



lower carbon marine fuel and lubricants

why it matters

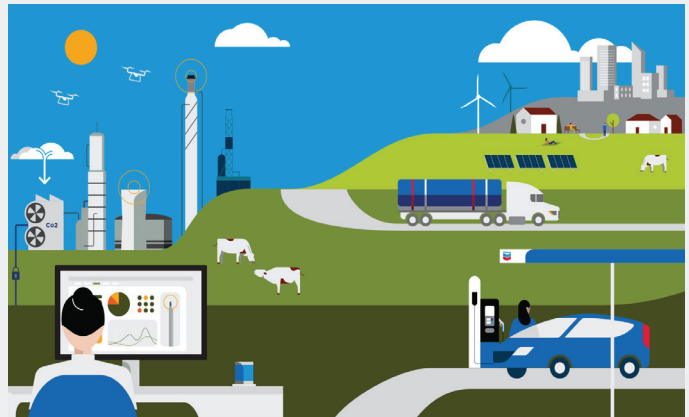
decarbonizing marine fuel and lubricants provides a lower carbon solution for the marine industry

our perspective

Advancing a lower carbon future

Our strategy is straightforward: Leverage our strengths to deliver lower carbon energy to a growing world.

As part of our higher returns, lower carbon objective, we are complementing the strength of our traditional products business with new offerings that will help our customers take action to support a lower carbon future. Renewable fuels are important products that can help reduce the life-cycle carbon intensity of transportation fuels while meeting the world's growing energy needs and are an essential part of portfolio of solutions.



Lower the carbon intensity of our operations and grow lower carbon businesses

regulatory perspective

The International Maritime Organization, or IMO, is the United Nations agency responsible for safe, secure and environmentally sound ocean shipping. IMO is the main organization driving the decarbonization of international shipping, with an initial greenhouse gas (GHG) strategy to achieve the following reductions vs. 2008:

- Reduce carbon intensity by equal to or greater than 40% by 2030
- Reduce carbon intensity by equal to or greater than 70% and 50% absolute reduction of annual GHG emissions by 2050

Regional initiatives and regulations will also shape decarbonization of international shipping. For example:

- Inclusion of Shipping into European Union Emission Trading Scheme (EU ETS) effective 2023
- Collaboration across port organizations in major bunker hubs (Singapore, Rotterdam and Japan) through Future Fuels Network to drive adoption of clean marine fuels in support of decarbonization

Chevron's point of view (CPOV) for the marine industry recently assessed various pathways to lower shipping emissions through transitions in both fuel and propulsion technologies, leading to identification of actions and opportunities for Chevron to participate in the marine industry's lower carbon future. The CPOV will be continually refreshed to reflect the latest information.

market observations

- Shipowners play an important role in the speed of decarbonization, with several of the largest shipping companies setting targets more ambitious than IMOs. For example, one company has set the target to have net-zero CO₂ emissions from its operations by 2050, with a 60% relative reduction in CO₂ emissions by 2030.
- Original Equipment Manufacturers (OEMs) move in line with shipowners' targets, with several of the major OEMs planning to produce or improve engines that help reduce CO₂ emissions.
- The decarbonization effort of shipowners and OEMs has numerous implications on Chevron's existing businesses, including Manufacturing, Supply & Trading, Shipping, Oronite, Lubricants and Chevron New Energies.

our planned actions



Work with shipowners on opportunities to reduce carbon emissions



Explore pathways to support the marine sector's decarbonization ambitions



Develop capabilities to meet the evolving needs of the marine sector

Why decarbonizing the marine industry matters

Maritime shipping currently emits 2% to 3% of the global GHG. According to the IMO, shipping emissions could increase between 50% to 250% by 2050 under a business-as-usual scenario. Scientists have projected that, if unmitigated, shipping could account for 17% of global emissions by 2050.

The Marine CPOV identifies liquefied natural gas (LNG) as the short-term lower emission fuel, while several alternative fuels are candidates to meet the IMO 2050 target. Ammonia appears most promising at this stage. As for propulsion technology, the internal combustion engine remains dominant until 2050.

The combination of alternative fuels and more efficient engines can help the shipping industry lower its CO₂ emissions significantly.



The communications antenna and a view of Ise Bay at dusk as the *Asia Excellence* delivers its first cargo of LNG from Gorgon to foundation customer Chubu Electric Power Company's Kawagoe Thermal Power Station in Kawagoe, Mie, Japan on April 5, 2016.

Working with Marine Industry Organizations

As an initial step in meeting the IMO 2050 goal, Chevron has partnered with various organizations to shape the decarbonization pathway for the marine sector.

Chevron has joined the Getting to Zero Coalition, an alliance of more than 150 companies of different sectors, committed to getting commercially viable deep-sea vessels powered by zero-emission fuels into operation by 2030.

Chevron is also a member of the Oil and Gas Climate Initiative (OGCI), International Petroleum Industry Environmental Conservation Association (IPIECA), Oil Companies International Marine Forum (OCIMF) and the Chamber of Shipping of America (CSA), which all seek to shape regulations for emissions reduction.

Chevron Shipping Company has joined the Sea Cargo Charter, a benchmark initiative for responsible shipping activities, transparent greenhouse gas reporting and improved decision making in line with the United Nations decarbonization targets.

plans for higher returns, lower carbon in the marine sector

- Prepare Chevron's marine activities to comply with IMO's adopted regulation on GHG reductions to sustain uninterrupted distribution of Chevron's products globally
- Leverage areas where Chevron has competitive advantages to achieve higher returns through lower carbon initiatives in hydrogen, carbon capture, utilization, storage and offsets
- Work with industry partners around R&D, demonstration and deployment of emerging technologies to advance the decarbonization efforts in the marine industry