

IENE Conference on "Green Liquid Fuels of the Future"

Minister, commissioner, esteemed guests, ladies and gentlemen, good afternoon.

I would like to thank IENE for the honour of making this short presentation.

1. As the debate around decarbonization and green fuels continues, you often hear shipping and aviation being lumped together and labelled as the two most hard-to-abate industries.
2. While this may be true, the comparison between these two sectors can be deceiving.
3. While both industries rely on mobile assets to transport goods and passengers around the world, shipping is a broad term that covers an industry that is considerably more diverse and complex than aviation.
4. Consider this:
 - Ship types vary greatly, from tankers, bulk carriers, container vessels, ro-ro_s, chemical tankers, to cruise ships, ferries, offshore vessels, LNG carriers etc..
 - Ship sizes range from small offshore supply vessels to huge liquid and dry bulk carriers
 - Very different business models & modi operandi:
 - On the one hand there is bulk/tramp shipping, by far the most important segment (84% of total tonne-miles), and one in which Greek shipowners specialize. It is dominated by thousands of small, privately-owned shipping companies specializing in the transportation of staples such as grain, iron ore, coal, oil and oil products. Shipowners routinely hire out their vessels to charterers, who, depending on the type of contract, take over the commercial operation of the vessel. This can be likened to a “hire-a-truck-with-a-driver” service – it is a segment that is by its very nature itinerant.

- On the other hand, liner shipping is a segment specializing in the transportation of containers and passengers. It is dominated by a handful of publicly listed big multinational corporations. Shipowners are often the ones operating the vessel commercially. The trading patterns are characterized by regularity and predictability and the segment can be compared to a bus or train service.
5. Overall, despite its crucial contribution to the world economy as the backbone of global trade, shipping is responsible for only 2-3% of world CO₂ emissions according to IMO and IEA.
 6. But, just as other sectors of the economy are transitioning to a greener future, so too must shipping take steps to reduce its emissions and eventually decarbonize.
 7. This raises the questions of how and at what level ship air emissions can and should be regulated.
 8. Shipping is a truly global industry that requires global rules. The UN IMO, the shipping industry's global regulator is the only one that can guarantee a global level playing field and provide the right framework for effectively reducing the industry's carbon footprint without having an impact on trade, the global economy, the citizens' welfare or the industry itself.
 9. The UN IMO has for years led the decarbonization effort, starting with the EEDI in 2011, the first globally binding climate measure since the Kyoto Protocol.
 10. In 2018, the UN IMO reached a historic agreement, according to which Greenhouse Gas (GHG) emissions from shipping are to be reduced by at least 50% by 2050 compared to 2008, despite the fact that the world population and global trade is expected to continue increasing for the foreseeable future. Today, the IMO is well on course to deliver.

11. In fact, last November, the IMO approved a well-balanced package of technical and operational short-term measures applicable to existing ships, the so-called EEXI (i.e. EEDI for existing ships).
12. However, in recent years, the EU has claimed an ever-increasing role in the regulation of ship air emissions.
13. The von der Leyen Commission has made the EU Green Deal a top priority and has several legislative initiatives in the pipeline. The most notable one is the European Commission's intention to include shipping in the ETS, the EU's carbon market.
14. The European Commission is also working on its so-called "FuelEU Maritime" proposal to introduce a fuel standard for ships, a zero-emissions EU berth standard, and an efficiency credit market, on top of - and separate from - the EU ETS.
15. Without going into details for either of these initiatives, there are some general observations that can be made:
 - By attempting to regulate the shipping industry at regional level, the EU risks undermining the considerable work and ongoing efforts of the UN IMO. As a result, other regions/countries might also be tempted to introduce local rules. This would be extremely detrimental to an industry as inherently global as shipping.
 - There is a severe risk of market distortion between but also within the segments of the shipping industry.
 - These measures will increase tensions with the EU's trading partners and increase the risk of retaliation against the EU shipping industry, which controls round 40% of the global fleet.
 - Regional regulation jeopardizes the EU's role as a global transshipment hub, will lead to carbon leakage and to the loss of employment.

16. **BUT, more importantly, these measures put the cart before the horse:**

- Shipping is already the most energy efficient transport mode, by far.
- More specifically, tramp/bulk shipping is highly efficient, sailing at low speeds and having made huge strides in fuel efficiency and thereby GHG reduction.
- Tramp/bulk shipping is almost entirely powered by 2-stroke, slow-speed diesel engines directly coupled to the ship's propeller. This propulsion package is considered to be one of the most efficient on earth!
- **In other words, energy efficiency can only go so far → we are reaching the limits of the current technological paradigm**
- To decarbonize, shipping will require new, zero- or low-emission fuels that are safe and globally available. Such fuels do not yet exist and will require substantial investments in R&D from oil companies, energy providers, engine manufacturers, as well as investments in infrastructure development,
- Until then, shipping will remain carbon captive and any MBM or carbon intensity target focusing on shipowners would be little more than a punitive measure or a revenue generating mechanism.

17. So what does the future of marine fuels look like?

18. For one, the new fuels will be pricier as the processes to produce and distribute them are inherently more expensive. Shipping will have to compete for the use of these fuels with other modes of transport such as trucking, rail and aviation.

19. Another thing that is becoming clear is that none of the candidate new fuels is as safe, energy dense, easy to transport, store and handle as HFO/VLSFO. In most cases there are several drawbacks that require considerable compromises. As a result, shipping may be heading towards a multi-fuel future. The “one size fits all” fuels are on their way out!

20. But even with government help it will take decades before zero-emission vessels and the necessary global infrastructure are ready.
21. To reduce emissions in the nearer term, shipping needs other options.
22. The alternative fuels and technology list is extensive: biofuels, methanol, ammonia, hydrogen, LNG, carbon capture and storage (CCS).
23. But which of these fuels would not only make emissions from shipping more sustainable, but, importantly, would also make the best use of the extraordinarily efficient engine/propeller combination. Which would permit existing ships' crews to continue without extensive re-training?
24. Seen from this perspective, "drop-in" Green Liquid fuels, i.e. fuels that can be used in existing engines without major modifications, are the most effective way forward at this point in time.
25. A few frontrunners have recently emerged: sustainable biofuels, methanol and "electrofuels"?
26. Sustainable biofuels
 - The pros:
 - Drop-in fuel → can be used with existing engines, no Capital expenditure would be needed.
 - can be blended with existing fuels
 - They are carbon neutral → no additional CO₂ released in atmosphere
 - Existing distribution networks can be used
 - Second and third generation biofuels show the most promise for marine propulsion
 - The cons:
 - More expensive than fossil fuel counterparts
 - Market is immature, limited distribution and availability
 - Further modifications in regulation are necessary (IMO, ISO etc)

27. Methanol

- The pros:
 - Drop-in fuel → can be used with existing engines,
 - Easy to store and handle
 - No SO_x, limited NO_x and PM emissions
 - Storing it onboard is cheaper than other options such as LNG

- The cons:
 - Only reduces CO₂ by about 25%
 - Corrosive nature of methanol → expensive stainless steel or equivalent materials are necessary for onboard storage and distribution systems.

 - Toxic when inhaled – Handling needs particular attention. Safety concerns.
 - Flammable/explosive → again safety considerations
 - Methanol bunkering infrastructure is currently centred around methanol terminals only.
 - Lower energy density of methanol and increased costs of the fuel storage system continue to make this fuel less attractive for the tramp/bulk fleet.

28. Electrofuels

Electrofuels based on 'green'-hydrogen – from electrolysing water with renewable electricity – that can be synthesized with nitrogen or non-fossil carbon dioxide or CO₂ from carbon capture systems to create green liquid fuels. In effect, E-Methanol.

29. No information is readily available on the likely cost of these electrofuels as “drop in” fuels, which are currently at a very early stage of development.

30. **To conclude**, going green may be the biggest challenge the industry has ever faced. It demands the right investment and the right policies to support a range of technologies and fuels that do not yet exist.

31. The greening of fuels is not and cannot be the responsibility of shipowners alone. The fuel of the future will need to be sufficiently a) energy dense, b) safe and c) available in sufficient quantities worldwide to guarantee the smooth functioning of the shipping industry. Other actors must also be involved: engine manufacturers, shipyards, classification societies, ports, fuel suppliers and charterers.
32. What is needed is a massive effort in R&D and a shift of technological paradigm towards safe and future-proof alternative fuels.
33. This is where the regulators come in: We are looking to regulators to:
 - a. maintain the global level playing field that our industry depends on,
 - b. stimulate substantial investment in R & D of these Green Liquid fuels,
 - c. Incentivize investments in production, distribution and availability in as many ports worldwide
 - d. introduce requirements at all levels of the maritime value chain, and not only focus on regulating shipowners
 - e. preserve the highly efficient, bulk/tramp shipping model. These workhorses of the sea are not only the mainstay of the shipping industry, but also a pillar upon which our modern, globalized economy is built.
34. Ladies and gentlemen, thank you very much.

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