Delivering the Government's Maritime 2050 Strategy: the vision for science and innovation

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Chair: The Earl of Selborne GBE FRS
                               Vice-President, The Foundation for Science and Technology

Speakers: Roger Hargreaves OBE
                               Director of Maritime, Department for Transport
                               Sarah Kenny
                               Vice Chair, Maritime UK
                               Professor Ed Hill OBE
                               Executive Director, National Oceanography Centre

Respondents: Professor Susan Gourvenec, Professor of Offshore Geotechnical Engineering
                               and Deputy Director Southampton Marine and Maritime Institute, University
                               of Southampton   `
                               Liz English, Group Development Manager, Associated British Ports

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ROGER HARGREAVES described the purpose and highlights of Maritime 2050 – the Government's new strategy and plan for the UK maritime sector. The sector had slowly declined, albeit from a position of great strength, over the last century. The strategy responded in particular to the economic and maritime rise of the east, and to technological change and innovation.

The strategy covered competitive advantage, infrastructure, people, trade, security, the environment and technology. It set out core values: the UK as a premium maritime brand; the importance of a balance between prosperity, sustainability and security; a rules-based and global approach; and a partnership between government and industry. It made recommendations for the short, medium and longer terms.

The sector had been widely consulted in formulating the strategy, but it was not always as used to dealing with Government as a consequence of its strongly market-led approach. There was strong intra-sector competition in the UK, and there had been scepticism about whether a sector-wide strategy would be feasible or effective. However, with the help of an expert panel involving leaders from the sector and beyond, broad consensus had been reached.

The strategy included a major role for science and innovation. The UK was strong in maritime technology and innovation, particularly naval. Our academic base and thought leadership gave us a competitive advantage. There was a tendency to be drawn to ideas such as fully autonomous ships, but potential developments of the technology story for 2050 went much wider. Ports were becoming part of a wider end-to-end process, so could not be considered in isolation. Big data and digitisation would be increasingly important.

Developing the UK's regulatory framework so that it permitted new world-leading technologies to be developed, for

example using test beds, was an important part of the Government's approach. This would be permissive rather than prescriptive.

The value of the sea was also increasing for reasons other than being a means for transport – for example through seabed minerals.

In summary, the Government had set out its approach, in partnership with the sector, to keeping the UK at the forefront of maritime nations, and was determined to deliver on that.

SARAH KENNY reminded the audience that the maritime sector was worth £40 billion a year to the economy, and supported, directly and indirectly, 1 million jobs. 95% of UK trade was conducted by sea. The UK's record of innovation was impressive – for example the Plimsoll line, iron-clad ships, hovercraft and hydrofoils, as well as its approach to marine accident investigation. Our naval training had been widely copied overseas.

The challenges we faced were great – evolving trade policies, the changing roles of China and the USA, and of course Brexit. Responding to the challenges would require innovation, collaboration (including with Government) and adaptability. There were also big opportunities – the OECD forecast a doubling of the value of maritime activity by 2030. The UK industry was not as adaptable as it should be, and was not always well prepared to respond to disruptive developments.

In future ships would become smarter and there would be a greater degree of remote operation. Blockchain was likely to play an increasing role in connecting the players. Reducing maritime carbon emissions by 50% by 2050 was an essential outcome, which would require effective and sustained collaboration.

It was important to use new technology not just to drive efficiency, but also to gain strategic advantage. Maritime 2050 provided the opportunity for the UK to be a leading innovator in maritime science and technology. Mapping the seabed would offer new opportunities. We should also build on our expertise in autonomous vessels. The new virtual collaborative innovation hub MarRI-UK would be an important enabler, focusing on the mid-Technology Readiness Level range.

In conclusion, the sector should get behind Maritime 2050 in a collaborative way, in the process becoming more innovative and adaptable. This would enable it to thrive in a rapidly-changing world.

PROFESSOR ED HILL emphasised the critical contribution of science and innovation to all parts of the ocean economy, which represented 2.7% of the UK's GDP.

The natural capital tied up in the ocean was estimated to be at least $24 trillion. The ocean played an important role in many Government strategies, including the Industrial Strategy and 25 year Environment Plan as well as UKRI's strategy for research and innovation.

Maritime 2050 included a lot of discussion of innovation, and related recommendations, albeit the role of science and technology was sometimes more implicit than explicit.

The maritime sector was often perceived, including by Government, as low to medium technology, which did not help. The opportunities for innovation, both to develop new approaches and to improve productivity in existing ones, were many. The regulatory regime should both encourage innovation and use innovation itself.

To succeed, the private maritime sector needed to invest more in R&D. This would require greater collaboration, both within the sector and with academia and Government. It should also collaborate to build the skills base needed for the future.

Seabed mapping had great potential, exemplified by the opportunities thereby opened up in Anguilla. An important post-Brexit opportunity for the UK would be to join the Atlantic Ocean Research Alliance (AORA) alongside the USA, Canada and the EU.

In summary, more effort was needed to build the sector's research and innovation capability and effectiveness, working with UKRI and others.

PROFESSOR SUSAN GOURVERNEC welcomed Maritime 2050. She placed particular importance on the approaches to science and innovation, collaboration and people.

On science and innovation, we needed to look both at the opportunities offered by new S&I, and also at what the sector needed or might make use of.

Business leaders in the sector needed to be more collaborative. The new innovation hub MarRI-UK was an important opportunity. It was essential that academia were full partners in the collaborative approach – this was not always understood, even by Government.

On people, this had not been much addressed by the previous speakers, but if science and innovation were to enable the UK to lead the world in maritime activity

then there needed to be a plan to ensure availability of the right people with the right skills at the right time.

More generally, the sector was invisible to most of society, and the UK's academic maritime base was invisible to much of the sector. Better communications and marketing were needed.

Finally, the strategy would need extra investment from DfT, UKRI and other research and innovation funders.

LIZ ENGLISH agreed that having a long term plan was of importance, and that the people/skills requirements had been insufficiently emphasised in earlier presentations. She also agreed about the invisibility of the sector, for example in schools.

The Government should do more to ensure the research it funded was better aimed at the needs of the industry – not just autonomy but also safety, air quality and other things. There were still too many serious accidents. Approached innovatively and with the right support, the sector could also help solve some of the sustainable development challenges.

DISCUSSION

Among issues raised from the floor was the importance of leadership – the sector appeared disparate, and to spend too much time and energy competing within itself. As a result, for example, Intellectual Property was squandered. Other sectors had developed effective leadership models and the maritime sector should do the same. That would enable better working with Government, academia and internationally (including with the EU post-Brexit). It would also help ensure a joined-up approach to regulation, digitisation and data, and to seizing opportunities such as those from seabed mapping while minimising free-riding. Finally, it would enable better marketing of the sector in the UK and overseas.

It was pointed out that the south coast marine cluster outranked (for example) San Diego. This was not well known. Others suggested that the UK as a whole should be seen as a marine cluster. Either way the Government and others needed to focus investment on giving our marine cluster(s) better facilities and skills, as well as building UKRI's understanding of the case for funding maritime research and innovation.

It was also important for the sector to build more collaboration (in particular technology collaboration) with related sectors, and to influence parts of Government outside DfT. It was not generally realised in Whitehall that UK aviation was smaller than UK maritime. Nor was the sector sufficiently prominent in Ministers' minds when considering regional and political issues.

The UK's competitive position would be improved if it could find ways to fund engagement in international collaborations such as AORA – this challenge should be addressed by Government, UKRI and the sector.

On skills, it was not realistic to predict now the skills that would be needed in 2050. But the Maritime Skills Commission would review skills needs every five years and make recommendations. It would be important to promote maritime careers more effectively. Part of the challenge was to make ports more attractive places to live, as well as to ensure good onshore infrastructure (eg electrification, transport) and integration with local economic strategies. One option for better engaging the public might be through environmental issues associated with the oceans (eg plastics, healthy food). The other side of that coin was the need to ensure a social licence for maritime activities, eg seabed mining and arctic activities. It was suggested that the ambition to reduce maritime carbon emissions by 50% by 2050 was insufficient to deliver the Paris commitments. Carbon-free vessels would be needed long before then. One option might be to set a carbon price or levy for the sector.

It was proposed that Maritime 2050 would be a good case study of Whitehall's ability to create a strategy starting from a blank canvass. Control mechanisms and accountability for delivery, as well as working with other departments (particularly MoD and the Royal Navy) appeared to be key factors.

In conclusion, Maritime 2050 was welcomed, but to deliver value to the UK from it would require stronger leadership, a more collaborative approach with more and more intelligent investment.

Jeremy Clayton

Useful Reading:

Technology and Innovation in UK Maritime: The case of Autonomy
Department for Transport
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/773219/technology-innovation-route-map.pdf

Maritime 2050 - Navigating the Future
Department for Transport
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/772805/maritime-2050-executive-summary.pdf

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www.erafoundation.org

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www.crick.ac.uk

Government Office for Science
www.gov.uk/government/organisations/government-office-for-science

GSK
www.gsk.com

The Institution of Engineering and Technology IET
www.theiet.org

Knowledge Transfer Network
www.ktn-uk.co.uk

Learned Society of Wales
www.learnedsociety.wales

Lloyd's of London
www.lloyds.com

Lloyd's Register Foundation
www.lrfoundation.org.uk

Maritime London
www.maritimelondon.com

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www.maritimeuk.org

NESTA
www.nesta.org.uk

Office for National Statistics
www.ons.gov.uk

Rolls-Royce
www.rolls-royce.com

Royal Academy of Engineering
www.raeng.org.uk

The Royal Society
www.royalsociety.org

The Royal Society of Biology
www.rsb.org.uk

The Royal Society of Chemistry
www.rsc.org

The Royal Society of Edinburgh
www.rse.org.uk

Society of Maritime Industries
www.maritimeindustries.org

SPTS Technologies
www.orbotech.com/spts

The Alan Turing Institute
www.turing.ac.uk

UK Statistics Authority
www.statisticsauthority.gov.uk

Wellcome Trust
www.wellcome.ac.uk

Welsh Government
www.gov.wales

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