

Vessels of the Future Workshop

Wednesday 6th April 2022 | Glasgow

Meeting Report

Fuel prices and regulatory pressures are concentrating efforts to develop alternative methods of powering vessels and to support the fishing industry in contributing to climate change mitigation.

Though there is focus on reducing vessel emissions in the wider maritime sector, little has been explored through the lens of commercial fishing. This workshop took a first step towards ensuring that the Scottish fishing industry takes an active role in discussing pathways to reduce vessel emissions and help Scotland achieve its commitment to net zero.

Over 40 different experts attended the workshop, including Scottish skippers, naval architects, and seafood retailers, to discuss ways to help the industry reduce both emissions and costs, and how to make these changes a reality in ways that benefit the Scottish seafood sector.

Three key questions were:

- ***What alternative technologies are realistic in a Scottish context?***
- ***What adaptations are possible now, or may be possible in the near future?***
- ***What are the drivers of change and possible unintended consequences which could disadvantage particular fleet segments?***

Discussion

This section synthesises discussions that took place throughout the day.

Building a roadmap

There is the need to develop a **fuel transition roadmap**, which shows potential pathways, the roles of colleagues within the Scottish supply chain, and associated risks, covering the short, medium, and long term. A roadmap should establish a **vision for Scottish fisheries**, showing the journey different fleets aim to take. The roadmap should be led by industry and involve **collaboration** and **cross-sector input**. There should be reasonable incentives and viable pathways to enable businesses and individuals to confidently **take ownership** of the changes needed.

The pathway would be **transitional**. Early stages may focus on **increasing efficiency** through ‘quick wins’, such as more streamlined vessel shapes, more efficient gear, and propeller upgrades, whereas long-term solutions will require substantial investment.

The **fishing industry** needs support to drive change, at a pace and scale expected by customers, rather than simply waiting for infrastructure to develop. The formation of an **industry forum** that brings the industry together with all other stakeholders, including local and port authorities, could facilitate this.

A **baseline understanding**, shared by all stakeholders, is needed regarding the current policy and practical landscape and potential paths forward. For instance, **tailored vessel designs or prototypes suited to the Scottish fleets** would help the industry understand, and hopefully allay, uncertainties surrounding the practicalities of transition.

Other sectors provide inspiration for creating a roadmap, for example Scotland’s Climate Smart Agriculture Framework aimed to be a high-level ‘living’ document including representatives from across the supply chain, creating a framework for communicating with government and funders.

Finances and funding

There must be a **business case** for transitions, so that they make financial sense for the various Scottish fleets. All fuel alternatives are currently more expensive than diesel. To make transitions viable, **subsidies or other forms of support**, such as preferential lending rates or grant schemes, will be necessary. The possibility of fisheries management incentives, such as additional quotas or access opportunities for vessels investing in carbon reduction solutions, was suggested.

Clear **guidance and support** for the industry, especially the small-scale fleet, on what funding and incentives are available and how to apply will be crucial for equitable progress. Care should be taken to ensure funding schemes don’t encourage **concentration of ownership of quota** by only rewarding those with the immediate financial capital necessary to implement changes.

Funding streams should promote **long-term solutions, but also support more immediate, practical transitions**. Changes to funding should support businesses in understanding what is required of them and what is possible.

Funding should connect more coherently with **wider policy goals**. This will require **hard evidence** that changes supported by funding will be beneficial. This involves proofs of concept for vessels powered by fuels such as hydrogen, which could be achieved through pilot studies.

New builds represent only a small proportion of the fleet, so **retro-fitting** will be an important part of the transition. Vessels with **dual fuel use** are drawing increasing attention and are more resilient to price and availability fluctuations of certain fuels.

Coordination and collaboration

A range of solutions will be necessary. For instance, changes to shoreside infrastructure or fleets should be tailored to focus on different fuels depending on local characteristics. **Pre-competitive collaboration** between innovators could help inform these decisions by analysing optimal long-term strategies and addressing common supply chain challenges. This requires effective **ways to share knowledge**.

Rapid changes in vessel design and infrastructure run the risk of creating **skills deficits**, such as a lack of specialised engineers. There is a need to build **fishing literacy within carbon policy** and clean technology sectors, and **carbon literacy in the seafood sector**. This could be achieved via a national demonstrator programme, which would rely upon benchmarks being in place. Other industries such as **transport** also provide inspiration and require similar skillsets.

Port and harbour infrastructure needs to develop in parallel with vessel fuel transitions to avoid docking and other operational constraints. This also presents an opportunity to collaborate with **other Scottish marine industries** that could also benefit from local infrastructure change.

Regulatory measures must align with policy targets, to ensure they are not counterproductive. For instance, current restrictions on vessel length and power should be reviewed to reflect developing technologies.

Transition should be **co-designed with industry**. Collaborative work is needed to engage with Scottish fishermen and address their appetite and concerns surrounding fuel transitions. This will involve working with local councils, enterprise bodies, and academic institutions. In line with this, **research should adapt** to ensure it is presented in a way that the Scottish fishing industry finds valuable and compelling.

Policy change

There is a need for a **policy and regulatory framework** for technical measures to address the fuel transition. An **increasingly crowded marine space** makes compliance with legislation challenging, especially for the inshore fleet. This should be addressed when building policy instruments to facilitate change.

An **international standard** could help inform the building and retro-fitting of vessels using alternative fuels. This could exist alongside **standardised reporting** for carbon emissions from the fleet.

Governments at all scales have important roles to play in coordinating efforts across the supply chain. There are also opportunities for inspiration from **cross-industry efforts abroad**, such as in Norway and Canada.

All fleet segments should be accounted for. Setting a national or regional strategy runs the risk of bringing imbalanced benefits or costs to different segments. There is a need to **identify risks** for different segments, and address high-risk categories through supportive action.

As an alternative to funding, **other policy instruments** could steer change, such as 'rewarding' vessels that transition with additional quota or access opportunities. In other sectors, **product certification schemes** based on carbon emissions are likely to be used by retailers in the near future, which could help promote a premium price for fisheries products caught by low-carbon vessels.

Presentations

This section gives an overview of the presentations given on the day.

Session 1: Drivers of Change

Alistair Morris of **The Carbon Trust** spoke about how to drive vessel decarbonisation, highlighting projects involving low-emission vessels and infrastructure in ports. Recommendations for driving change included: support through forums to create momentum; increased data collection, shared with the wider fishing industry; harmonisation of standards for vessel emissions; breaking the infrastructure/vessel design stalemate; and promoting technologies to vessel operators. The development of a standard could be useful for reporting, certification, and creating pathways to support the Scottish fishing industry in reducing emissions.

Steve McLean from **M&S** spoke about the market perspective, including pressures from rising costs and increasing consumer and NGO focus on the sustainability of wild-capture fisheries. He emphasised that proposed changes to operating practices within the supply chain require a robust business case, and present an opportunity to look at co-investment opportunities for innovation and collaboration.

Vegard Hjelvik of **Skipsteknisk** spoke about their work designing fishing and research vessels with reduced energy consumption and alternative fuels. Drivers include regulatory and policy changes, expectations of innovation from buyers, capital directed towards green financing, and government subsidies. He noted design challenges regarding the energy density of fuels and limited availability of technology, but flagged that there was increasing adoption of alternative energy sources within the sector.

Oana Racu of **Marine Scotland** gave an overview of the Scottish Government's ambitious net zero targets, and Scotland's Fisheries Management Strategy 2020-2030 which has specific actions to support climate change mitigation. She noted that robust evidence was needed before developing concrete actions, which should draw on the expertise of the fishing industry to explore key challenges and overcome barriers. She pointed out that all industries must play their part in meeting net zero targets.

Session 2: Innovations and adaptations

Adrian Bartlett and **Jason and Kirstyn Munro** of **Ecomotus** introduced their pre-treatment system for fishing vessels that reduces emissions, increases air quality, and increases fuel efficiency. They said it provides a transitional solution, providing a 'bridge' between fossil fuels and renewable energy, to increase efficiency in the short term.

Robin Johansen of **Moen Marin** introduced their business as a leading supplier of hybrid and electrical vessels to the aquaculture and fishing industries. Their scalable 'eBox' provides battery capacity for diesel mechanic vessels as a fuel-saving investment, for instance by powering winches.

Chris Smith from the **University of Exeter** introduced Exeter's Centre for Future Clean Mobility and its work across the transport and maritime industries. He said the supply chain was adapting quickly in the transport sector, citing the government's Clean Maritime Plan as a useful example of a workable roadmap. He provided case studies indicating how different vessels can be best supplied with alternative fuels, and spoke about the Centre's powertrain test facility, a step up from simulations through demonstrating the real-world potential for clean propulsion.

Session 3: Supporting the transition

David Fenner of the **Maritime and Coastguard Agency** gave an overview of the safety and regulatory landscape for new fuels. He noted that regulations are based on current technology (diesel fuel) and are very prescriptive. New fuels have implications for crew safety, fuelling systems, and vessel design and stability, often not addressed in current regulations. The Maritime Future Technologies Team within the MCA is working on developing solutions to these challenges. He introduced two pathways to certification of emerging technologies: via MGN 664, or installation via exemptions.

Imogen Smith-Devey of the **Fishing Amateur Project** explained potential funding opportunities to support energy efficient fishing measures. The Marine Fund Scotland re-opens in May 2022, with likely targets to include a low-carbon blue economy. The UK Infrastructure focuses on the UK's net zero targets. The Fishing Industry Science Partnership Scheme aims to improve and share knowledge of fisheries through forging partnerships between fishermen and researchers.

Session 4: Fuel efficiency and radical solutions

Tom Rossiter of **Safety Net Technologies** spoke about how precision fishing can bring benefits for fuel efficiency, given that it helps fishing vessels catch only what they aim to catch. Examples for achieving this included underwater cameras, autonomous vehicles, and FIS' Smartrawl system, which uses Artificial Intelligence and a selective device operated in a demersal trawler that allows unwanted fish to be released in-situ underwater. He also indicated more radical solutions, including sail-propelled vessels.

Next Steps

The event built momentum and enthusiasm towards addressing the challenge of transforming the fishing industry to meet the low-carbon expectations of the modern world. Significant next steps for attendees to consider include:

- There is a need for **commitment and collaboration** throughout the entire Scottish supply chain and related sectors. A **seafood industry forum**, driven by the catching sector and fishing businesses, would act as a tool for enabling this. Such a forum should include government, local authorities and regulators, processors and buyers, and ports and harbours.
- Creation of a **roadmap**, led by a seafood industry forum, that details pathways for the sector and individuals to pursue in order to meet clear goals. This will involve constructive discussions to recognise a suitable **transition period**, including immediate innovations for the short term and more substantial changes for the long term.
- Supporting the modification of **regulation and policies** to support this roadmap and remove obstacles to progress.
- Creation of a **business case** for transition, through **finance and policy tools** that support those exploring alternative fuels and energy sources.
- Building the **evidence base** for both the current state of play and scope for future pathways.
- **Close collaboration with other sectors** to facilitate and inspire change, to include ports and harbours, other marine users, agriculture, and transport. **International collaboration** to co-develop solutions that can be applied globally.
- Ensuring **equity** in transition for all segments of the fleet, and ensuring the development and provision of **required skills** is supported.

In-Person Participants

- David Alexander, Unity Fishing
- John Anderson, Scottish Fishermen's Organisation
- Annabel Arbuthnot, Marine Scotland
- Barbara Berx, Marine Scotland
- Duncan Boag, Macduff Ship Design
- Kara Brydson, Fisheries Innovation Scotland
- David Donnan, NatureScot
- James Duthie, Sunbeam Fishing
- David Fenner, Maritime and Coastguard Agency
- Alison Freeman, Fishmongers' Company
- John Goodlad, Chairman of Fisheries Innovation Scotland Board
- Rick Haley, Clearwater Seafoods
- Marc Hamel, Macduff Shellfish
- Vegard Hjelvik, Skipsteknisk
- Matthew Hurst, Seafood Scotland
- Keith Lohnes, Clearwater Seafoods
- Duncan MacInnes, Western Isles Fishermen's Association
- Douglas McKie, Maritime and Coastguard Agency
- Helen McLachlan, RSPB

- Stuart McLanaghan, Seafish
- Steve McLean, M&S
- Alistair Morris, The Carbon Trust
- Mike Park, Scottish White Fish Producers Association
- Oana Racu, Marine Scotland
- Tom Rossiter, Safety Net Technologies
- Imogen Smith-Devey, Fishing Animateur
- Graham Smith, Moen Marin
- Chris Smith, University of Exeter
- James Stephen, Skipper
- George West, Macduff Shellfish
- Daniel Whittle, Whitby Seafoods

Virtual participants

- Adrian Bartlett, Ecomotus EcoPro Ltd
- Mike Bell, Heriot Watt University
- Hannah Fennell, Orkney Fisheries Association
- Robin Johansen, Moen Marin
- Cameron Moffat, Young's Seafood
- Ian Paton, Parkol Marine Engineering and SC McAllister & Co.
- Elaine Whyte, Clyde Fishermen's Association

Our Members

