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The BNP Paribas Fortis Chair Transport, Logistics and Ports organizes a third Shipping event



Impact of Decarbonisation & Energy Transportation

Executive Summary

On Thursday, 25 May 2023, the Third BNP Paribas Fortis Chair Shipping event was organised by Prof. Dr. Christa Sys, holder of the BNP Paribas Fortis chair on Transport, Logistics and Ports at the University of Antwerp. Experts from across the value chain of shipping, ports and maritime financing met to discuss the many challenges related to decarbonising the shipping sector.

The key talking points:

- The days of low-hanging fruit are (almost) over
- The transition to net zero will be expensive – investments for new ships alone is estimated at \$5 trillion by 2050
- There is a lot of uncertainty about which fuel and technology will prevail
- Most carriers and ports are adopting a multi-fuel approach
- Retrofitting existing ships is complicated
- Regulation should ideally be international

Decarbonising shipping is both an environmental imperative and a business opportunity. By investing in low-carbon technologies and practices, the shipping industry can reduce greenhouse gas emissions, lower costs, improve operational efficiency and increase competitiveness and resilience in the global marketplace. What has been done already – and what else needs to be achieved?

The days of low-hanging fruit are (almost) over

To adapt to the new emission reduction requirements, most shipping companies have started picking the low-hanging fruit. Quick wins such as raising awareness of energy efficiency. Implementing and optimising technology to do more with less energy. Modifying propellers. Sailing at slower speeds. Adapting speeds to just-in-time port calls. But now it is time for the hard part: experimenting with new fuels and technologies while moving towards near-zero and zero-emission fuels. The pace of change is accelerating, but there is no silver bullet as of yet. And the costs (and risks) are huge.

Investment opportunities and risks

Banks and other financial institutions play a key role in financing the energy transition. Although shipping is making progress, the transition needs to accelerate: international regulations are rapidly pushing for a greener shipping industry. Time is running out to meet the myriad targets.

Banks are also under increasing pressure to decarbonise their portfolios. With the Poseidon Principles, financial institutions have established a global framework to measure and disclose the carbon intensity of shipping loans. Poseidon signatories stepped up their ambition in 2022. The International Maritime Organization (IMO) might do the same at its next meeting, as the first strategy launched in 2018 is up for review.

For banks, lending to the shipping industry is a specific business. Shipping is a highly volatile sector. The industry is leveraged, and the universe of ship owners is generally speaking rather fragmented. Compared to other sectors, the compliance aspect is also sometimes challenging. Additionally, Basel IV could to make ship financing more expensive.

Shipping is currently one of the most carbon efficient forms of commercial transport in terms of CO₂-per-tonne-per-mile. Shipping accounts for 2.1% of global CO₂ emissions (Clarkson Research NV, 2023), while the transport sector as a whole is responsible for 25% of total CO₂ emissions. But we should not forget that ships also emit harmful NO_x and particulate pollution.

Innovation adoption

Decarbonising shipping is complicated and needs more innovation. Long-distance shipping cannot be electrified, and alternative fuels and technologies are not sufficiently available or scalable. It is therefore likely that innovation adoption over the next few decades won't follow a linear trajectory. Instead, we're likely to see an S-curve, with just some of the carriers investing in alternative fuels and new technologies initially, but as the technologies mature the number of carriers is going to dramatically increase until slowly reaching saturation at a maximum technology adoption level.

The investment required to finance the transition to green shipping is huge. By 2050, \$5 trillion is needed for new ships. And the estimated cost of retrofitting the existing fleet is not yet known. Nor is the investment required for new facilities in port and bunkering infrastructure. For example, only 200 of the world's 5,800 ports currently have shore-side electricity.

Alternative fuels and technologies

The main uncertainty lies in the choice of the fuel and/or technology of the future. As ships have a life span of 30 years on average, many being built or planned today will still be in service in 2050.

It is expected that many types of low emission fuels will coexist for some time. Electricity will only be used on coastal ships, ferries and some tugs. Large ships will run on Liquefied Natural Gas (LNG) or Liquefied Petroleum Gas (LPG), methanol, ammonia and maybe even biofuels.

Long distance shipping will rely on heavy fuel for some time, possibly with carbon capture and storage. Hydrogen does have potential, but it faces different challenges in terms of density, storage and safe handling, which still need to be addressed for it to become mainstream.

Wind and solar, too, can also play a vital role. Even nuclear is not off the table. But at the moment, the fuel technology is progressing faster than the fuel supply. While the number of ships that can run on cleaner fuels is growing, the fuels required need to be available on a large scale and in different locations around the world.

One way to accelerate decarbonisation is to create green corridors: trade routes between major port hubs that offer zero-emission solutions. The shipping industry is preparing for the new regulatory landscape. And it means we could see the first net-zero ships by 2030. Retrofitting existing ships is paying off, with new, more efficient, bulbous bows, lighter and more efficient propellers, low-drag rudders, increased automation and monitoring.

The evolving regulatory environment

The regulatory framework is complex and constantly evolving. However, there is one constant: the rules are getting tougher and apply to more and more ships.

By 2030, the IMO is committed to reducing the carbon output of all ships by 40% compared to 2008 figures. This will move towards a 70% reduction by 2050 (compared to 2008). The initial strategy will be reviewed later this year.

The EU aims to reduce greenhouse gas emissions from shipping by at least 55% by 2030 compared to 1990. By 2024, an Emissions Trading Scheme (ETS) will apply to all ships over 5,000 gross tonnes sailing to or from EU ports. FuelEU Maritime sets limits on the carbon intensity of fuel for all ships over 5,000 GT.

While almost everyone in the industry is in agreement that net-zero is the way to go, the many different regional and supra-regional schemes place an additional administrative and financial burden on the shipping industry.

At the Third Shipping Industry event, all the stakeholders called for an international approach to what is by definition a global sector. Furthermore, clear and ambitious policies are needed to make the incentive enticing enough. But it's essential to monitor and enforce the policies, punishing those who don't comply. ETS revenues should also go towards financing investments on board ships and in ports.

In conclusion

The shipping industry should expect even stricter regulation. Because none of us yet know which fuel or technology will prevail, it is wise to embrace a diversity of options. But it goes without saying that the full decarbonisation of shipping will come at a cost. Time is limited: if we're lucky, we're looking at a window of 25 years, with significant challenges to overcome. It's therefore imperative that all stakeholders participate and work together to meet the challenges ahead.