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Statement of

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Before the

House Subcommittee on the Coast Guard and Maritime Transportation

on

The Path to a Carbon-Free Maritime Industry: Investments and Innovation

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Chairman DeFazio, Chairman Maloney, Ranking Member Gibbs, and Members of the Committee, thank you for the invitation to testify today.

Maersk is the world's largest container shipping company and has long been committed to environmental leadership in our operations. We are headquartered in Copenhagen Denmark and operate over 700 container vessels globally, as well as our APMT marine terminals, Svitzer ocean-going tugs, and other supply chain logistics facilities in North America and around the world.

Maersk is committed to ensuring that our business practices are safe, responsible and transparent. Our vision and priorities are discussed in more detail in our Sustainability Reports, available on our website at https://www.Maersk.com/en/business/sustainability.

Our global Sustainability Strategy identifies four key sustainability priorities, our Shared Value Programs:

1. Decarbonizing logistics,
2. Contributing to halving food loss,
3. Helping to multiply the benefits of trade in developing regions,
4. Leading change in the global ship recycling industry.

Our most significant environmental impact is the air emissions produced by fuel consumption in our ships' very large diesel engines. These include both

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Greenhouse gases (primarily CO_2, often referred to as "carbon") and criteria air pollutants (SOx, NOx, fine particles).

The shipping industry emits 2-3% of the world's anthropogenic CO_2 and is the only industry to have set global metrics and goals on energy efficiency, greenhouse gas emissions and other pollutants such as sulfur.

Maersk alone emits approx. 0.1% of this CO_2, 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 reduces operating costs and also reduces emissions of both greenhouse gases and criterial pollutants. In the last decade Maersk has reduced our fuel consumed and related emissions by 42% 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.

In December 2018 Maersk announced a goal of Net Zero Carbon Shipping by 2050. That commitment means we are working to launch our first zero carbon vessel by 2030. We are also continuing our energy efficiency work with a 2030 goal of a 60% reduction in emissions vs. 2008.

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 providers, investors, legislators and especially our customers to meet the target.

Investments

We are approaching full implementation of the Radical Retrofit program, a $1Billion investment commitment over 5 years started in 2015. We also continue to make significant progress on maturing, hardening and fully implementing the "Connected Vessel" digitalization project. This program is connecting our fleet digitally with our global operations coordination centers and enables real-time optimization of operational conditions to reduce fuel consumption and related emissions. These programs are successfully delivering increased efficiencies and reduced emissions.

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Maersk's recent announcement of Net Zero Carbon emissions by 2050 comes with significant plans for future investments, including further energy efficiency work, alternative fuel development, and the technologies needed to build zero carbon vessels.

Action on Zero emissions shipping

As an industry leader Maersk feels a great responsibility to do our part to fight climate change and reduce our impacts significantly. Significant innovative solutions must be developed and start to be implemented by 2030 in order to meet the goal of net zero carbon emissions by 2050 from our vessel operations.

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 always optimize designs, with close collaboration between our technical experts and the ship yards.

2. **Electrification**. We are preparing an installation of a major battery on a vessel during 2020 to learn how this technology might be useful on a vessel and to drive further development on the technology. Our work in this area will increase significantly going forward. 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 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 was conducted together with 4 major customers. This success led to a new Net Zero Carbon shipping service called "ECO-

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Delivery." The first commercial voyage including ECO Delivery shipments is currently on the water.

- 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 exist today but has the potential to have significant positive impact on CO_2 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 CO_2 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.

The need for strong enforcement of climate and air emissions rules

As of 1 January 2020, all ships had to cut their SOx emissions by over 80%. This has been a major and comprehensive transition and the vast majority of the global fleet (including Maersk vessels) has done so by switching to low sulfur fuel. This comes at a very steep price; for Maersk alone, the additional bill is estimated to be around $2 billion per year. Maersk fully supports the IMO2020 Regulation and will naturally respect it.

However, given the very large potential savings by non-compliance, we would like to emphasize the need for strong enforcement and adequate fines to deter non-compliance. Such fines should as a minimum cover the total amount saved by non-compliance including the part of the voyage on the high-seas. 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 to secure 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 paraphrase one of our senior leaders who stated that the main challenge in the transformation to low or zero emissions shipping is not at sea but on land. The technological changes inside the vessels are minor compared to the massive innovative solutions and fuel transformation that must take place to produce and distribute entirely new energy sources.

Thank you again for the opportunity to provide this input.

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