ECSA
European Community Shipowners' Associations

How shipping, including short sea shipping, compares favourably to other modes of transport on CO2 emissions

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Several studies show that the CO_2 emissions from deep sea and short sea shipping compare favourably to other modes of transport. In almost all situations, emissions from sea borne transport are much lower than from other transport modes. This factsheet highlights the CO_2 performance of global shipping and short sea shipping. In addition, it illustrates the good performance of short sea shipping with a concrete example of a route between two EU ports.

Global shipping emits some 2% of total global CO_2 emissions

In today's world, the seamless and sustainable transport of goods and passengers is a key enabler for growth and prosperity. 90% of everything we consume arrives by sea. Without any doubt, shipping is at the very heart of global trade. Despite the huge trade volume, international shipping accounts for approximately 2% of global CO_2 emissions[1]. This attests to the extremely high carbon efficiency of shipping.

Shipping has improved its carbon efficiency by 30% and reduced its total emissions by 11% to date

For many years, there have been significant improvements in engine efficiency and hull design, and the use of ships with larger cargo-carrying capacities and smaller installed engine power have led to an increase in fuel efficiency and a reduction in emissions. The more efficient use of data has enabled the optimisation of operations, which has also led to further reductions.

According to estimates by the environmental NGO, the International Council on Clean Transportation, the shipping industry reduced its total CO_2 emissions between 2008 and 2015 by about 11 per cent[2], despite a significant increase in maritime trade during the same period. This indicates that the sector has already improved its carbon efficiency by as much as 30 percent over the past decade.

[1] International Maritime Organization. *Third IMO GHG Study 2014*. London, IMO, 2015.

[2] Olmer, Naya, et al. *Greenhouse Gas Emissions from Global Shipping 2013-2015*. Washington DC, International Council on Clean Transportation, 2017.

Shifting goods from land to sea will reduce CO_2 emissions

In terms of CO_2 emissions per tonne of cargo transported one mile, shipping is recognised as the most efficient form of commercial transport. Compared with road and air transport, shipping stands out as the best performing. (see table below). In the same way as shifting transport from road to sea, shifting passenger transport from air to sea will produce even larger reductions of GHG emissions. This is a real alternative in short distances such as straits crossing or inter-island trades where shortsea shipping competes in total transit time (city to city) with regional airplanes.

Table 1 – Grammes of CO_2 per tonne-kilometre per transport mode [3]

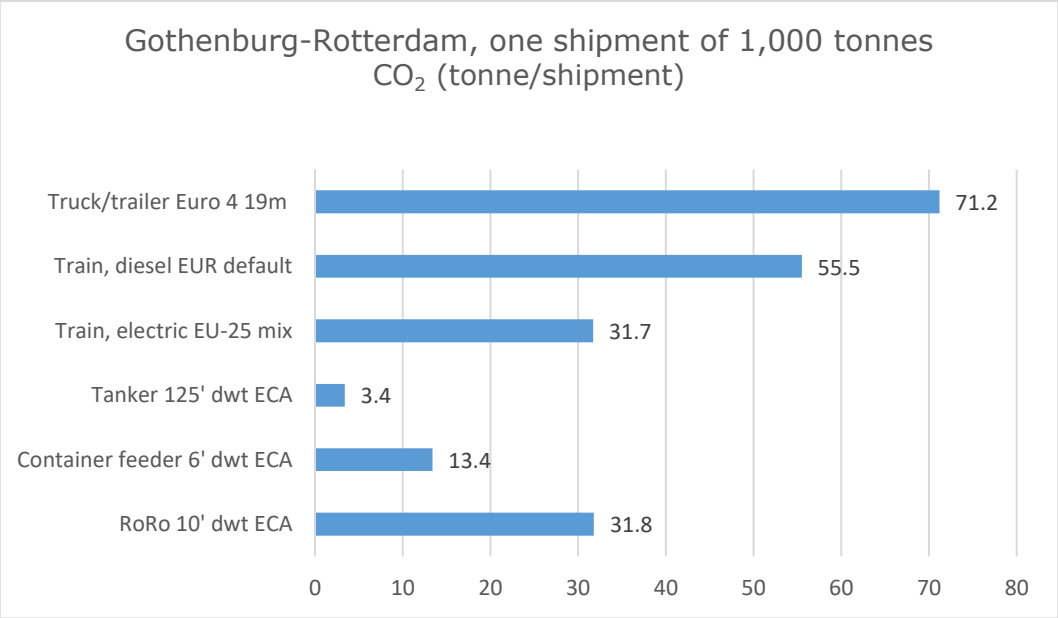
Transport mode		Grammes of CO_2 per tonne-km
Sea freight	Bulk vessel (200,000 dwt)	**2.5**
	Container vessel (8,000 TEU)	**12.5**
	Short sea vessel, general cargo (5,000-10,000 dwt)	**15.8**
	Short sea vessel, container (0 – 999 TEU)	**36.3**
Rail	EU average	81
Air freight	Boeing 747 F	435-474
Road freight	Truck (>40 tonnes)	80

[3] International Maritime Organization. *Second IMO GHG Study 2009*. London, IMO, 2009.

Short sea shipping is an exceptionally climate-friendly mode of transport – concrete case study of Rotterdam-Gothenburg

The Swedish Environmental Institute (IVL) made a comparison between different modes of transport and looked at the CO_2 performance per tonne/shipment on the route Rotterdam-Gothenburg. In the graph below, the two lowest bars (a 6,000 DWT container feeder and a 10,000 DWT RoRo carrier) are typical ship types which mainly operate in short sea shipping. Transport by sea is in almost all comparisons much more environmentally-friendly than by rail (diesel as well as electric EU-25 mix) or road (Euro IV engines). The types of energy (electric EU-25 mix e.g.) and engines (Euro IV e.g.) for the different modes of transport mentioned in the table are the most common ones in the European transport sector today. These numbers were also presented by the IVL at the European Parliament's hearing on maritime emissions on 21 January 2020.

Table 2 – Comparison of transport modes [4]



[4] Source: Swedish environmental institute (IVL), 2020

Short sea shipping could provide a way forward towards shipping's decarbonisation

Short sea shipping could adopt various zero-emission technologies and fuels aimed at the decarbonisation of the industry. The development of hydrogen and other alternative fuels, as well as electric vessels with the use of batteries are the first steps on the pathway to decarbonisation. Short sea shipping could provide a way forward towards decarbonisation through the uptake of these technologies. In addition, the shift of cargo from the road to the sea can reduce road congestions, improve air quality and safety, and reduce CO_2 emissions.

Concrete suggestions to further improve the environmental performance of shipping

In a separate publication[5], ECSA suggests a number of concrete actions to be taken by the EU to support the efforts of the shipping industry to reach climate neutrality as soon as possible this century. Port call optimisation, i.e. optimising the access of ships to ports in a planned schedule, can reduce CO_2 emissions substantially. The potential for harvesting such low-hanging fruits has to be recognised and put into effect as a matter of priority. Shore power and infrastructure for alternative fuels will enable the delivery of alternative (non-fossil) fuels in key European network ports, including electricity.

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[5] European Community Shipowners' Associations. *Position Paper: A Green Deal for the European Shipping Industry*. Brussels, ECSA, 2020.

The **European Community Shipowners' Associations (ECSA)**, founded in 1965, comprises the national shipowners' associations of the EU, the UK and Norway. ECSA aims at promoting the interests of European shipping so that industry can best serve European and international trade and commerce in a competitive and free business environment, to the benefit of both shippers and consumers.

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