

# Carbon pricing in shipping

Its role in decarbonising  
maritime transport

What is carbon  
pricing?

Why do we need  
carbon pricing  
in shipping?

How should we  
introduce carbon  
pricing in shipping?

## At a glance

Maritime transport accounts for 3% of global carbon dioxide (CO<sub>2</sub>) emissions and is currently largely dependent on fossil fuels. Decarbonising the sector will help mitigate the global climate emergency. However, there are no indications that maritime shipping's emissions have peaked.

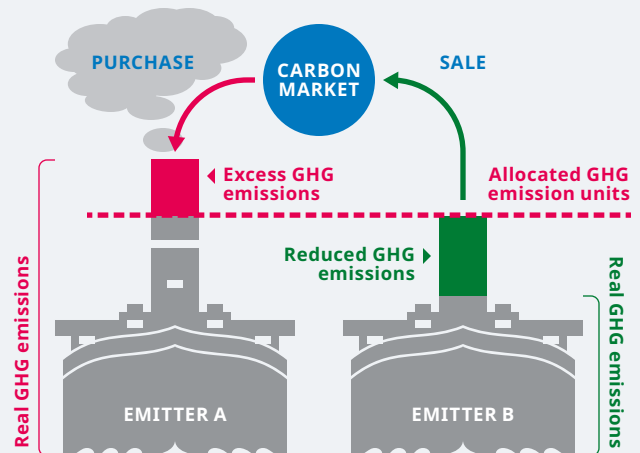
The International Maritime Organisation (IMO) is mandated to develop international regulations for the shipping sector. The IMO has, over the past decade, developed energy efficiency measures for ships that have reduced their emissions. However, more efforts are required to decarbonise shipping; carbon pricing should be part of those efforts.

## What is carbon pricing?

Carbon pricing quantifies the social costs of carbon emissions, or the damages that result from emitting CO<sub>2</sub> into the atmosphere. It creates an incentive to reduce emissions over time, helping to reduce the price gap between conventional and more sustainable fuels, and incentivise the development of low-carbon fuels.

Figure 1

## How an emission trading system works



Allowances are either freely allocated or auctioned, and then may be traded.

Emitters can also choose to 'bank' allowances for use in future years.

The supply and demand for these allowances establishes a market price.

Emitters with an insufficient amount of allowances required for their industry at the end of the reporting period incur penalties.



## Why do we need carbon pricing in shipping?

There are three ways to reduce GHG emissions from shipping: 1) improve energy efficiency (by reducing energy needed per tonne-mile); 2) use lower carbon-intensive fuels (measured in GHG emissions per unit of energy used); or 3) reduce the demand for maritime transport (the total amount of tonne-miles carried out by the shipping sector).

Various policy levers can be used to achieve decarbonising objectives. For example, ships are more energy-efficient when travelling at slower speeds, and shipping companies can deploy more energy-efficient ships and adapt their operations to become more efficient.

Carbon pricing can influence these policy levers (see Table 1). It can make shipping more energy-efficient by lowering speeds, spur a transition to less carbon-intensive ship power by bridging price gaps and stimulating innovation, and reduce the demand for shipping by stimulating shorter shipping routes.

Decarbonisation objective	Policy levers
<b>Energy efficiency</b>	More energy efficient ships
	More efficient shipping operations
	Lower ship speed
<b>Carbon intensity</b>	Bridge the price gap between conventional and alternative fuels
	Advance in zero-carbon technologies
<b>Reduced demand</b>	Shorter shipping routes
	Fewer goods transported by seas

Carbon pricing can meet a number of policy objectives

The European Union has introduced carbon pricing for shipping, including shipping in the EU Emission Trading System (operational in 2024). This measure includes voyages between EU ports, 50% of every voyage between a non-EU port and an EU port, and 50% of every voyage between an EU port and a non-EU port. The EU has indicated that it will expand its coverage if the IMO does not reach an agreement on a substantial package of mid-term measures.

## Carbon taxes versus cap-and-trade systems

There are two principal ways to design a carbon pricing system:

- a carbon tax (or levy)
- emissions cap-and-trade schemes (or emissions trading systems)

Carbon taxes set a carbon price, whereas cap-and trade schemes establish a maximum cap on emissions that will decrease over time. Entities obtain credits via auctions and trade allowances with one another to comply with targets; high emitters can purchase credits from those who have emitted less and companies emitting below their allowance can sell surplus allowances to companies overshooting their budget.

Worldwide, 68 carbon pricing schemes exist on a supra-national, national or sub-national level, covering around 23% of global greenhouse gas (GHG) emissions. Emissions from shipping are currently not priced in most parts of the world. Fuels for international and domestic shipping are also generally exempt from taxation in many countries.

Carbon pricing has proven difficult to introduce. The most successful carbon-pricing schemes have gradually increased prices and have been implemented with other carbon-reduction measures including regulation (e.g. on fuel standards or technical requirements).

## How to introduce carbon pricing in shipping?

Carbon-pricing measures have also proven difficult to introduce in shipping. IMO member-country discussions on market-based mechanisms (i.e. carbon pricing) in shipping between 2006 and 2013 did not lead to consensus.

But carbon pricing is now back on the agenda. Since 2021, several IMO countries have submitted proposals to the IMO to introduce a form of carbon pricing as part of the mid-term measures needed to reach the IMO levels of ambition.

Although consensus on the need for carbon pricing in shipping seems to be growing, it is essential to get the design of the carbon pricing framework right.

The ITF argues for the introduction of carbon pricing in shipping under the following conditions:

- **Address negative impacts and fund an equitable transition to zero emissions**

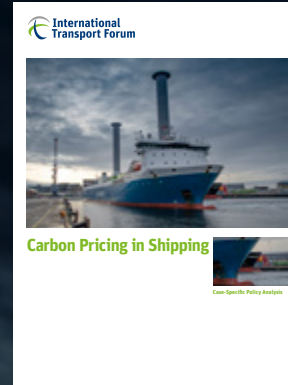
A substantial share of revenues from carbon-pricing mechanisms would need to be reserved for general climate mitigation and adaptation projects in small island developing states and least-developed countries, including projects related to decarbonising maritime transport. Using carbon-pricing revenues in this way helps balance potentially increased transport costs and negative impacts on trade.

- **Complement carbon pricing with a low-emission fuel standard**

A “zero-emission readiness” technical specification would require all new vessels to be capable of running on zero-emission fuels or other zero-emission energy sources. Such a standard could become progressively stricter to phase out fossil fuels in shipping.

- **Design carbon pricing to incentivise pioneers and early adopters**

Ideally, a carbon-pricing mechanism should cover the price difference between conventional fuels and zero-emission fuels or energy sources. In this way, it incentivises operators to adopt emissions-free energy sources early while burdening late movers with higher costs and increasing pressure to convert.



## Carbon Pricing in Shipping ITF Policy Paper

This report reviews the effectiveness of carbon pricing, how it might be applied to the shipping sector and with what effects. It also evaluates recent proposals by countries to introduce a price on shipping’s carbon emissions and examines related policy issues.



**Available for download:**

[www.itf-oecd.org/carbon-pricing-shipping](http://www.itf-oecd.org/carbon-pricing-shipping)

**For more information**

[olaf.merk@itf-oecd.org](mailto:olaf.merk@itf-oecd.org)

[nicholas.bell@itf-oecd.org](mailto:nicholas.bell@itf-oecd.org)

[olivia.wessendorff@itf-oecd.org](mailto:olivia.wessendorff@itf-oecd.org)

ITF 2 rue André Pascal, 75775 Paris Cedex 16, France  
[www.itf-oecd.org](http://www.itf-oecd.org)