

Supplementary Material

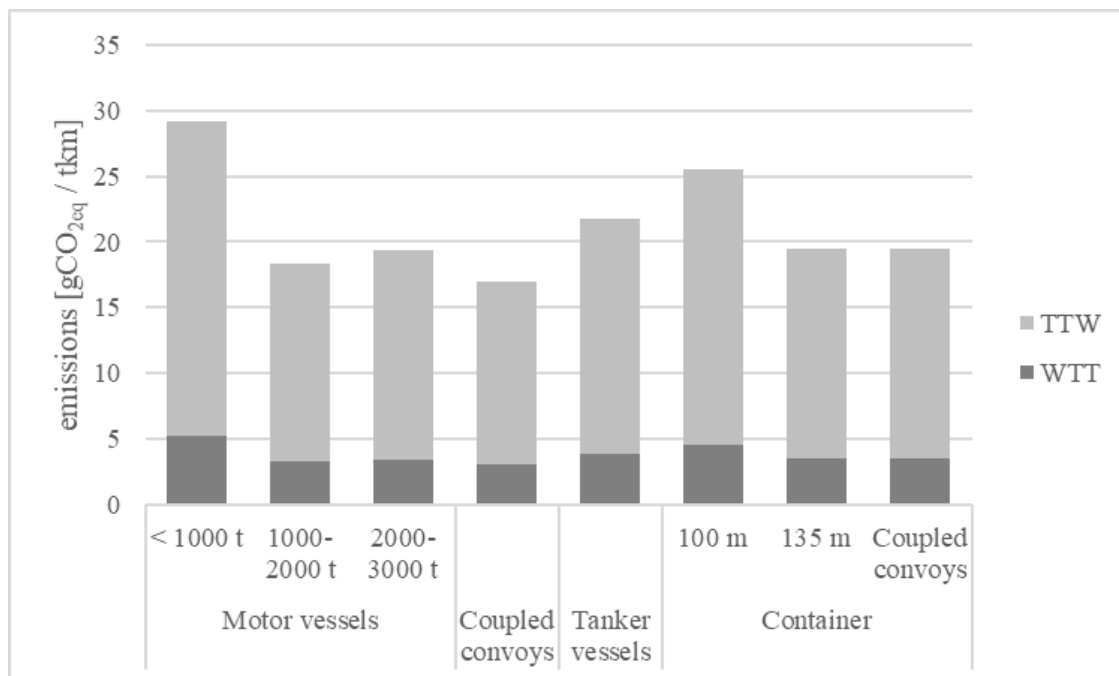
1 Supplementary Data

The data underlying the charts reported in the paper are available in JRC (2022).

Various inland and maritime stakeholders provided answers to questions posed by the European Commission in relation to alternative fuels deployment in waterborne transport (see Section 5.8.1 in EC (2020) for the questionnaire). These stakeholders expressed for IWWs the following stylized views: (i) electric propulsion for small vessels and for short trips was mature, though uptake remained low; (ii) fuel cell propulsion was not fully developed; (iii) the deployment of LNG vessels was extremely low; (iv) the prospects of alternative fuel vessels were uncertain, with electric propulsion seemingly better positioned than LNG (at least along the Rhine). Their stylized views on maritime transport were: (i) the performance of battery-electric vessels was still perceived as not fully satisfactory for deep-sea operations; (ii) the extent to which fuel cell propulsion was regarded as matured varied by stakeholder; (iii) upwards trend in LNG vessel uptake. Overall, these stakeholders tended to see a role for biofuels and synthetic fuels in the European waterborne transport system.

2 Supplementary Figures and Tables

2.1 Supplementary Figures

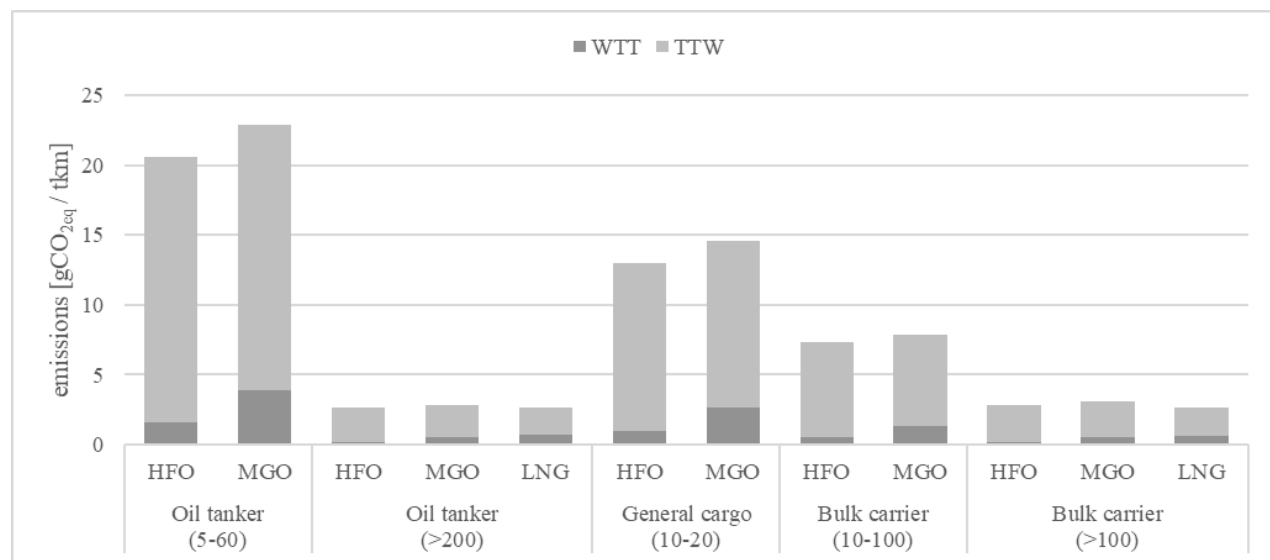


Supplementary Figure 1. Levels in GHG emissions by IWW vessel powered by diesel

Notes: TTW = tank-to-wake, WTT = well-to-tank.

Source: adapted from data in GLEC (2020)

Supplementary Figure 1 shows how the level of GHG emissions varies by type of IWW vessel powered by diesel. According to the source, these “data are primarily based on European operational information” (GLEC, 2020, p. 96). Using the same source, Supplementary Figure 2 shows how the level of GHG emissions differs not only by type of maritime vessel but also fuel. As can be seen, the only alternative fuel shown in this data is LNG and for only two options: oil tanker and bulk carrier.

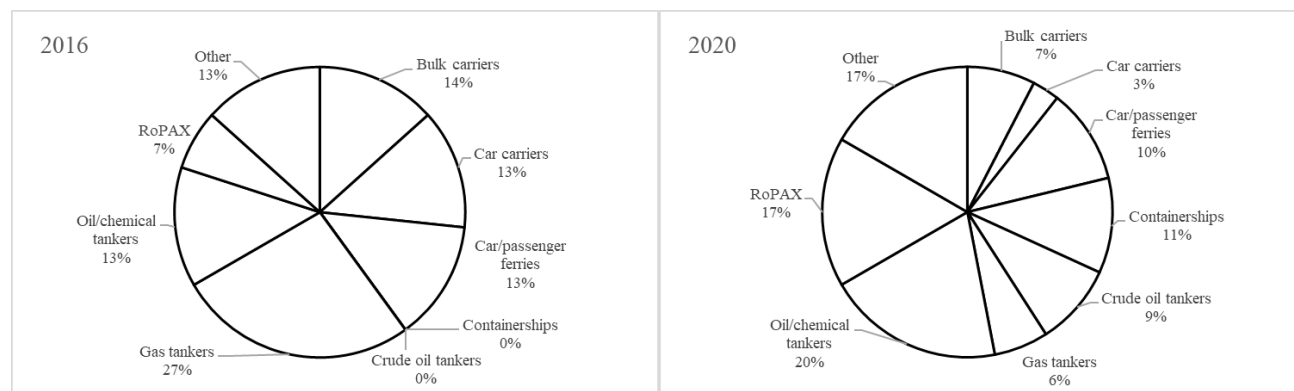


Supplementary Figure 2. Levels in GHG emissions by fuel and maritime vessel

Notes: HFO = heavy fuel oil, MGO = marine gasoil.

Source: adapted from data in GLEC (2020)

Supplementary Figure 3 shows the share of the European LNG maritime vessel fleet held by the different segments. As can be seen, while gas tankers held the largest share in 2016, followed by bulk carriers, they had been overtaken by oil/chemical tankers by 2020. In this year, containerships and crude oil tankers accounted for respectively 11% and 9% of the fleet, compared to no deployment four years earlier.



Supplementary Figure 3. European maritime vessel fleet powered by LNG in 2016 (left) and 2020 (right), by segment (%)

Notes: Excluding Norway.

Source: adapted from data by DNV-GL (2021) reported in EAFO (2022)

3 References

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