New analysis puts a price tag on maritime shipping's decarbonization

At least $1 trillion of capital investment in land-based and ship-related infrastructure required to halve international shipping's greenhouse gas emissions by 2050.

Copenhagen, 20 January, 2020; Shipping needs to make a radical shift to zero carbon energy sources in the coming three decades to reduce the sectors total greenhouse gas emissions by at least 50% of 2008 levels by 2050 – a target set by the International Maritime Organization, a UN agency responsible for regulating shipping. This transition requires significant infrastructure investments in new fuel production, supply chains, and a new or retrofitted fleet.

A new study by UMAS and the Energy Transitions Commission for the Getting to Zero Coalition spells out the scale of the challenge. Depending on the production method, the cumulative investment needed between 2030 and 2050 to halve shipping's emissions amounts to approximately $1-1.4 trillion, or an average of $50-70 billion annually for 20 years. If shipping is to fully decarbonize by 2050, this will require further investments of some $400 billion over 20 years, bringing the total to $1.4-1.9 trillion.

"We need to understand the scale of the challenge to solve it. Shipping's shift to zero carbon energy sources calls for significant infrastructure investments. The investment needed should be seen in the context of global investments in energy, which in 2018 amounted to $1.85 trillion. This illustrates that shipping's green transition is considerable, but certainly within reach if the right policy measures are put in place," says **Johannah Christensen, Managing Director, Head of Projects & Programmes at the Global Maritime Forum, a partner of the Getting to Zero Coalition**.

"Energy infrastructure and ships are long-life capital-intensive assets that normally evolve slowly. In the next 3 decades however, our analysis suggests we will see a disruptive and rapid change to align to a new zero carbon system, with fossil fuel aligned assets becoming obsolete or needing significant modification. Even though regulatory drivers of this system change such as carbon pricing are only starting to be debated, the economic viability of today's investments and even the returns on recent investments will be challenged, and the sooner this is factored in to strategies and plans, the better," says **Dr Tristan Smith, Reader at the UCL Energy Institute**.

Land-based infrastructure makes up most of the investment needed

The analysis also sheds light on where investments need to take place. These can be broken down into two main areas: ship-related investments and land-based investments.

The biggest share of investments is needed in the land-based infrastructure and production facilities for low carbon fuels, which make up around 87% of the total. This includes investments in the production of low carbon fuels, and the land-based storage and bunkering infrastructure needed for their supply.

Only 13% of the investments needed are related to the ships themselves. These investments include the machinery and onboard storage required for a ship to run on low carbon fuels in newbuilds and, in some cases, for retrofits. Ship-related investments also include investments in improving energy efficiency, which are estimated to grow due to the higher cost of low carbon fuels compared to traditional marine fuels.

"Sustainable investing is here to stay. We foresee that there will be a great appetite for investments in sustainable infrastructure projects that help reduce greenhouse gas emissions," says **Michael Parker, Chairman of Global Shipping Logistics & Offshore at Citi.**

"Much of shipping's decarbonization will take place on land. It is a systemic transformation that goes beyond the capabilities of the maritime industry alone. We need to bring together the full range of upstream and downstream fuels value chains to unlock shipping's shift to zero carbon energy sources. Done right, this represents a trillion-dollar market opportunity," says **Lord Adair Turner, Chair, Energy Transitions Commission**.

At the Global Maritime Forum's recent Annual Summit, maritime leaders proposed a global carbon levy to accelerate shipping's decarbonization through investments in technology and design of new propulsion systems, alternative fuels, and scaling and infrastructure to deliver these fuels – while taking into consideration the impact on trade and developing states. The starting level for a carbon levy should be $10 per ton CO2, and $50-$75 per ton CO2 around 2030. A price of $10 per ton CO2 would correspond to an annual fund of $8 billion. A price of $75 per ton CO2 would correspond to an annual fund of $70 billion.

Learn more about the analysis here.

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About the Getting to Zero Coalition

The Getting to Zero Coalition is an industry-led platform for collaboration that brings together leading stakeholders from across the maritime and fuels value chains with the financial sector and other committed to making commercially viable zero emission vessels a scalable reality by 2030. The Getting to Zero Coalition is a partnership between the Global Maritime Forum, the Friends of Ocean Action, and the World Economic Forum.

Methodology

The estimates of investment needed come from the UMAS shipping model GloTraM. The model simulates decisions from a shipowner's perspective to identify the fuel, technology and operation combinations that maximise their profits and therefore identifies the likely pathways for the sector's evolution under a combination of macroeconomic and policy drivers. The model includes a detailed representation of the different ship types within the global fleet, and the production pathways, their capital and operating costs, for a range of potential low and zero carbon fuels. From this, the investment implications for fleet and land-side infrastructure of the model-identified likely pathway are then obtained.