

LNG carriers' financial risk in the climate transition

Findings from the Investment Risk Monitor
for Fossil Fuel Carrying Ships



by Kühne Foundation

In cooperation with:



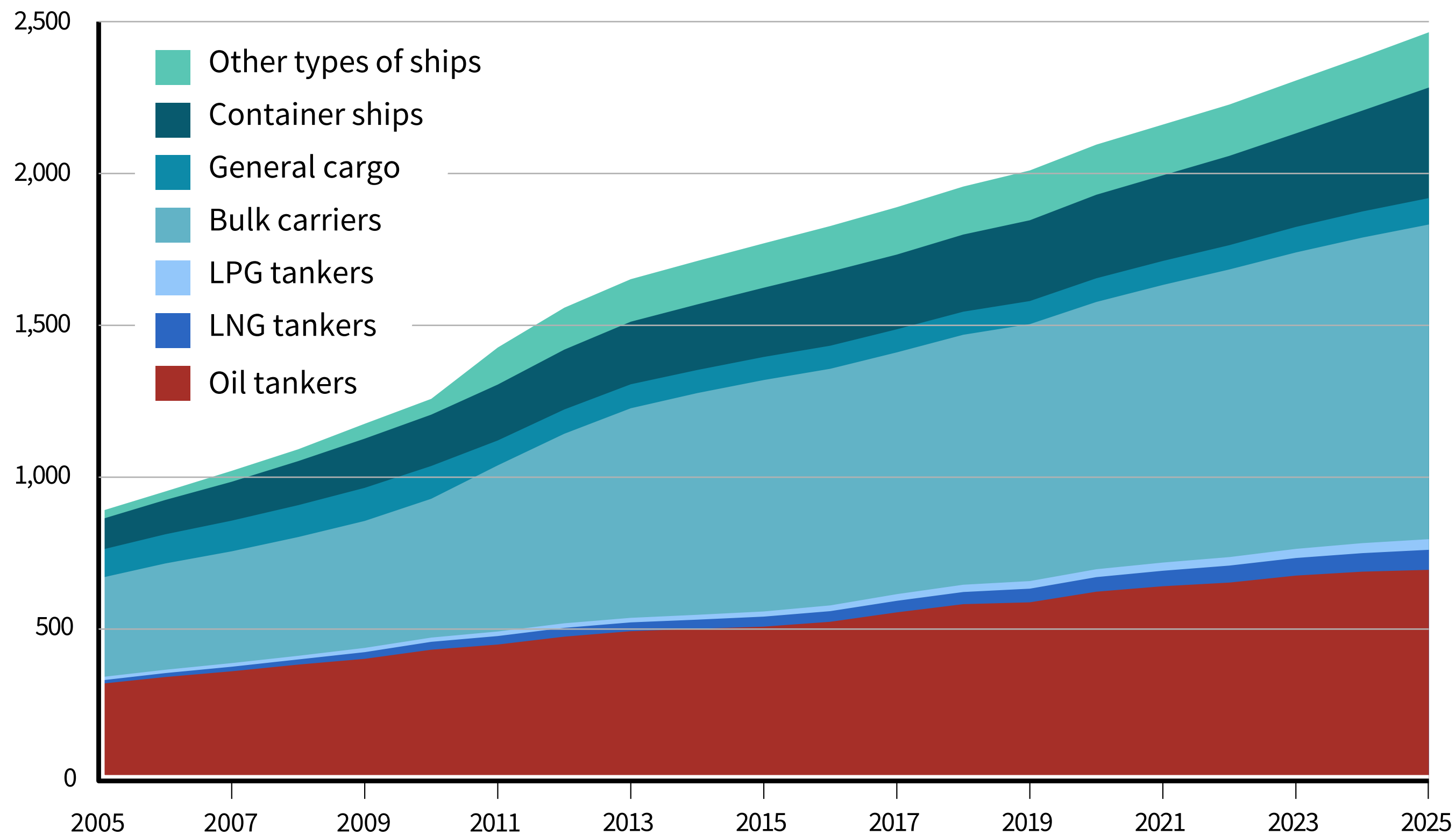
THE BARTLETT
ENERGY INSTITUTE

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Today, one third of the global vessel fleet transports oil and gas

Maritime Transport Capacity per Vessel Category in million deadweight tons



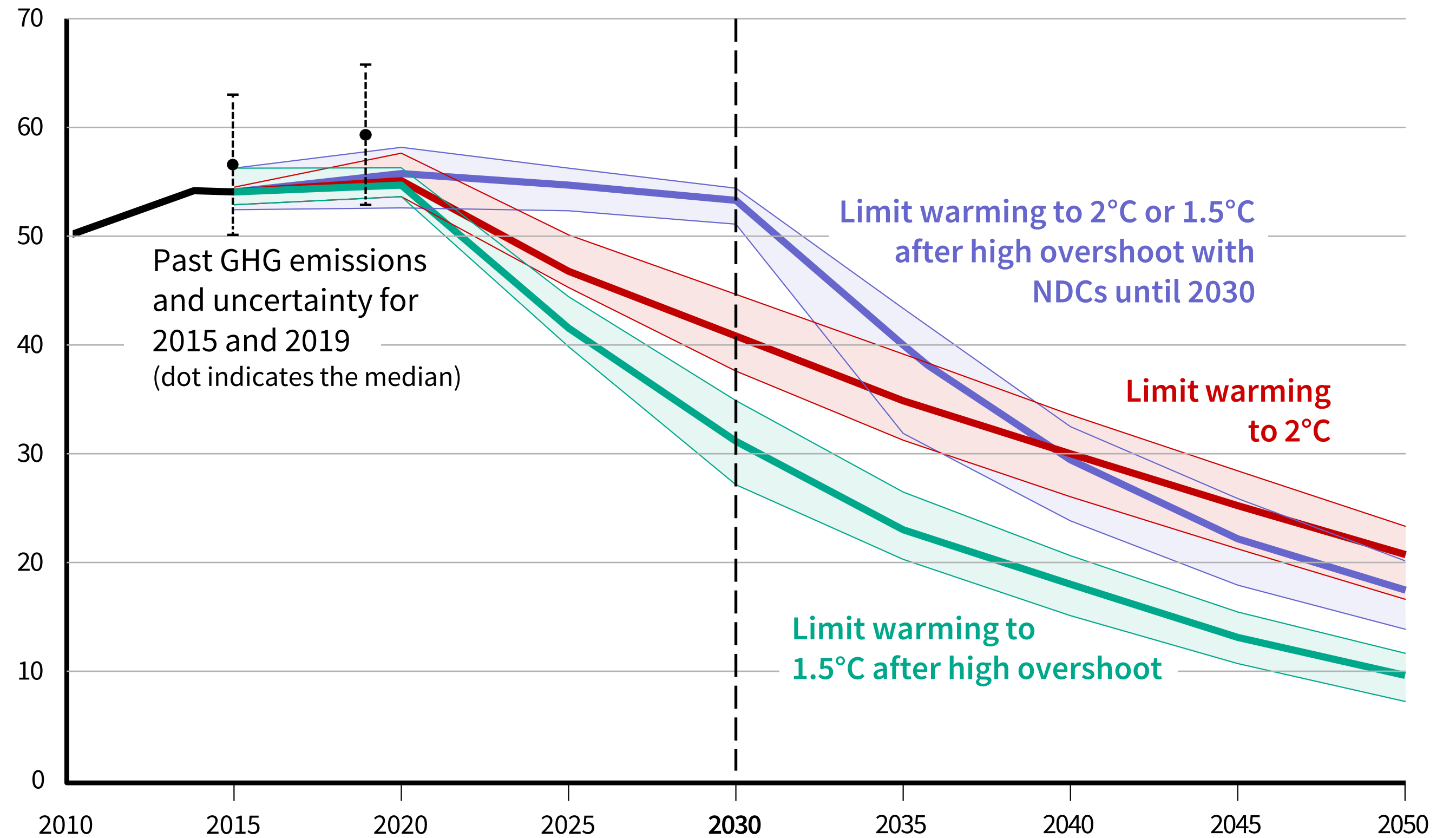
Based on data from UNCTAD and Clarksons Research

Staying within the climate targets of the Paris Agreement requires a rapid decline in emissions. With the transition to a low-carbon economy, the demand for fossil fuels, and their transport, is set to decline.

78% of today's global GDP is committed to net-zero

(Net Zero Tracker)

GHG emissions (GtCO₂-eq/yr)



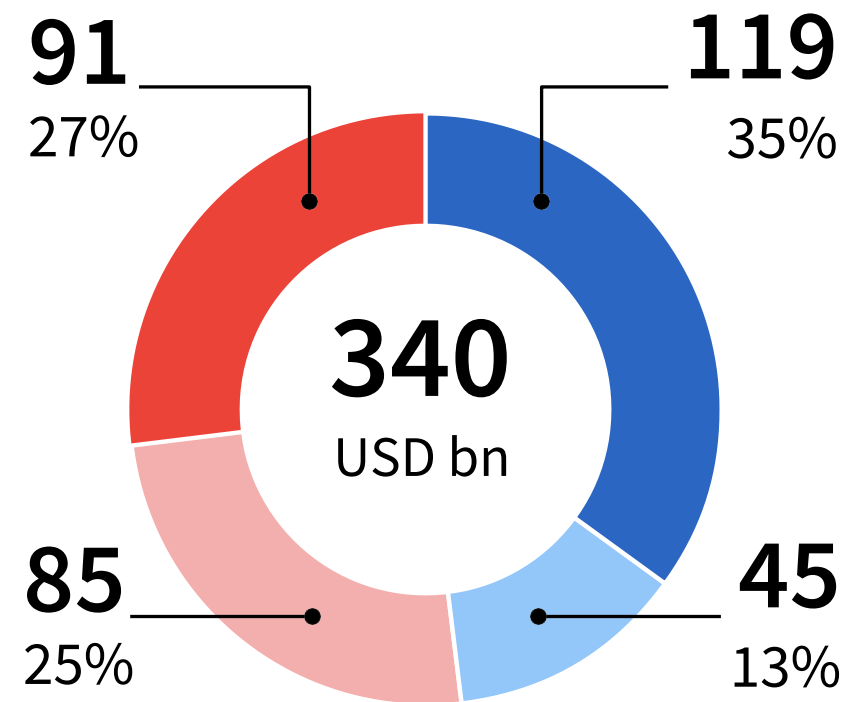
Based on IPCC (2023) Climate Change 2023: Synthesis Report, 6th Assessment Report

The fleet of LNG carriers, though fewer in numbers, has a high value of USD 119 bn and represents 39% of the total fleet's value.

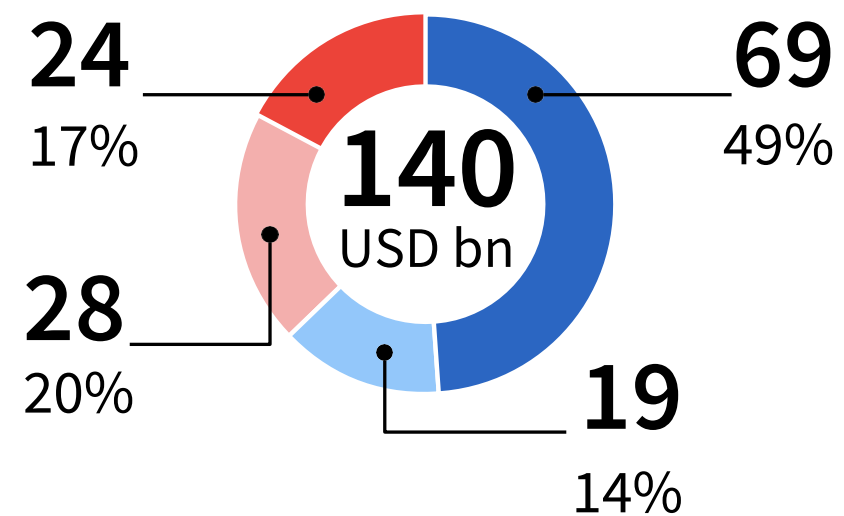
Currently, 321 additional LNG carriers with a value of USD 69 bn are on order. This equals a fleet growth of 39% in the next years.

With a median age of 5 years and a vessel lifetime of 38 years, the majority of LNG carriers will be in service well beyond 2050.

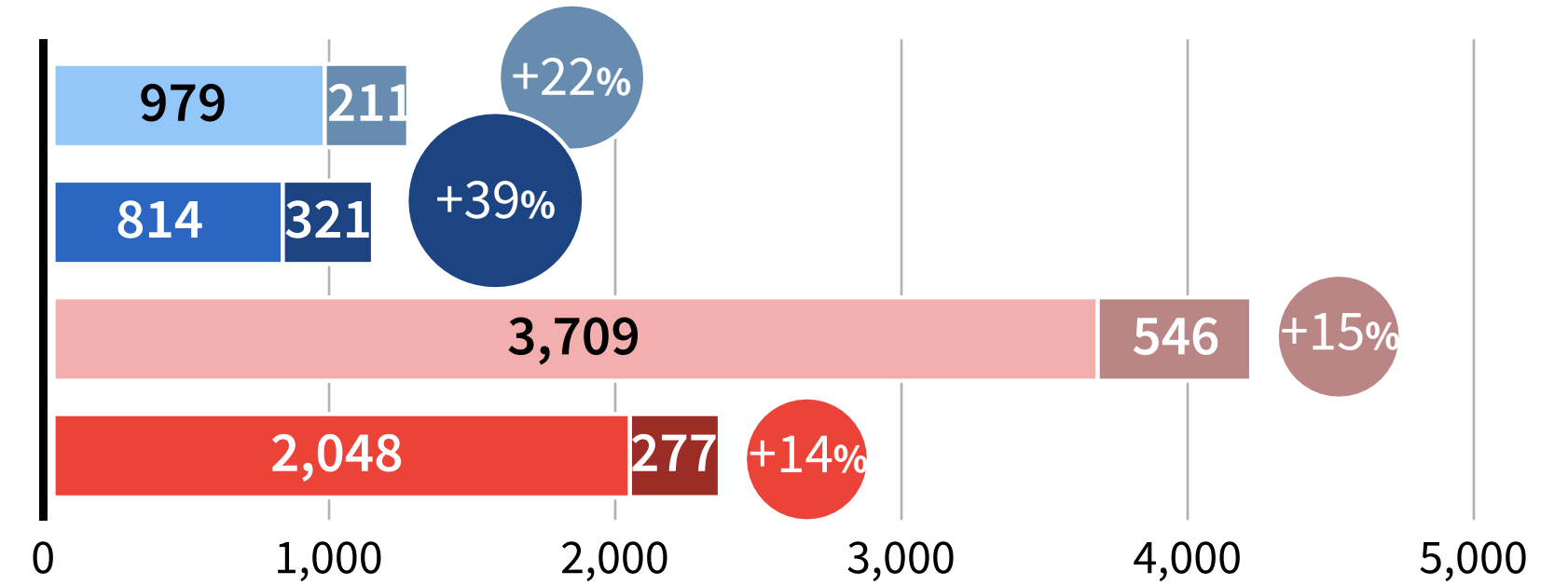
Existing fleet value in USD bn



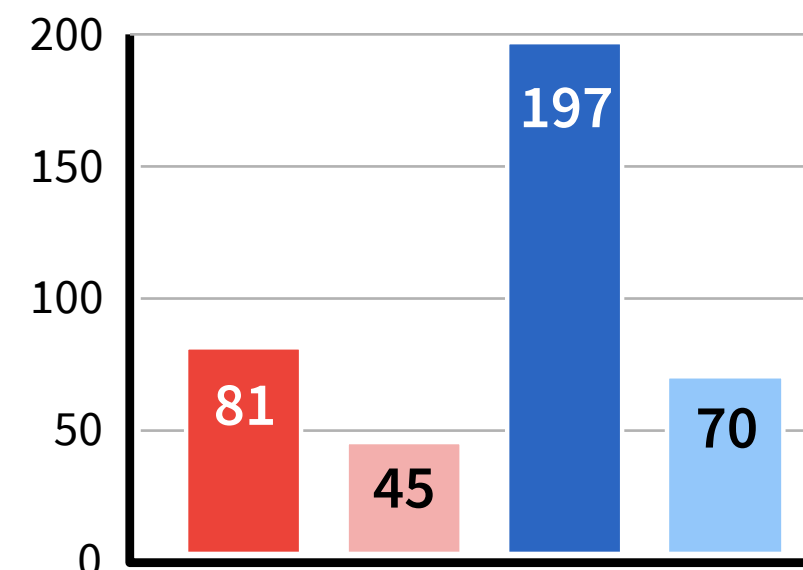
Ordered fleet value in USD bn



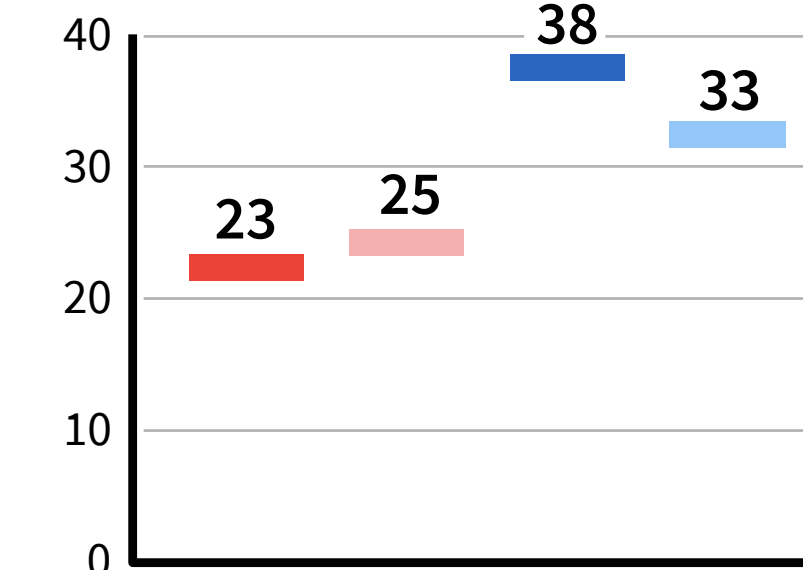
Existing ships | Ordered ships ● Fleet growth



Average newbuild Value in USD bn



Median active years



Tankers: Crude oil Oil product LNG LPG

Only vessels >5,000 GT covered; this represents 97.5% of GT in crude oil, oil products, LNG, LPG tankers.

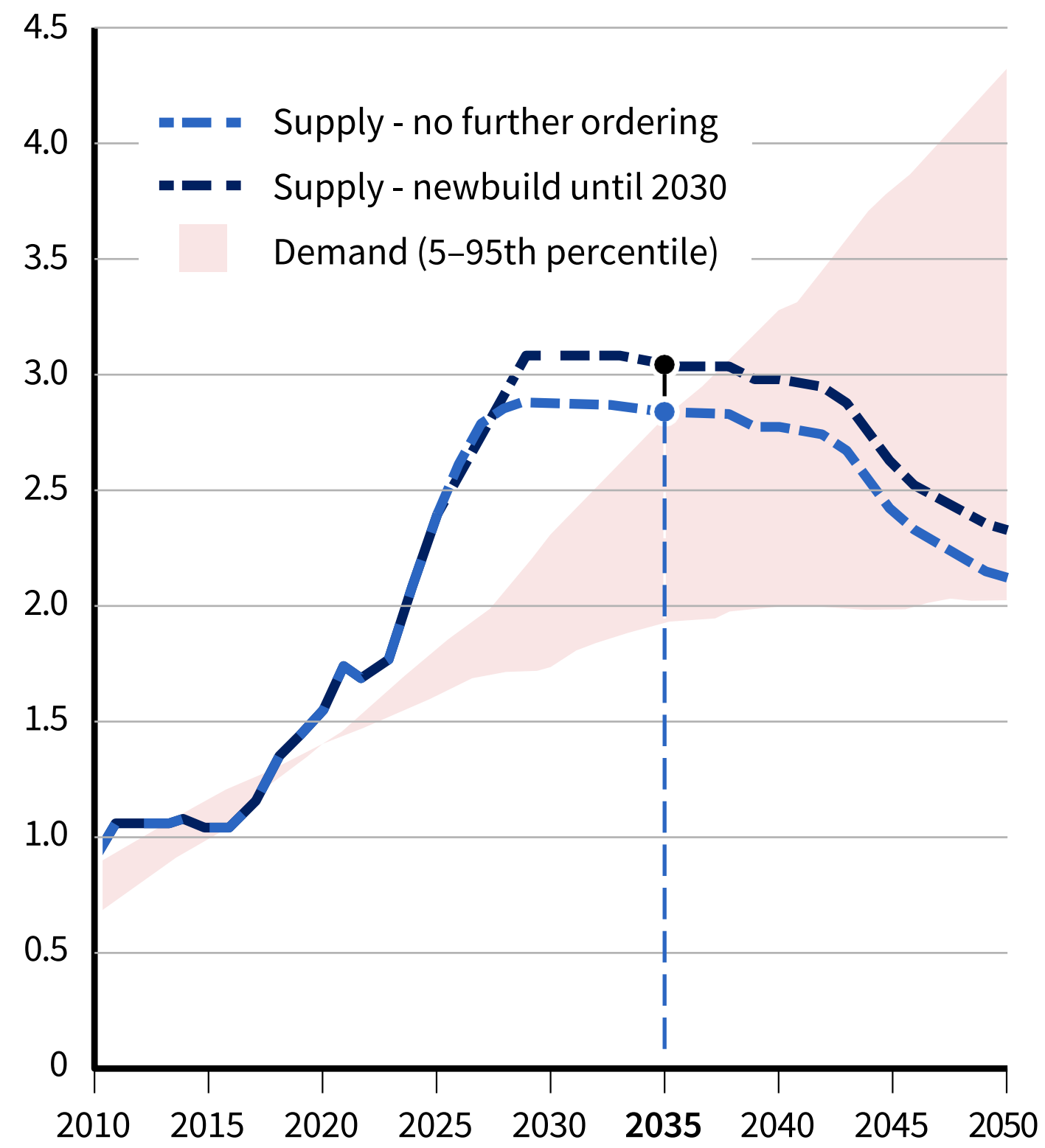
2.5° Global warming scenario

In an energy scenario that leads to 2.5°C global warming, LNG carriers are in oversupply even with high LNG use until 2035, and well into the 2040s with medium LNG use.

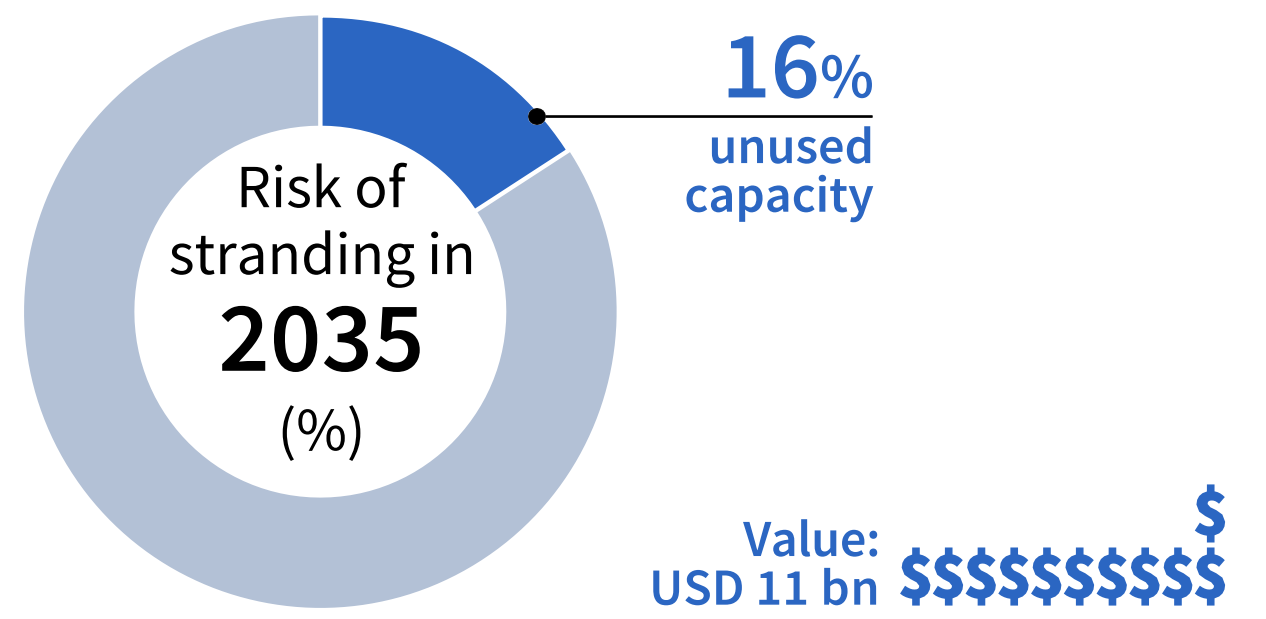
If no further vessels are ordered as of today, 16% of LNG carriers, with a value of USD 11 bn, are at risk of stranding in 2035.

If ordering continues and vessels are added to the fleet until 2030, 22% of LNG carriers with a value of USD 12 bn are at risk of stranding in 2035.

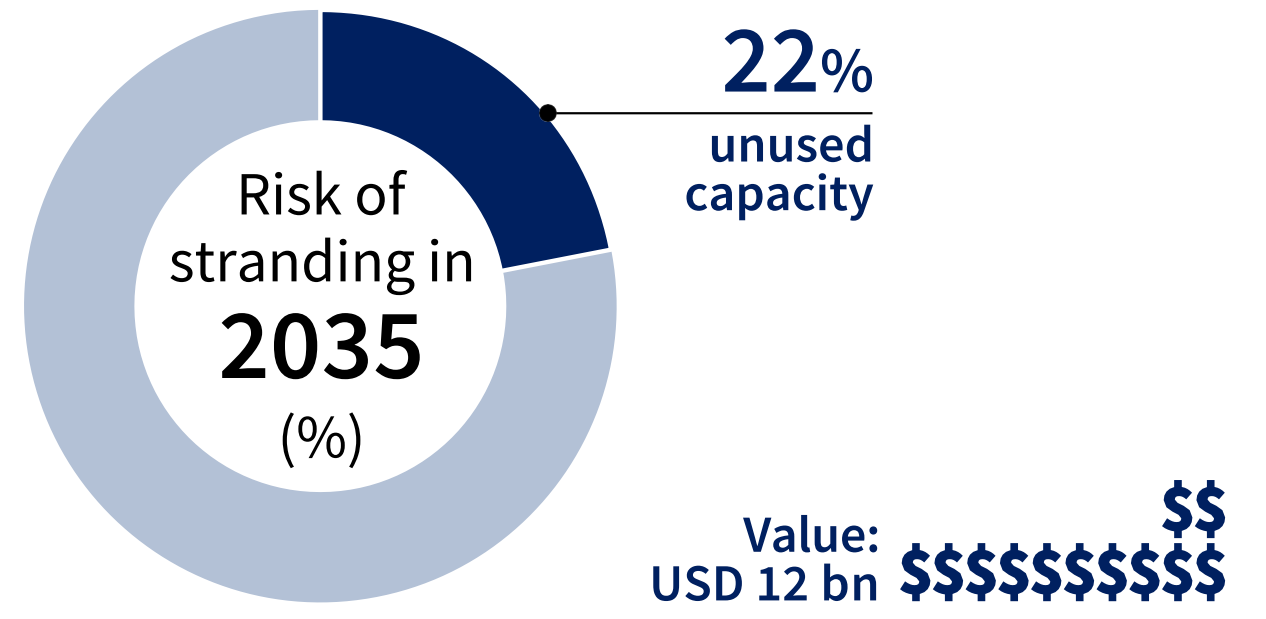
Trillion tonne-miles



Scenario 1 – no further ordering



Scenario 2 – newbuild until 2030

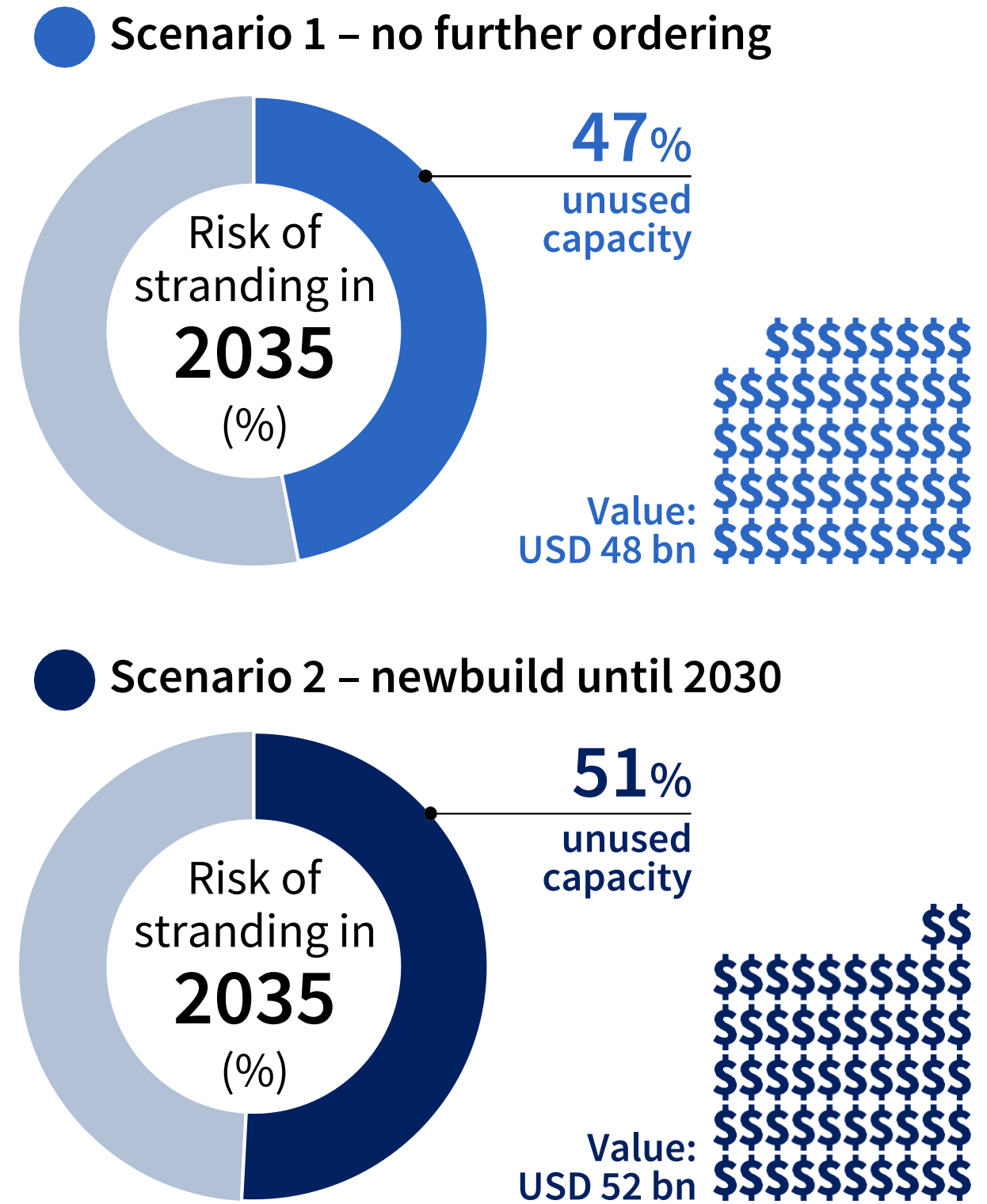
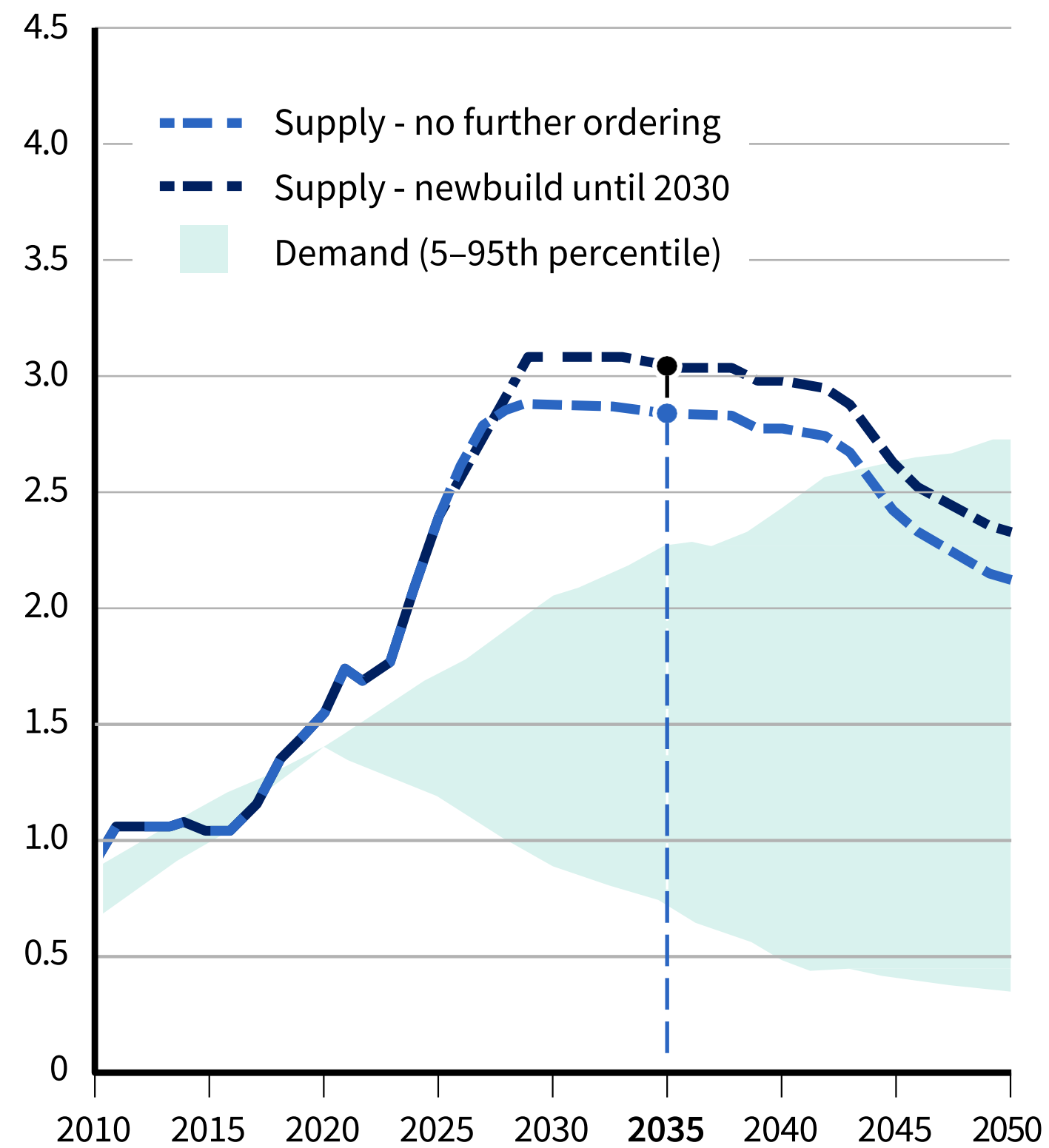


1.5° Global warming

In energy scenarios that align with 1.5°C global warming, 47% of LNG carriers with a value of USD 48 bn are at risk of stranding in 2025, even if no further vessels are ordered as of today

If ordering continues and vessels are added to the fleet until 2030, 51% of LNG carrier capacity with a value of USD 52 bn remains unused in 2035.

Trillion tonne-miles



LNG tankers have poor options for repurposing to other commodities.

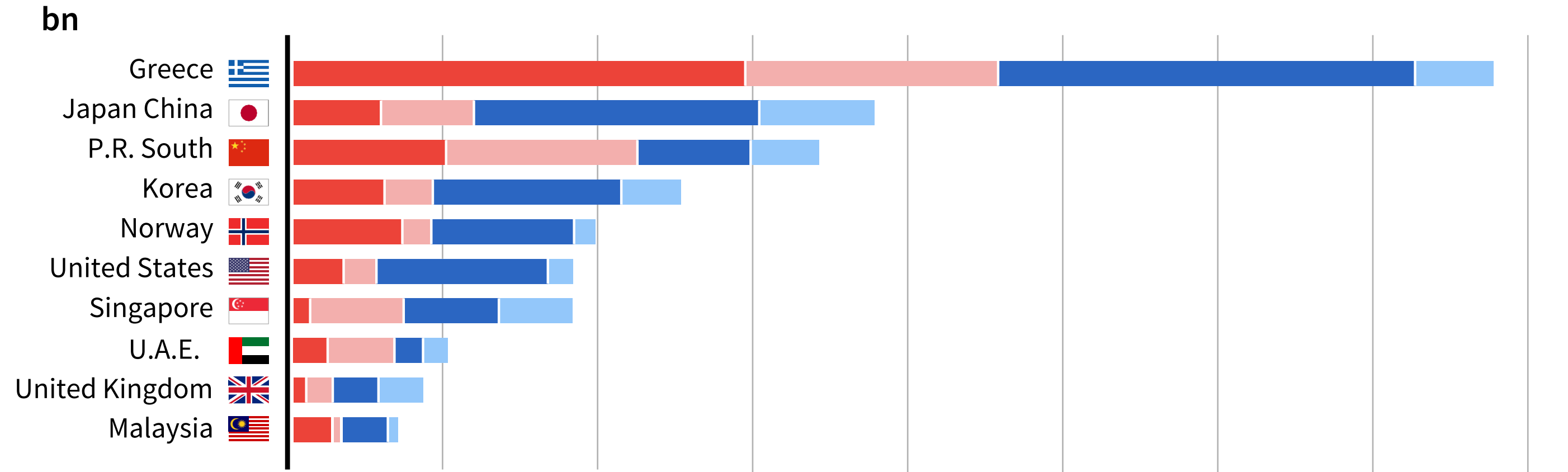
This makes them more exposed to demand risk than other vessel types.

Challenges for repurposing and retrofits related to:	Toxicity and safeguarding	Changes to the ship's structure	Trading, batch size, and port restrictions	Cost and Return on Investment	Cargo options
LPG tankers to ammonia	MEDIUM	LOW-MEDIUM	MEDIUM	LOW-MEDIUM	MEDIUM-HIGH
LNG tankers to ammonia	MEDIUM	MEDIUM-HIGH	MEDIUM-HIGH	MEDIUM-HIGH	MEDIUM-HIGH
Oil product tankers to biofuels, methanol, chemicals	LOW-MEDIUM	LOW-MEDIUM	LOW-MEDIUM	LOW-MEDIUM	MEDIUM
Crude oil tankers to biofuels, methanol, chemicals	LOW-MEDIUM	MEDIUM	MEDIUM-HIGH	MEDIUM	MEDIUM

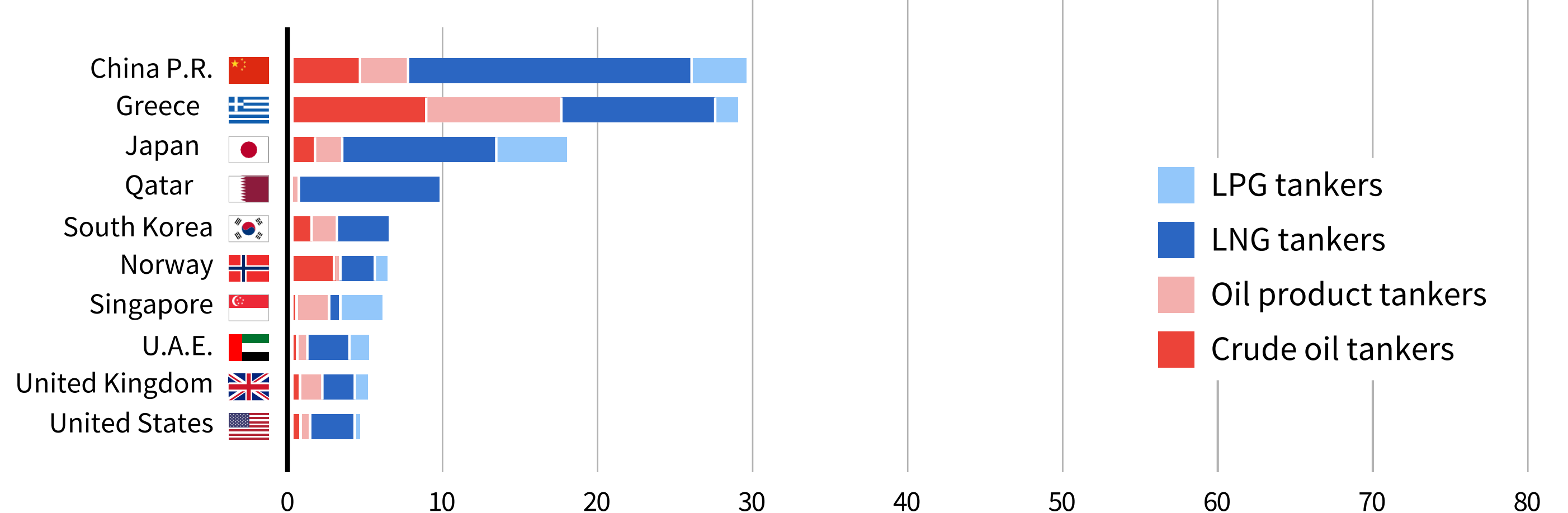
256 USD bn, equal to 75% of the value of the whole fossil-fuel fleet, sits on balance sheets of companies in the top 10 ship-owning countries.

Companies in the top 3 countries, China P.R., Greece and Japan will considerably expand the fleet and increase risk in their portfolios.

Existing fleet value by ship type in USD bn



Ordered fleet value by ship type in USD bn



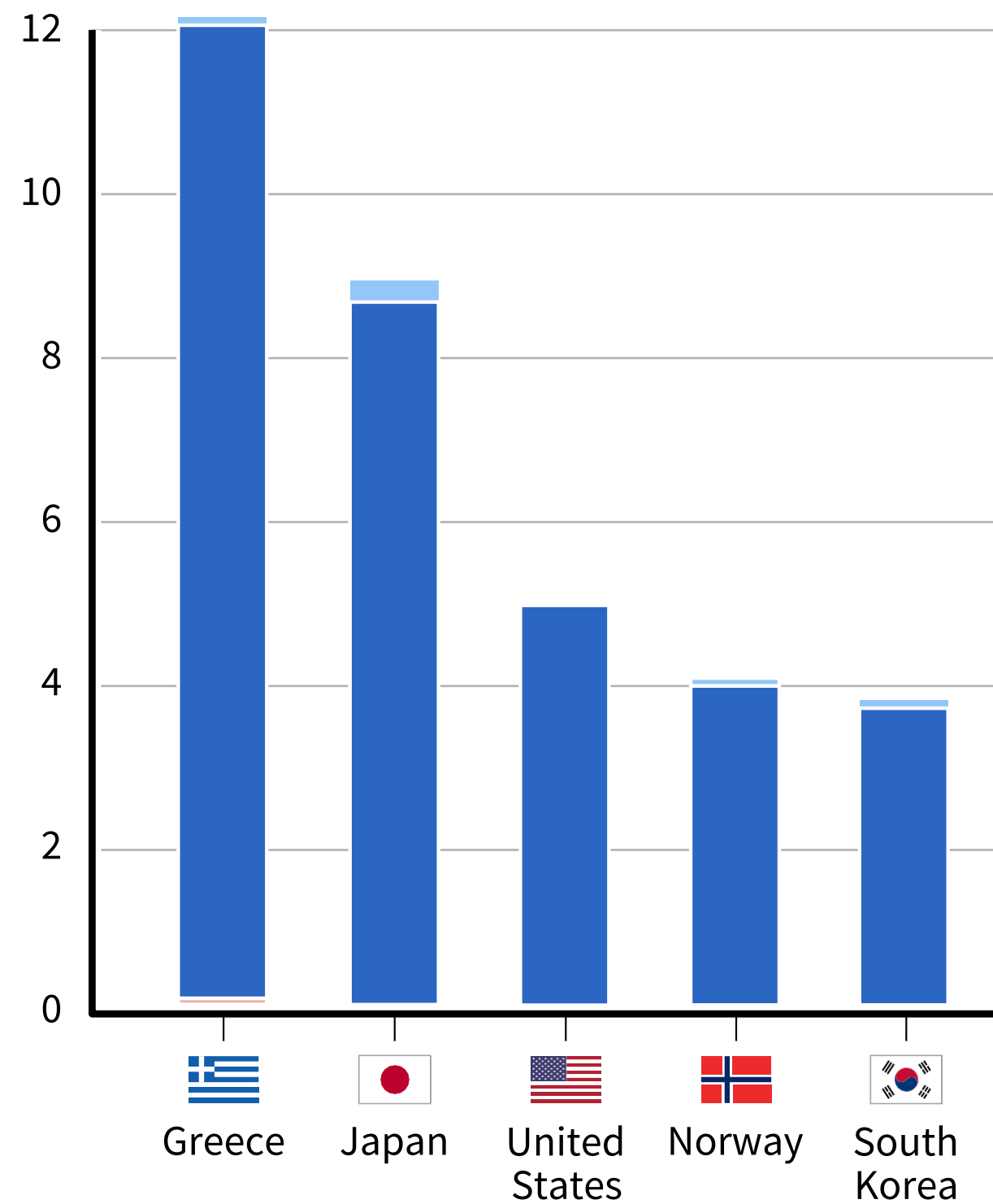
Companies based in Greece and Japan have the highest absolute risk.

In 2035, in a 1.5°C climate scenario, USD 12 billion are at risk in Greece and USD 9 billion in Japan.

The oversupply of LNG tankers is the major driver for investment risks, also in a 2.5°C scenario.

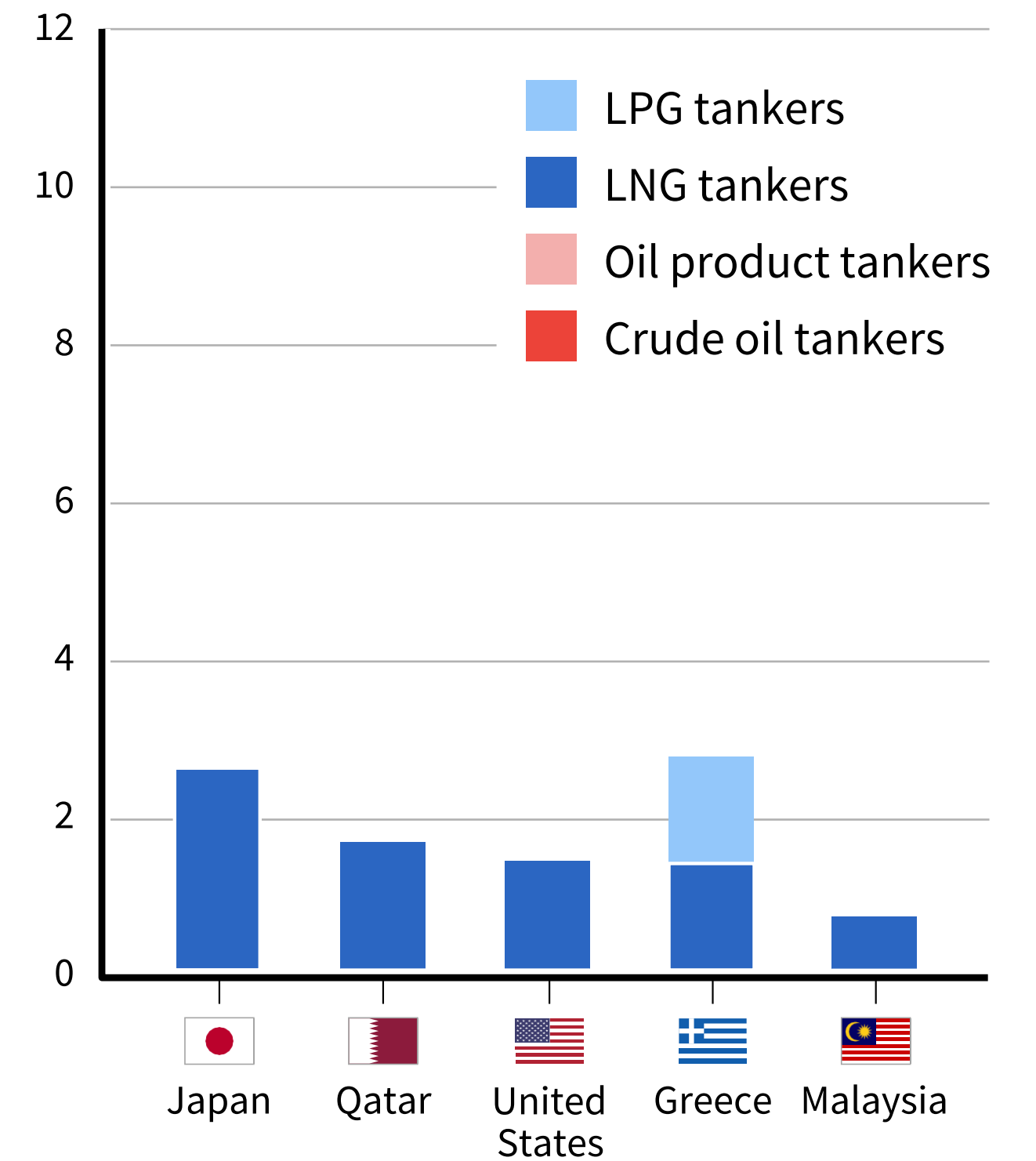
1.5° Global warming

Estimated value at risk in USD bn



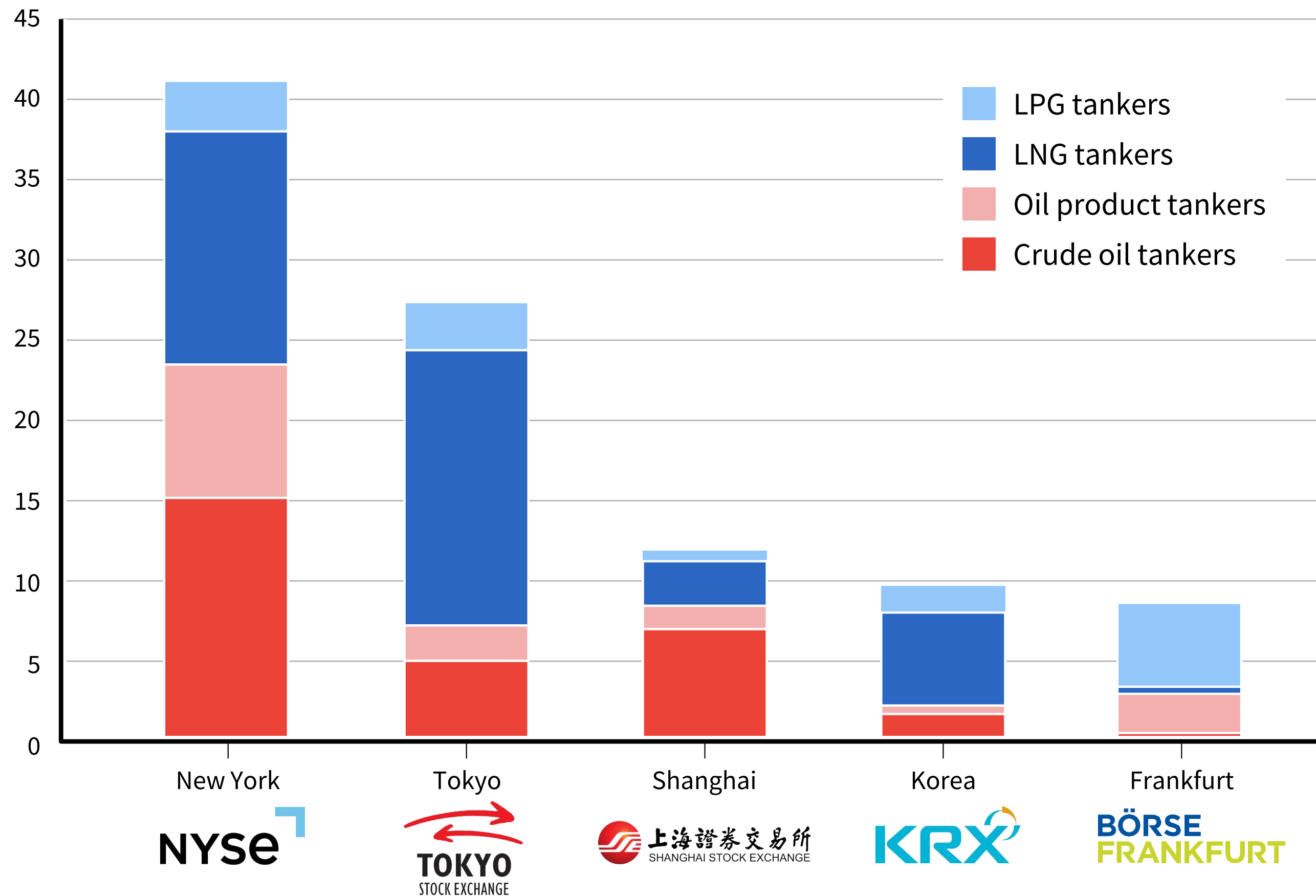
2.5° Global warming

Estimated value at risk in USD bn



New York, Tokyo, Shanghai and Korean stock exchanges trade the majority of publicly listed vessel-owning companies with high risk exposure.

Value in USD bn



The Investment Risk Monitor for Fossil Fuel Carrying Ships

shows the aggregate risk of different vessel types under different climate scenarios, as well as the aggregate risk of a country's vessel-owning companies.



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The Investment Risk Monitor is available on:
www.shipping-transition.org

It was developed by University College London Energy Institute and Kuehne Climate Center.

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The **UCL Energy Institute** hosts a world leading research group which aims to accelerate the transition to an equitable and sustainable energy and trade system within the context of the ocean.

The Shipping and Oceans Research Group's multi-disciplinary work on the shipping and ocean system leverages advanced data analytics, cutting-edge modelling, and rigorous research methods, providing crucial insights for decision-makers in both policy and industry. The group focuses on three core areas: analysing big data to understand drivers of historical emissions and wider environmental impacts, developing models and frameworks to explore energy and trade transition to a zero emissions future, and conducting social science research to examine policy and commercial structures that enable the decarbonisation of the shipping sector.



by Kühne Foundation

The **Kuehne Climate Center KCC** is a subsidiary of the charitable Kühne Stiftung (Foundation). KCC develops and implements logistics-focused solutions to accelerate the transition to a just, low-carbon society by reducing emissions, removing carbon, and strengthening resilience. In its program "Logistics for the Transformation of Energy and Industry", KCC supports the development of logistics systems with the right capacities for the energy sector to master its transition fast and efficiently.