science and research inquiry - <https://www.parliament.uk/business/committees/committees-a-z/commons-select/science-and-technology-committee/inquiries/parliament-2015/leaving-the-eu-inquiry-16-17/publications/>

# The marine environment after Brexit: the future for science and policy

## The full workshop report:

### Notes from the morning breakout discussions: *the marine environment*.

Key questions posed to attendees:

- What are the greatest risks that Brexit poses in terms of legislation and policy, and implications for the marine environment?
- *What would success look like? What new institutions and frameworks are required to replace existing EU arrangements? What legislation will remain in place?*

#### Group 1:

#### Risks to the marine environment from Brexit

Priorities Risks:

- Economy prioritised over environment
- Reduced resources for marine environment
- Weakening of environmental protections and/or their enforcement

#### What are the opportunities and what does success look like?

Priorities for success:

- Holistic approach: integrated ecosystem marine planning
- Collaboration between science, policy, stakeholders
- Regionalisation

Greater details behind comments

#### 1. Prioritisation of the economy over the environment

General comments	Post-it notes
Broad economic context for Brexit, with risks to prosperity and growth, may lead to the deprioritisation of the environment in general, and the marine environment and broader marine interests specifically, as resources are directed elsewhere.	"Prioritising short term economic growth" "Short term economic gain" "Focus on economic sectors not the ecosystem" "Economy is prioritised over the environment" "Reissuing of fishing licences for economic reasons" – may be particularly relevant in overseas territories e.g. British Indian Ocean Territory where some licences have previously been cancelled e.g. for Tuna. Risk that no-take zones are cancelled.
Consensus that this was about the economy as a whole, not just marine issues e.g. fishing over environmental protection.	

#### 2. Lack of prioritisation leads to fewer resources for the marine environment

General comments	Post-it notes
It's a question of human resources as well as money – does the UK have the relevant expertise and competence? Can that be retained/attracted in the context of a post-Brexit immigration system?	<ul style="list-style-type: none"><li>• "Lack of EU funding for marine science and conservation"</li><li>• "Reduced funding for environmental protection"</li><li>• "Funding"</li></ul>

	<ul style="list-style-type: none"> <li>• “Use of funding”</li> <li>• “No money”</li> </ul>
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### 3. Fewer resources means weaker environmental protection

General comments	Post-it notes
Loss of enforcement/infracton capabilities of the European Commission a key issue – are we confident that the UK has sufficient “motivation” on its own, or will we do the bare minimum.	<ul style="list-style-type: none"> <li>• “Degrading protection of marine reserves”</li> <li>• “Only implementing laws that are required, doing the absolute minimum”</li> <li>• “Environmental protection legislation: watering down/loss of legislation”</li> </ul>
Loss of momentum and hard work of recent years e.g. around MPAs	<ul style="list-style-type: none"> <li>• “Legislative protection is lost or confused leading to decline in environmental status”</li> <li>• “Incentives, support and priority of marine conservation is lost if UK is alone”</li> </ul>

### 4. Continued uncertainty

Current state of uncertainty/dithering is in itself unhelpful due to poor use of resources and distraction from continuing positive momentum on marine conservation.

### 5. Loss of collaborations

General comments	Post-it notes
Loss of influence on European policy and legislation e.g. MSFD	“reduced cooperation across boundaries and with EU/Member State contracting parties”

## What are the opportunities and what does success look like?

### 1. Opportunity for the UK to build a reputation for being a world-leader in marine conservation

Post-it notes
“National pride: public buy-in for value. Britain is Best” “UK takes more ownership of its seas (and better manages its fish stocks)” “Chance to do better. More specific policy for us” “A radical shift in the political landscape could force innovative solutions” “More bespoke and effective regulations from UK EEZ e.g. MSFD indicators, could UK do better?”

### 2. Success - Integrated ecosystem marine planning: holistic approach, integrating fishing and environmental aspects of marine management

Post-it notes
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“Integrating fishing effects into environmental legislation”  
 “Be leaders in integrated efficient environmental legislation”  
 “Well managed MPAs that apply ecosystem-based approach at North East Atlantic Scale”  
 “Holistic policy approach to environment”

- Uncertainty as to whether new institutions or just a new approach required.
- Holistic approach with reduced emphasis on fisheries
- Including climate change impacts

### 3. More collaborative approach involving science, policy and stakeholders

General comments	Post-it notes
Both inside government (integrated policy) and outside (stakeholder engagement and collaboration)	“Forum of representatives from all sectors to represent UK marine interests to/via government on international obligations” “Robust funding model for marine policy, practice and research” “Valued and vibrant research economy providing evidence to policy”
But knowledge base required – retaining people essential	

### 4. Regionalisation of policy

General Comments
Enable policy and management to be set by those closer to the ground (especially for fisheries)
Allow regions to pursue own agendas

### 5. Increase public engagement to motivate government action

General Comments
Opportunity to build on the Blue Planet effect
Plymouth Marine Laboratory research programme on ecosystem services and natural capital demonstrating value of marine environment (still early days)
Chance to build in citizen science

*Potential to learn from Isle of Man experience of being outside the EU but adopting best practice and collaborating due to shared seas e.g. fisheries/conservation integration and success of MPAs.*

#### Group 2:

#### Risks to the marine environment from Brexit

##### Priorities Risks:

- Lack of communication and collaboration between governments
- Wider enforcement and monitoring
- Race to bottom economically – removing general principles.

##### Other comments:

- Mobile species – fragmentation of habitat management and lack of coherence
- Designation of MPAs
  - More in OT rather than UK
  - Number of paper parks increases

- Lack of money and therefore monitoring and enforcement
- Increase in coastal development
  - E.g. marine, aggregate extraction, minerals and mining
- Who will be accountable for water quality?

### What are the opportunities and what does success look like?

#### Priorities Opportunities:

- Increased awareness of marine natural capital and increased engagement with industry and business
- Understand architecture of marine management in the UK and how it can be improved
- Create environmental court to hold UK to account

#### Other comments:

- More specific tailored legislation for UK priorities BUT maintain wider standards
- Maintain current legislation then review to UK needs.

### Group 3:

#### Risks to the marine environment from Brexit

#### Priorities Risks:

- Reducing standards: a loss of existing protections as economic pressures prioritised.
- Loss of budget/ resources and access to funding.
- Less enforcement

### What are the opportunities and what does success look like?

#### Priorities for success:

- Locally adapted management of marine environment (inclusive of fisheries)
- UK Specific /adapted legislation
- Better integration

#### Greater details behind comments

#### **1. Reducing standards: a loss of existing protections as economic pressures prioritised.**

##### **1. Reduced standards: a loss of existing protections as economic pressures prioritised**

- Downgrading of environmental protection due to need for economic gains.
- Prioritising economic growth over environmental protection - removal of ECJ and precautionary principle.
- Government assigning environmental policies by putting economic value on ecosystem services.
- Government de-prioritising environment post-Brexit/ Loss of prioritisation of the environment.
- Less ambitious policy / legislation.
- Loss of ambition for marine environmental targets.
- Lack of impetus to implement environmental standards, reduced enforcement.
- Loss of motivation / participation in existing measures due to loss of consequences.
- Downgrading in protection offered to habitats and species.

#### **2. Loss of budget/ resources and access to funding.**



- Reduction in budget to monitor marine environment effectively
- Diminished investment in ecosystem monitoring
- Lack of resources for marine environmental protection due to need for other priorities in Government agencies post Brexit
- How will funds change and be prioritised to ensure a smooth transition and protections are upheld
- Devolved agencies receive even less funding (its already been less in recent years)
- Decreased funding implementation of policy and legislation (and for research – next session!)

### **3. Less enforcement.**

- Lack of EU Courts to hold UK Government to account if measures are not being implemented
- Government – who will be responsible for oversight and infractions. How will be devolution be affected?
- Reduced enforcement
- No access to ECJ, will make it harder for people to access justice system
- Even if all EU legislation is converted into UK Law – who will wield the stick to make it happen? Self-regulation doesn't work.

### **4. Other Comments:**

- Loss of international collaboration and poor coordination of research
- Loss of expertise – regulators, scientists, conservationists. Big hole in European environment agency.
- Reduction in evidence based approach and loss of joined up thinking on management.
- Loss of integration between fisheries and marine conservation policies. Lack of integration of science/ evidence, policies and economics
- Lack of influence in policy
- Being reactive instead of proactive
- Changing priorities and uncertainty for conservation and development,

What are the opportunities and what does success look like?

#### **Post-it from the Group:**

##### **1. Locally adapted management**

- Think beyond devolved scale – More adapted local management plans, with tailored on the ground action to manage local habitats
- Responsibility of management at local coastal area but national / UK courts would continue to provide enforcement
- Current Marine Plans provide for management so we have a framework to use.
- Local management of marine

##### **2. UK specific / adapted legislation**

- New legislation that would otherwise be blocked by EU Law
- New legislation that take into account UK specific priorities
- Having more flexibility to have legislation specific to UK & UK issue: Ignore legislation that is not applicable

##### **3. Better integration**

- Co-management of both fisheries and environment for the benefit of both.

- Better stakeholder integrations and with more parts of society
- Science and evidence informed decision making

#### 4. Other comments

- Increased speed of decision making
- Ability to move more quickly in response to issues. Less bureaucracy.
- Reduce the influence of international lobbyists
- Re-directing funds to enhance collaboration with non-EU countries and organisations
- Northern Irish Vessels to maintain Irish rights
- Simplification of reporting: especially for OSPAR, MACC Art 17, Art 12 etc.
- Possibility to engage with leave voters more on environmental issues.

What do we need in place to capture this? Frameworks- what do we need to replace what we have at the EU level?

- **Maintain key EU principles** – E.G. precautionary, polluters pays etc. but get better UK specific guidance on what these mean in practice.
- **Need an overarching framework**, perhaps with a new Department of Maritime Affairs (integrating fisheries and environment) to oversee and enforce it, but with regional / **local involvement, ownership and management**. Need regional regulators and clarity about where specific responsibilities lie.
- **Integrating different factions of society** is key as local people / organisations need to feel personal / corporate responsibility for how the marine environment (including fisheries is managed). Ensure a bottom up process by engaging stakeholders, and ensuring local management that engages with fishing and conservation.
- Local people are more likely to be on board if consulted properly and involved from the beginning. Plus, they are likely to have local knowledge. **Local engagement and participation may also play a key role in enforcement**. All of it is linked together, but the need consistency over time means a common overarching framework is important.
- However, local plans won't work unless **properly resourced**. They require expertise, monitoring and tracking.
- Therefore, need to **maintain stakeholder engagement** as provided for by the Marine Coastal Act, and continue to push and evolve the Marine Plans that we have, as well as the ones being developed, across the UK (currently England only?).
- The UK courts have a different process- challenging would be harder. There does need to be an independent body to ensure decisions and enforcement can be scrutinised and challenged fairly.
- **Education and corporate responsibility are important**, especially when encouraging local 'ownership' of plans and CSR.
- **Need for long term plans and for long term funding commitments**.

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Group 4:

Risks to the marine environment from Brexit

Priorities:

- Stability in legislation with changes in Government
- Brexit is a "rushed job" could lead to poorly conceived and applicable legislation; lack of certainty
- Reduced monitoring capabilities and unable to detect change / measure success
- Lack of public awareness and interest in marine environment; media bias

## Opportunities for the marine environment from Brexit

### Priorities:

- Improved MSFD could be overarching strategy integrating biodiversity, fishing, pollution and human dimension
- Backing of public for marine conservation
- Increased funding for applied research
- Accountability taken account of socioeconomic and environmental factors
- UK leader for SDG: success in home waters, exportation of good practice to other countries

### Further details:

<b>Brexit risks</b>
Reduced ambition of Regulation
Isolated Government departments and agencies; fisheries vs marine environment
25 yr. Environment Plan: vision, targets, practicalities unknown
Ambitious goals but no resources
<b>Stability in legislation with changes in Government</b>
<b>Brexit is a “rushed job” could lead to poorly conceived and applicable legislation; lack of certainty</b>
<b>Reduced monitoring capabilities and unable to detect change / measure success</b>
Scrutiny and consequences for infraction
<b>Lack of public awareness and interest in marine environment; media bias</b>
Collaboration between devolved administrations
Increased exploitation myth around fisheries which was main talking point of Brexit campaigns
Fisheries is treated separately to marine environment policy
Lack of transboundary fishery management may pose risk for sustainable exploitation
Decommissioning of rigs in North Sea in particular; who monitors process? What about renewable energy e.g. tidal turbines?
Marine issues isolated from overall environment discussions

Indicators of success	Opportunities
Achieve target – Ecologically meaningful targets	<b>Improved MSFD could be overarching strategy integrating biodiversity, fishing, pollution and human dimension</b>
<b>Backing of public for marine conservation</b>	Education: climate change, marine environment to be integrated in school curriculum
Sustainable fishing industry	Raise profile of marine issues in Government
Collaborations across boundaries	Integrate fisheries and marine environment holistically and in practice
<b>Increased funding for applied research</b>	Given increased public awareness in plastic pollution, this could be scaled out to raise awareness of other issues
<b>Accountability taken account of socioeconomic and environmental factors</b>	Bespoke UK legislation
<b>UK leader for SDG: success in home waters, exportation of good practice to other countries</b>	Better use of subsidy money and tie to good environmental practice now that we are leaving

	CAP; how does leaving CAP translate into other environmental areas?
Simplify 'horrendogram' through improved MSFD	Focus on global treaties and directives like SDG and CBD
	Export good environmental practice to developing countries

### Priorities

#### Post-it note comments – What do you think is important for the marine environment?

- Environmental protection
  - Maintain at least the EU level of protection
  - Keep MSFD and maintain ecosystem approach; integrate fisheries in broader marine management
  - Attribute values to our oceans that are not driven by economics
  - Include coastal and freshwaters
  - Protect biodiverse sites
  - Complete ecologically coherent network of MPAs
- Climate change
- Pollution and health safety (manage health risk of seafood etc.)
- Food security / sustainable exploitation
  - Reduce and minimise bycatch in UK waters
  - Stabilise fish stocks
- Government transparency and public participation
- Public awareness
  - Community engagement and feeling of “investment”
  - Richness and resilience: biodiversity and human enjoyment
  - Integrate marine science and environment in UK curriculum
- Increased funding and investment in research and collaboration
  - Science is bedrock of policymaking; UK is a strong leader
  - Include marine conservation
- Freedom of movement of people; fill UK skills gaps
- Transborder/continental research and collaboration
- Continued support of international treaties
- Monitoring
  - Report on ecosystem state and targets
  - Consequences for non-delivery of environmental protection
- Proper implementation and accountability
  - Scrutiny of copy and paste job of EU Withdrawal Bill
  - Effective management of human activities.

## Notes from afternoon breakout discussions: *Marine Science*.

Key questions:

- *What would success look like for UK marine science post Brexit? What current structures should be retained, and what future mechanisms are required to replace current arrangements?*
- *In light of the challenges and opportunities that Brexit poses for the marine environment, what are the key gaps in our knowledge? What are the research and monitoring requirements for addressing these challenges?*
- *Group into top 3 priorities for what success looks like and research priorities*

Group 1:

### What does success look like?

#### 1. Continuing or replacing mechanisms that facilitate collaboration

- Risk of UK scientific research opportunities narrowing with UK priorities
- Importance of retaining (organisational and personal) European contacts and networks
- COST programme has been hugely important for facilitating European interaction – could we continue to participate, or create new programmes with wider international reach e.g. “International COST” with India, China, USA, etc.
- Some mechanisms e.g. Royal Society programmes exist to do this, but are not well co-ordinated, lack marine focus, can be inaccessible for smaller organisations.

#### 2. Retaining access to Horizon 2020 and other European funding avenues

- Need to retain best possible access to H2020 and successors
- H2020 not perfect e.g. UK has not been as successful as it could have been at driving agenda for funding priorities – is this an opportunity to reappraise how we set priorities? Risk that H2020 is driven by EU policy requirements that become less relevant with time. Criticism for bureaucracy and high levels of competition.
- Isle of Man has never been eligible – opportunity to address?
- Structural funds also important (Welsh marine industry an important example) e.g. providing shared facilities and structures.
- Challenge that participation of e.g. Norway in H2020 is conditional on free movement
- Could place more emphasis on non-EU collaborative structures e.g. ICES, OSPAR

#### 3. A clearly articulated strategy for marine research in the UK: “the UK as a marine laboratory”

- “Perfect storm” context of change in UK scientific research funding:
  - Brexit
  - Creation of UKRI
- Creation of UKRI could lead to marine research being squeezed out due to competition with medicine, industrial strategy etc. and tension between blue skies/applied research
- Any strategy must be genuinely inclusive, not produced by the “usual suspects”
- Need to raise the voice of our small community.

UK could sell itself to the world’s scientists as a marine laboratory with unique research opportunities: e.g. reference areas, use of innovative techniques for monitoring and assessment, innovative research programmes.

### Research Priorities:

#### 1. Clarity over devolution:

- Role of devolved governments needs to be clear – who has responsibility for setting research priorities – could be problematic if returned powers are retained by Westminster, or if lack of collaboration and co-ordination across the UK. Where are research needs being defined?
- Risk of research base becoming fragmented – should there be an equivalent to MASTs everywhere.
- Devolved authorities do collaborate but often funding and time dependent, different priorities for different agencies and governments.

## **2. Continued investment in baseline monitoring:**

- UK has been doing comparatively well with monitoring and assessment but we still lack basic knowledge of marine features
- Need to invest in new techniques, technologies for efficient, integrated monitoring
- Essential to enable success (or otherwise) to be measured
- Does Brexit threaten access to some long-term data sets? Continued threats to funding for e.g. water temp, basic monitoring
- Opportunity to use citizen science to encourage marine stewardship (but underpinned by government-led programme)
- Greater integration with social science e.g. social indicators as well as biological.

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### Group 2:

#### What does success look like?

- 1. More monitoring taking place**
  - Clear evidence of recovery.
- 2. Greater interdisciplinary work and collaboration**
  - 'grand challenges'.
- 3. Transboundary and international**
  - Use other countries beyond EU e.g. Canada, Iceland, Norway, Atlantic hub.
  - All latitudes.
  - Oversea Territories.
- 4. Bilateral agreement for researchers outside the EU**
  - Support and encourage student exchange
  - Research visa
  - ERASMUS replacement?
  - Marie Curie broadened out to the world
- 5. Other comments**
  - Impact.
  - More money being spent.
  - Using marine resources in sustainable way.
  - More streamlined communication between science/ policy/ practice interface.
  - Supporting collaboration and networks
    - i. Future earth coasts
  - Secure current access and input to infrastructure and broaden access to others

#### Research Priorities:

- 1. Bridging gap between natural and social scientists.**
  - Effective communication and improved public engagement.

- Positive behaviour changes.
- 2. MPA – Bridging the gap in MPA Management and understanding impacts.**
    - Avoid paper parks. Understand requirements.
    - Work under UK law.
    - Currently broadly managed. Future need to prevent foreign boats accessing.
  - 3. Blue economy future under climate change and ocean acidification. Blue carbon and future proofing**
  - 4. Other comments:**
    - Longer term timeframes to allow coordination of research between different bodies
    - 6-12 nautical miles (and beyond) knowledge gaps. Monitoring of smaller vessels
    - Long term impacts of marine renewable energy e.g. tidal / wind / wave. Trade-offs between climate mitigation and local communities and environment
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### Group 3:

#### What does success look like?

##### Priorities:

- Cross-disciplinary & applied research funded
  - Funding for marine research safeguarded
  - Long term funding
  - Better use of data
- 1. Cross-disciplinary & applied research funded**
    - Need to bring different scientific disciplines together + need better stakeholder (including a focus on local) involvement and engagement. Need collaboration between disciplines.
    - More spend on analysis of data and information, ecosystem processes, impacts of humans etc. Too much is spent on observing fish populations.
    - Need to ensure funding for applied trans-boundary research is secured.
    - Get involved in international projects looking to answer the same questions as us. Look to work with industry for contacts and look wider than currently do. Are there other ways of getting co-funding that we need to start doing?
    - Bring fisheries and conservation science together.
    - Co-creation of new marine management measures.
    - Working with industry for research – no longer them and us mentality
    - Strengthened link between ecological and social sciences
  - 2. Better use of data**
    - UK has the skills to process the marine data that is collected.
    - Data collection carried out in more holistic surveying i.e. no more survey just collecting data on one isolated population. Use resources more effectively and ensure surveys are collected for multiple uses and purposes.
    - Extended use of data that is collected. Shared data – to ensure cumulative impacts are better understood.
    - Long term data set collections.
    - Integration of monitoring data sets to deliver for wider benefits – integrated freshwater and saltwater data sets.



- Development of a framework that looks at the analysis of data across various requirements.
- 3. Funding for marine research safeguarded**
- Separate marine funding from terrestrial funding
- 4. Long term funding**
- UKRI programmes have a much longer funding cycle / fund projects for longer
- 5. Other comments**
- Improved communication of project outcomes to showcase the benefit of marine research better.
  - Improved communication (and integration) between science and business
  - Ensure a level playing field for developing research priorities
  - Clarity of where responsibilities lie within government departments
  - Transparent decision-making processes
  - Tailored marine management plans underpinned by an effective legislative structure

## Research Priorities:

### Baseline data

- “Lacking baseline data in and out of protected sites - necessary in order to assess if post Brexit policies are working”.
- “Lacking simple details of what is where”.
- “Lack of historical data meaning we have an unknown baseline”.

### Socio-economic knowledge

- “Understanding the full socio-economic benefits from the marine environment in order to implement better environmental plans and management”.
- “Value to the economy that can be gained from marine environment part from fishing”.

### Clarity

- “What does Good environmental status look at like?”
- “What is ‘significant’ ” (*Think this relates to significant impact*)
- “Definition of ‘best available scientific advice, and commitment of when to sue it – i.e. science for policy”.

### MPAs

- “Lack of effective monitoring of all MPAs”.
- “Lack of understanding of MPAs means not sure if need more of them or not”.
- “Government setting too high standard for the designation of MPAs.”
- “Lack of application of indicators to assess condition both inside and outside of protected sites”.

### Management

- “The ability to suitably assess the success of management measures”.
- “Lack of ecosystem level knowledge and what is needed for an ecosystem based approach in the marine environment”.
- “Cumulative impacts - hard to figure out when data isn’t shared”.
- “How does the UK fare against the rest of the EU in meeting management measures for marine environment”.
- “Social science linked to applied ecological in order to know how to manage a site”.

### Knowledge gaps – not specifically research Qs

- “Clarity of where responsibilities lie within government departments”.

- “Understanding openness and transparency of Brexit processes as so many will be impacted”.
- “Gaps in information flow (mechanisms not the place) post Brexit. Data →Models →Policy”.
- “Have we enough expertise if freedom of movement ends?”
- “Skill set gaps across science to inform policy”.
- “In applied science, the biggest gap is not the evidence but the way the evidence is created and translated”
- “Studies on how non-EU countries ensure legislation if followed”.

#### Group 4:

Indicators of success
<b>Minister for Marine Science</b>
<b>Funding:</b> long-term (10+ years), strategic view (incl. Blue Skies studies) incl. sustained observations/monitoring
Innovation and room for creativity: currently funding is only given if researchers can guarantee hard output after X years
Make Britain attractive for marine scientists; <b>leadership</b>

Structures to be maintained	New mechanisms
<b>Shared infrastructure</b> , e.g. Taurus (Cold Fusion), SHIP Collaboration, MOUs (good relationships), PAP, etc.	Equivalent of Transatlantic Alliance with commitment of Government to fund <b>transboundary projects/collaborations</b> ; UK to fund projects with intl. collaborators
	Skills-based immigration system? How can marine science community feed into this if it comes into force; security for skills immigrants

Knowledge gaps	Research and monitoring requirements
How will be <b>monitor</b> MCZs , biodiversity – fund people and skills to analyse data; detect change and measure success; best use of data collection; Effectiveness of monitoring measure → strategic science	Data sharing
Detection of change and attribution of cause, e.g. climate change, anthropogenic activities	<b>UK use of models/data/science from other countries</b> , e.g. Nemo for climate science
<b>Innovation:</b> how to create new tech? Support for SMEs at risk due to EU funding. Blue innovation and blue growth	Research needed to support our competence, e.g. UK fisheries
<b>Socioeconomic/ecological partnerships</b> between SMEs, fisheries and scientists	

#### Priorities

‘Personal priorities’ - What do you think is important for the UK marine science community after Brexit?

- Leverage UK's world-class research; long history of excellence and expertise
- Funding
  - Partnerships
  - Support for scientific networking
  - Joined up strategic funding
  - Holistic view
  - Transparency on funding sources
- Education
  - Graduates with applied skills and all around expertise
- Freedom of movement
- Collaboration with European neighbours
  - In particular to address transboundary issues such as climate change, pollution, etc.
  - Work with industry, specifically concerning blue growth
- Monitoring
  - Sustain long-term monitoring; e.g. MPAs
- Data and infrastructure sharing
- Strong community voice to lobby Government