

# Changing Course: Bank Financing of the Shipping Industry

This briefing acts as a guide for investor engagement with shipping companies and the banks that lend to them. It provides recommendations addressing climate-related risks and outlines how banks can support decarbonisation of the industry.



<b>Executive Summary</b>	1
<b>Introduction</b>	2
<b>1. Shipping and Climate Change</b>	5
1.1 Growing Demand, Growing Emissions	5
1.2 Decarbonising the Shipping Industry	7
<b>2. Risks and Market Forces</b>	11
2.1 Regulatory Risks	12
2.2 Demand-side Risks	14
2.3 Stranded Asset Risk	16
<b>3. Policy and Initiatives</b>	17
3.1 Industry	17
3.2 Financiers	18
<b>Recommendations</b>	21
<b>Conclusion</b>	22

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# About ShareAction

ShareAction is a UK registered charity working globally to lay the tracks for responsible investment across the investment system. Its vision is a world where ordinary savers and institutional investors work together to ensure our communities and environment are safe and sustainable for all.

In particular, ShareAction encourages institutional investors to be active owners and responsible providers of financial capital to investee companies, while engaging meaningfully with the individual savers whose money they manage.

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# Executive Summary

Relative to other carbon-intensive industries, shipping has faced less scrutiny, falling outside the scope of the 2015 Paris Agreement.<sup>1</sup> However, for investors and banks that support the Paris goal of limiting global warming to well below 2°C, the industry warrants attention. Emissions from shipping account for 2.4% of global greenhouse gas (GHG) emissions and could rise by as much as 250% by 2050 under a business-as-usual scenario.<sup>2</sup> In 2018, after years of relative inaction, the International Maritime Organisation (IMO) announced its GHG strategy, targeting at least a 50% reduction in shipping emissions by 2050.<sup>3</sup>

This briefing identifies steps that can be taken by investors and banks that support the shipping industry in meeting and going beyond this target. In the short to medium term, operational and technical measures such as slow-steaming are crucial in achieving emission reductions, but to decarbonise and align with the Paris goals, the shipping industry needs to move away from fossil fuel powered ships, and towards low-carbon alternatives. As providers of capital, investors and banks have a key role to play in financing this transition.

In 2018, Maersk, the world's largest container shipping company, announced a target of net-zero emissions by 2050.<sup>4</sup> Through lending policies and company engagement, investors and banks must press other shipping companies to match this target. Doing so is important not only from an environmental standpoint, but also a financial one. This briefing finds that a number of trends, such as increasing regulation, present risks to the shipping sector. Ships with higher energy efficiency and lower GHG emissions are generally more resilient to these risks, and act as higher quality collateral. Despite these benefits, few banks disclose policies specific to shipping.

The focus of this briefing is on investor engagement with banks financing the shipping industry. However, the recommendations made are also applicable to equity and credit investors that invest in and engage with shipping companies. This briefing primarily looks at the environmental impact of the shipping industry as a result of GHG emissions. Other important environmental issues, such as the impact of shipping on biodiversity, are outside the scope of this briefing.<sup>5</sup>

## Key Recommendations

### Policy

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Require that clients have a strategy and targets to reduce GHG emissions which, at a minimum, meet the IMO 2050 50% reduction target. Banks should engage with clients on alignment with the Paris Agreement, requiring net zero emissions by 2050.

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Require that clients are not highly dependent on revenues from coal transportation, aligned with or going beyond any existing bank coal policies.

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### Practice

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Incorporate climate-related risks into credit risk assessment when lending to shipping companies.

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Set and disclose targets for the climate alignment of shipping loan portfolios, aiming for alignment with the Paris Agreement.

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## Introduction

At present, the shipping industry relies on fossil fuels, both as a driver of demand and as a power source. Close to half of all seaborne trade is in fossil fuels,<sup>6</sup> while carbon-intensive heavy fuel oil (HFO) is used in 80% of marine fuel consumption.<sup>7</sup> As a result, shipping is responsible for close to a billion tonnes of carbon dioxide (CO<sub>2</sub>) emissions annually.<sup>2</sup> For banks, shareholders, and debtholders looking to manage climate-related risks, the shipping industry needs to be a priority.

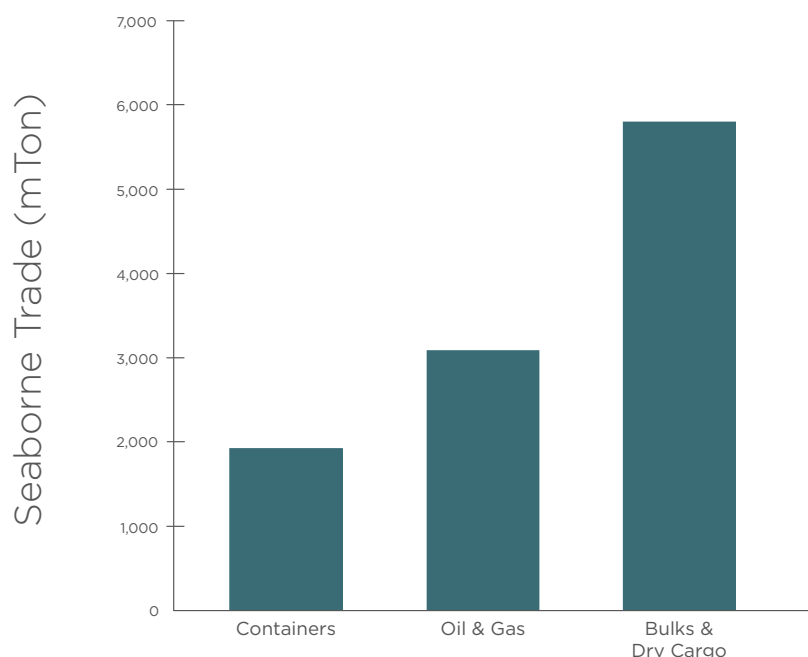
Decarbonising an industry this dependent on fossil fuels is no easy task, but action cannot wait. Alignment with the goals of the Paris Agreement requires the shipping industry to decarbonise completely between 2035 and 2050.<sup>8</sup> Yet, under a business-as-usual approach, emissions are set to rise 50-250% by 2050<sup>2</sup> and account for 17% of global CO<sub>2</sub> emissions by 2050 if left unregulated.<sup>9</sup> Bridging this gap will require banks and investors – as well as shipping companies, governments and regulators – to play their part.

As financial intermediaries, banks are uniquely positioned to facilitate the transition to a low-carbon economy. With the right policies they can support decarbonisation, finance low-carbon opportunities and mitigate climate-related risks. For global banks, lending to shipping may form a small proportion of overall loan books, but due to the carbon-intensive nature of the sector, it cannot be ignored.<sup>10</sup> The aim of this briefing is to support investor engagement with banks on this issue. However, it also applies to investors engaging directly with the shipping industry.

First, this briefing addresses the relationship between shipping and climate change, identifying steps that reduce environmental impact. This includes short-run measures and long-term solutions, such as alternative fuels and zero-emission vessels. It then looks at the industry trends such as regulation, which are driving decarbonisation, and the financial risks that they pose. Finally, after evaluating existing industry initiatives and bank policies, the briefing provides a set of recommendations for banks and their shareholders.

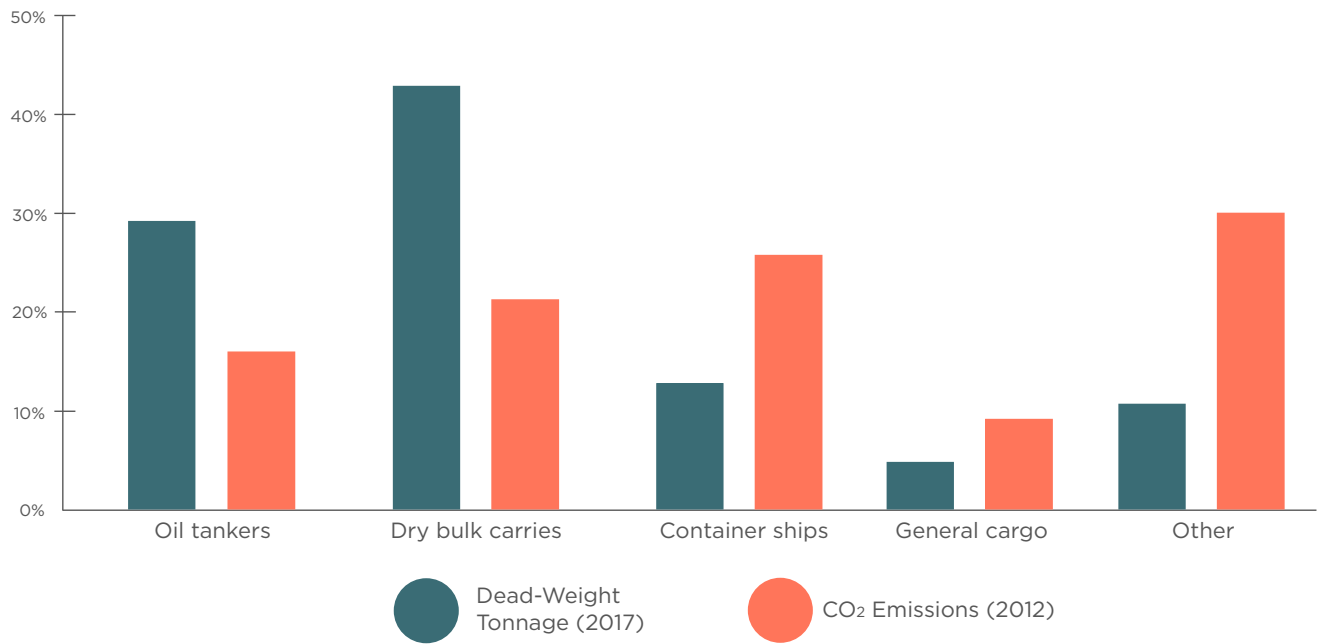
This section provides a brief overview of the shipping industry, giving a breakdown by geography and ship type. It also looks at the largest bank lenders and container shipping companies.

**Figure 1: World Seaborne Trade by Cargo 2017**



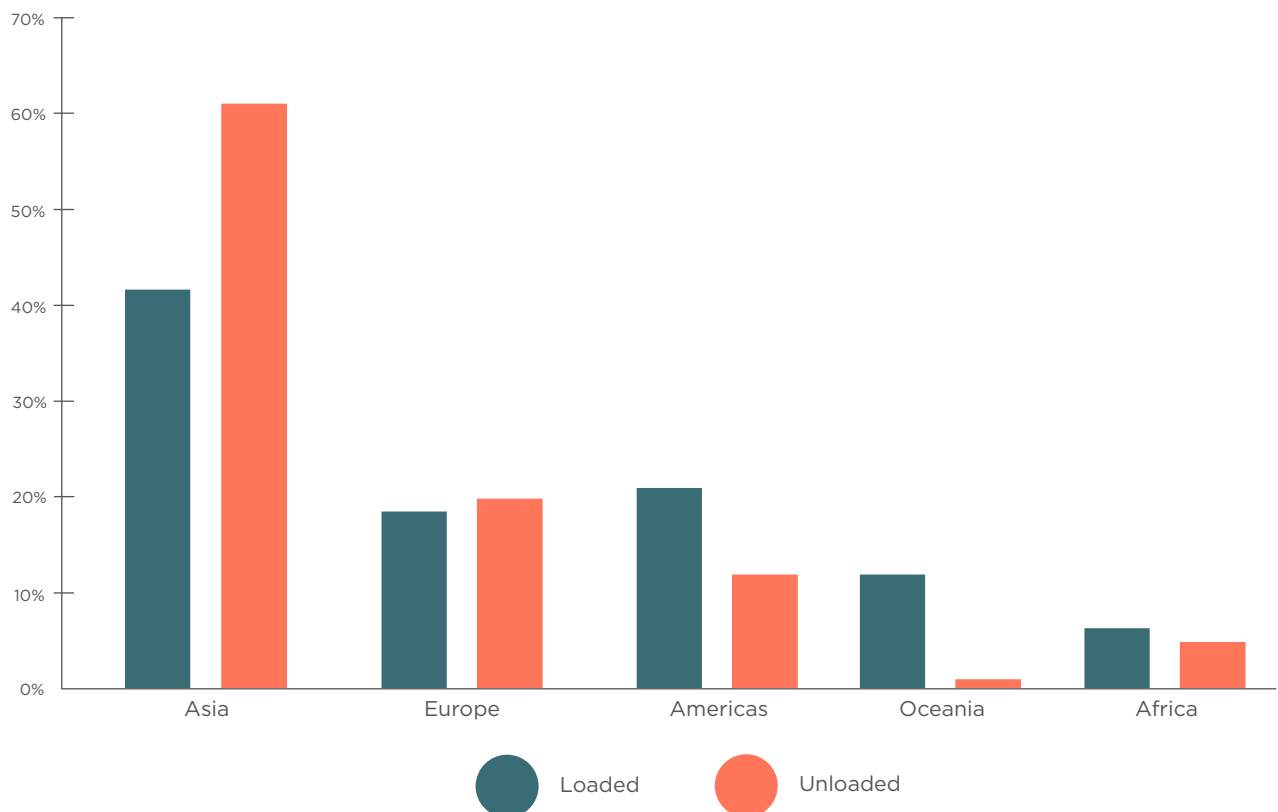
Source: UNCTAD

Figure 2: World Seaborne Trade by Vessel Type



Source: UNCTAD, IMO GHG Study 2014

Figure 3: World Seaborne Trade by Region 2017



Source: UNCTAD

**Figure 4: Largest Liner Shipping Companies**

Shipping Company	Size (mTEU)	Country
Maersk Line	3.9	Denmark
Mediterranean Shipping Company	3.1	Switzerland
CMA-CGM	2.6	France
China Ocean Shipping Group	2.0	China
Hapag-Lloyd	1.6	Germany
Ocean Network Express	1.5	Japan
Evergreen	1.1	Taiwan
Orient Overseas Container Line	0.7	Hong Kong
Yang Ming	0.6	Taiwan
Pacific International Lines	0.4	Singapore

Source: UNCTAD 2018

**Figure 5: Largest Shipping Banks (excl. private and state-owned)**

BNP Paribas	BTMU
DNB	Credit Suisse
Crédit Agricole	Sumitomo Mitsui Banking
ING	Bank of America Merrill Lynch
SEB	Iyo Bank
Danske Bank	DVB
HSBC	UniCredit
Standard Chartered	Societe Generale

Source: Petrofin 2018

In terms of total seaborne trade, measured in million tonnes (mTon), the dry bulk sector forms the largest part of the shipping industry (Figure 1). It also has the largest share of the global shipping fleet at 40% of the total (Figure 2). However, in terms of CO<sub>2</sub> emissions, the container shipping sector is the biggest single contributor, making up 21% of total emissions (Figure 2). The dominance of Asia in the shipping industry is clear. In 2017, Asia made up 62% of seaborne trade (Figure 3) and six out of ten of the largest liner shipping companies (Figure 4). Europe also plays an important role as the second largest destination for trade and home to the three largest liner shipping companies, measured in 20-foot equivalent units (TEU). In addition, the majority of the largest lenders to the shipping industry are European (Figure 5). Global investors engaging with banks and shipping companies on GHG emissions need to do so across the industry sectors and geographies.

# 1. Shipping and Climate Change

This section looks at the environmental impact of shipping and how it can be reduced. The IMO is targeting at least a 50% reduction in emissions by 2050 compared to 2008 levels, yet under current trends, emissions are set to rise.<sup>3</sup> To decarbonise, fundamental change is needed. The industry needs to transition away from fossil fuels and towards zero-emission vessels and alternative fuels.

## 1.1 Growing Demand, Growing Emissions

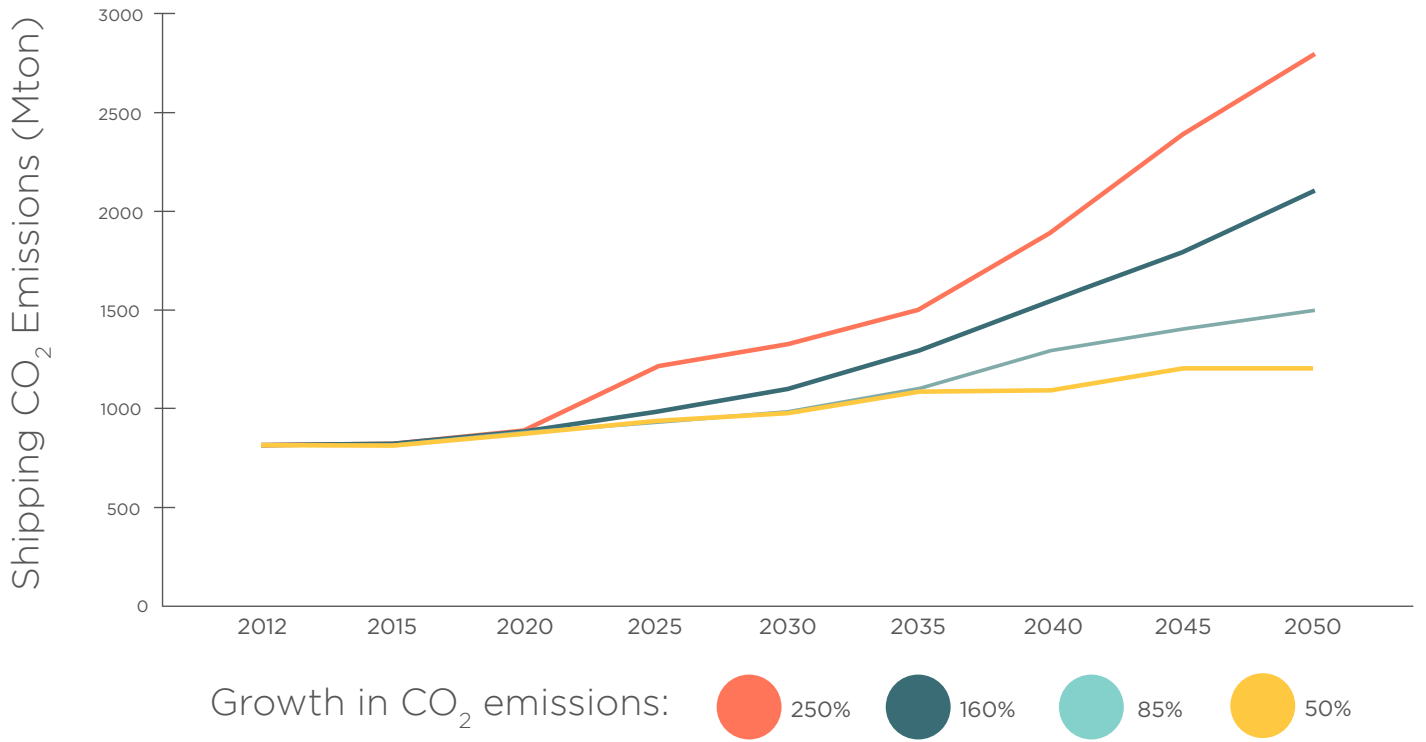
If counted as a country, the shipping industry ranks ahead of Germany as the 6th largest emitter of GHG globally.<sup>11</sup> The consumption of heavy fuel oil (HFO) is the primary reason for such high emissions, accounting for 80% of marine fuel usage.<sup>7</sup> The number of ships able to carry 5,000 tonnes is small relative to the global fleet, yet these ships, which tend to rely on HFO, account for 85% of the industry's emissions.<sup>12</sup> Shipping is also a key component in fossil fuel supply chains, with fossil fuels making up 40% of seaborne trade in 2017.<sup>6</sup>

As a “bottom of the barrel” by-product of the oil refining process, HFO is cheap with a high energy density, making it economical for large vessels and long journeys.<sup>13</sup> However, it is also one of the most harmful fuels in terms of GHG emissions, with a higher carbon intensity than diesel or crude.<sup>14</sup> In addition to CO<sub>2</sub>, HFO releases large quantities of sulphur dioxides (SOx), nitrogen oxides (NOx) and black carbon or particulate matter (PM), a short-lived climate forcer detrimental to human health and ecosystems.<sup>15,16</sup> As an industry, shipping is responsible for 13% and 15% of global SOx and NOx emissions.<sup>17</sup>

As international trade has grown, so too have shipping emissions, with shipping transporting 90% of global trade.<sup>18</sup> From 1990 to 2012, fuelled by globalisation and economic growth, world seaborne trade grew 130% while absolute emissions grew 70%.<sup>2,19,20</sup> The continued growth in international trade – forecast at 3% a year up to 2050 – is likely to lead to greater demand for shipping in the future.<sup>8</sup> Under a business-as-usual scenario the IMO projects that GHG emissions will rise 50-250% by 2050<sup>2</sup> (Figure 6), while the International Transport Forum (ITF) at the OECD project that emissions from international shipping will rise 23% by 2035 relative to 2015.<sup>8</sup> This contrasts sharply with the reduction in emissions consistent with the Paris goals. Figure 7 shows that in order to align with a 1.5°C scenario, the shipping industry needs to decarbonise before 2050.<sup>21</sup>

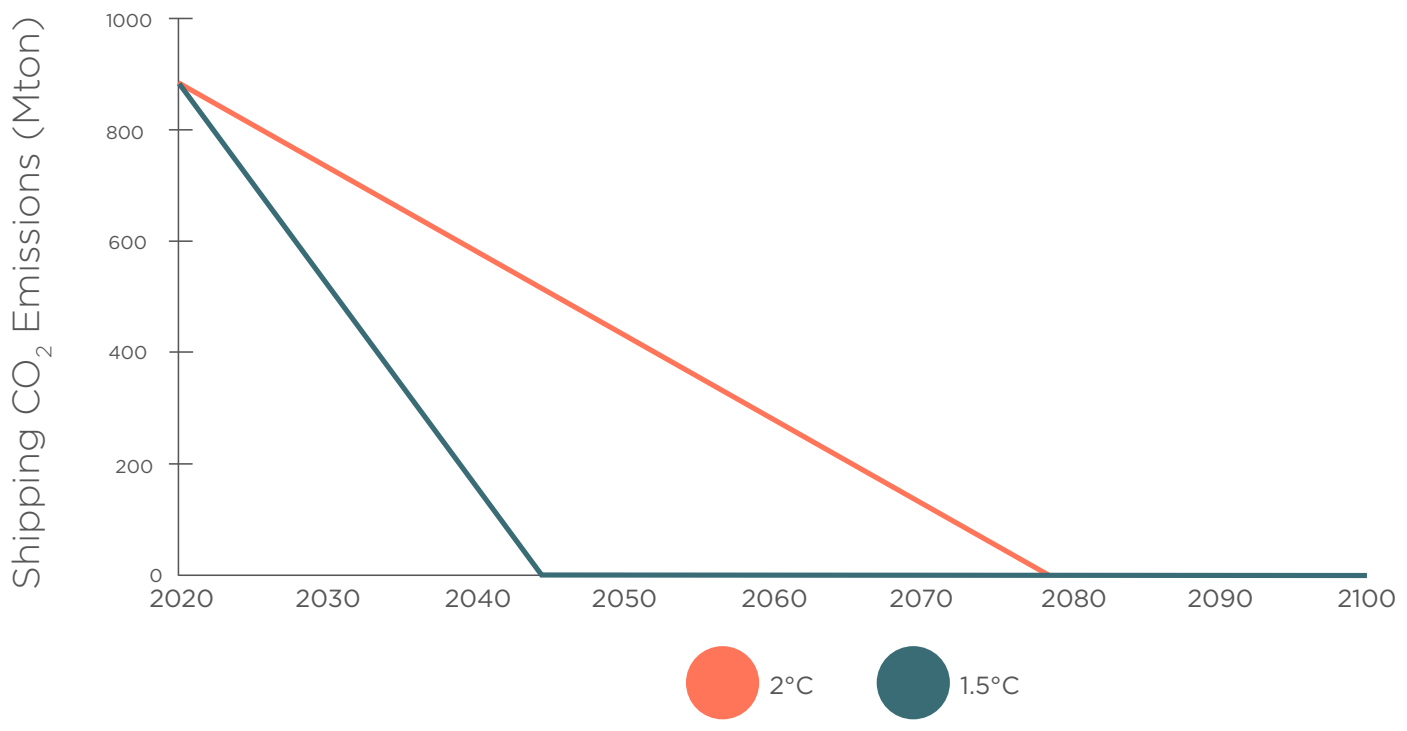


Figure 6: IMO Business-as-usual Scenarios



Source: IMO

Figure 7: 1.5°C/2°C Scenarios



Source: University College London, University of Manchester

## 1.2 Decarbonising the Shipping Industry

According to the International Transport Forum, decarbonisation of the shipping industry needs to occur between 2035 and 2050 in order to align with a 1.5°C scenario.<sup>8</sup> In 2018, the world's largest shipping company Maersk announced a target of zero net emissions by 2050.<sup>4</sup> This is ambitious, but the IMO states that a 25%-75% reduction in emissions can be achieved through operational measures and existing technologies.<sup>20</sup> This section looks at how this can be achieved.

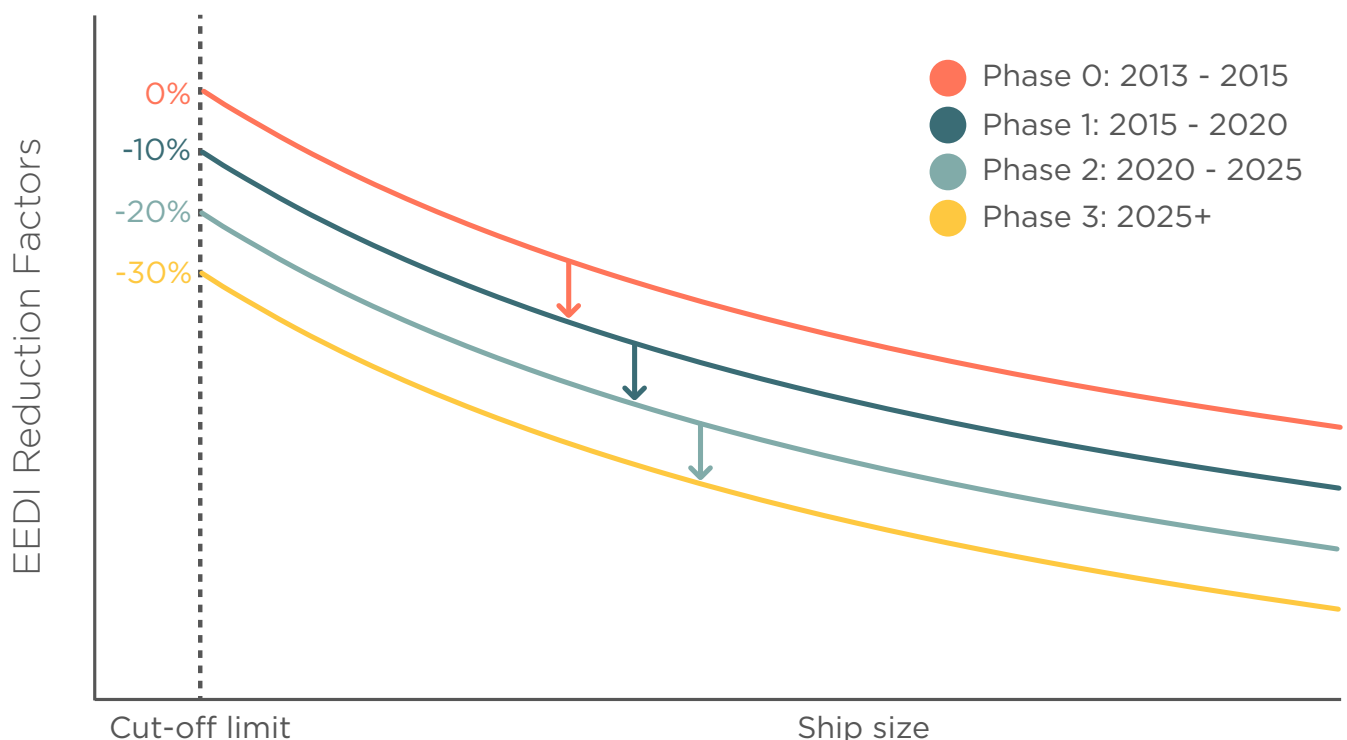
### Short-term measures: slow steaming and energy efficiency

To increase the probability of meeting GHG reduction targets, the shipping industry should aim to reduce emissions as soon as possible. Short-term measures that reduce GHG emissions include slow steaming, a technique already widely used. By reducing speed by 10%, power consumption can be decreased by up to 30%.<sup>22</sup> Following the 2008 financial crisis this technique has been widely adopted to reduce fuel costs, causing daily fuel consumption to drop 27% from 2007 to 2012 (averaged across ships of all types and sizes).<sup>2</sup>

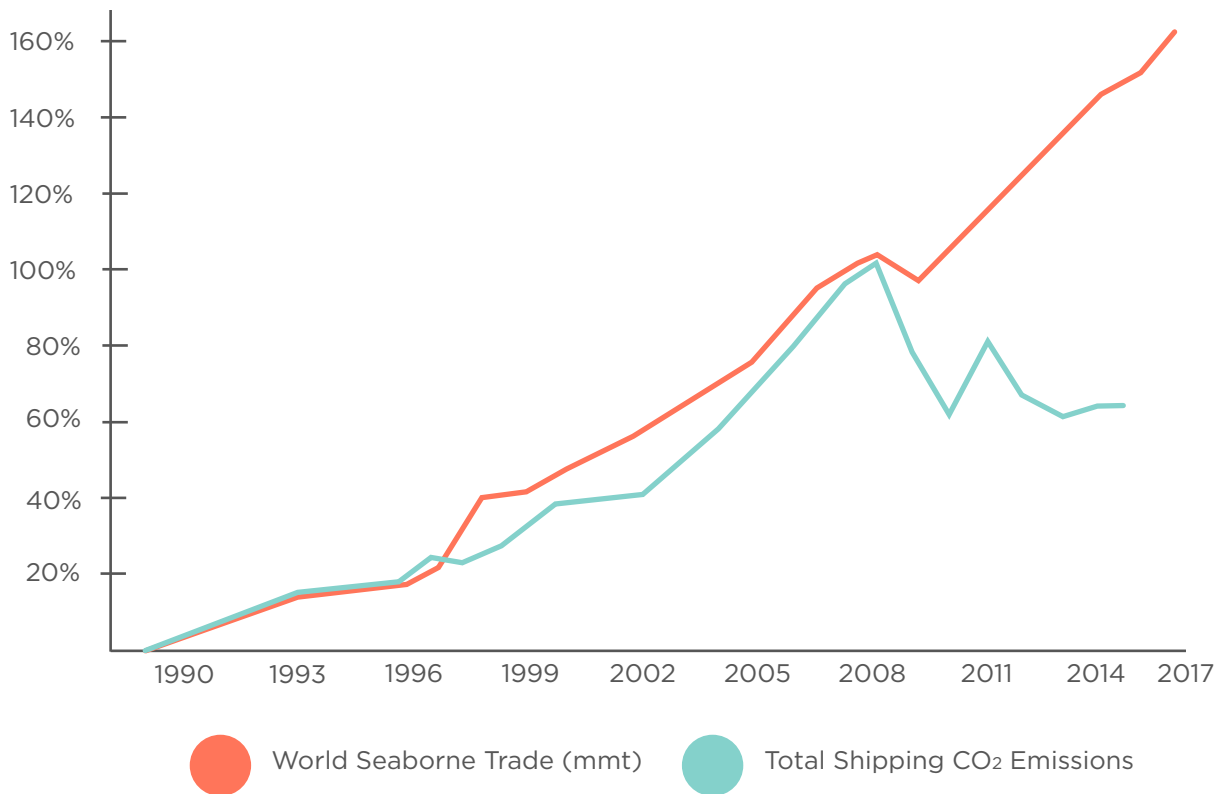
Maximising energy efficiency also reduces fuel consumption. Larger ships can reduce emissions by 30%, while slender hulls can reduce fuel consumption by 10-15%.<sup>8</sup> The IMO regulates the energy efficiency of new ships through the Energy Efficiency Design Index (EEDI). EEDI requirements are measured in terms of GHG emissions per tonne mile, and depend on ship type and size. Each phase of the EEDI has a reduction factor relative to a 1999-2009 baseline. The next phase starting in 2020 will require EEDI values 15-20% lower than the baseline, representing an increase in energy efficiency.<sup>23</sup> In 2025 this will increase to 30%, as shown by Figure 8. However, both phases are already easily met by some new builds, with 71% of new container ships already in compliance with Phase 3.<sup>24</sup> As a result, the IMO is tightening standards, bringing forward Phase 3 implementation for container ships to 2022.<sup>25</sup>

The implementation of these measures has caused the growth in shipping emissions and international trade to diverge (Figure 9). Going forward, liquefied natural gas (LNG) is commonly cited as a way of reducing CO<sub>2</sub> emissions, with the number of LNG ships expected to double in the coming years. However, when incorporating methane slip, the reduction in emissions relative to HFO is not substantial.<sup>26</sup>

**Figure 8: IMO Energy Efficiency Design Index (EEDI)**



Source: IMO

**Figure 9: Growth in Shipping Emissions**

Source: OECD, IMO 2nd and 3rd GHG Study, ICCT

## Long-term measures: alternative fuels and energy

Short-term measures are important, but to align with the Paris goals fundamental change is needed. To successfully decarbonise, the sector needs to replace HFO powered ships with zero-emission vessels (ZEVs) powered by renewable fuels and energy. Different ZEVs are currently under development and a consensus on the best way forward is yet to emerge – technological maturity differs, and various constraints exist.

Shipping companies, and the banks that support them, have an important role to play in ZEV adoption. Ships currently under construction will be in service for up to 20-30 years.<sup>27</sup> Therefore, to be consistent with a 50% chance of limiting warming to 2°C, ZEVs need to enter the global shipping fleet by 2030 and form a substantial share of new builds from that point onwards.<sup>28</sup> Reaching this goal will require shipping companies to support ZEV development by investing in R&D and taking part in pilot projects.

ZEVs are split into two main categories, those using internal combustion engines (ICE) and those using electric motors. Many ZEVs have zero direct emissions, but if fossil fuels or unsustainable practices remain in supply chains, emissions can move upstream. This is demonstrated by Figure 10, which shows the range of potential CO<sub>2</sub> emission reductions relative to HFO powered ships, taken from an ITF meta-analysis.<sup>8</sup> For example, depending on whether electricity is generated by fossil fuels or renewables, the CO<sub>2</sub> reduction can range from 0% to 100%. Consequently, a focus on life-cycle or “well-to-wake” (WtW) emissions is necessary.

At present, ZEVs are more expensive than conventional ships, but this differential is likely to fall. Analysis by UMAS and Lloyd’s Register indicates that the cost of decarbonising shipping is predominantly a function of the cost of zero-emission fuels.<sup>28</sup> Using International Energy Agency (IEA) price forecasts Energy Brainpool predicts that in the 2030s, as the cost of renewables fall, it will be possible to generate renewable hydrogen at a lower cost than natural gas.<sup>29,30</sup>

Issues around sustainability may limit the viability of biofuels.<sup>31</sup> However, in terms of cost, biofuels appear the most attractive with minimal extra investment required, whilst battery power is the most expensive (Figure 11). Between the two options are alternative fuels, such as hydrogen and ammonia, that are largely in the testing and development phase. These alternative fuels can be used either in electric motors or internal combustion engines, with the later more cost-effective. The section below covers these options in more detail.

## Figure 10: Auxiliary Power, Alternative Fuels, and Electric Motors

### Auxiliary Power

#### Wind

**Potential CO<sub>2</sub> Reduction: 1% - 32%**

Wind can be used to support another power source. Rotating cylinders, turbines and sails are a few examples of how wind power can be harnessed either to produce electricity or for direct propulsion.<sup>32</sup> A number of technologies are currently being tested, while others are already commercially available.

#### Solar

**Potential CO<sub>2</sub> Reduction: 0% - 12%**

Solar energy can supplement another power source, either on deck or on sails.<sup>37</sup> Like wind, depending on weather conditions and ship type, the effectiveness of solar varies.

### Alternative Fuels

#### Biofuels

**Potential CO<sub>2</sub> Reduction: 25% - 100%**

Biofuels are the cheapest alternative, with existing internal combustion engines either already compatible or requiring minimal extra investment. In some cases, CO<sub>2</sub> emission reductions can be as high as 80-90%.<sup>32</sup> However, depending on the production process, land use change can result in the destruction of high carbon stocks.<sup>33</sup>

#### Liquefied Natural Gas (LNG)

**Potential CO<sub>2</sub> Reduction: 0% - 20%**

Taking into account upstream emissions and the release of methane, a climate forcer 28 times more potent than WtW equivalent CO<sub>2</sub> emissions can actually increase.<sup>34</sup> LNG powered ships are therefore not ZEVs.

#### Hydrogen and Ammonia ICE

**Potential CO<sub>2</sub> Reduction: 0% - 100%**

Hydrogen can be produced through electrolysis powered by renewable energy, or by using methane, biomass or fossil fuels. Liquid hydrogen used in internal combustion engines produces zero CO<sub>2</sub>. Like hydrogen, ammonia can also be used in direct combustion.<sup>8</sup>

### Electric Motors

#### Electric Batteries

**Potential CO<sub>2</sub> Reduction: 0% - 100%**

For medium to long journeys, electric batteries have been shown as the least cost-effective option. However, the cost of batteries is falling rapidly.<sup>32</sup> Trials of hybrids have shown a 35% reduction in fuel consumption, while in Norway fully electric ferries have reduced CO<sub>2</sub> emissions by 95%.<sup>35</sup>

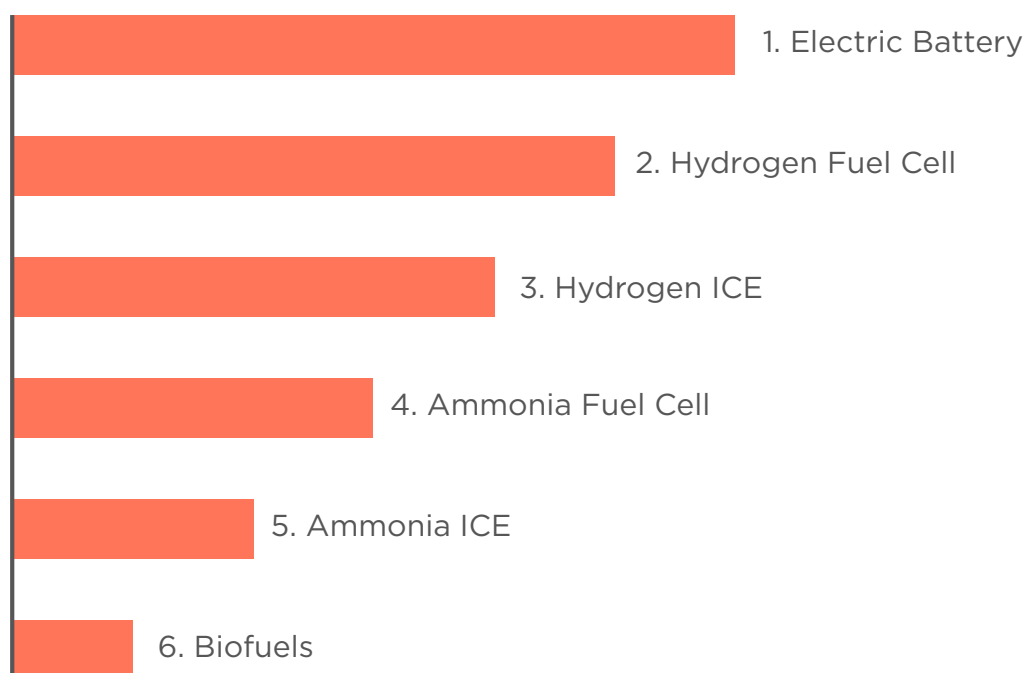
#### Fuel Cells

**Potential CO<sub>2</sub> Reduction: 2% - 20%**

In fuel cells, liquid hydrogen is converted directly into electricity to power electric motors. The low density of hydrogen makes storage difficult and so far only small passenger boats have utilised the technology.<sup>36</sup> Commercial production of fuel cells is expected from 2022.<sup>32</sup> Ammonia can also be used in fuel cells. In both instances, low energy density requires more on board storage which increases costs.

*Source: International Transport Forum*



**Figure 11: ZEVs Ranked by Cost**

Source: UMAS

## Market barriers to decarbonisation

### Corporate Lobbying

Unlike other UN agencies, the IMO enables extensive corporate sector influence in the policy making process. At IMO committee meetings corporate sector representatives, either from companies or trade bodies such as the International Chamber of Shipping, are allowed to attend as part of state delegations.<sup>37</sup> Analysis by InfluenceMap found that at the Marine Environment Protection Committee (MEPC) 71st session in 2017, 31 out of 100 state delegations included representatives of the shipping industry.<sup>38</sup> The corporate sector has wielded this influence to resist GHG emission reduction measures, lobbying to delay action until 2023. In addition to trade bodies, InfluenceMap notes that companies outside of the shipping sector are also active. For example, mining company Vale sent more delegates to MEPC 2015-2017 meetings than any other company.

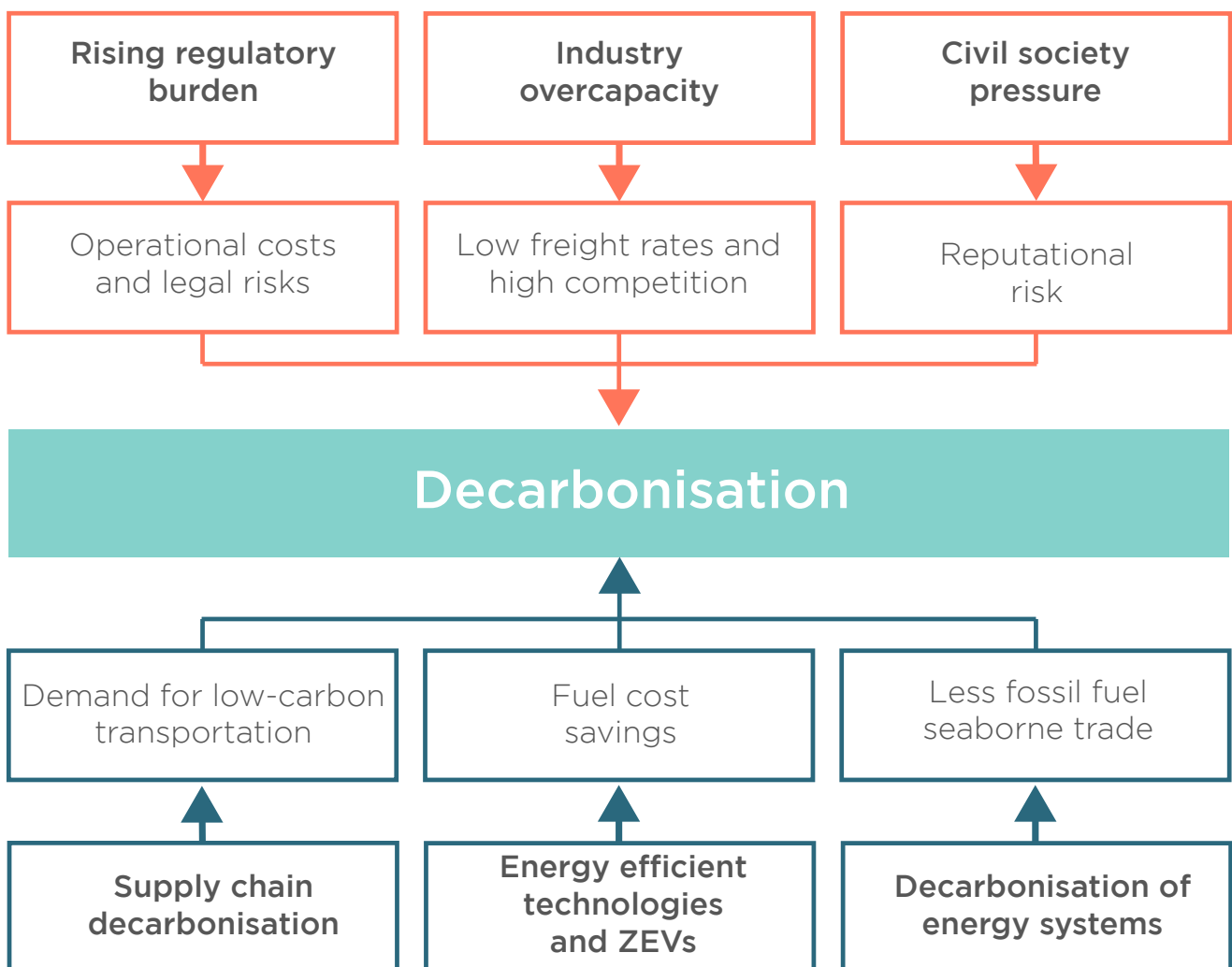
### Split incentives

The world's 10 largest container shipping companies charter on average 48% of their fleets.<sup>6</sup> In time charter markets, charterers pay ship owners to use their vessels and also cover the cost of fuel. This presents a split incentive problem. Due to savings on fuel, one would expect energy-efficient ships to command a price premium when chartered. If not, ship owners have little incentive to invest in energy-efficient ships and retrofits that lower emissions. Evidence shows that charter rates do not fully reflect energy efficiency. Although a premium appears to exist in Panamax markets, evidence elsewhere is more mixed.<sup>39, 40</sup> One study finds that 14% and 27% of fuel savings are captured by higher rates in the Panamax and Capesize markets respectively.<sup>41</sup> Potential solutions include third-party financing models, similar to those found in the renewable energy sector, with returns on investment generated by fuel cost savings.<sup>42</sup>

## 2. Risks and Market Forces

This section identifies transition risks arising from decarbonisation and their associated impact, as summarised by Figure 12. Investors and banks with financial exposure to the shipping industry should develop policies to manage and mitigate these risks, and engage with companies on these issues.

**Figure 12: Shipping Industry Decarbonisation**



## 2.1 Regulatory Risks

After years of inaction and mounting pressure, in 2018 the IMO agreed on an initial strategy to tackle GHG emissions, aiming for a reduction of at least 50% by 2050 from 2008 levels.<sup>3</sup> This roadmap and initial strategy, which will be reviewed in 2023, is summarised in Figure 13. Considering the disparity between the IMO's GHG strategy and current emissions, additional regulation is required to meet this target.<sup>30</sup> The financial risk for shipping companies, and the banks that finance them, is that regulation tightens faster than expected, increasing operational costs and regulatory uncertainty.

### Figure 13: IMO Roadmap and Initial Strategy

#### IMO Roadmap

2016	Roadmap for tackling GHG emission in the shipping industry agreed
2018	Initial Strategy announced, along with a list of short-, mid-, and long-term measures
2019-2022	Data collection on emissions on all ships over 5,000 tonnes
2023	Strategy is revised based on data collected

#### Initial Strategy

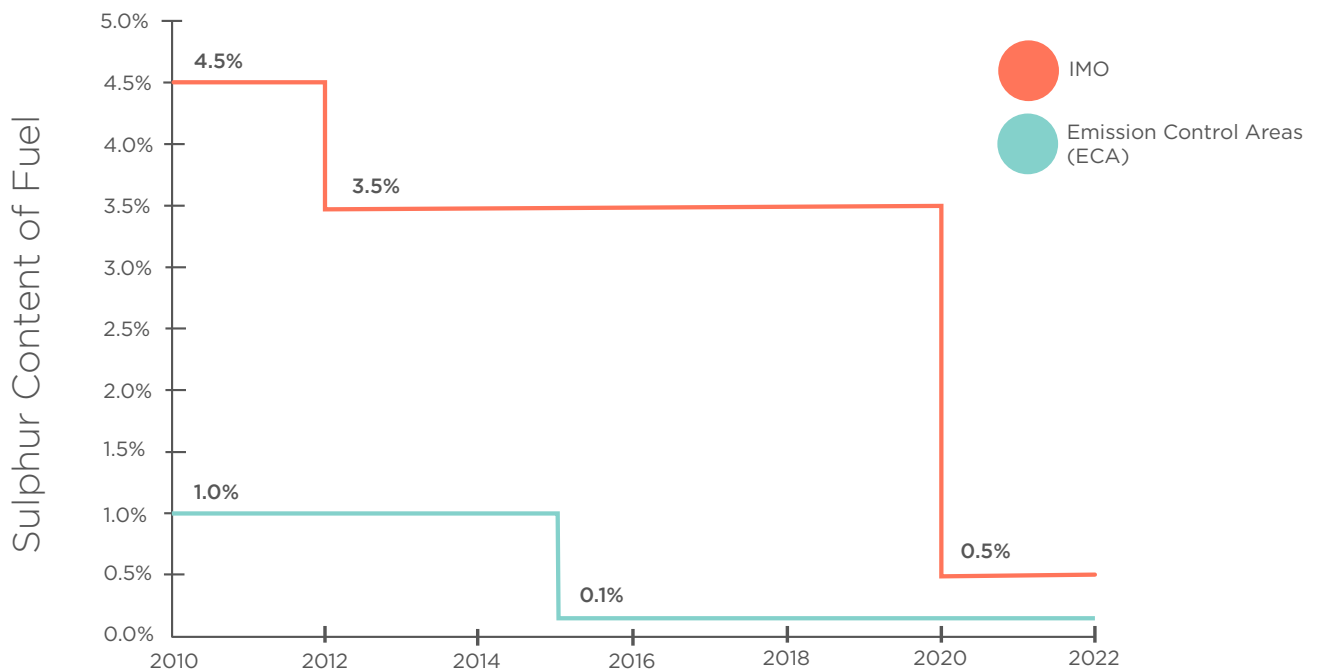
Objectives	<ol style="list-style-type: none"> <li>1. Strengthen energy efficiency requirements</li> <li>2. Reduce absolute emission by 50% by 2050 from 2008 levels</li> <li>3. Reduce emission intensity by 40% by 2030 and pursue a 70% reduction by 2050</li> </ol>
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Source: IMO

Following the agreement, the IMO has struggled to finalise new regulations. Approval for a cap on ship speeds and more stringent efficiency measures failed to gain traction after opposition from member states.<sup>43</sup> That being said, the incoming cap on the sulphur content of marine fuel at 0.5% in 2020, down from 3.5% at present, indicates a willingness to regulate despite cost to industry (Case Study 1 & 2).<sup>44</sup> This regulation, known as IMO 2020, is estimated to cost the container shipping industry \$5bn-\$30bn annually, an increase of 20-85%.<sup>45</sup> To meet the cap, companies are using scrubbers, compliant fuels, and switching to LNG. Although this may be enough for compliance these are not long-term solutions. To manage an increasing regulatory burden, companies need to address the root of the problem - a reliance on fossil fuels.

## Case Study 1: IMO 2020 Sulphur Cap

**Figure 14: Sulphur Fuel Caps**



Source: IMO

### Options for achieving compliance:

- 1. Scrubbers** operate by spraying alkaline water into exhausts, either from sea-water (open-loop) or from freshwater (closed-loop). SO<sub>x</sub> emissions are reduced by 98%, but WtW GHG emissions increase by 4-5.5% and, in the case of open-loop scrubbers, water is discharged back into the sea along with heavy metals and SO<sub>x</sub>.<sup>46</sup> Ship modifications are expensive (\$5m-\$10m)<sup>47</sup>, but cost savings can be made through the continued use of cheap HFO.
- 2. Liquefied Natural Gas (LNG)** powered ships emit zero SO<sub>x</sub>, however the reduction in CO<sub>2</sub> relative to HFO is only -9.6% to +1.5%, depending on the amount of methane slip and supply chain emissions.<sup>32</sup> The cost of retrofitting existing ships is estimated at \$6m, making LNG more applicable for new builds.<sup>48</sup> The existing fleet of LNG ships is expected to double in the next few years.<sup>49</sup>
- 3. Compliant Fuels** such as marine gas oil (MGO) or ultra-low sulphur oil (ULSFO) can be used to meet IMO standards. The premium that these fuels trade at relative to HFO means that switching would cost the industry \$60bn annually.<sup>50</sup> In addition, WtW GHG emissions of MGO are 1% higher than HFO.<sup>51</sup>

## Case Study 2: Open-loop scrubbers and regulatory uncertainty

In anticipation of the 0.5% sulphur cap, the shipping industry has invested heavily in open-loop scrubbers. Research by DNV GL shows that of the 2,693 ships fitted with scrubbers, 80% have been open-loop.<sup>52</sup> Carnival, the world's largest cruise ship operator, has invested \$500m in the technology. However, due to environmental concerns Singapore, China and the U.A.E have banned the use of open-loop scrubbers from 2020, whilst individual ports in Russia and Finland, amongst other countries, have imposed bans or restrictions. There is now regulatory uncertainty about the future role of open-loop scrubbers with industry participants concerned that the IMO will ban them outright.



## 2.2 Demand-side Risks

### Supply Chain Decarbonisation

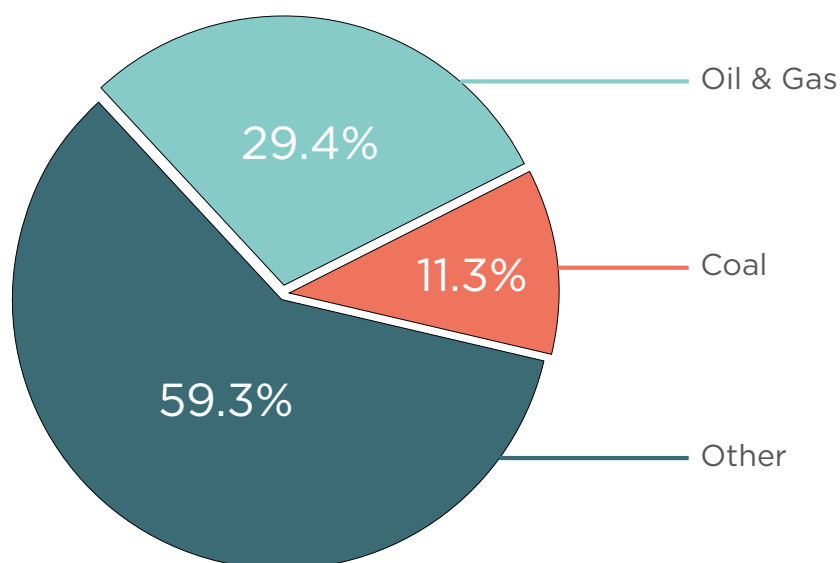
Climate-related disclosure initiatives, such as the Task Force on Climate-related Financial Disclosures (TCFD) and CDP (formerly the Carbon Disclosure Project), have increased transparency and awareness of corporate GHG emissions and environmental impact. This trend is likely to increase scrutiny of the shipping industry, a key component of global supply chains and therefore a target for both multinational corporations and civil society.

In shipping, data on emissions and energy efficiency can be collected at the individual ship level or for entire fleets. For example, the Clean Shipping Index (CSI) run by the Clean Shipping Network collects data on 2,400 ships.<sup>53</sup> For many multinationals looking to decarbonise supply chains transportation forms a large part of Scope 3 emissions. Analysis by CDP found that on average company supply chain emissions are 5.5 times that of direct emissions.<sup>54</sup> Companies such as VW, H&M, and Volvo have begun using CSI data to track the energy efficiency of their cargo and in 2012, Cargill, Huntsman, and UNIPEC UK announced they would no longer charter the least efficient ships.<sup>8, 55, 56</sup> This data is also being used by some banks to inform lending to the shipping industry.<sup>57</sup> As a result, companies with highly polluting fleets may find themselves facing the risk of lower demand, higher cost of capital and reputational damage.

### Forecast declines in global fossil fuel consumption

To limit global warming to 1.5°C, the share of renewables in the energy mix needs to rise to 63-81% in 2030, whilst compared to 2010, demand for coal needs to drop 73-97% and oil 32-87%.<sup>58</sup> To date, 30 countries have signed up to the Powering Past Coal alliance and in 2014, global demand for coal appears to have peaked.<sup>59, 60</sup> Furthermore, in many areas of the world coal is now more expensive than renewables,<sup>61</sup> with regulation increasingly favouring the latter.

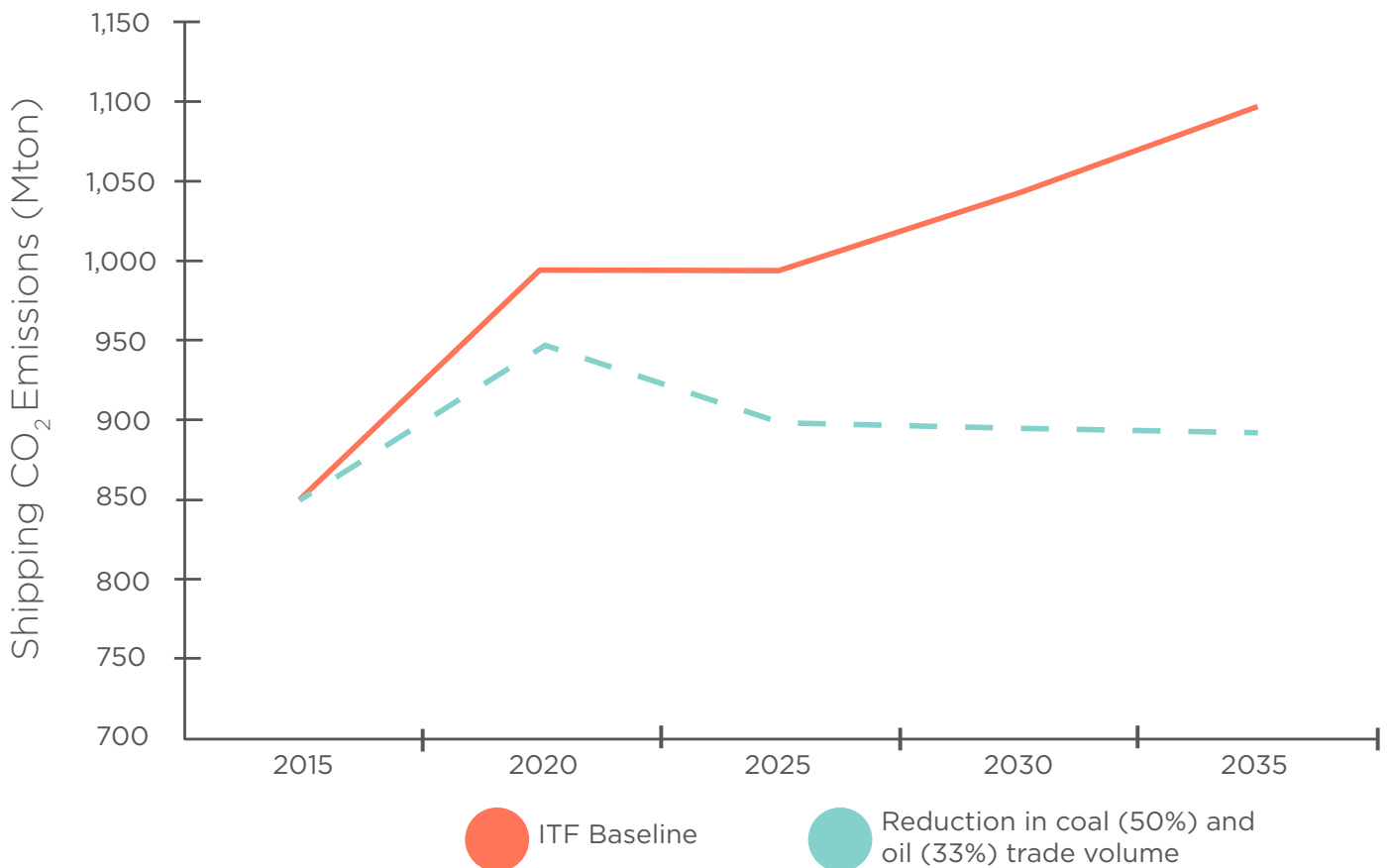
**Figure 14: World Seaborne Trade by Product 2017**



Source: UNCTAD

This structural change required to meet the Paris goals presents a risk to shipping. As shown by Figure 14, shipping is highly reliant on fossil fuels as a driver of seaborne trade. In 2017, oil and gas made up 29% of seaborne trade while coal represented 11%, making up 24% of the dry bulk sector.<sup>6</sup> Using IEA projections, the International Transport Forum estimates that the volume of oil and coal trade could drop 33% and 50% respectively by 2035 from 2015 levels, reducing emissions in the process (Figure 15).<sup>8</sup> This drop in trade could result in oversupply in shipping markets, pushing down freight rates and profitability.

**Figure 15: Impact of Reduced Fossil Fuel Trade on Shipping Industry Emissions**



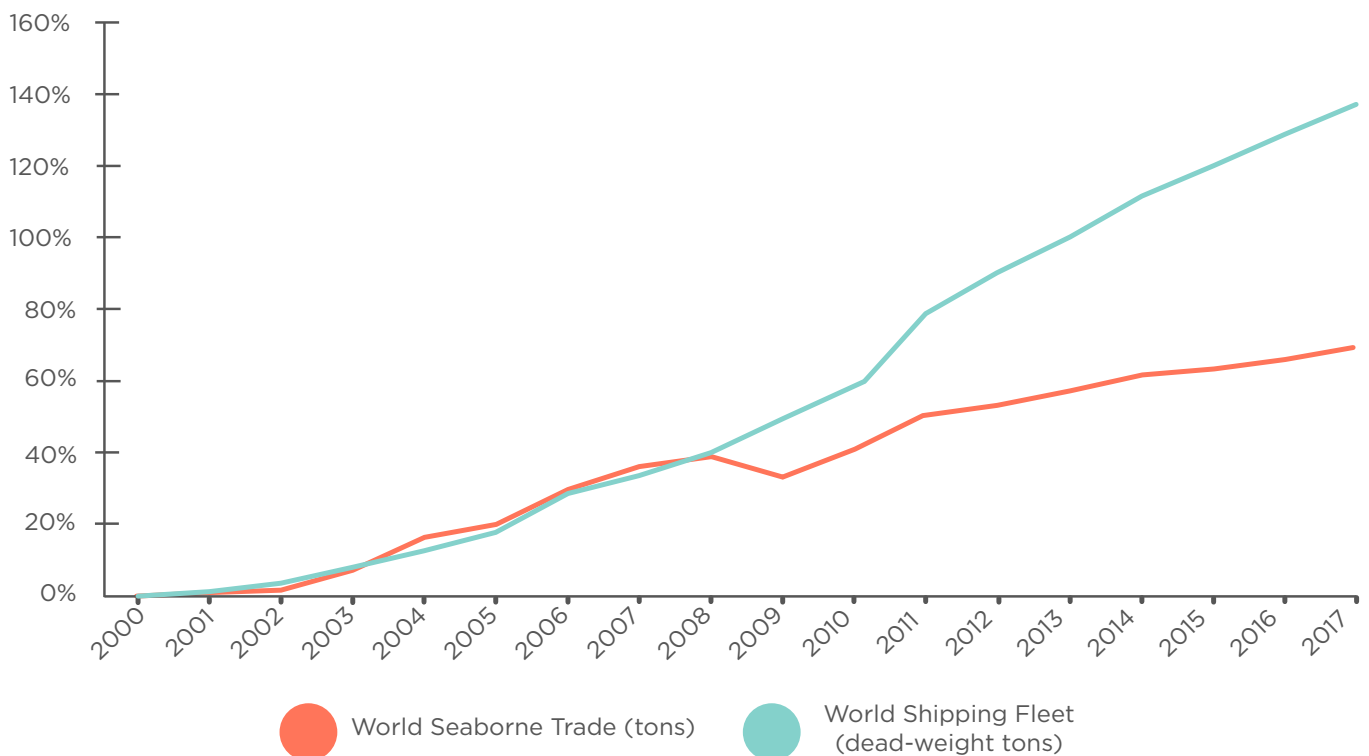
Source: International Transport Forum

## 2.3 Stranded Asset Risk

An increasing regulatory burden, and the demand-side risks highlighted above, are set to challenge the cost competitiveness of ships reliant on fossil fuels. Ships built with poor energy efficiency are particularly at risk. Lower energy efficiency results in higher operational costs due to higher fuel consumption, in turn lowering profitability and competitiveness. Using scenario analysis, UMAS compared ship profitability under different levels of climate change mitigation policy (carbon price) and freight rate. They find that ships built with a short-term investor perspective, with high fuel consumption rates, typically underperform and have a higher risk of becoming illiquid and prematurely depreciating in value.<sup>62</sup>

For companies and the banks that finance them, there is a risk of ships becoming stranded assets, losing “economic value well ahead of... anticipated useful life”.<sup>63</sup> However, predicting stranded assets in shipping is difficult. Ships can be retrofitted and can relocate to areas with easier regulatory regimes.<sup>39, 62</sup> Nevertheless, asset write-downs are already common due to the cyclical nature of shipping.<sup>56</sup> For example, following the financial crisis in 2008, the market has been oversupplied with vessels pushing down freight and utilisation rates (Figure 16).<sup>64, 65</sup> Climate-risks have the potential to accelerate asset write-downs and scrapping. HSBC estimates that by 2020, 20% of the global tanker fleet will be over 15 years old and will likely be scrapped due to a costly regulatory environment.<sup>66</sup>

**Figure 16: Growth in Shipping Fleet vs Trade**



Source: UNCTAD

## 3. Policy and Initiatives

This section looks at the policies and actions already being taken by companies and banks to reduce GHG emissions and decarbonise the shipping industry.

### 3.1 Industry

#### GHG emission targets

GHG emission reduction targets are key to aligning business models with the transition to a low-carbon economy. Targets can guide corporate strategy and help to communicate corporate ambition with regard to climate change. The Science Based Targets initiative (SBTi) verifies targets as “science-based” dependent on a level of decarbonisation consistent with the Paris goals. Out of the 536 companies signed up to the SBTi, four are shipping companies (Figure 17).<sup>67</sup>

**Figure 17: Science Based Targets**

Company	Size	Science Based Target
K-Line	14th-largest container shipping company in 2017.*	Commits to a 25% emissions cut per ton mile by 2030 from 2011. Goal of a 50% cut by 2050.
NYK Line	11th-largest container shipping company in 2017.*	Commits to a 30% emissions cut per ton-km by 2030 from 2015, and 50% by 2050.
CMA CGM	3rd-largest container shipping company in 2018.	Committed but not yet set targets.
Maersk	Largest container shipping company in 2018.	Net-zero CO <sub>2</sub> emissions by 2050. Not yet verified by SBTi.

*Source: Science Based Target Initiative, UNCTAD*

\* In 2018, K-Line, NYK Line, and Mitsui O.S.K. Line began trading as a joint venture Ocean Network Express, forming the world's 6th-largest shipping container company.

#### Lobbying and initiatives

InfluenceMap notes that the majority of shipping companies do not publicise their own positions on climate change policy, but instead rely on powerful industry groups such as the International Chamber of Shipping (ICS) to represent their interests.<sup>38</sup> The ICS, which represents 80% of the world's merchant fleet, has lobbied extensively against climate action, pushing back against ambitious Energy Efficiency Design Index (EEDI) standards and binding GHG targets. There are, however, a number of industry groups which advocate for sustainable shipping. These include the International Council on Clean Transportation and the Clean Shipping Coalition, groups which inform the IMO and engage in consultations.



Other industry initiatives include the Smart Green Shipping Alliance, focused on commercial renewable solutions, the Sustainable Shipping Initiative (SSI), a cross-sectoral organisation, and the International Windship Association. Corporates outside of shipping are also working to reduce supply chain emissions from transportation. Cargill is partnering with DNV GL to reduce shipping emissions by 10%, Drax is testing wind propulsion in partnership with dry bulk transporter Ultrabulk, and Ikea is trialling sustainable biofuels with container shipping giant CMA CGM.<sup>68, 69, 70</sup>

## Case Study 3: Maersk

**GHG Targets:** In 2018, Maersk, the world's largest container shipping company, announced a 2050 net-zero emission target, going beyond the IMO's reduction target of at least 50% and setting an ambitious precedent for others to follow. In its statement, Maersk stressed the need to fully transition to carbon-neutral fuels and to invest in R&D.<sup>4</sup>

**Lobbying and Initiatives:** Maersk publicly discloses climate policy positions, supporting the IMO GHG emission roadmap.<sup>38</sup> It is also a member of the Sustainable Shipping Initiative, which has called for stronger energy efficiency regulation.

### 3.2 Lenders and Finance Providers

Although many banks have general or sector-specific climate policies, few disclose policies specific to shipping. Of those that do, disclosure tends to focus on regulatory compliance. To ensure that sufficient cuts to GHG emissions are made, bank lending policies need to go beyond compliance with minimum environmental standards. Banks need to actively finance low- and zero-carbon solutions and incorporate sustainability into lending criteria.

The following sub-sections summarise and classify current developments in the banking sector in two key areas: **climate-related risk assessment and management**, and **low-carbon products and services**.

#### Climate-related risk assessment and management

By identifying and mitigating climate-related risks, banks can improve credit quality and loan portfolio resilience. Banks providing credit face an asymmetric payoff. By prioritising energy efficiency in lending practices the quality of collateral and recovery rates can be raised in the event of default. Research has shown a direct link between energy efficiency and vessel value in secondary markets.<sup>71</sup> Financing retrofits can have the same effect, improving the competitiveness of ships and therefore asset quality.<sup>72</sup>

At the individual loan level, banks HSH Nordbank and KfW IPEX-Bank have integrated GHG emission ratings into risk and return assessment when providing loans for vessels and retrofits.<sup>73</sup> Risk can also be assessed and tracked at the portfolio level, for example using scenario analysis. In addition, individual ship and loan data can be aggregated to gauge climate-related risks at the portfolio level. Ship energy efficiency and emissions data, for example collected by the Clean Shipping Index (CSI) or EEDI, can be used to achieve this. To facilitate the comparison of risk banks should push for the standardisation of reporting metrics.

## Case Study 4: KfW IPEX-Bank

KfW IPEX, whose parent organisation KfW is a German state-owned development bank, is one of the largest shipping lenders. The bank has used the Energy Efficiency Design Index (EEDI) to evaluate the energy efficiency of its merchant shipping portfolio, facilitating comparison with the global fleet. KfW IPEX found that 88% of ships in their loan portfolio could be evaluated using the EEDI.<sup>74</sup>

After a loan or investment is made, engagement and monitoring procedures can ensure that companies remain compliant with sustainability criteria in lending policies. Multiple instances of non-compliance with a bank's own policy and with regulations should result in the termination of client relationships.

Numerous global banks have already committed to stop financing coal, ending financing for mines, power plants, and companies highly dependent on the commodity. By continuing to finance coal transportation, banks are undermining their own climate policies. Banks should stop financing thermal coal carriers and shipping companies reliant on coal transportation in accordance with their own policies. If for example a bank does not finance companies deriving a certain percentage of revenue from coal, that same limit should apply to shipping companies.

## Case Study 5: ABN AMRO

The bank uses a Shipping Sustainability Assessment (SSA) Tool to integrate environmental risks into financial analysis, allowing for comparison between clients based on their sustainability performance.<sup>75</sup> If after an evaluation of sustainability risks gaps are identified, measures are agreed to close these gaps or clients are subject to more stringent monitoring. Loans are also followed up by an engagement and monitoring procedure.

## Low-carbon products and services

As well as managing climate-related risks, banks have a key role to play in financing decarbonisation. Technological developments and regulatory requirements create opportunities for banks to develop products tailored to the shipping industry. One example is the Green Shipping Guarantee Programme set up by the European Investment Bank, aimed at de-risking environmentally focused investments.<sup>76</sup> Societe Generale, ABN AMRO and ING have signed up to the framework, agreeing to contribute a combined €600m.<sup>77, 78, 79</sup> Examples of funded projects include an LNG-powered ferry financed by Societe Generale and energy-efficient cement carriers financed by ABN AMRO.<sup>80, 81</sup>

In 2016, ABN AMRO issued the first certified sustainable green shipping loan using a framework built on the Green Bond Principles.<sup>82</sup> In 2018, BNP Paribas issued a \$40m green loan to finance scrubbers and NYK Line secured a green loan for its first methanol-fuelled tanker.<sup>83, 84</sup> These are steps in the right direction. However, loans labelled as ‘green’ do not always represent low-carbon solutions. For example, LNG power can increase CO<sub>2</sub> emissions relative to HFO. The shipping industry is increasingly developing and trialling low-carbon technologies that will require financing, examples of which are shown by Case Study 6. Given the long operational lifespan of ships, it is essential that banks support these solutions as soon as possible.

### Case Study 6: Low-carbon projects

Technology	Company	Status
Battery-electric cargo ship	Guangzhou Shipyard	Operational
Tanker vessel retrofitted with rotor sails	Maersk	Operational
Plug-in hybrid ferry	Colour Line	In development
Battery-electric cargo ship	Yara	Under construction
Hydrogen fuel cell cruise ship	Viking Cruises	In development

Source: *The International Council on Clean Transportation, Maersk*

## Recommendations

This section provides a set of recommendations that investors should ask banks to incorporate into shipping policies. Banks and investors can also use some of these recommendations when engaging with shipping companies directly.

### Risk assessment and management

1. Develop and publish a standalone shipping policy.
2. Incorporate climate-related risks into credit risk assessment when lending to shipping companies.

### Loan portfolio alignment

1. Disclose the climate alignment of shipping loan portfolios and disclose classification methodologies.
2. Well-to-wake emissions should be used when classifying loans or transactions as climate-aligned.
3. Set and disclose targets for the climate alignment of shipping loan portfolios, aiming for alignment with the Paris Agreement.

### Lending criteria

1. Require that clients have a strategy and targets to reduce GHG emissions which, at a minimum, meet the IMO 2050 50% reduction target. Banks should engage with clients on alignment with the Paris Agreement, requiring net zero emissions by 2050.
2. Require that clients are not highly dependent on revenues from coal transportation<sup>i</sup>, aligned with or going beyond any existing bank coal policies.
3. Require that clients publicly disclose positions on climate policy and ensure that any trade associations, of which they are members, do not undermine these positions.
4. Require that clients disclose GHG emissions at the fleet level.
5. Require that new ships powered by fossil fuels have the ability to be retrofitted for alternative fuel usage.

<sup>i</sup> Highly coal-dependent companies are defined as those where over 30% of their revenues comes from coal transportation

## Conclusion

It is clear that there are numerous structural barriers to decarbonising shipping. The sheer size of commercial vessels and the amount of energy required make switching to low-carbon alternatives a difficult task. Not only that, but the industry faces numerous economic and structural headwinds, with low freight rates, high debt levels and overcapacity.

In the past decade, we have seen shipping companies reduce fuel consumption through technical and operational measures in order to meet these headwinds and regulatory requirements. This has resulted in the decoupling of GHG emissions and growing international trade. From 2009 to 2017, Clean Cargo reported a 37.1% drop in emissions intensity in the container shipping industry,<sup>85</sup> whilst Maersk, the largest company in the sector, decreased emission intensity by 47% between 2007 and 2018.<sup>86</sup>

These figures are encouraging, but to align with the goals of the Paris Agreement, which requires net zero emissions by 2050, the industry needs to go beyond improvements in emissions intensity and focus on absolute emissions. To achieve this, the industry needs to cut its reliance on fossil fuels and transition to low-carbon alternatives, such as those outlined in this briefing. In recent years we have seen shipping companies begin to pilot zero-emission vessels and set ambitious emission reduction targets.

These trends need to continue and accelerate. Banks, as providers of capital, need to step up and use their leverage to engage with shipping companies on this issue. Investors need to press banks to incorporate energy efficiency into credit risk analysis, align their shipping loan portfolios with the Paris goals, and ensure that shipping clients are, at a minimum, working towards IMO emission reduction targets. Due to the carbon-intensive nature of the shipping industry and the shrinking window available to meet the goals of the Paris Agreement – this needs to be a priority.

## Appendix: Investor Questions for Banks

Topic	Questions
<b>Industry engagement</b>	<p>How do you engage with clients to ensure that they are working towards the IMO objectives and the Paris goals?</p> <p>Do you engage with companies outside of the shipping industry on shipping emissions, for example with ports, or multi-nationals with large supply chain emissions?</p>
<b>Risk assessment and management</b>	<p>Does the bank have a standalone shipping policy?</p> <p>How do you evaluate climate-related risks when lending to the shipping industry? Are measures of energy efficiency incorporated into financial analysis?</p> <p>Do you have a monitoring and engagement policy to ensure that clients remain in accordance with bank lending criteria after a loan is made?</p>
<b>Lending criteria</b>	<p>What requirements must clients meet in order to qualify for lending?</p> <p>For example, requirements that:</p> <ul style="list-style-type: none"> <li>o Clients have a strategy to reduce GHG emissions, that at a minimum, meets the IMO 2050 50% reduction target</li> <li>o GHG emissions are disclosed</li> <li>o New builds powered by fossil fuels have the ability to be retrofitted for alternative fuel usage</li> <li>o Clients publicly disclose positions on climate policy</li> </ul> <p>Does the bank have a policy related to financing coal companies? How does this correspond to financing shipping companies dependent on coal transportation?</p>
<b>Loan portfolio alignment</b>	<p>Do you disclose the climate alignment of shipping loan portfolios and the methodology used for classification?</p> <p>Has the bank set and disclosed targets for the climate alignment of shipping loan portfolios? Will the bank commit to aligning with the goals of the Paris Agreement?</p>



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ShareAction (Fairshare Educational Foundation) is a registered charity that promotes responsible investment practices by pension providers and fund managers. ShareAction believes that responsible investment helps to safeguard investments as well as securing environmental and social benefits.

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