

Fit for 55

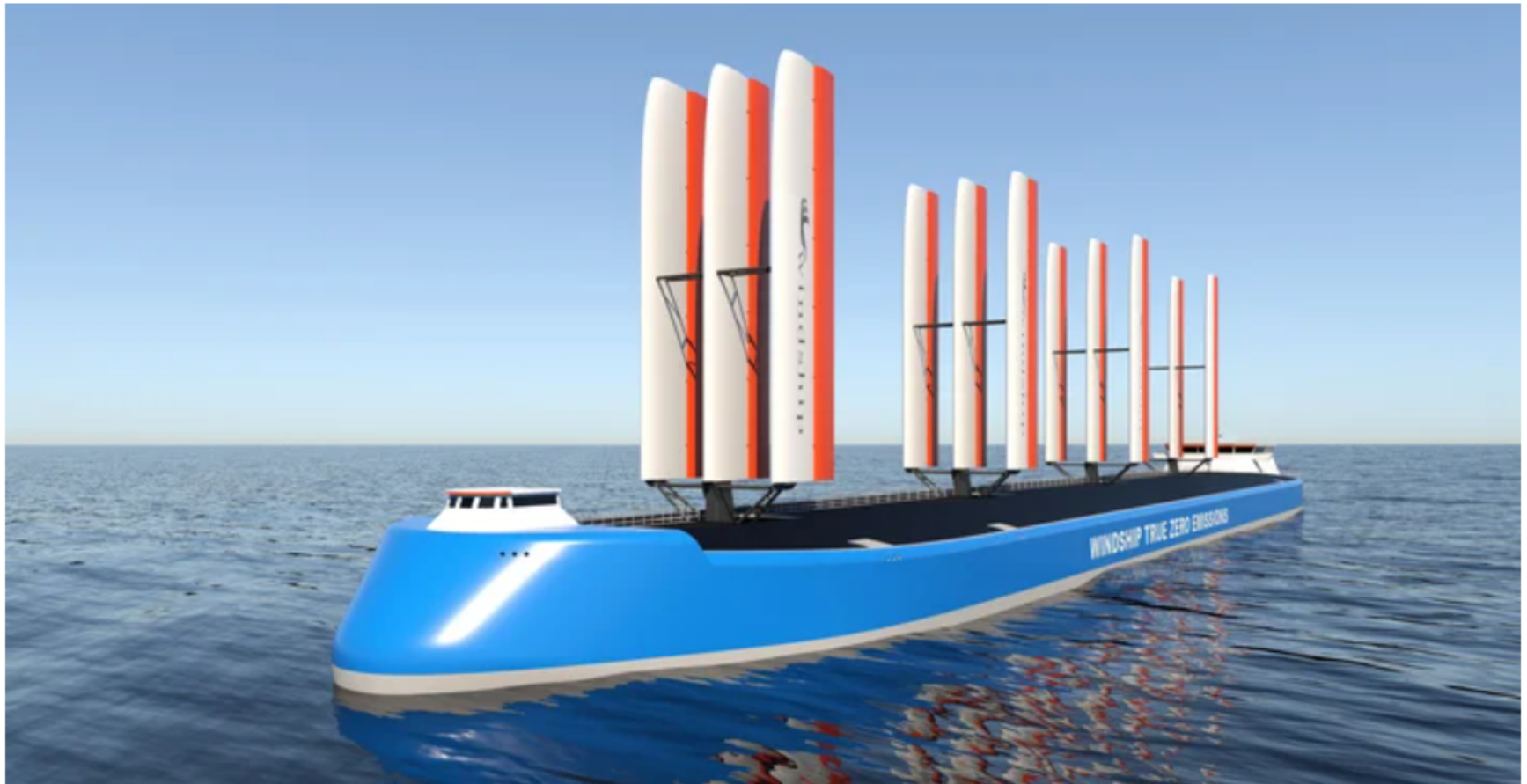
Measuring, monitoring and managing
emission reduction targets.

What is the impact of this vessels' emissions on your port/region/business?



Graphic source: University of Tasmania

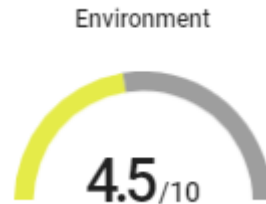
What is the impact of this vessels' emissions on your port/region/business?



Graphic source: Windship Technologies



You cannot manage what you cannot measure



Carbon Emissions Indicators

Total CO2 emissions	Annual efficiency ratio (AER)	Carbon intensity (EECI)	Allowed AER as per Poseidon Principles	Poseidon Principles climate alignment	Poseidon CA rating
679.3CO ₂ t	26.2g CO ₂ /DWT*nm	27.9g CO ₂ /mt*nm	48.1g CO ₂ /DWT*nm	-45.6%	Bp

Sulphur Emission Indicators

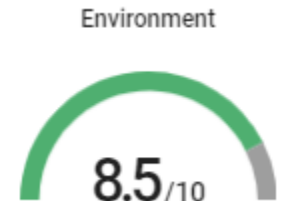
Total Sulphur emissions	Annual Sulphur efficiency	Sulphur emissions per nm	Sulphur emissions per hour
1.1 t	0.042 g / DWT * nm	0.21 kg/nm	0.1 kg/hr

Nitrogen Oxides Emission Indicators

Total NOx emissions	Emissions at sea		Emissions while idle		Emissions while Manoeuvring	
	Total NOx emissions ME at sea	Total NOx emissions Aux Eng at sea	Total NOx emissions Aux Eng idle	Total NOx emissions ME manoeuvring	Total NOx emissions Aux Eng manoeuvring	
	45.3 t	8.7 t	1.7 t	28.2 t	4.9 t	1.8 t
	NOx ME per hr at sea			NOx ME per hr manoeuvring		
	16.7 kg/hr			13.4 kg/hr		

Particular Matter Emission Indicators

Total PM emissions	Emissions at sea		Emissions while idle		Emissions while Manoeuvring	
	Total PM emissions ME at sea	Total PM emissions Aux Eng at sea	Total PM emissions Aux Eng idle	Total PM emissions ME manoeuvring	Total PM emissions Aux Eng manoeuvring	
	2.8 t	0.6 t	0.1 t	1.6 t	0.3 t	0.1 t
	PM ME per hr at sea			PM ME per hr manoeuvring		
	1.1 kg/hr			0.9 kg/hr		
	N/A in ECA			N/A in ECA		
	1.1 kg/hr outside ECA			0.9 kg/hr outside ECA		



Carbon Emissions Indicators

Total CO2 emissions	Annual efficiency ratio (AER)	Carbon intensity (EECI)	Allowed AER as per Poseidon Principles	Poseidon Principles climate alignment	Poseidon CA rating
27,211.3CO ₂ t	3.3g CO ₂ /DWT*nm	6.1g CO ₂ /mt*nm	3.7g CO ₂ /DWT*nm	-10.2%	Cp

Sulphur Emission Indicators

Total Sulphur emissions	Annual Sulphur efficiency	Sulphur emissions per nm	Sulphur emissions per hour
39.3 t	0.005 g / DWT * nm	0.55 kg/nm	4.5 kg/hr

Nitrogen Oxides Emission Indicators

Total NOx emissions	Emissions at sea		Emissions while idle		Emissions while Manoeuvring	
	Total NOx emissions ME at sea	Total NOx emissions Aux Eng at sea	Total NOx emissions Aux Eng idle	Total NOx emissions ME manoeuvring	Total NOx emissions Aux Eng manoeuvring	
	818.0 t	711.7 t	41.7 t	24.7 t	36.5 t	3.5 t
	NOx ME per hr at sea			NOx ME per hr manoeuvring		
	124.2 kg/hr			99.4 kg/hr		

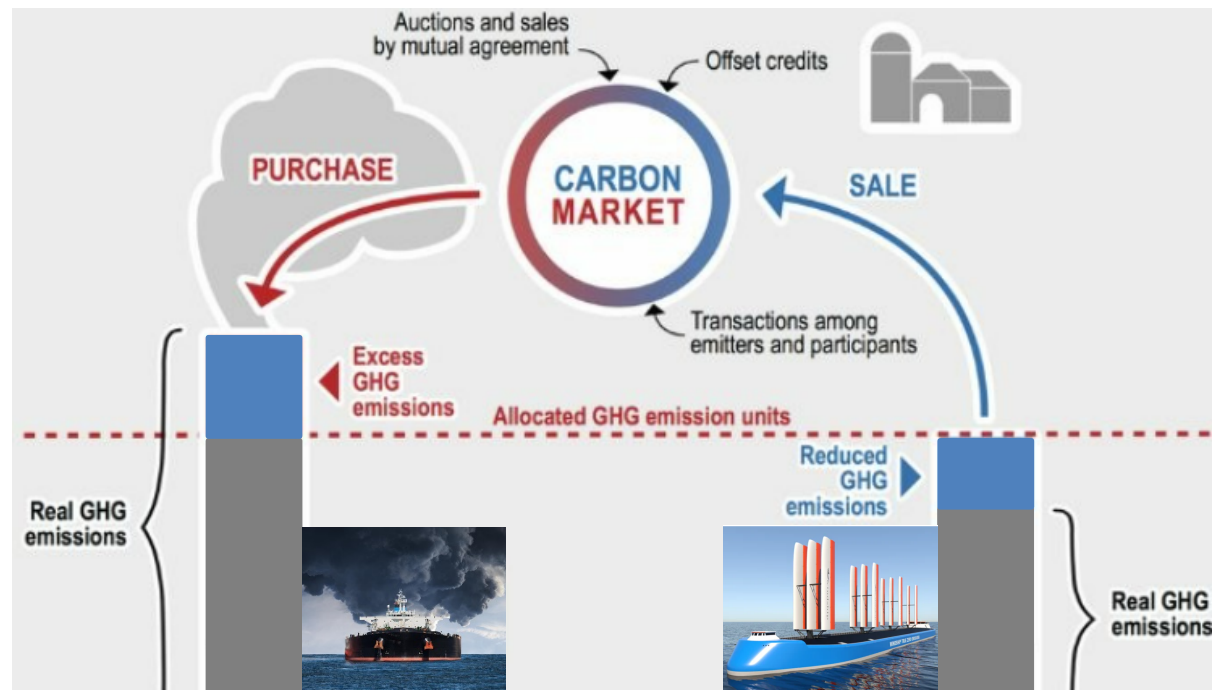
Particular Matter Emission Indicators

Total PM emissions	Emissions at sea		Emissions while idle		Emissions while Manoeuvring	
	Total PM emissions ME at sea	Total PM emissions Aux Eng at sea	Total PM emissions Aux Eng idle	Total PM emissions ME manoeuvring	Total PM emissions Aux Eng manoeuvring	
	5.1 t	0.5 t	3.2 t	1.1 t	0.0 t	0.3 t
	PM ME per hr at sea			PM ME per hr manoeuvring		
	0.1 kg/hr			0.1 kg/hr		
	0.1 kg/hr in ECA			0.1 kg/hr in ECA		
	0.1 kg/hr outside ECA			0.7 kg/hr outside ECA		

The EU Emissions Trading System (ETS)

The ETS will be extended to include emissions from all ships above a gross tonnage of 5.000 regardless of their flag as of 2023.

- As of 2023 ships reporting emissions under the EU MRV regulation required to purchase CO2 emission credits.
- All intra-EU emissions and 50% of the emissions for voyages when arriving in or departing from the EU included.
- Phase-in period starting with 20% coverage in 2023 will be increasing to 100% in 2026.
- Non-compliance is fined and may eventually lead to a ban from EU waters.



The FuelEU Maritime Initiative

Limit on the greenhouse gas intensity of energy used on-board and obligations to use on-shore power or zero-emission technology from 2025 on.

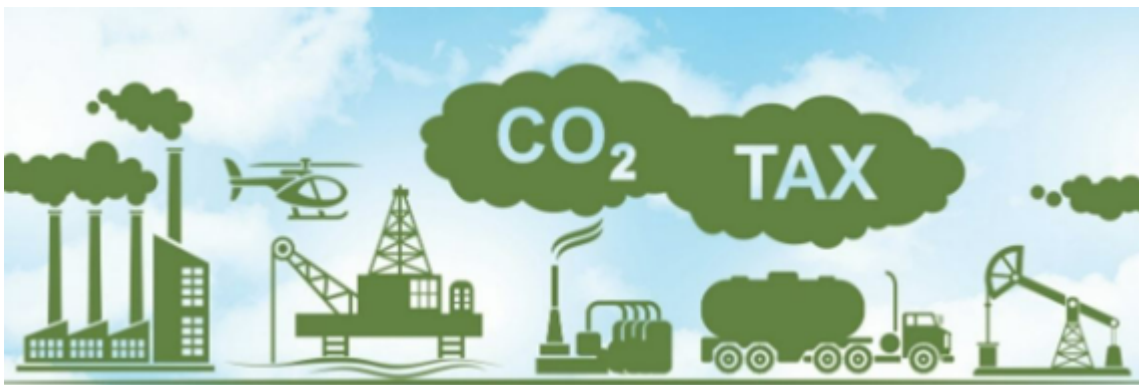
- Applicable to all EU MRV regulation covered ships.
- Life cycle GHG footprint requirements on the energy used on board of ships.
- Measures well-to-wake emissions from CO₂, methane and nitrous oxide.
- The GHG intensity of the energy used will be required to improve 2% per year and 75% by 2050.
- Credits will be granted for energy generated on board, such as by wind power.
- Requires container and passenger vessels to connect to shore power from 2030 for stays longer than two hours.
- Non-compliance may lead to fines and being banned from EU waters.



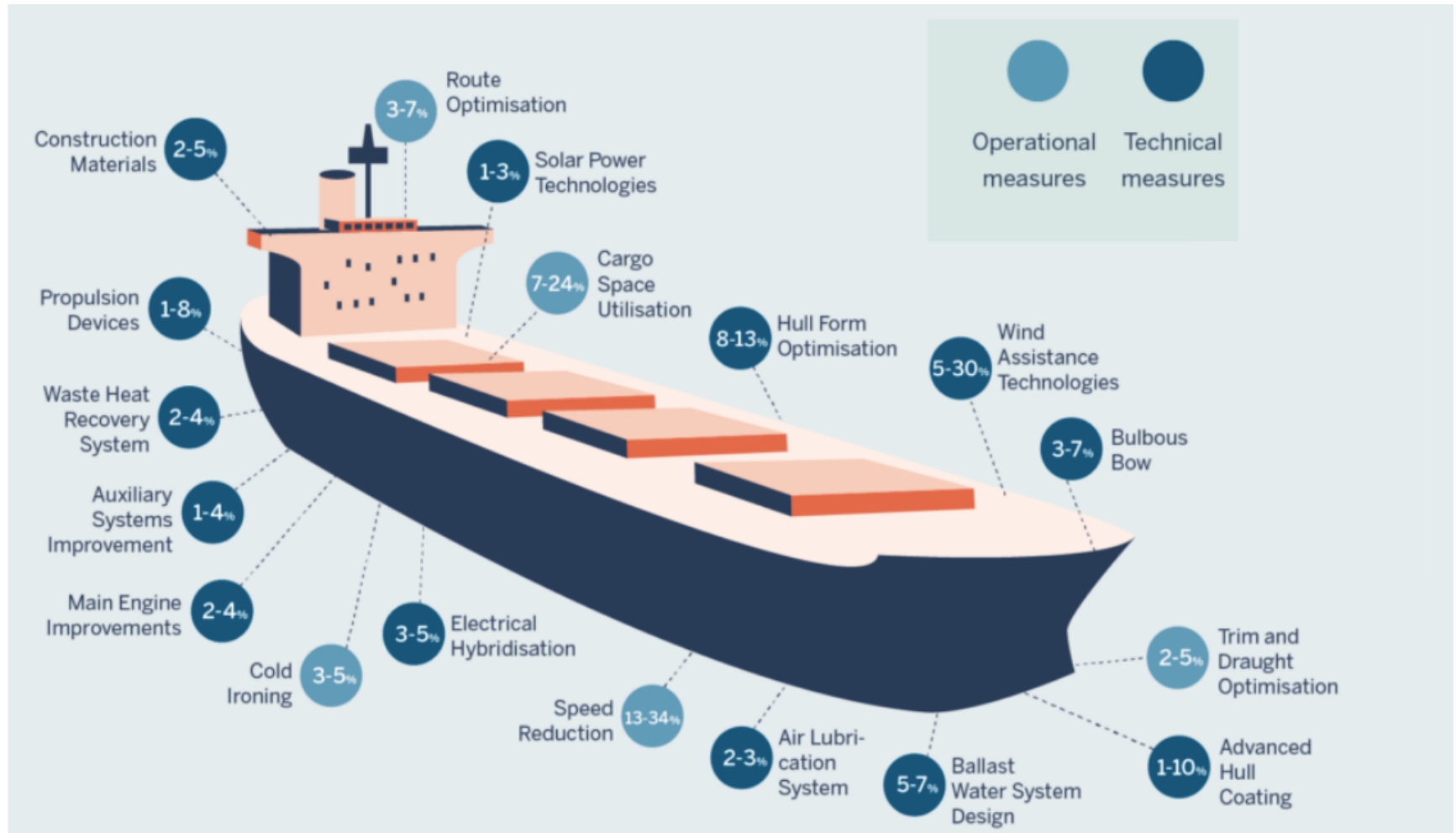
The Energy Taxation Directive (ETD)

Introduction of a minimum tax rate on certain fuels / vessels.

- Remove the tax exemption for conventional fuels used between EU ports as of 1 January 2023
- For heavy fuel oil, the new tax rate will be approximately €37 per tonne.
- LNG will initially be taxed at a rate of €0.6 per GJ.
- Alternative fuels will be tax exempt for a ten-year period.

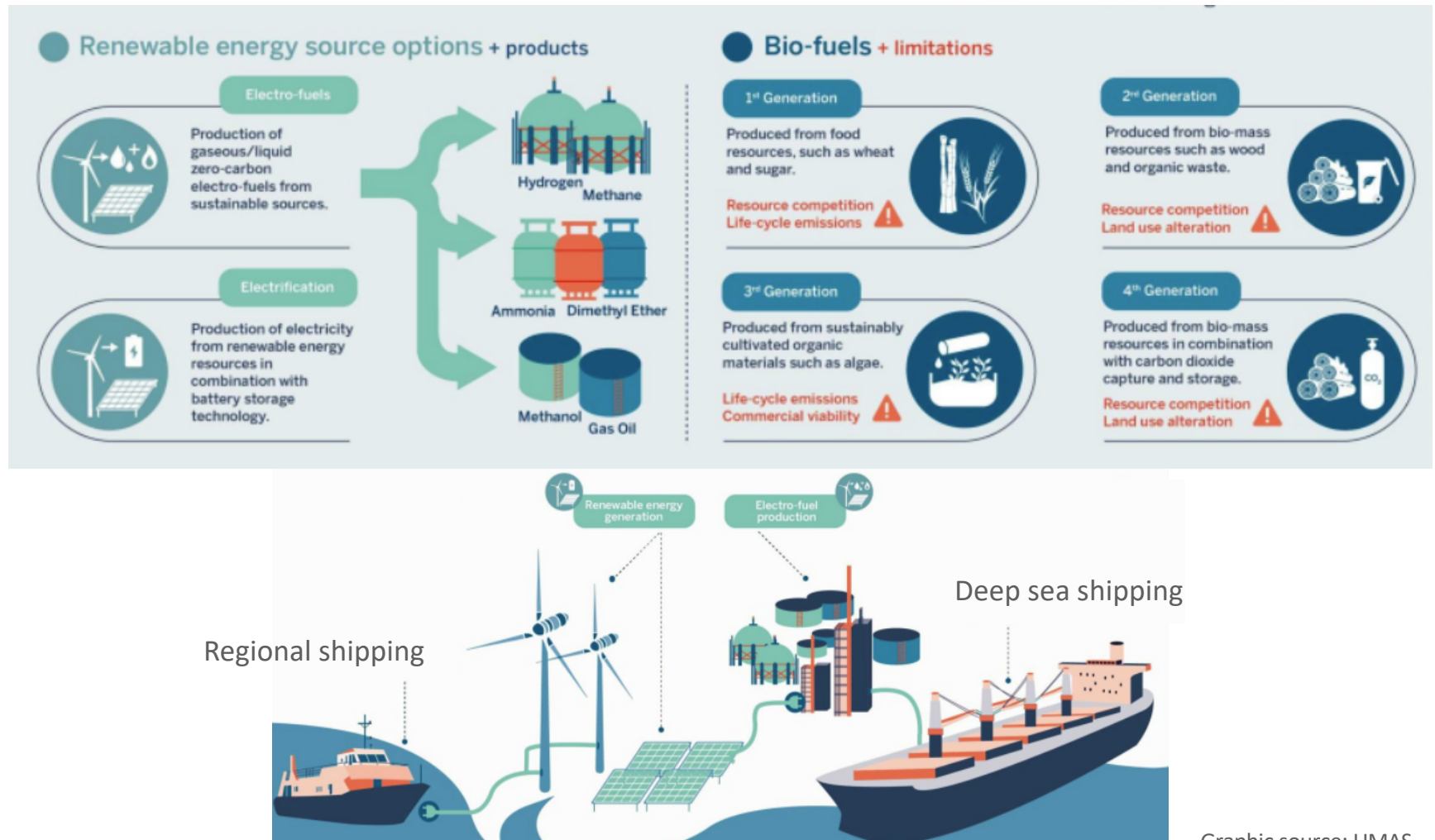


The measures today are only the beginning



Graphic source: UMAS

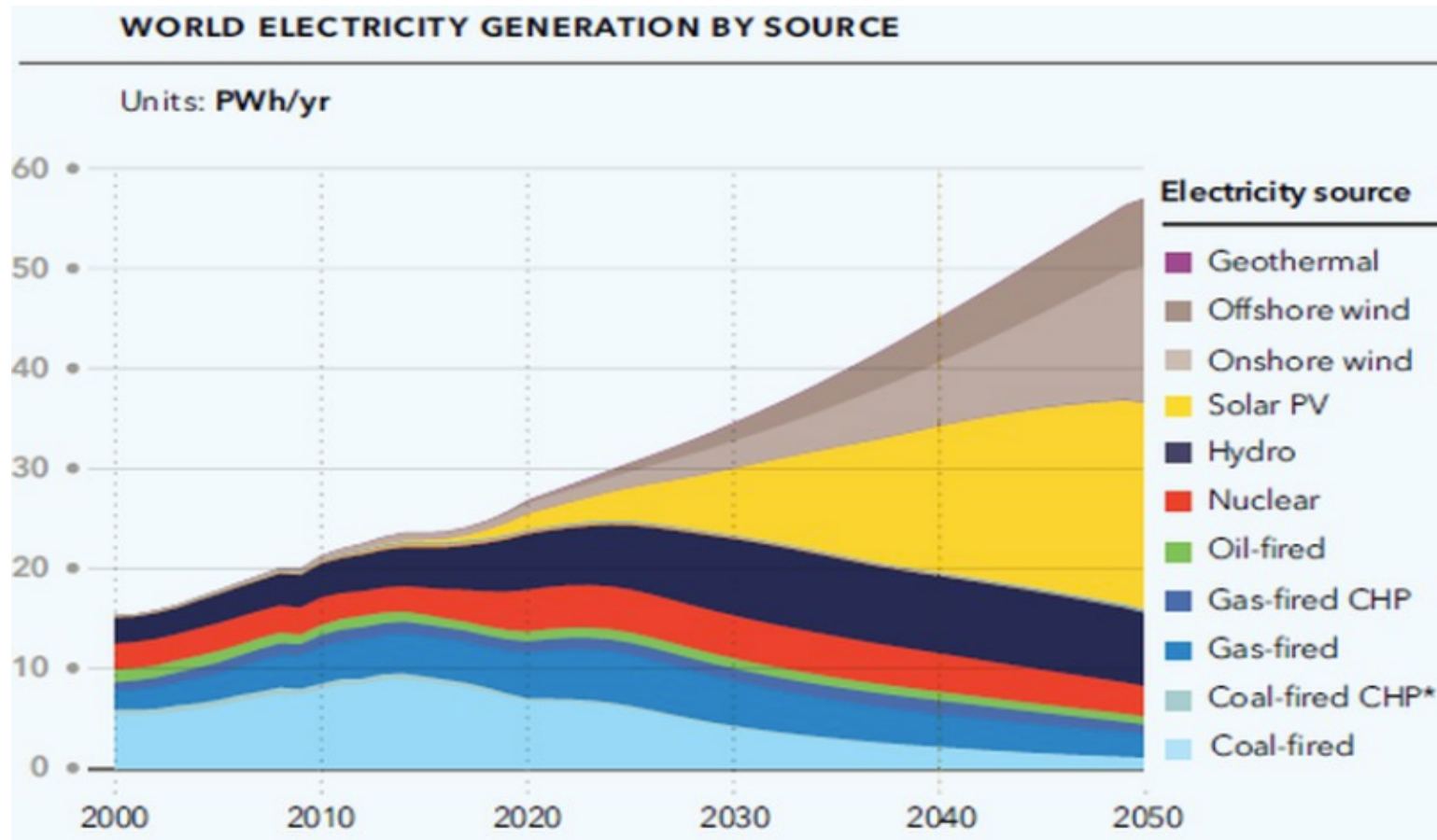
The energy/fuels of tomorrow are not even known



Graphic source: UMAS

Ambitious emission targets will drive innovation

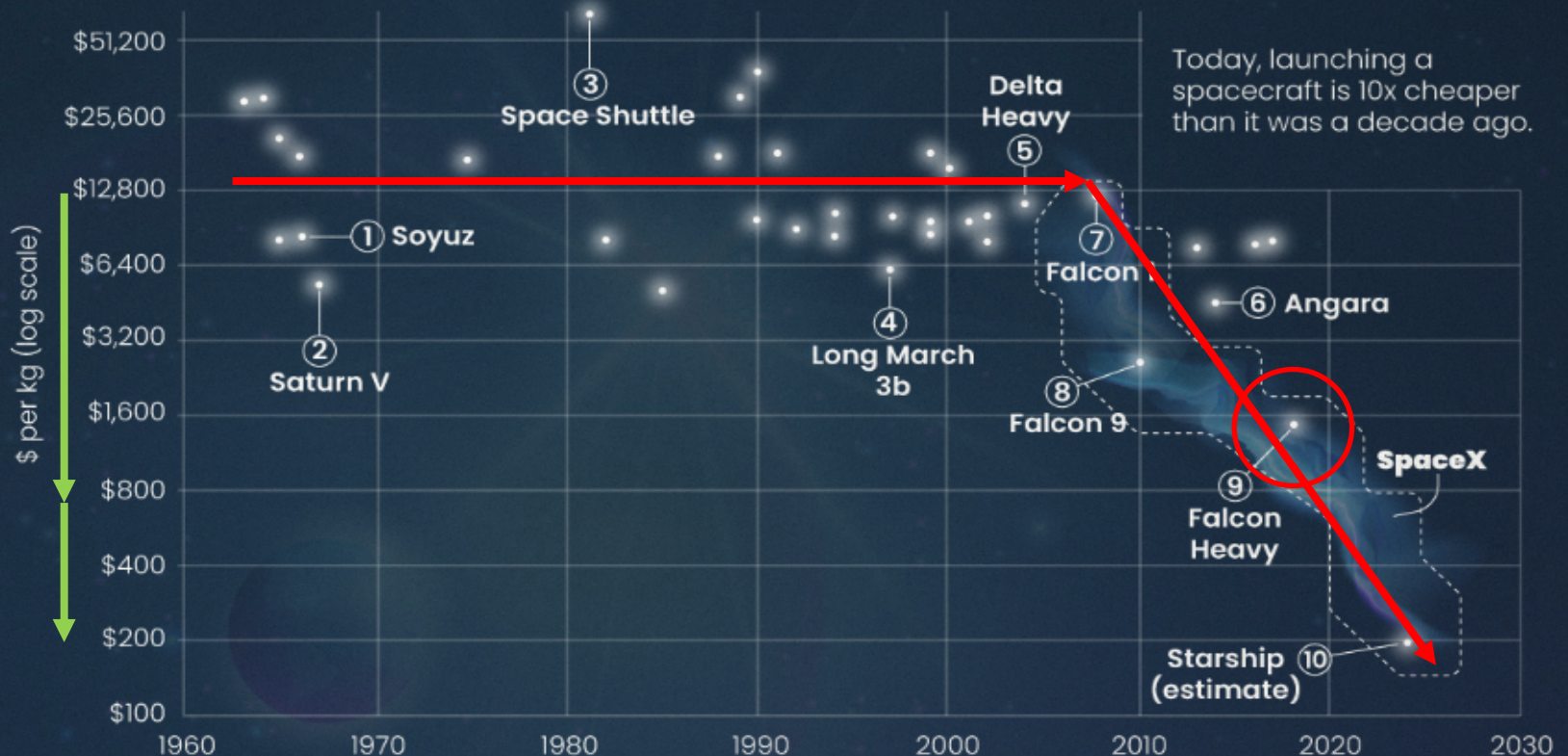
85% of power will be generated from renewables energies by 2050



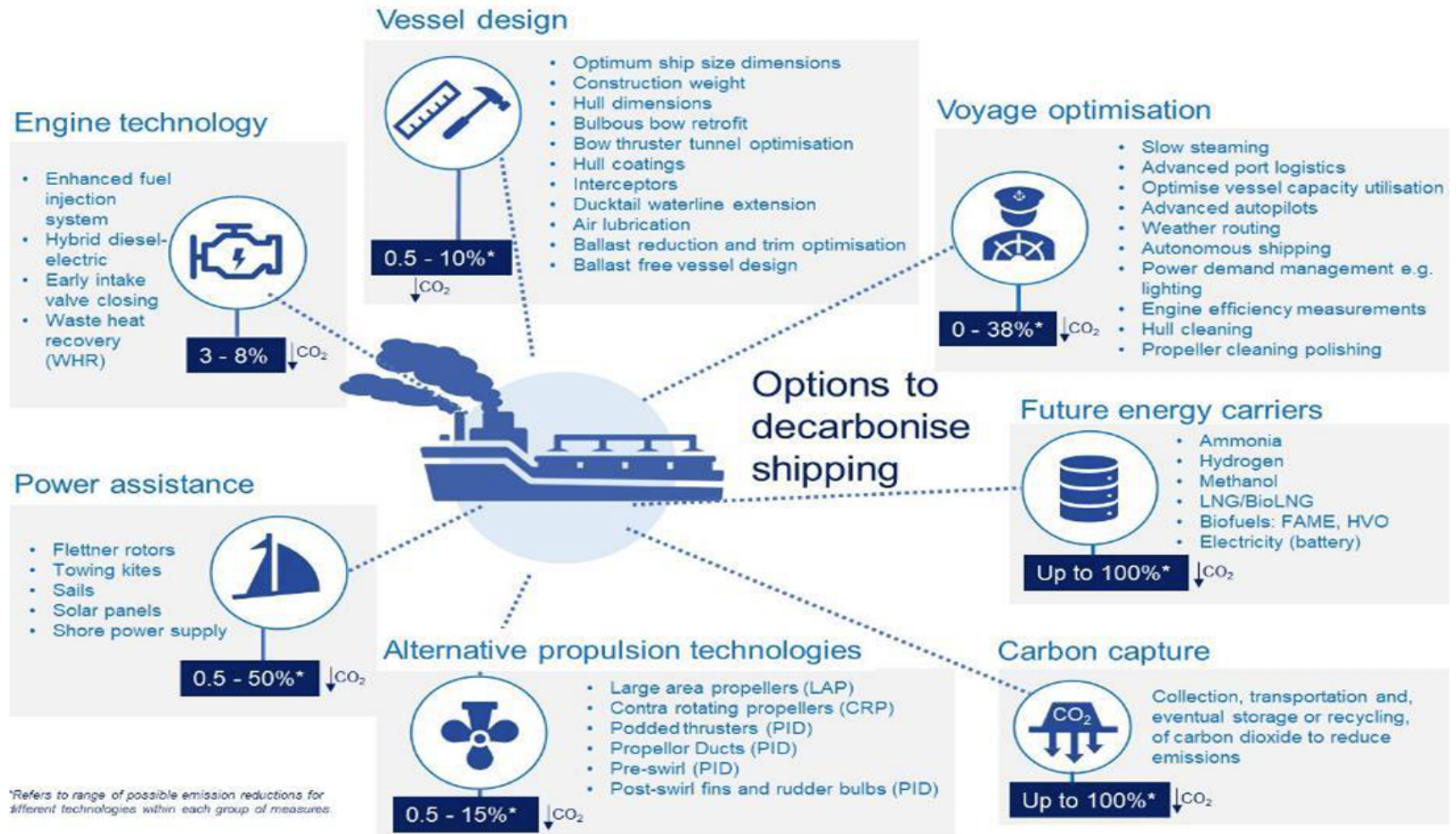
Source: EcoEnergyConsultants

Innovation will drive down cost (SpaceX)

How much does it cost to launch a spacecraft into orbit?
A lot less than it used to, thanks to innovation by SpaceX.
Here's a look at the cost per kilogram for space launches
across the globe since 1960.



Shipowners will decarbonize their fleet of ships



Graphic source:

Port climate actions on vessels

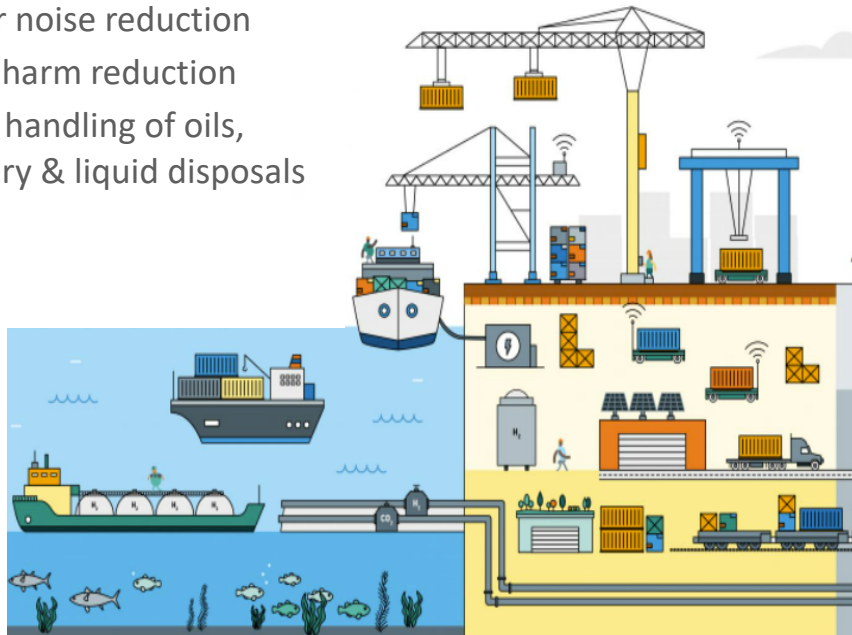
Reduce vessel pollution in ports:

- Inventory on pollution from vessels
- Pollution reduction targets (plan)
- Incentives for ships to reduce pollution:
 - CO₂, NO_x, SO_x and PM reduction
 - Under water noise reduction
 - Biodiversity harm reduction
 - Eco-friendly handling of oils, chemicals, dry & liquid disposals

Port climate actions on infrastructure

Reduce pollution from port infrastructure:

- inventory on emissions from infrastructure
- Scope 1, Scope 2 and Scope 3 emissions
- Pollution reduction target (plan)
- Emission reduction infrastructure :
 - Renewable electric or hydrogen vehicles, ferries and tug boats , etc.
 - Multi-fuels bunkering, i.e. biofuels, methanol, ammonia, and hydrogen
 - Carbon capture & storage
 - Clean hinterland transport, i.e. electric and hydrogen trucks, electric trains



Fit for 55 objectives in Europe - Panel discussion



DUARTE LYNCE DE FARIA

- Executive Member of the Board of Directors
- Port of Sines and the Algarve Authority



MARIE-CAROLINE LAURENT

- Director General, Europe
- CLIA (Cruise Lines International Association)



KIM DIEDERICHSEN

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- Anemoi Marine Technologies Ltd