Danish Shipping Maritime Research and Innovation Strategy

Shipping is facing new challenges – ambitious climate targets, increasing environmental regulation, digitalization and new business models. Innovation, research and development is key for a strong maritime nation like Denmark to compete in a global business feeling the winds of change.

With this strategy, Danish Shipping will work towards achieving three key strategic objectives covering: a way to carbon neutral shipping, digitalization driven solutions and access to research and funding.

This strategy is supplementary to Danish Shipping’s overall strategy and runs till December 2021. The strategy presents the overall targets, action plans will be developed for each individual target.

Ahead of the curve

Denmark is a strong maritime nation being the 5th largest merchant ship operator in the world and a cluster for maritime development throughout the entire value chain. Connected with Denmark’s leading position within digitalisation, energy efficiency and renewable energy, it is natural to aim for an ambition of Denmark to become a global maritime power hub, in the lead for carbon neutral shipping and digital solutions.

This entails an ambitious plan to sustain and further develop the Danish maritime sector by a strengthened focus on research & development.

Three strategic objectives

1. A way to Carbon Neutral Shipping

International shipping carries around 80-90% of global trade and accounts for 2,2% of global greenhouse gas emissions annually. Emissions are projected to grow by between 50 and 250% by 2050 if no action is taken.

The ambition of Danish Shipping is closely aligned with the UN International Maritime Organization’s Initial GHG Strategy. The strategy prescribes that international shipping must reduce its total annual greenhouse gas emissions by at least 50% of 2008 levels by 2050, whilst pursuing efforts towards phasing them out as soon as possible in this century.

Achieving the 2050 target requires immediate action. Ships can be operated for 20-30 years or more, which means that the ships entering the world fleet around 2030 can be expected to be operational in 2050. Consequently, there is a need to have technically feasible, safe, commercially viable, emission free deep-sea vessels entering the global fleet by 2030, as well as a clear path to provide the large amounts of carbon neutral energy sources needed to allow the rapid uptake of carbon neutral vessels in the following decades.

Our response to this is to drive the development of focused activities in domestic and short-sea shipping as well as ocean going vessels. It is key to focus on the full value chain and identify opportunities, explore possibilities and test alternative solutions to reduce the carbon footprint from shipping throughout the sector.

The drive towards carbon neutral shipping should be funded by a shared contribution from private companies, private foundations and government through research funding programmes and financing structures.
WE WILL

a. Drive solutions for short-sea shipping and ferries
   Reinforce the decarbonisation of domestic shipping by supporting the development and co-funding of a range of research and demonstration projects for decarbonization and energy optimization of ferries and short-sea shipping, within electrification, hydrogen, wind power, bio fuels and other solutions.

b. Establish access to financing of infrastructure
   Ensure availability of financing options i.e. through the Danish Green Investment Fund and EU TEN-T CEF funds, to support the green transition through infrastructure investments, supporting the development of electrification and alternative fuels for domestic and short-sea shipping in Denmark.

c. Develop an alternative fuels test and R&D platform
   Ensure support for the development of an ambitious platform for shared research projects into new fuels and methods of ship propulsion. By creating a space for further open innovation between ship owners, suppliers, start-ups and researchers, it will underpin the best possible opportunities for fast-tracking development and scaling of projects in collaboration.

d. Investigate how a support mechanism for de-risking investments in green technologies can be developed
   Solutions for decarbonization of shipping are emerging but are mostly not commercially viable at this point. Danish Shipping will explore opportunities to establish a financing mechanism to de-risk investments in new technologies for ship owners.

e. Develop a Danish Power2X Alliance
   Initiate the establishment of an alliance with relevant partners. The P2X alliance will gather all relevant stakeholders and focus on developing a plan for the introduction of large scale P2X projects in Denmark with a view to providing power to ship propulsion - considering Danish and international regulation, energy resources, support mechanisms and infrastructure etc.
Digitalisation as a driver for further efficiency

New digital technologies increasingly affect the shipping industry in both technical operations and business processes. Digital solutions are welcomed onboard vessels and in land organisations as it generally results in better overview and insight leading to better decision support. Increasingly, there are also ample opportunities for predicting future actions and thereby plan reactions accordingly. This leads to higher complexity of systems and data handling as well as an increased cyber security threat.

WE WILL

a. Develop projects in digital ship operations including autonomy
   Enable increased collaboration and support funding for further projects of data sharing, preventive maintenance, increased autonomous operations etc.

b. Support digitalisation of business processes
   Through an increased collaboration between ship owners, researchers and start-up companies we will underpin the development and tests of new digital solutions to increase efficiency and transparency in shipping.

c. Increase awareness of cyber security
   Engage in a collaboration with relevant stakeholders throughout the maritime sector and beyond as well as authorities to ensure a shared, strong awareness of cyber security and implementation of protective measures. Especially in the implementation of new, digital solutions.
3 Access to research coordination and funding opportunities

Danish maritime research is internationally recognized as leading in several areas according to a recently performed analysis on Danish Maritime Research. Danish national R&D funding is primarily directed in two channels, either for the universities’ basic funding or as research programmes. The majority through the Innovation Fund Denmark, which is expected to launch a climate investment strategy in 2020 with separate tracks for each sector. The investment strategy is being used for funds allocation to R&D projects, hence it is key to have a clear maritime focus in the strategy.

Furthermore, international and especially EU funding is available for maritime research and innovation projects, as well as demonstrations and tests, however, it is key to ensure a continued targeted focus at EU level. Furthermore, Danish ship owners, other maritime companies and universities need to improve utilization of the possibilities of funding methods.

From the maritime research analysis, it is also clear that there is a need for stronger and more market-related research networks assisting the companies with overview and access to research and scientists.

Close to the individual companies’ daily innovation and network challenges stands the maritime clusters. A new national cluster organisation has the potential to become a strong player in coordinating industry-driven innovation activities and development projects across the maritime sector.

WE WILL

a. Ensure a clear maritime focus in a new Climate Investment Strategy by the Innovation Fund Denmark
Actively work to ensure that a separate maritime track will be included, focusing on the challenges and solutions relevant to shipping.

b. Establish an overview and promotion of funding opportunities
Create an overview of funding opportunities, promote the opportunities through events and ensure that assistance is in place for companies exploring the possibilities.

c. Ensure EU funding targeted shipping and the maritime sector
In collaboration with the European Community of Shipowners Association (ECSA) we will initiate various activities to ensure sufficient targeted EU funding for maritime research in Horizon Europe, EU Innovation Fund and upcoming CEF programmes etc.

d. Assist the Maritime Research Alliance in establishing a coordinating role benefiting the industry
Support the Maritime Research Alliance in its applications to maritime foundations to implement a coordinating function and work out a sustainable business model for the long run.

e. Lead the establishment of a National Danish Maritime Cluster with a key focus on innovation projects
Lead the process of forming the new cluster organisation and will play a key role on strategic and tactical level in a new organisation. Our aim is for the new cluster to highly prioritise industry-driven innovation projects.