

“Decarbonising the marine sector: Progress and Aspirations”

Even during CoVid times, the shipping sector has been responsible for 80-90% of global trade, globally employing millions, and is aptly described as the "lifeblood of the global economy". However, one downside is that, even though shipping is a cost-effective and low carbon-intensive mode of transport, it accounts for more than 900 million tonnes (or 2-3%) of annual global GHG emissions (and large amounts of sulfur emissions). The BC-SMART and IEA Bioenergy Task 39 networks were able to recruit five leaders who work in the global marine sector to discuss how a more sustainable marine sector might develop from the perspective of a major port, a leading shipping company, a sustainable fuel producer and a biomarine fuel innovator.

Peter Lister, Vice President- Commercial Services, [Seaspan](#)

Peter Lister (Seaspan Marine) moderated the panel discussion. Seaspan Marine is the largest, integrated marine company in western Canada and operates three shipyards, a fleet of tugboats and ferries. As well as recently purchasing two LNG-battery electric hybrid ferries with two additional vessels scheduled to be delivered in 2021, Seaspan is exploring the possible use of low-carbon intensive biofuels for its existing diesel-powered fleet. The company is also developing new battery-electric tugboats, the first of their kind in Canada.

Christine Rigby, Senior Air Quality and Climate Specialist, [Vancouver Fraser Port Authority](#)

Christine described the complexity of decarbonising the marine sector. Christine stressed the importance that all of the stakeholders try and work together, partly due to its global, interconnected nature and the magnitude of the shipping trade. The Vancouver Fraser Ports Authority has a 3-pronged approach to reducing its environmental footprint. This includes, a) periodic, port-wide air quality and GHG emissions inventories (every 5-years), b) working together locally and internationally, and c) promoting sustainable fuels and technologies. Emission inventories indicate that the Port of Vancouver has successfully reduced air pollutant emissions despite steady growth in trade. This is primarily a result of regulatory measures such as North American Emission Control Area regulations and Canada's cleaner, low sulfur diesel requirements. However, in contrast, the total GHG emissions have increased. To address this challenge the port partners with other ports in programs such as the Northwest Ports Clean Air Strategy, World Ports Climate Action Program and the Getting to Zero Coalition. The [Port of Vancouver's EcoAction](#) program also incentivises vessels by awarding discounts to those “clean” vessels which call on the port and has created the "bluecircle Award". Other initiatives include, the International Collaboration on Ship Emission Reductions which taps into BC's “green” hydro-based electricity supply to provide greener shore power, the MARitime HYdrogen SAFETy project to address regulatory and approval barriers related to fuel hydrogen and a project with Wartsila on 95% biodiesel-LNG dual-fuel engines.

Lee Kindberg, Director – Environment and Sustainability, [Maersk](#), North America

Maersk's sustainability strategy involves both shared-value projects and responsible business practices. As part of their shared-value projects, Maersk helps their clients decarbonise shipping logistics. The company is committed to net-zero CO₂ emissions from their entire fleet of 750 vessels by 2050. As these ambitious targets require the first carbon-neutral vessels to be in operation by 2030, and considering the times involved in ocean-going vessel design and commissioning, effective decarbonisation strategies are

urgently needed. Lee stressed the need for new renewable fuels, carbon-neutral vessel design, carbon-neutral products and a supportive regulatory framework. [Maersk's Eco Delivery](#) program currently offers biofuel-based carbon-neutral transport to customers such as H&M, Heineken and Philips. In collaboration with the University of Copenhagen, Maersk is also supporting biofuels-for-shipping research and development. The company also promotes cooperation across the entire carbon-neutral fuel value chain through the Maersk Mc-Kinney Moller Center, a non-profit foundation.

Dirk Kronemeijer, CEO and Founder, [GoodFuels](#) and the [GoodShipping Program](#)

Dirk underscored the rapid growth of the marine biofuels market in the last few years. This is primarily due to demand growth driven by government regulatory programs and the voluntary uptake by ship owners. On the supply side, marine biofuels have several advantages, including lower production costs (compared to biojet), easy drop-in and improved environmental impacts. He expects marine biofuels to grow substantially over the next ten years. The GoodFuels' marine biofuel program began in 2015 with entry into the market with Bio-MGO (marine gas oil). Today the company offers both Bio-MGO and Bio-HFO (heavy fuel oil) and has over 100 permanent customers, including Boskalis, Port of Amsterdam, NYK, and Stena Bulk. Dirk described how the IMO's sulfur caps have helped reduce the price differential between fossil marine fuels and biofuels. He highlighted the importance of the EU and North American policy environment in driving marine biofuels' growth. He emphasised that GoodFuels monitors sustainability across the complete value chain, including the feedstock supply. The company is optimistic about the scale-up potential of marine biofuels with feedstocks transitioning from residues such as used cooking oil to biomass and later to lignin. The [GoodShipping](#) program, similar to Maersk's Eco Delivery program, offers cargo-owners climate-neutral shipping at a minimum premium. It has been adopted by companies such as IKEA and BMW and the program continues to grow.

Dayne Delahoussaye, Senior Advisor – Public Affairs, [Neste](#)

Dayne described how Neste's vision is to create a healthier planet for future generations by embracing renewables and circular economy principles. He reminded us that the Paris Agreement's aggressive climate goals require us to reduce global emissions by 50% every ten years. He stressed the urgency to act now. He noted that nations, regions and cities are taking steps to align the Paris goals with their own climate targets and action plans. He used Sweden, Finland, California, British Columbia, London and Berlin as examples and how these jurisdictions consider renewable low-carbon liquid fuels to be part of their energy mix. Neste's approach is to use renewable and recycled hydrocarbons to produce fuels, polymers, and chemicals. Although Neste is currently using waste oils and fats as its predominant feedstocks, the company hopes to use recycled waste plastics, lignocellulosics, algae and power-to-x, etc., to scale-up their fuel supply. For example, Neste is working with McDonald's and HAVI to provide circular economic solutions, such as converting used cooking oil from McDonald's into Neste MY Renewable Diesel. This will be used to power HAVI trucks that deliver goods to McDonald's. Other projects included supplying the City of Oakland with renewable diesel fleet and FINNAIR with Sustainable Aviation Fuel.

Summary

The panel discussion highlighted several issues. The marine sector is large (both in terms of trade volumes and monetary value), comprising an interconnected, transborder value chain. Thus, the active participation of all the sector members will be essential, if the sector is to effectively decarbonise. Key players, including the panelists' organizations, are making significant efforts to decarbonise through

collaborative projects with the participation of multiple stakeholders. Biofuels will play an important role in decreasing sector emissions and continuing, significant progress is anticipated. However, some challenges are also anticipated, such as the limited volumes of sustainable feedstocks that are/will be available, the costs of feedstock and overall logistical challenges. It was recognised that strong policy support will be needed to incentivise and de-risk decarbonisation efforts in the marine sector.