

# The role of inland waterways in sustainable transport networks

**Waterways – A Step Towards Green Transition**

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**Assistant Professor (Maritime Business and Policy)**

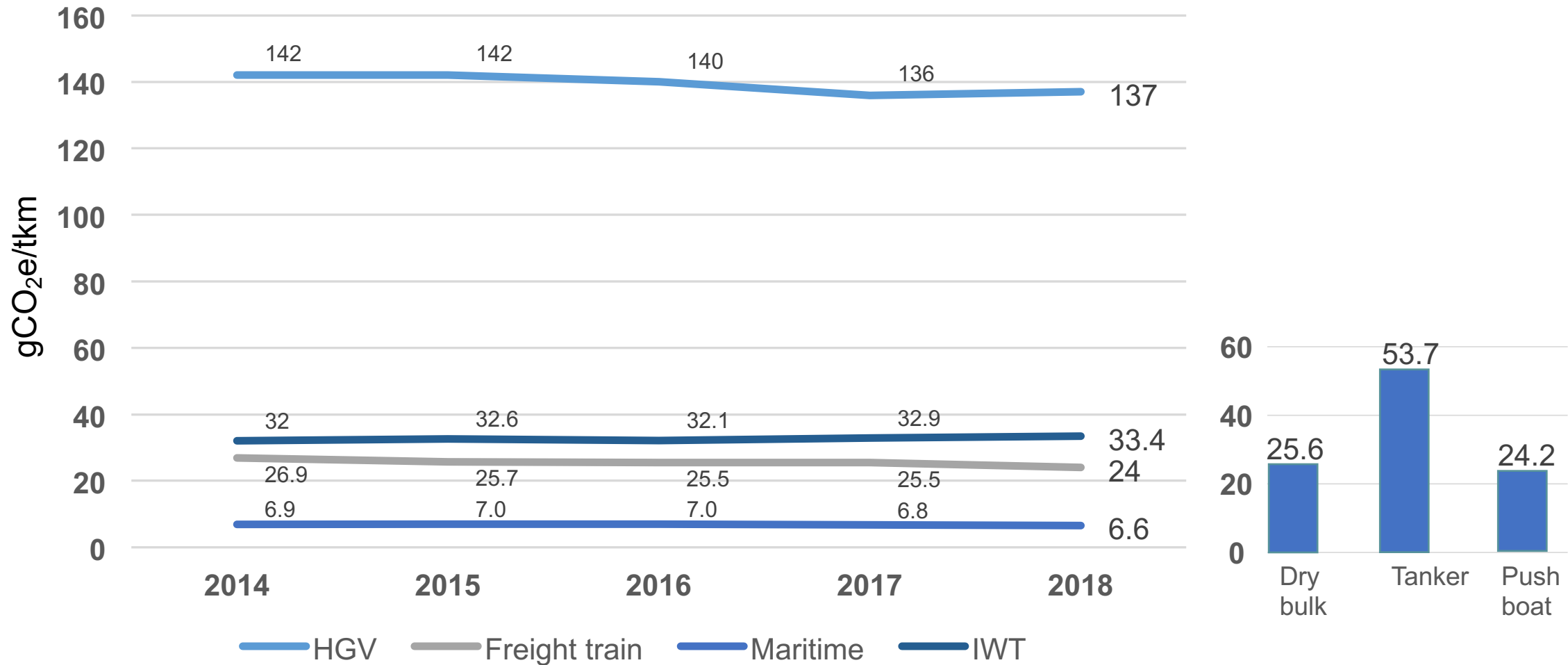
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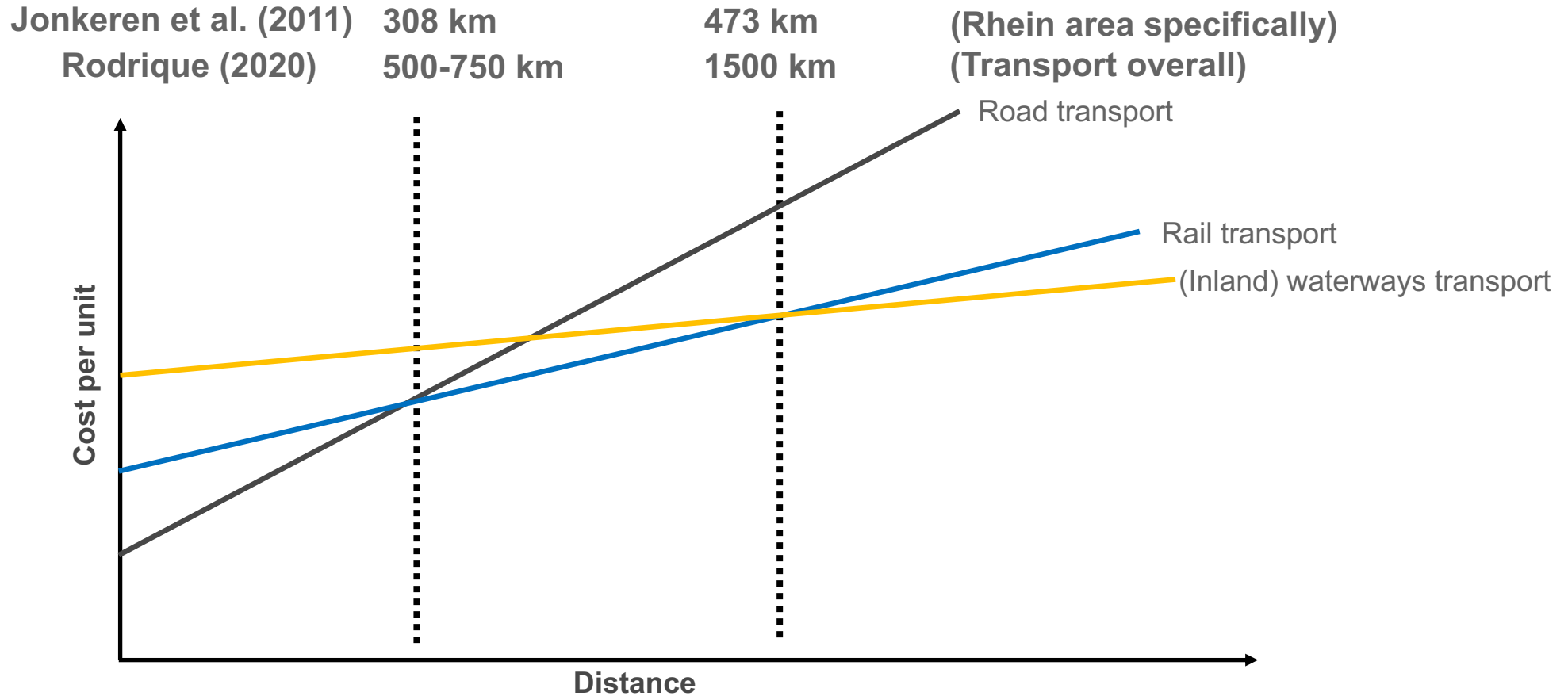
# Emission factors for transport in Europe



# Emissions of IWT competitive against other modes of transport

- Shipping greenest transport mode with lowest energy consumption and CO<sub>2</sub> emission per ton-mile
- IWW:s a bit higher than rail on average
- large differences between countries depending on CO<sub>2</sub> intensity of electricity production
- Emissions of IWT depend on cargo type, bulk and push boat on the same level with average emissions of rail transport

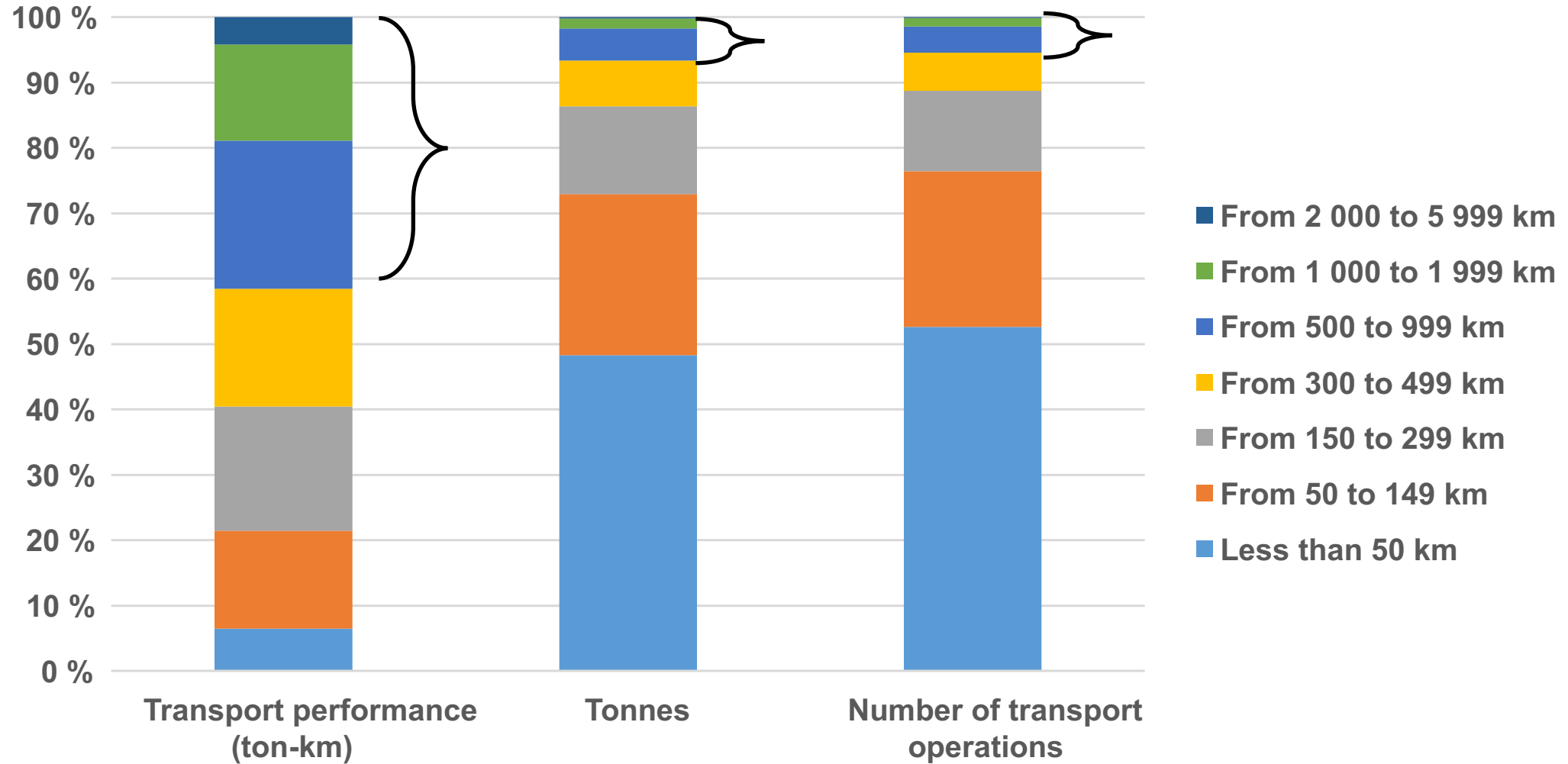
# Transport distance and cost competitiveness of transport modes



Rodrique (2020) *The Geography of Transport Systems*.

Jonkeren, O., Jourquin, B., Rietveld, P. (2011) Modal-split effects of climate change: The effect of low water levels on the competitive position of inland waterway transport in the river Rhine area, *Transportation Research Part A*, Vol. 45, pp. 1007-1019.

# Distance distribution of road transport (EU27)



Data Source: Eurostat 2021

# Potential from the cost perspective

- Shipping and IWW competitive in longer distances
- Depending on the source, the break-even distance of Shipping/ IWW between 500 and 1500km
- Internalizing the externalities of transport will bring the break-even distance down – at the same time, most of transport of short distance
- In intermodal transport chains additional loading and unloading and transport to closest waterway terminal increase the effective distance

# Electricity as a power source of shipping



Photo: Reuters/Victora Klesty



Photo: VCG



Portliner.nl

# To summarize

- Shipping greenest transport mode with lowest energy consumption and CO<sub>2</sub> emission per ton-mile
- Emissions of IWT:s a bit higher than rail on average – large differences between countries depending on CO<sub>2</sub> intensity of electricity production
- Unlike sea transport, inland waterways close to shore, lower speed and therefore lower energy consumption –more potential to use for example electricity as a power source
- Environmental goals of transport will increase the competitiveness of IWT - geographical and supply chain challenges limit the potential





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**Thank you!**

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