

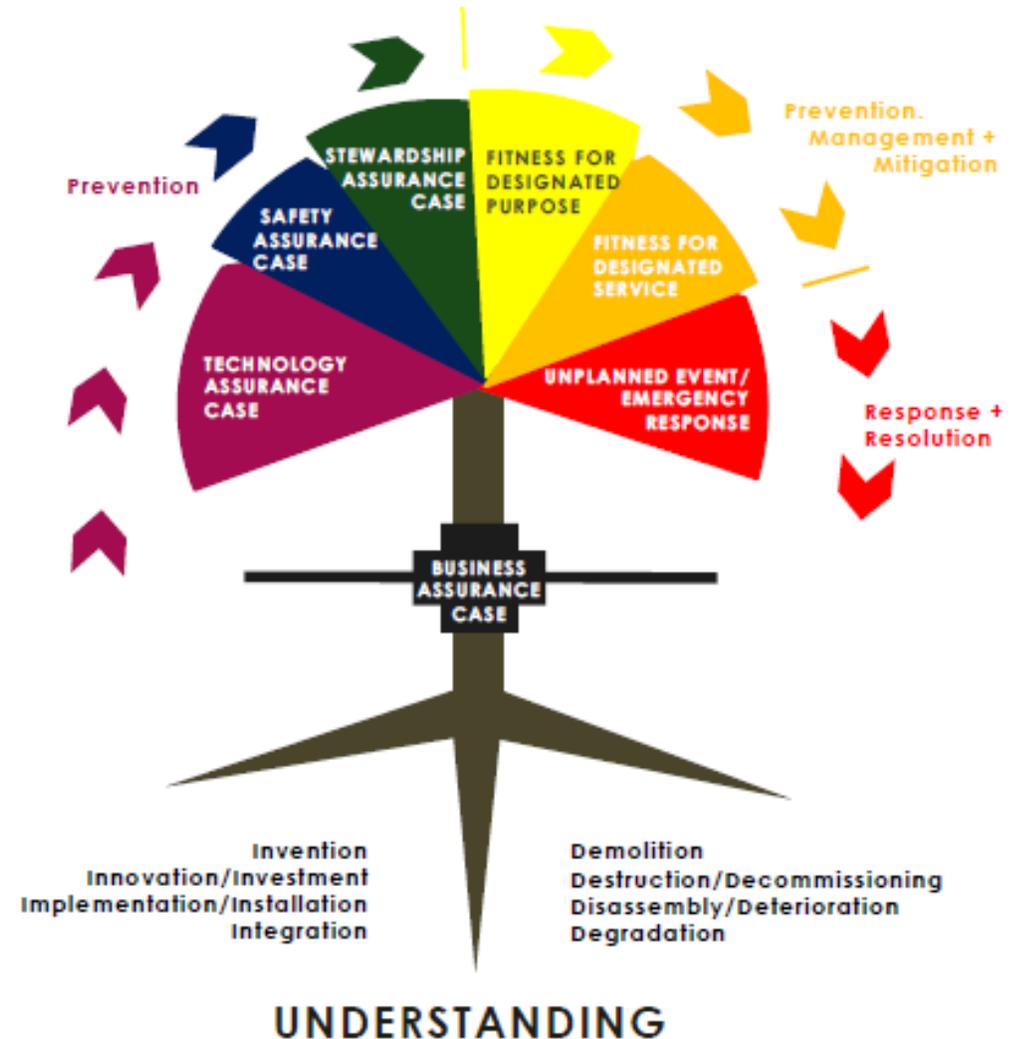


**Development of Understanding
and
Rapid Implementation of
Technology and Change,
in balance with
Nature**

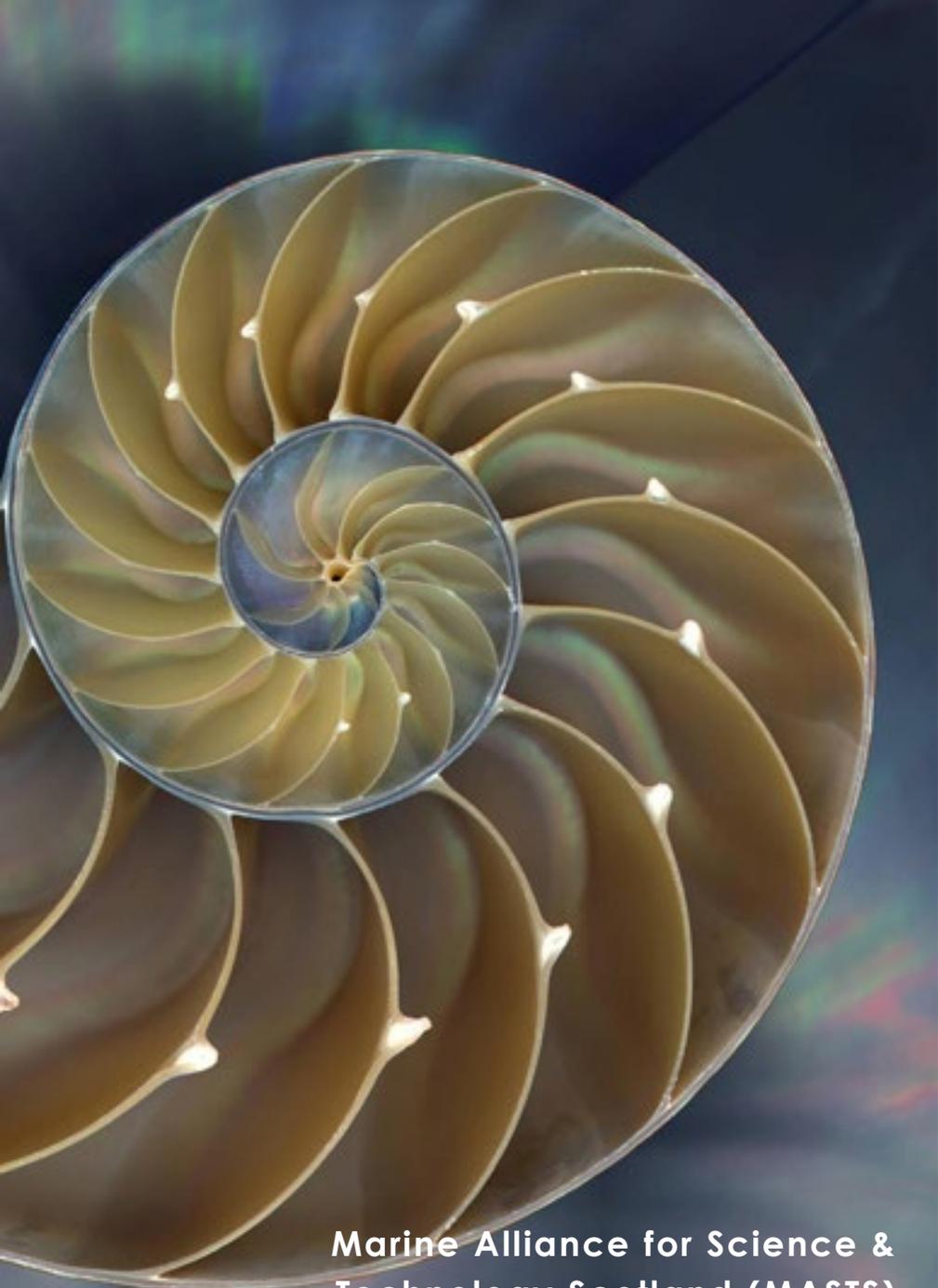
SUT/MAST Workshop 2-4 October 2019



A Holistic, Lifetime Approach to Wealth Creation



Arts & Humanities +
Science, Technology, Engineering &
Mathematics (STEM) +
Finance & Commerce



Marine Alliance for Science & Technology Scotland (MASTS)

Twelve years of work!

SUT/MASTS Workshop Agenda		Thank you to our sponsors	
Technology & Innovation Centre, Glasgow 3rd (13:30) to 4th (12:45) October 2019 (Auditorium A)			
Decommissioning & Wreck Removal Influence, educate and unlock opportunities: Informing key decommissioning and wreck removal challenges			
Part 1: THURSDAY, 3rd - 13:30 - 17:30			
	<p>WELCOME, Karen Smith, Marine Science Chair, SUT Decom & Wreck Removal Sub-Committee</p> <p>Setting the Scene, Miya Crowfoot, Chair, SUT International Salvage & Decommissioning Committee</p>		
SESSION ONE 13:45			
	<p>The Global Offshore Decom Market: A Contractor's Perspective, Stephen Thompson, Business Development Manager, Arctic Global</p> <p>New Environmental Data Collection Techniques and Technologies for Jacket Raising in Thailand, Peter Oliver, Senior Staff Environmental Scientist, Chevron</p> <p>Decommissioning Agreements Update, Tim Walker, Partner, HPW</p> <p>The UK Decom Regulatory Hub Update, David Ogilvie, Unit Manager Sector Team, Scottish Environmental Protection Agency</p> <p>The National Decommissioning Centre Update, Richard Redford, Centre Director, The National Decommissioning Centre</p> <p>Russell Stevenson, Industrial Director, The Oil & Gas Technology Centre</p>		
Interactive Workshop: Session including: The Global Offshore Marine Research Workshop, Sally Prouse, Research Associate, Scottish Association for Marine Science			
COFFEE & NETWORKING 15:45			
	<p>Risk Assessment and Risk Management relating to Inputs and Impacts of Retaining or Reversing Marine Infrastructure, Mike Elliot (as above)</p> <p>Explosive Use: Impacts to Marine Wildlife and Mitigation, Sarah Carrigan, Offshore Industries Advisor, Joint Marine Conservation Committee (JMCC)</p> <p>Decommissioned Marine Infrastructure: A Stepping Stone for Marine Invasive Species, Sergio Garcia, Research Professor Biology & Environment, Høegheda University, Ljubljana</p>		
Interactive Discussion			
Closing Remarks: Mike Elliot (as above)			
17:30-18:30			
	<p>Networking drinks reception</p> <p>WELCOME, Andy Mabbitt, General Manager (Edinburgh) Environmental Services, Pogo</p> <p>Chair: David Patterson, Chief Executive, MASTS</p> <p>CEPAR, the Grand Fleet and other Considerations for Lifting in Situ or Reversing, Miya Crowfoot (as above)</p> <p>Sustainable Decommissioning Analysis: Structuring from a Holistic Perspective, Pierre Major, Head of Research, Offshore Innovation Centre</p> <p>Visualisation Tools for Wreck Research, Mark Lawrence, Lead Digital Services, Waves Group</p> <p>Interactive Workshop Session: Developing a Considered Civil Sector Approach for Assessing the Impact of Marine Infrastructure, Objects, Structures and Submarines (MASCOS) on the Marine Environment</p>		
SESSION THREE 18:45			
	<p>The Challenges of an Oil & Gas Circular Economy, Mark Robertson (as above)</p> <p>Opportunities, Funding and Support for Circular Economy (CE) Projects, Charlotte Stanger, Circular Economy Energy Incentives Manager, Deloitte Waste Scotland</p> <p>Industry Challenges and Solutions, Matt Blair, Science Engineering Director, SRA (Chair, Decom Health Sea Rescue Group)</p> <p>Artificial Reef Creation using Decommissioned Pipeline Protection Structures Michael Redford, Scottish Association for Marine Science (SAMS)</p> <p>Optimising the Decommissioning of Pipeline Protection Structures in the North Sea, Eric Dejean, SAMS Research/Innovation Opportunities: Successful Aspects to Study: Collaborative and Projects, Paul Cartwright, Knowledge Exchange Partner, Scottish Institute for Petroleum</p>		
Interactive Discussion			
The NORTH Programme Phase 2: An Update, Richard Howd, Programme Director, INSTE			
Closing Remarks, David Patterson, Executive Director, MASTS			
SESSION FOUR 19:45			
	Round-up of Decom Statistics		
SPECIAL UPDATE			
CLOSING 19:45			

The bringing together of interested people within salvage, oil and gas, marine science, government and regulation



Revision of founding Discussion Document, which is now ten years old

Learning from the Past – Looking to the Future and Leading Discussion and Thinking



Salvage & Decommissioning Committee

Discussion Document:

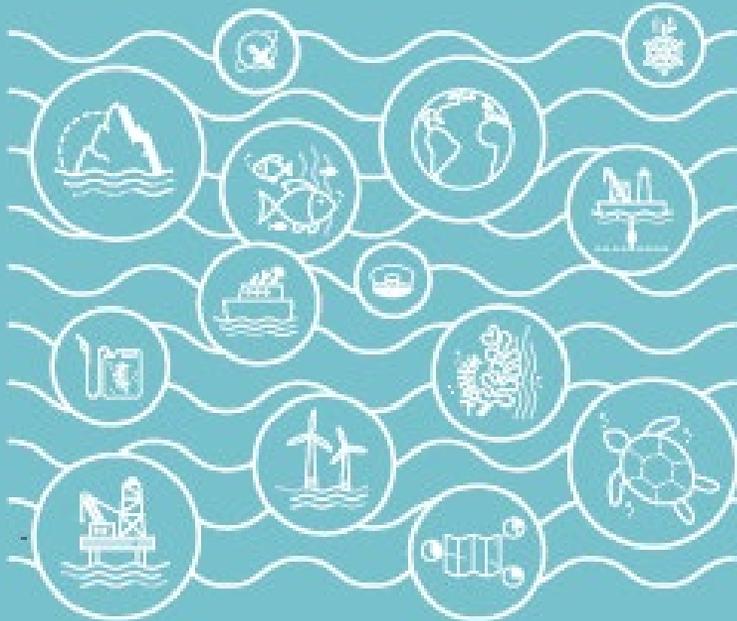
Developing a Consistent, Cross-Sector Approach for Assessing the Impact of Man-Made Materials, Objects, and Structures and Substances

(MMOSS)

on the Marine Ecosystem: LEGACY ISSUES

Foresight Future of the Sea

A Report from the Government
Chief Scientific Adviser



Taking Recommendations and Conclusions of Foresight: Future of the Sea Report as Core Messages

The sea is critical to planet Earth, and its future will fundamentally affect ours. Science and innovation have an important part to play in shaping that future. Science holds the key to understanding the impact of a changing marine environment, informing our response to it, while emerging technology brings opportunities to develop and stimulate economic growth, as well as improve our marine science capability. (Foresight Future of the Sea, A report from the Government Chief Scientific Advisor, 2018).

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/706956/foresight-future-of-the-sea-report.pdf

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Such an approach would address the current lack of coordination, which broadly manifests itself in four ways.

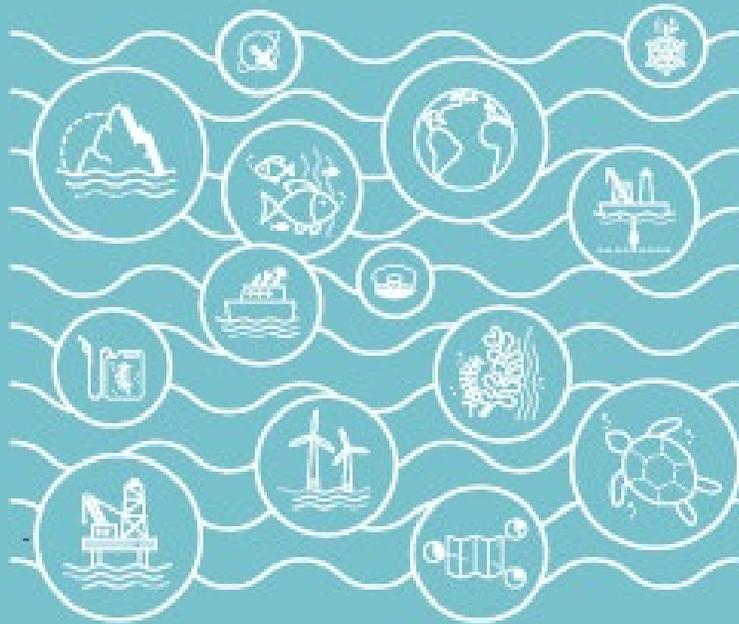
Within Government: Figure 37 demonstrates how, as a result of its broad scope, responsibility and interest for marine issues are shared across departments and within the devolved administrations. **This creates a significant risk of siloed thinking that is currently not addressed through any overriding strategy.**

Within Industry: The different sectors that make up the marine economy are extremely diverse, making full coordination both impossible and undesirable. **'Maritime' industries in particular have some join up; however shared issues around skills, infrastructure, legislation and technological innovation go beyond those industries, and the join up appears to be significantly less in general than it is for comparable sectors.**

Within Science: The UK has a Marine Science Co-ordination Committee which facilitates significant join up within the sector. **However, the sheer breadth of relevant disciplines means that opportunities are not necessarily capitalised on.**

Foresight Future of the Sea

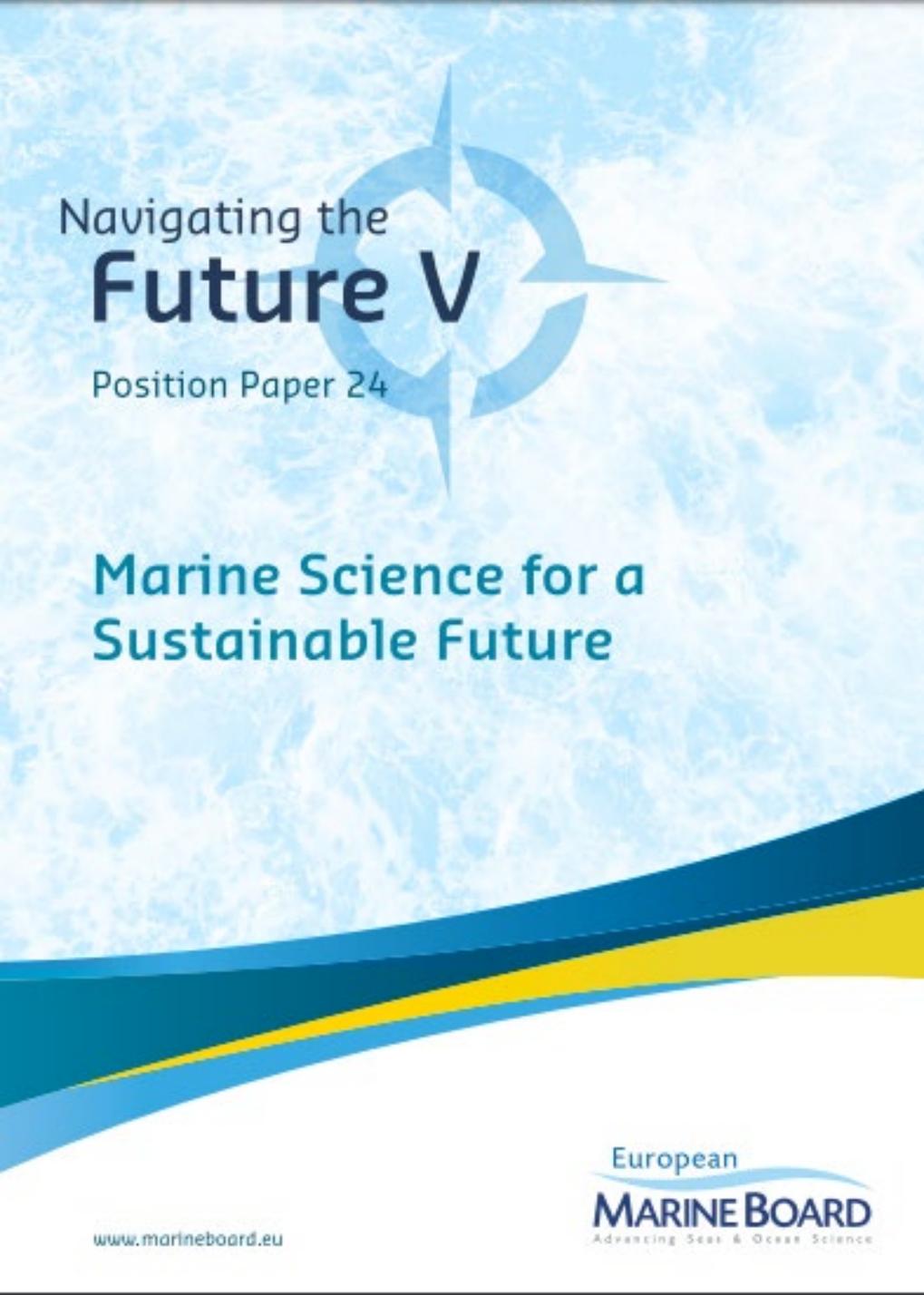
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Between Government, Industry and Science.

All three actors have common interests, and can work together to share data and other evidence. There is also an important communication aspect to this. Government has a role in signalling its priorities and needs, while better join up with science and industry can make the case to Government for policy action.

This is a good time to develop a strategic position.



Navigating the
Future V

Position Paper 24

**Marine Science for a
Sustainable Future**

Navigating the Future V (NFV) provides recommendations on the marine science required from now until 2030 and beyond.

The future we want requires a healthy ocean and the sustainable use of marine resources. However, the ocean is under threat from multiple interacting stressors.

Moreover, we are still developing the scientific knowledge base and technology to fully explore, understand, observe and predict the ocean and the effect of human activities.

NFV recommends a solution-oriented, transdisciplinary marine research agenda, co-designed with all stakeholders and with the governance of sustainability at its core. It should address the following key knowledge gaps and actions:



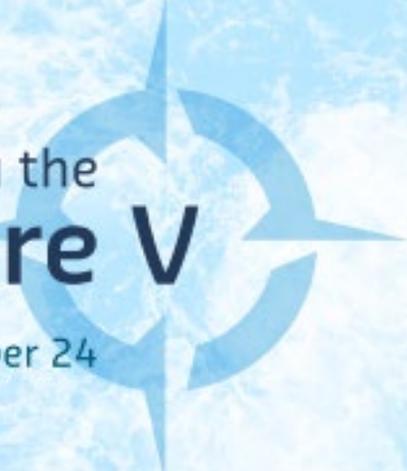
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Sustainable Future**

- **The four-dimensional ocean**

i.e. a three-dimensional volume that changes over space and time (as the fourth dimension). An interdisciplinary research program on ocean connectivity is needed including more knowledge of the functional links that connect the components of the marine system, i.e. physics, chemistry, biology, geology, ecology and humans. The four-dimensional structure and function of marine ecosystems should be better integrated into management and conservation practices;



Navigating the
Future V

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- **Multiple stressors (e.g. climate change, pollution, overfishing) and their impact on the functioning of marine ecosystems, including their interactions, evolution and adaptation over time.**

Models that include uncertainties and that help develop early-warning indicators for multiple stressors and tipping points should be used in combination with observations and experiments;

- **Climate-related extreme events and geohazards including marine heat waves, storm surges, meteotsunamis** and submarine earthquakes, landslides, volcanic eruptions and their associated tsunamis. We need to better understand their characteristics, probability, impacts and potential changes under climate change. An earlywarning system for these events that will include enhanced observations, modelling and forecasting is a priority;



Navigating the
Future V

Position Paper 24

**Marine Science for a
Sustainable Future**

- **Ocean technologies, modelling, data and artificial intelligence needed to understand, predict and manage human impacts on the ocean.** This includes the Ocean Internet of Things where nextgeneration ocean observations are transferred in real-time to communication networks combined with enhanced local data processing i.e. machine learning and artificial intelligence. A virtual reality ocean platform would enable all information to be uploaded and visible to the public in real-time. A key priority is the development of a business model ensuring the long-term economic sustainability of ocean observations that involves co-design with all stakeholders; and
- **Sustainability science for the ocean. A new generation of sustainability scientists needs to be trained to focus on a holistic vision of the marine ecosystem.** We need to establish a sustainability forum within Europe bringing together all actors including industry and civil society. Marine citizen science is a priority for enhancing public understanding of the ocean.