

The role of shipping & ports in a 1.5°C energy transition

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Consumers & connectors

Port, ships & shipping

Shipping will transport different **fuels**, in different **quantities** between different **countries** – and to deliver 1.5°C future – change is needed **urgently**

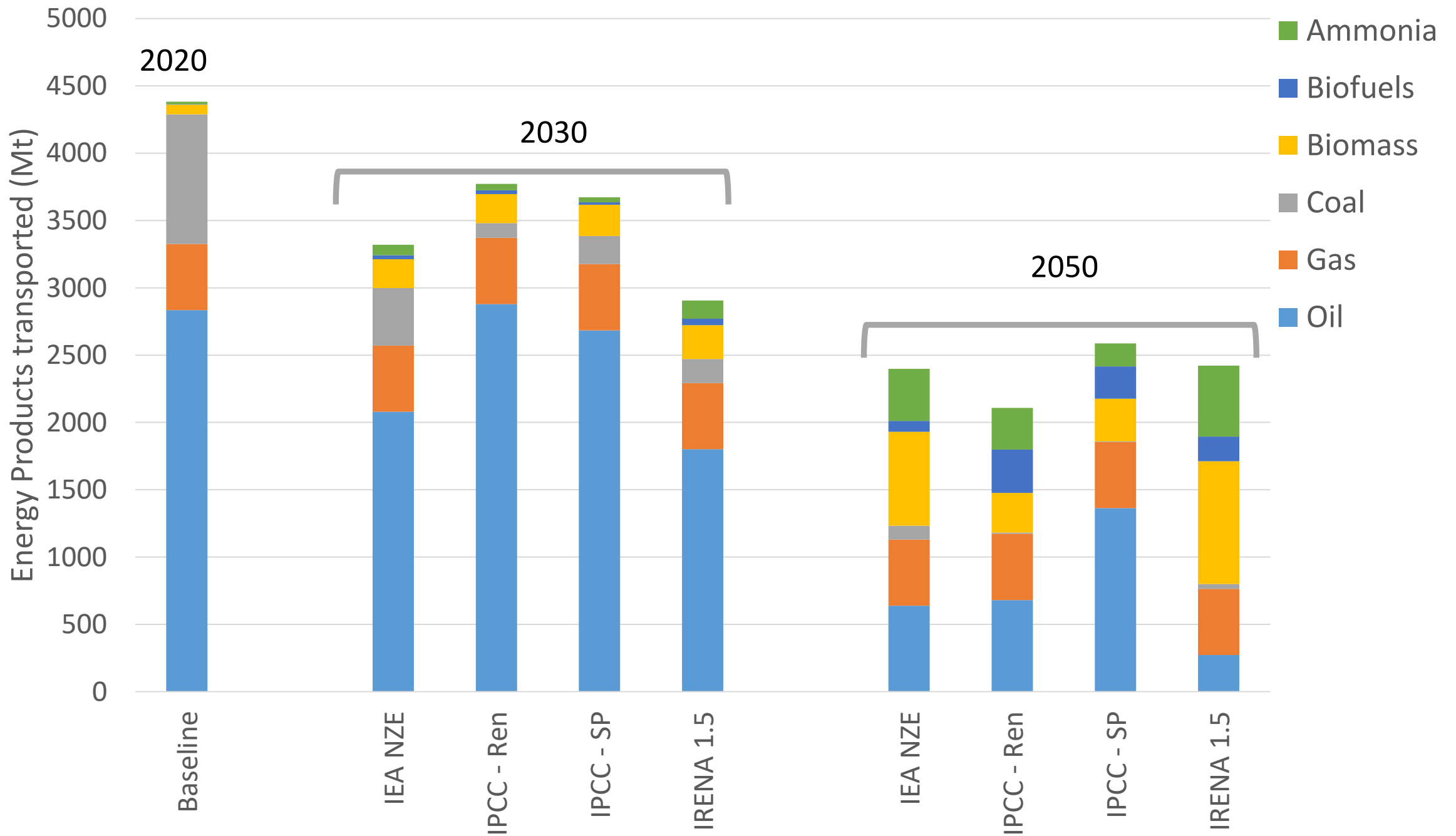


Common themes in 1.5°C scenarios...

- Reductions in global energy consumption
 - Rapid electrification of many sectors
- Rapid decarbonisation of electricity with renewables replacing coal and gas
 - Rapid reductions in fossil fuel use
- Growth in lower-carbon fuels – H₂ & bioenergy

36% tonnes of trade by ship are energy products





1.5C Scenarios from IPCC, IRENA & IEA in 2020, 2030 and 2050

(Conservative) implications for shipping

- Shipping of energy products falls
- Growth in H₂ & bioenergy outweighed by falls in coal & oil
 - 90-100% fall in coal shipments by 2050
 - 50-90% fall in oil shipments by 2050
 - Greater proportion gas transported
- H₂ (as ammonia) as high as gas today??
 - Bioenergy - as high as coal today??



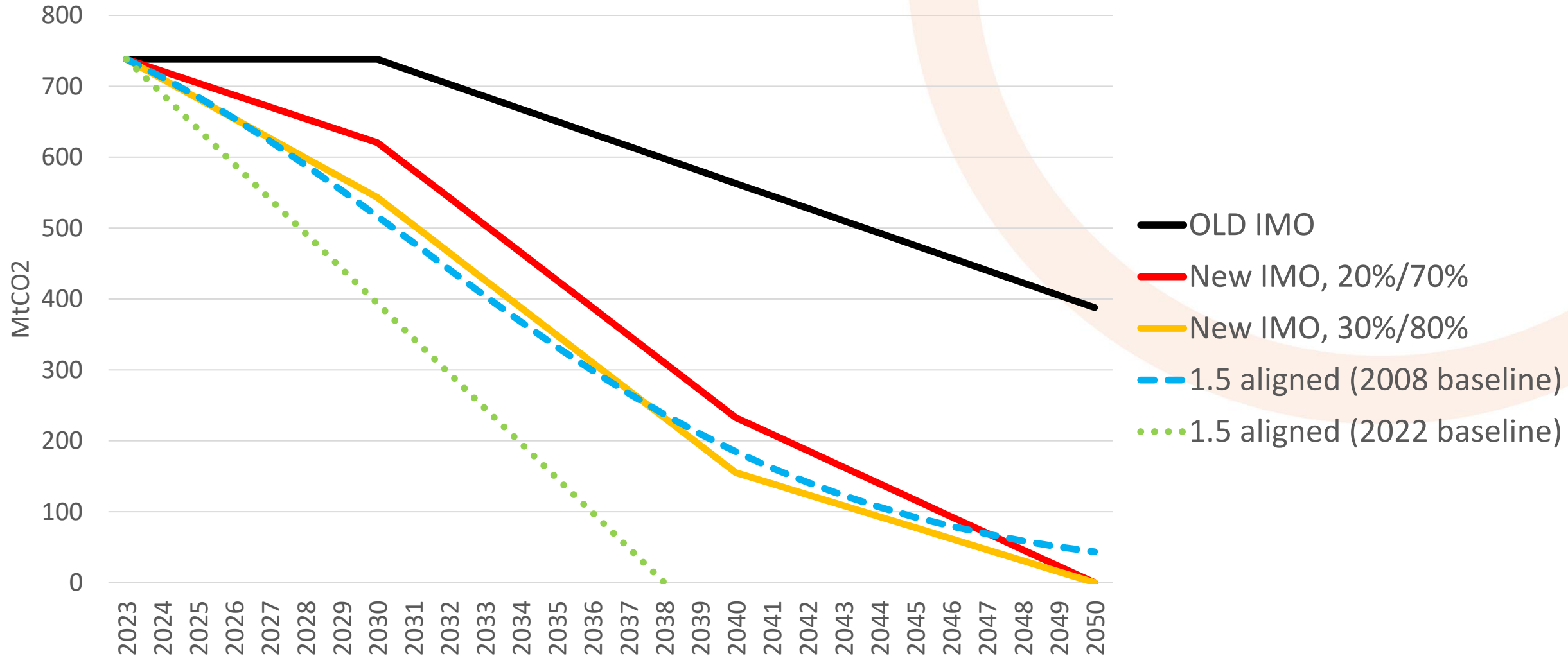
Shipping needs to prepare now for a rapid transition **away from** transporting fossil fuels & **opportunities** for transporting bioenergy and ammonia



Shipping itself is also set
for a rapid transition



Shipping decarbonisation trajectories



Ports will be critical to energy system change – handling new **fuels**, new **infrastructure** & rapidly minimising the sector's **CO₂**



Shore power

Ships plug into ports

Stops the burning of diesel in port

Direct electricity use or battery recharge



Deployable now

Enabling tech for hybrid and all-electric vessels

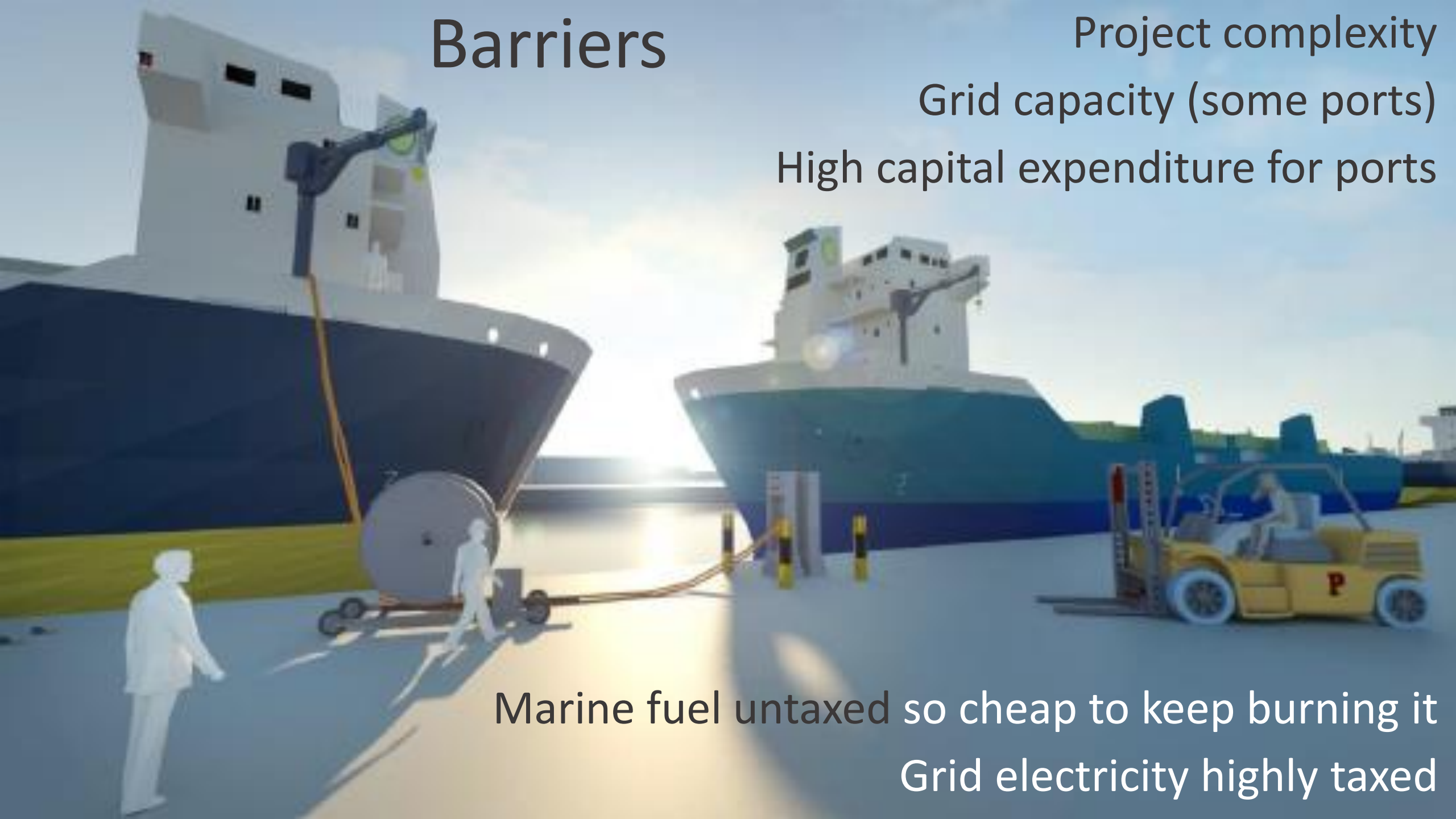
Cheaper to use electricity directly in future than NH_3 or H_2 from elec.

Barriers

Project complexity

Grid capacity (some ports)

High capital expenditure for ports



Marine fuel untaxed so cheap to keep burning it

Grid electricity highly taxed

Solutions



Capital funding

Tax exemptions

Zero emission birth standard

Inclusion in ETS helps – but for UK its only domestic shipping
UK revising Clean Maritime Plan; strong policy package an imperative

Shipping **facilitating** a global transition

Local port changes part of global shift

Short-term cuts CO₂ essential



Shore-power: a potential **catalyst** but
needs **intervention** to improve economics

- Shipping's role in the global energy transition: <https://shorturl.at/gtHQ1>
- Shipping policy brief: <https://tinyurl.com/UKshipclimate>
- Stronger climate targets for international shipping: <https://tinyurl.com/IMOclimate>
- The need for action on existing fleet of ships this decade: <https://tinyurl.com/CommittedShips>
- Barriers and solutions for UK shore-power: <https://tinyurl.com/UKshorepower>
- Improving shore power project economics: Aberdeen case-study: <https://tinyurl.com/SPAberdeen>