Eni, Fincantieri and RINA present the second edition of the Sustainable Maritime Transport Outlook

The transition is not progressing at the same pace everywhere. The main divide is not technological, but regulatory: while Europe is driving decarbonisation through binding measures, the lack of clear obligations and incentives at global level is holding back investment by shipowners. There is no single solution: LNG and biofuels are already viable options for the short and medium term, while synthetic fuels will be essential to meet the 2050 targets.

Rome, 11 November 2026 – Eni, a global energy company, Fincantieri, a global leader in the construction of high-complexity ships, and RINA, the global inspection, certification and consulting engineering multinational group, today presented in Rome the second edition of the Sustainable Maritime Transport Outlook, developed with the technical support of Bain & Company Italy.

The Outlook provides a global overview of solutions for decarbonising maritime transport, comparing different technology and fuel options in terms of their emissions reduction potential, maturity, infrastructure availability and the evolution of their Total Cost of Ownership through to 2050. The quantitative analysis is supported by a broad range of interviews with operators and stakeholders across the value chain, including shipowners and operators representing around 40% of the container market and 20% of the cruise market, engine and propulsion technology suppliers accounting for more than 80% of the ICE market, as well as ports and industry associations. Together, these interviews provide a clear picture of market realities.

The key message emerging from this second edition is that the landscape is more uncertain than it was a year ago. However, competitive solutions are already available to reduce environmental impact today, offering a pragmatic response to the European regulations currently in force while the industry awaits global decisions from the IMO.

Under the Outlook's reference scenario, "*Today as Future*", Europe is expected to achieve an 80% reduction in emissions intensity by 2050 compared with 2020 levels, while the reduction globally is projected at around 40%. The Outlook also considers a slower scenario, "*Decarbonization by 2070*", under which the achievement of Europe's decarbonisation targets is postponed until 2070, with countries in the rest of the world following several years later.

Compared with last year, three of the four indicators shaping the transition, namely the regulatory framework, macroeconomic conditions, fuel and infrastructure availability, and technological maturity, have deteriorated, with regulatory uncertainty having the greatest impact. The global IMO agreement has been postponed and, when countries are weighted by tonnage, almost 90% support a more gradual pathway, while the United States has taken a position against maritime decarbonisation. Europe, by contrast, has reaffirmed the targets already established under FuelEU Maritime.

The economic outlook has also become more uncertain due to slowing growth, tariffs and geopolitical tensions, while the crisis in the Strait of Hormuz is increasing risks to trade flows and the global economy. The low-emission hydrogen value chain has lost momentum, with numerous maritime projects put on hold. Technology nevertheless continues to play an enabling role, with the orderbook for alternative-fuel vessels growing slowly but steadily. However, against a backdrop of uncertainty, shipowners are increasingly favouring mature, readily available solutions.

Synthetic fuels produced from green hydrogen will be essential to complete the pathway to net zero, but they remain expensive and depend on a supply chain that has yet to be fully developed.

Through Enilive, Eni is among the leaders in the production of HVO biofuels from renewable feedstocks. These fuels are not only a solution for contributing to decarbonisation, but also an important component of industrial strategy and a means of strengthening the resilience of the production system. Alongside LNG and bio-LNG, biofuels can support maritime transport decarbonisation by leveraging already existing vessels and infrastructure. However, to fully unlock their potential and help the maritime sector progress towards climate neutrality, a regulatory framework is needed that recognises their role across all transport

sectors, together with pragmatic and stable operational rules that can support investment development.

Fincantieri supports shipowners on their decarbonisation journey through a pragmatic and flexible approach, integrating different technologies and developing innovative solutions. In the cruise sector, LNG is currently the leading alternative fuel, paving the way for progressive decarbonisation through bio-LNG and, in the longer term, e-LNG. Biofuels such as HVO and dual-fuel propulsion systems further broaden the range of available options. At the same time, the Group is working to improve the efficiency of the ship as an integrated system and is developing new energy and propulsion solutions, while also exploring longer-term opportunities through research into nuclear technologies.

RINA contributes to the decarbonisation of maritime transport by providing operators across the value chain with its engineering and technological expertise, supporting them in identifying and adopting the most effective solutions. In particular, the Group assesses the technological maturity, practical feasibility and environmental performance of different alternatives, while helping to verify their compliance with regulatory requirements.

The Outlook therefore sets out concrete commitments for every player across the value chain: common rules and standards for regulators and certification bodies; targeted investment and flexible infrastructure for ports; availability and diversification for fuel suppliers; vessels designed to accommodate multiple solutions and retrofit support for shipyards and shipowners; and continued investment in research and development by engine manufacturers. Pragmatism does not mean waiting: it means starting with mature technologies while building platforms that can evolve over time.

Against the backdrop of an increasingly complex geopolitical environment, Eni, Fincantieri and RINA also formalised their commitment during the event to continue the Observatory's work for the next three years. The signing of the agreement marks the first step in a collaborative journey that is expected to deepen and become increasingly strategic, with the potential to involve additional players across the value chain in the future.

BACKGROUND INFORMATION

The cost landscape changes over time in Europe, where progressive decarbonisation targets are underpinned by a system of increasing penalties. In 2030, fossil fuels remain the most cost-effective options, while synthetic fuels can cost around three times as much. From 2040 onwards, European emissions penalties make biofuels increasingly competitive, and by 2050 fossil fuels could cost around twice as much as the more sustainable alternatives.

Looking at Europe's fuel mix in 2050, there is no single clear winner, but a well-defined backbone emerges: biofuels will account for around one third of the mix, alongside fossil and bio-LNG, while synthetic fuels will contribute around 20% to the decarbonisation pathway. Overall, this will result in an 80% reduction in GHG emissions compared with 2020 levels.

Compared with the previous edition, the overall direction of the transition remains unchanged, but the projected contribution of synthetic fuels has been reduced by around half. As a result, the investment required to upgrade European port infrastructure is also lower: approximately $15 billion, compared with the roughly $25 billion estimated last year, with the entire difference attributable to the slower uptake of synthetic fuels.

At global level, the transition is expected to progress more slowly. By 2050, the global fuel mix will still rely significantly on conventional fuels, which will account for around 70% of the total, while GHG emissions reductions will reach only around 40% compared with 2020 levels. In Europe, by contrast, biofuels and LNG will remain the main areas of convergence with the rest of the world, albeit within a faster emissions reduction pathway.

In the cruise sector, which is of strategic importance to the Italian shipbuilding industry, synthetic fuels are expected to play a greater role than in maritime transport overall. This will primarily involve e-LNG, which could help decarbonise LNG-powered vessels already in the fleet while making the most of investments already made in existing platforms.

Although nuclear propulsion is not expected to make a significant contribution to the 2050 decarbonisation pathway, the first nuclear-powered vessels could enter service between 2040 and 2045. Over the longer term, nuclear could also emerge as a key technology for certain high-power, long-range segments. This makes it important to begin research, assessment and development activities in this field today.

Finally, the decarbonisation of maritime transport will require coordinated action across the entire value chain. Stakeholder interviews highlight a number of common barriers: regulatory uncertainty, which is holding back investment; the difficulty of passing the additional cost of lower-emission fuels on to customers; and bottlenecks that are more pronounced onshore than onboard vessels. Accelerating the transition will require a more stable global framework, consistent price signals, sufficiently predictable demand, reliable fuel volumes and greater feedstock diversification.

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Eni S.p.A. and Fincantieri S.p.A. are related parties. Any binding agreements between the parties will be entered into in compliance with applicable laws and regulations, including those governing related-party transactions.

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