# Case study: Early lessons for pricing strategies to address the climate-related impacts of international shipping

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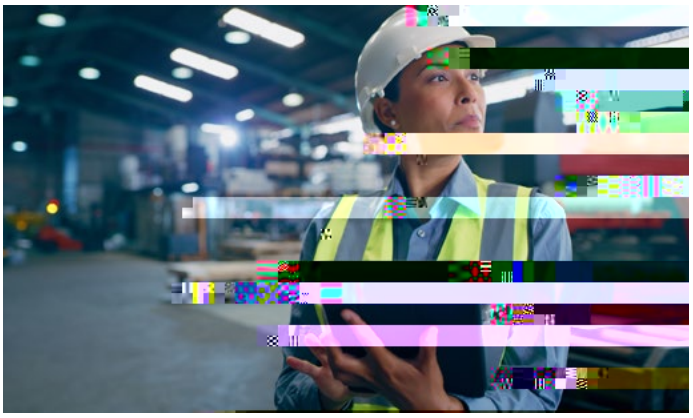
In cooperation with

KÜHNE FOUNDATION

UCL THE BARTLETT ENERGY INSTITUTE



# *Transport and Logistics for the Low-Carbon Society of 2050*

The climate crisis requires and drives a rapid transformation of our society: reducing emissions to net zero and adapting to the impacts of a new climate reality are the major tasks of our times, across all countries and sectors of the economy. By 2050, we must – and can – build a more equitable and prosperous low-carbon society.

Transport and logistics will play a key role in the transition. It will have to contribute to emission reductions through its own low-carbon development. But transport and logistics can also act as a facilitator of the transition, supporting green and sustainable development, and serving the new needs of people, industry, and society towards achieving the climate targets. Therefore, new investments and skills, and new regulations will be needed.

The Kühne Climate Center's work on 'Transport and Logistics for the Low-Carbon Society of 2050' strives to lay out the structural changes in the economy to which transport and logistics will need to adapt, the capacities the sector has to develop, and the opportunities it can seize to enable sustainable development at the global and local scale.

being published in a dedicated series.

# Why this study

Achieving the climate goals as stated in the Paris Agreement requires a rapid decarbonization of the world economy. Fossil fuels used in the energy sector, in transportation, and in various industries will have to be replaced with renewable electricity and other low or zero-carbon forms of energy. In its updated net-zero scenario 2050, the International Energy Agency IEA estimates that demand for coal falls by 90% to 500 million tones, for oil by 75% to 24 million barrels per day, and for natural gas by 78% to 900 billion cubic meters (IEA, 2023a).

Today, over a third of the global shipping capacity is used

intensive assets with lifetimes of 20 to 50 years, investment decisions need to consider long-term market evolutions. The decline in trade of fossil fuels would lead to a reduced demand for transporting these commodities and result in a "demand-side risk" for those ships, as framed by Smith et al.

change in fuel and engine technology has already started, the demand-side risks from a decline in fossil fuels as a cargo has so far largely been overlooked.

The massive and rapid transition to the low-carbon society required for a stable climate holds many new opportunities and will require new investments. Rechanneling funds to activities and assets that are compatible with the needs of a low-carbon society early on protects assets and allows for an

The Kühne Climate Center and the University College

kind analysis to quantify the demand-side risk for fossil fuel carrying ships on a trajectory that would limit global warming to 1.5°C in 2050.

The results are intended to raise shipping actors' and

redirect their investments.

# What it contains

In this study, we analyze four segments of fossil fuel carrying ships for their demand-sike risk in the transition towards meeting the 1.5°C climate target: bulk carriers for coal, oil

Using information from the Clarksons World Fleet Register, we estimate the available capacity for transport of fossil fuels by ship, the "supply", up to 2050. We estimate the "demand" for transport of fossil fuels by ship using two scenarios that align with a 1.5°C trajectory and which were modelled in the *Fourth IMO GHG Study 2020*
the observed demand up to 2023.

# Over one third of the global shipping

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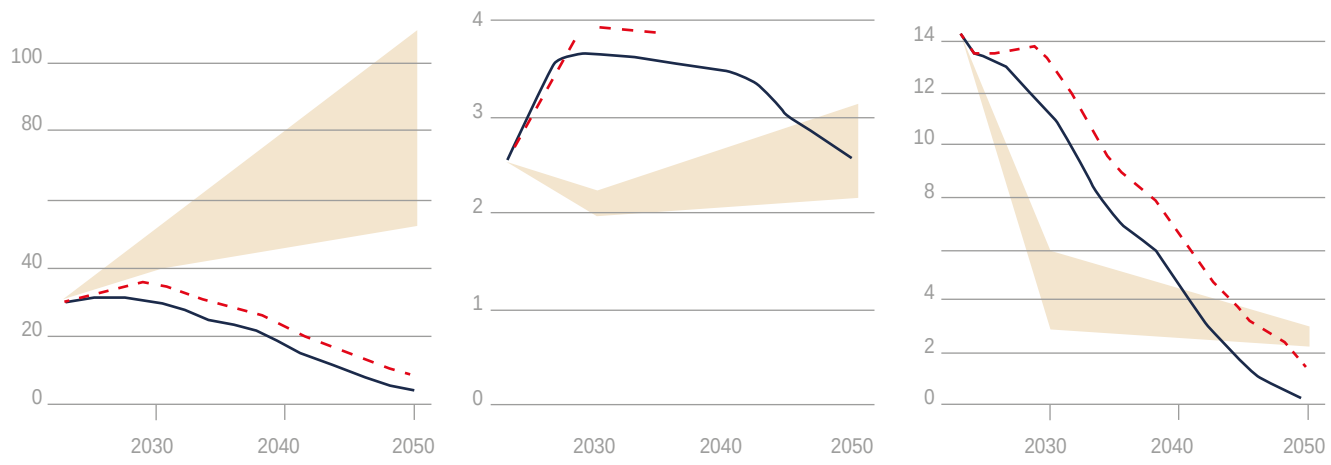


paper ‘Fossil fuel carrying ships and the risk of stranded assets.’ (Fricaudet et al. 2024b).

# Key Findings in Detail

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Bulk carriers that transport coal today have a low demand-

to increase. These ships can relatively readily switch to other

more hazardous cargos, like certain minerals, may require

temperature control or cargo securing equipment. Also, very

cargo is traded in smaller batch sizes and if they cannot
operate on all routes and enter relevant ports due to their size.

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The oversupply in transport capacity for oil and gas is

combined value between USD 90 to 108 billion may be
unemployed even if no further ships are ordered. This

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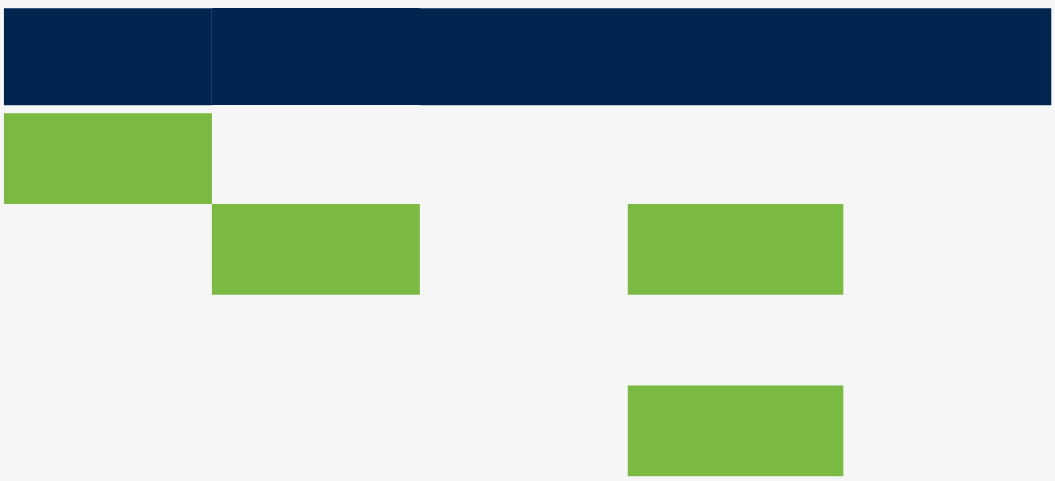
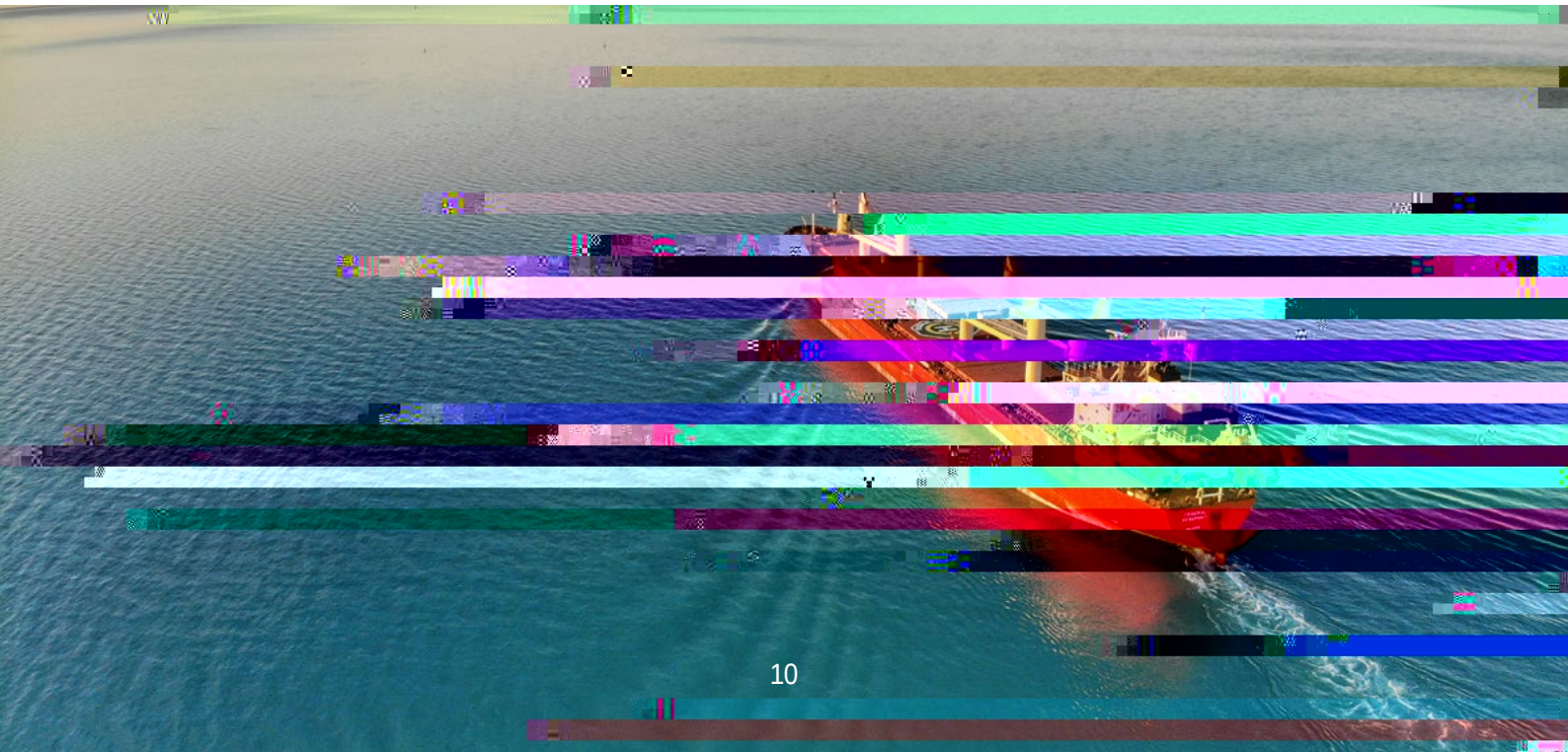


Among the four groups of assessed actors, shipbuilders

segments, with only a few focused on constructing fossil fuel carrying ships. Flag states, which comprise many developing countries with vulnerable economies and Small Island

ships, which limits their risk of losing income should fossil

ships being oil and tankers.

# Implications and recommendations

While there is little publicly available information on the

who ultimately owns the ship behind the registered owner – banks have historically served as the primary source of

their lending to the shipping industry since the stricter BASEL

operators would not be able to serve their debt, at least not from their fossil fuel shipping activity.

The current investments in fossil fuel carriers suggest that investors have a strong focus on immediate returns

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The potential increase in demand for shipbreaking from fossil fuel carrying ships is certainly not the only but another reason to strengthen sustainable shipbreaking capacities. Parts of the foundation for this have been laid by the Hong Kong Convention. It remains to be seen how it will be enforced, and what ship owners' response to potentially higher cost of scrapping and thus lower residual value of ships will be.

Shipbreaking today takes place in mainly three countries:

can work together to strengthen sustainable shipbreaking capacities in general and, in particular, in these countries, where the activity constitutes a livelihood for many workers.

The transition to a low-carbon society holds many opportunities—and it requires new investments. Many of the opportunities will lie within or close to the maritime industry. Transport capacity for dry bulk cargo will likely need to increase, as our modelling suggests. Production capacity for low-carbon fuels for the shipping industry, but also for other sectors is urgently needed. Ports will require new facilities to serve as hubs for trade in green energy and other low-carbon goods and technologies.

investments in fossil fuels every single year. In 2023, clean

in the sector (IEA, 2023b).

The sails are set.

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scenarios modelled for the demand of shipping of fossil fuels. The initial scenario used was based on 2018 estimates from the *Fourth IMO GHG Study 2020*. This is outdated as the consumption and transportation of fossil fuels between 2018 and 2024 did not align with any of the in 2018 projected 1.5°C trajectories. To address this limitation, we adjusted the scenario to a 2024-perspective.

one was selected for practical reasons. Our estimates do not include a bottom-up modelling of energy goods consumption and their impact on trade, because such modelling is not

than a strict estimate. Limitations of the initial input data from the *Fourth IMO GHG Study 2020* remain. In particular, it does not include the recent evolutions in trade, the consequences

or reduction in gas consumption due to higher prices.

Also, this initial assessment of stranded assets is based on averages taken for each type and size-class of vessel, making

at the individual ship level. Distinguishing between various

in everything from how they are designed to their cost structures.

Last, this analysis only covered one factor of demand-side risks. Other factors linked to a low-carbon transition could

regionalization of trade may decrease shipping distances and activity (Walsh et al., 2019; Walsh & Mander, 2017.

potential uptake of alternative commodities like biofuels, $CO_2$, and hydrogen-derived fuels, which could partially

dynamics of these commodities and assess the economic

these functions.

# Sources

Cite as: Kühne Foundation (2024). Fossil fuel carrying ships and the risk of stranded assets in the transition to a low-carbon economy - Key Findings and Implications for Financiers and Industry Actors. Schindellegi, Switzerland.

## Preferred Reading

This publication is based on the white paper "Fossil fuel carrying ships and the risk of stranded assets" (Fricaudet et al., 2024b) and the academic article "Fossil fuel carriers and the risk of stranded assets" (Fricaudet et al., 2024a)

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