



Statement of

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Maersk

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Transportation

on

Practical Steps Toward a Carbon-Free Maritime Industry: Updates on

Fuels, Ports, and Technology

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Chairman Carbajal, Ranking Member Gibbs, and Members of the Subcommittee, thank you for the invitation to testify today.

Maersk is a world leader in logistics and has long been committed to environmental leadership. We are headquartered in Copenhagen Denmark and our North American



Headquarters is in Florham Park, New Jersey. We operate over 700 container vessels globally under brands including Maersk, SeaLand, Hamburg Sud, and Svitzer ocean-going tugs. Here in the US, Maersk Line, Limited is the owner and operator of our U.S. Flag vessels and the largest participant in the U.S. Maritime Security Program. On the land side we have APM Terminals (our marine terminal operating arm), and other supply chain logistics facilities in the United States and globally.

We are committed to ensuring that our business practices are safe, responsible and transparent. This year the urgent priorities of the pandemic have kept us busy, however sustainability remains at the top of our agenda. We see increasing expectations from all stakeholders, and especially our customers, investors, governments and employees – expectations that we and our industry deliver more solutions, more visibility and more help in decarbonising supply chains. Our goals, strategies and progress are discussed in our annual Sustainability Reports, available on our website¹.

The shipping industry emits 2-3% of the world's anthropogenic CO₂ and shipping is the only industry to have set global metrics and goals on energy efficiency, greenhouse gas emissions and other pollutants such as sulfur. These air emissions are produced by fuel consumption in our ships' very large diesel engines, and include both Greenhouse

¹ Maersk's annual Sustainability Reports are available on our website at <https://www.Maersk.com/en/business/sustainability>.



gases (GHG, primarily CO₂, which is sometimes referred to as "carbon" or "carbon footprint") and criteria air pollutants (SO_x, NO_x, fine particles).

Maersk alone emits approx. 0.1% of global anthropogenic CO₂, so decarbonization is a cornerstone in our sustainability strategy. Our first focus is on ocean transport, which is the source of 98% of our "Scope 1 emissions." Decarbonization goals will be extended to our marine terminals and other logistics services and transport modes over the coming years.

Reducing fuel consumption does reduce operating costs and also reduces emissions of both greenhouse gases and other pollutants. In the last twelve years Maersk has reduced our fuel consumed and related emissions by 47% per container moved. This energy efficiency improvement was achieved in three primary ways: new larger vessels, retrofits of our existing vessels, and improved operational and vessel management practices. Our Radical Retrofit program involved investing \$1 Billion over 5 years starting in 2015. We continue to mature, harden and implement the "Connected Vessel" digitalization project to connect our fleet digitally with our global operations coordination centers and enable real-time optimization to reduce fuel consumption and related emissions.

In December 2018 Maersk announced a goal of Net Zero Carbon Shipping by 2050.

That commitment included launching our first zero carbon vessel by 2030 and



continuing our energy efficiency work with a 2030 goal of a 60% reduction in emissions vs. 2008.

Just two years after setting that net zero ambition in December 2018, we find we have come further than we imagined possible at that time. In 2018, a 2050 net zero ambition for shipping was a moonshot goal. Today, we see it as a challenging target, but clearly possible to reach.

A prerequisite for Maersk to meet the Net Zero 2050 target is radical innovation in technologies and fuels. We have openly recognized the need for close collaboration with external stakeholders such as technology and fuel providers, researchers, investors, governmental officials and staffs, and especially our customers to meet the target. We plan significant future investments, including further energy efficiency work, alternative fuel development, and the technologies needed to build zero carbon vessels.

A First Carbon Neutral Vessel

In March of this year we announced that our first carbon neutral container vessel will be operational by 2023. This has been made possible by the advances in technology, our strategic commitment to sustainable practices and the active support of our partners and stakeholders. Powered by biomethanol or e-methanol, this feeder vessel will pilot an industry-first, scalable carbon neutral product. This is encouraged by the strong



support and commitment by our customers to keep accelerating the full transition to decarbonisation.

This first vessel will give valuable operational experience, help accelerate our journey, demonstrate real demand to fuel suppliers, and provide a scalable, carbon neutral option for customers. We believe our commitment to put the world's first carbon neutral liner vessel in operation by 2023 is the best way to kick start the rapid scaling of the carbon neutral fuels needed, since the limited supply of green methanol is a bottleneck for decarbonising the industry.

Action on Zero emissions shipping

Maersk is already engaged in several innovation projects and is significantly scaling up our innovation efforts. Currently we have more than 50 engineers in our technical innovation departments who focus primarily on reducing fuel consumption, and we are hiring more as we speak to broaden our efforts. At this point we are not ruling out any technological options and the innovation work covers many areas including the following:

1. Continue our **cutting-edge fuel efficiency efforts** such as retrofitting existing vessels with new technologies and setting new standards on fuel efficiency when we order new vessels. Maersk does not purchase standard vessels; we



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- always optimize designs, with close collaboration between our technical experts and the shipyards.
2. **Electrification.** We installed a major marine battery on a vessel in 2020 to learn how this technology might be useful on a vessel and to drive further development on the technology. We also now connect vessels to shore power in California and China, allowing us to operate in port without emissions.
 3. **Research in new alternative fuels.** We have a range of programs exploring new marine fuels, including several programs related to biofuels. Examples include:
 - **Biofuel-based ECO-Delivery:** A pilot voyage with 4 major customers in April-May 2019 used renewable biofuel blends made from used cooking oils on an Asia-Europe roundtrip to prove applicability and test commercial opportunities. This successful trial led to a new carbon neutral shipping service called “ECO-Delivery,” which has grown even more quickly than we had hoped and continues to attract new major shipping customers.
 - **Lignin Ethanol Oil (“LEO”) biofuel:** Maersk, together with a coalition of US-based and international customers and in collaboration with the University of Copenhagen, has establishing a new sustainability innovation project to develop a biofuel tailor-made for shipping (LEO). This biofuel does not



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exist today but has the potential to have significant positive impact on CO₂ emissions as well as other air emissions from shipping.

The concept is to blend bio-based ethanol with the biopolymer lignin (a by-product of agriculture, paper making and wood-products production) to form a new relatively inexpensive biofuel with high energy content. The LEO biofuel should be a sustainable fuel meaning that it is: 1) Made from waste/by-products not competing with food uses – a 2nd generation biofuel, 2) Should be CO₂ neutral, and 3) is economically feasible and price competitive with conventional fuels (or only small price premium).

The current objectives of the LEO project are to confirm the feasibility of the fuel, test it on a vessel, and make it commercially feasible for uptake in the shipping industry.

- In the fall of 2020, the Maersk Mc-Kinney Moller Center for Zero Carbon Shipping was established by seven companies including Maersk, with the intent of accelerating development of the technologies and fuels needed to for carbon neutral shipping in the time frame needed.

The Need for Strong Regulations, Global Standards and Enforcement

Wise fuel choices depend on having global metrics and goals, and clear standards for how to measure, report and verify the full impact of fuels and operations. These metrics need to include the full suite of GHG – CO₂, methane and nitrogen oxides – as well as



the upstream and downstream impacts of fuel extraction, production, delivery and use. Global standards are strongly needed in this area to enable clear comparisons and impact assessments. And in this rapidly changing field, performance-based standards are needed rather than attempting to choose winners among the new fuels and technologies.

The importance of enforcement is illustrated by the recent implementation of IMO's 2020 fuel rule. As of January 2020, all ships were required to reduce their sulfur oxide emissions by over 80%. This was a major transition and the vast majority of the global fleet (including Maersk vessels) has complied by switching to more expensive low sulfur fuel. This comes at a very steep price; for Maersk alone, the additional bill was estimated to be around \$2 billion per year. The very large potential savings by non-compliance show the importance of strong enforcement. For example, a vessel trading from Asia to Europe could "save" close to \$750,000 USD per ship per voyage by ignoring the IMO2020 rules. Companies rely on good enforcement to provide the "level playing field" necessary for competitiveness and environmental progress.

The same strong enforcement concepts will need to be fundamental components of any climate-related programs. When developing climate programs at the national and international level it is of utmost importance that mechanisms are in place to ensure that international competition is not disrupted and that first movers are rewarded for early investments into emissions reducing technology.



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In closing let me reiterate that the changes required to achieve carbon neutral shipping will not be easy or inexpensive, either on the vessel side or the land-based fuels infrastructures. However, we believe it can and must be done. Massive innovative solutions and fuel transformation will be required to produce and distribute entirely new energy sources. Regulatory changes and standards development are also needed on a global scale to enable this transformation.

Members of the Subcommittee, thank you again for the opportunity to discuss this important topic with you today. I will be happy to answer any questions.

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Potential carbon-neutral fuels

