

Scene setter

- You will meet [REDACTED] Rolls-Royce, to discuss the current challenges in the Marine Industry and inform him about FuelEU Maritime, which is relevant for Rolls-Royce maritime business.
- The proposal of the European Commission for a Regulation (FuelEU Maritime) on the use of renewable and low-carbon fuels in maritime transport was published on 14/07/2021 as part of the Fit for 55 package.
- The initiative complements existing rules on renewable energy supply and alternative fuels infrastructure. The aim is to build a common EU regulatory framework that addresses all relevant aspects of fuel demand, production and distribution, to increase the use of cleaner energy and at the same time maintain the competitiveness of the maritime sector.

Objective(s)

- Ask Rolls Royce's views on the most promising technologies for low emission maritime transport and on current trends in the marine equipment industry.
- Obtain Rolls Royce support to COM initiative on FuelEU maritime.
- Call for engagement in the technical discussions that will be needed to draw up the delegated acts of FuelEU, once approved.

Key Messages

- The European Commission proposes the FuelEU Maritime Regulation to create a minimum (but increasing) level of demand for renewable and low-carbon fuels (RLF) in the maritime transport sector.
- The FuelEU Maritime proposal introduces requirements on ship operators to reduce gradually the yearly average greenhouse-gas intensity of the energy used on board ships. It also requires container and passenger ships, to use onshore power supply (OPS) or, in alternative, zero-emission technologies, when they are in ports.
- The initiative respects the principle of technological neutrality and does not promote any specific fuel/solution. Comparison between fuels are made taking into account all the main greenhouse gases (CO₂, methane and nitrous oxide) emitted well-to-wake.

- Operators will be free to decide which is the best combination of fuels and energy converters (being these engines, fuel cells, batteries, etc.) that works best for them.
- We expect engine manufacturers to also engage in this challenge for technological solutions that are best suited to the different needs of the various maritime transport activities (ferries, cruises, deep sea vessels, etc). We hope to see EU manufacturers at the forefront of these developments.
- FuelEU Maritime would set stable and long-term objectives (2025-2050) in terms of GHG targets, providing a frame for the industry to work and adapt.
- Safety remains at the core. The phase-in of new energy sources should be safety assessed. The role of the industry is key in that respect, both at European and international (IMO) level.
- Finally, we hope to be able to rely on Rolls Royce's expertise and contributions in the forthcoming implementation work of the FuelEU initiative, also with particular regard to assessing engine's performance with respect to fuel slip emissions (methane and nitrogenous oxide).

Defensive Points

Why is a proposal like FuelEU Maritime necessary? Why not relying on the ETS to provide the single framework for emission reductions in Europe?

- The current carbon price in ETS, and its expected evolution, will encourage further effort on energy efficiency, but will not be sufficient to provoke a switch from fossil to renewable and low-carbon fuels and the roll-out of related investment, at least for another decade.
- The transition to cleaner fuels requires long lead times and cannot be delayed. The FuelEU Maritime Regulation will initiate this transition by requiring specifically the use of renewable low-carbon fuels in the maritime sector, in an initially small, but gradually increasing proportion.

Why does FuelEU Maritime focus on demand rather than fuel supply?

- Ships can bunker where they want and travel long distances on a single tank. For this reason, ships bunkering in third countries are likely to circumvent any measure focusing solely on fuel supply in the EU. This would translate in massive carbon leakage.
- To guarantee avoid carbon leakage, we must therefore put requirements on fuel demand. Nevertheless, the aspects of fuel supply and fuel distribution are also addressed in the Fit for 55 package through proposal for revision of the Renewable Energy Directive (fuel supply) and the Alternative Fuel Infrastructure Directive (fuel distribution).

What types of fuel will FuelEU Maritime incentivise?

- The proposal requires the reduction of the greenhouse gas intensity of the energy used by ships and is therefore technology neutral. It accommodates all sustainable alternative fuels in maritime transport. These include: liquid biofuels, e-liquids, decarbonised gas (including bio-LNG and e-gas), decarbonised hydrogen and decarbonised hydrogen-derived fuels (including methanol and ammonia) and electricity. On the other hand, biofuels of first generation are not considered sustainable and are treated like fossil fuels.
- By leaving the choice of fuel to market actors, we expect some variety in the technology mix, to accommodate for different types of businesses and operating conditions. This would have the advantage of not creating dependence on a single feedstock and of stimulating further research in multiple fuels and technologies.
- The proposal includes the possibility to pool results of different ships and reward those that have gone beyond the target through use of advanced technologies, such as those based on renewable hydrogen. The proposal also requires big emitters to use on-shore power supply in ports or alternative zero-emission technologies, which could also encourage fuel cells and hydrogen-based fuels.

Why does the FuelEU maritime initiative promote existing technologies such as LNG which are not a long-term solution to decarbonisation?

- We do not foresee the entire maritime sector using only one technology - at least for another couple of decades. This is not necessarily bad, since what matters is the origin of the fuel rather than the technology that uses it. Fuel oil, LNG and even hydrogen can be bad for climate if they come from a fossil path, but the same technologies, used with sustainable biofuel and biogas, synthetic fuels or renewable Hydrogen and Ammonia, have a much more favourable impact.
- Fossil LNG is a transitional fuel with very modest GHG gains, but it has the great advantage of dramatically abating air pollution and being immediately available for both coastal and ocean travel.
- Looking ahead, LNG-fuelled ships could gradually decarbonise by using increasing amounts of bio-methane produced from waste, some share of hydrogen, and, later, synthetic gas. They can also be retrofitted to use ammonia.

- We must also recognise that zero-emission fuel options, like hydrogen or ammonia, have not yet been fully tested for maritime transport. We should not wait another decade before introducing cleaner technologies. A transition fuel like conventional LNG can help bridge the gap.

What role do you see for hydrogen in reducing shipping emissions?

- On shorter distances and in ports, lower energy density is sufficient, already opening additional decarbonisation and zero-pollution pathways (e.g. hydrogen and electrification). However, currently, these solutions remain limited to very specific market segments (such as short-distance ferries) with relatively low power requirements and the ability to bunker frequently. For other types of operations, a higher energy density is required – but neither electricity nor hydrogen yet offer this.
- Hydrogen and hydrogen-based fuels (synthetic liquid or gaseous fuels, such as synthetic LNG, or ammonia) will however certainly play a role in the longer terms as primary sources of energy or as blends. Hydrogen is seen as a stepping stone to the production of synthetic “drop-in” fuels, which can be used with existing technology and infrastructure.
- Changes to infrastructure and energy conversion equipment (engines / machinery on board) are also important to consider. Technologies such as hydrogen or ammonia would require a dedicated infrastructure for distribution.

Is FuelEU maritime favouring specific technologies?

- FuelEU maritime is technology neutral. Sets GHG reduction targets, which can be met by using the available technologies without favouring one on another.

Why do the maritime and aviation proposals have different approaches?

Maritime and aviation differ substantially in two important aspects:

- There is a much greater variety of clean fuels and technology in maritime than there is in aviation. Different technologies in maritime are suited to different types of ships and businesses. It would be impossible to adopt in maritime a prescriptive approach identifying only two or three fuels to be used. A goal-based approach that leaves the choice of technologies to operators is necessary in maritime.
- Contrary to airplanes, ships can cover very large distances on a single tank. This means that obligations to supply only clean fuel in EU ports would not guarantee actual use of those fuels. Ships would bunker cheaper fuel outside the EU, generating carbon leakage.

Why are crop-based biofuels (i.e. food and feed based biofuels) excluded?

- We do not wish to open two entirely new and large markets like maritime transport and aviation to crop-based biofuels. If crop-based biofuels were promoted in the maritime sector, there would be a significant increase in their demand, which would increase the pressure on land and could lead to the extension of agricultural land into high-carbon stock areas (forests, wetlands and peatland). This extension would accordingly result to additional greenhouse gas emissions and risks to the biodiversity.

Is there an overarching Impact Assessment for the whole Fit for 55 Package? (Cumulative impact)

- I need to push back on this recurrent argument that the Commission did not properly assess the combined or cumulative impacts of this package.
- In fact, the impact assessment accompanying the 2030 Climate Target Plan provides the costs and benefits of the revised climate ambition, i.e. of achieving 55% greenhouse gas emissions reductions by 2030. It defines cost-effective pathways to deliver the targets, assessing the best mix of instruments and sectoral contributions. It shows that all sectors need to contribute; otherwise, some sectors will have to do more, in a less cost-effective way. It also shows benefits in deploying a broad mix of policy instruments, including extending carbon pricing and increased energy and transport regulatory policy ambition.
- All Fit for 55 impact assessments start from the Climate Target Plan, ensuring that the proposals “add up” to the 55% greenhouse gas emissions reductions target and that all sectors contribute to the effort cost-effectively. In other words, we followed a two-step approach: the Climate Target Plan provided the key elements of the policy architecture (e.g. standards, targets, sectors targeted) that are spelled out now in the Fit for 55 proposals.

How will FuelEU affect the freight rates and the consumer prices?

- It is difficult to directly relate freight rates to the cost of fuel, since other factors have often more weight in freight rates determination such as the demand and supply of raw materials, fleet composition and demand and supply of ships.
- Nevertheless, based on the existing literature on the relation between fuel prices and freight rates, we have estimated the impacts on the freight rates and found these to be in a range of 0.1% to 2.5% for 2030 and 0.8% to 15.1% in 2050.
- Given the low share of transport costs on final consumer prices, the intervention is not expected to lead to significant impacts on the prices of commodities and final goods.

Why EU Taxonomy for maritime considers only direct emissions (tank to funnel) and therefore does not recognise the use of low carbon renewable fuels?

- The use of a tank-to-wake approach (or funnel emissions) in the Taxonomy Climate Delegated Act criteria for shipping reflects current maritime legislation on GHG emissions, both at global and EU level, as well as current metrics and indicators, focussing on energy efficiency of vessels. However, we acknowledge in order to contribute significantly to the EU climate objectives, shipping needs both to use less energy and use cleaner energy in a life cycle perspective, as has been proposed in the Fuel EU maritime initiative and is currently work-in progress at IMO. We will update the Taxonomy criteria accordingly, as soon as respective metrics and benchmarks have been agreed.

How RR could prepare for FuelEU?

- Rolls Royce is providing power systems that will have to cope in the future with several type of new fuels (methanol, bio-fuels, ammonia, hydrogen) and fuels-blends. For long-term objectives, use of zero emissions technologies such as fuel cells and internal combustion engines running on hydrogen will be needed.

How RR could help with FuelEU and other GHG targets?

- Rolls Royce is invited to contribute with its technical and scientific knowledge in developing the future FuelEU implementing acts that will look into further developing the science and technological base of emissions factors for fuels and engines.

Background

About FuelEU:

- The FuelEU Maritime initiative was first presented to the Council Shipping Working Party on 01/09/2021 and is currently being examined by the Member States' experts. Overall, the delegations have welcomed the initiative and agreed with its aim and importance in order to meet the EU climate ambitions.
- The next step is a policy debate in the context of the Transport, Telecommunications and Energy Council (TTE) that will take place on 09/12/2021, where the Slovenian Presidency expects delegations to express their expectations on the FuelEU Maritime proposal.
- The FuelEU Maritime proposal was presented to the European Parliament's Committee on Transport and Tourism (TRAN) on 27/09/2021 in the context of the Fit for 55 package. Additionally, DG MOVE gave a technical presentation for MEP assistants and political advisors in TRAN, on 30/09/2021.

About Rolls Royce:

- Rolls Royce Power Systems with its MTU division provides solutions for fast ferries, tugs, inland cargo, complex special service vessels, offshore service and supply vessels and offshore windfarms, providing power systems and solutions turnkey for the customers, providing prime movers from 60 to 10.000 kW, gensets and related automated systems.
- Rolls Royce supports the net-zero by 2050 target.
- 'We are now laying out our technology pathway to net zero and committing to ensuring our new products will be compatible with net zero operation by 2030, and all our products compatible by 2050.' Says Warren East Chief Executive Officer.

RR Power Systems portfolio has sufficiently reliable data to be able to define a science-based interim target to reduce by 35% the lifetime emissions of new products sold by the business by 2030, relative to 2019. [REDACTED]

Marine Engine Market

- The global marine engines market size is projected to grow from USD 11.8 billion in 2020 to USD 13.7 billion by 2025; it is expected to grow at a Compound Annual Growth Rate (CAGR) of 3.1% from 2020 to 2025. The key factors driving the growth of the marine engine market include growth in international marine freight transport, growth in maritime tourism, and increasing adoption of smart engines for situational awareness and safety.
- The main boost to the market for marine propulsion engines came from the diesel propulsion engine segment in 2019. This is due to the lower cost of diesel fuel compared to other types of fuel.
- The Asia-Pacific (APAC) was the largest market for marine propulsion engines in 2019, and the region will offer several growth opportunities to market vendors during the forecast period. This is attributed to the rising demand for mass production goods in the region.
- The global marine propulsion engine market is fragmented. AB Volvo, BAE Systems Plc, Beta Marine Ltd., Caterpillar Inc., Cummins Inc., General Electric Co., Mitsubishi Heavy Industries Ltd., Rolls-Royce Plc, Wartsila Corp., and Yanmar Holdings Co. Ltd. are some of the major market participants.
- The rising adoption of automation technologies and digital analytics has encouraged market vendors to focus on the development of intelligent propulsion systems. These are expected to positively influence the growth of the market during the forecast period.

Contact: [REDACTED]