Decarbonisation: existing EU policy

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Decarbonising Maritime Transport
EXPERT WORKSHOP
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The challenge of decarbonisation

Estimated growth of CO$_2$ emissions from int. shipping v. reduction needs

Source: Discussion paper on GHG emission reduction targets for international shipping; Öko-Institut & CE Delft for German Federal Ministry for the Environment, 2015
Different examples

- MRV Regulation 2015/757

- Directive on the deployment of alternative fuels infrastructure (2014/94/EU)


- CO2 emissions heavy trucks and light road transport
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EU action addressing CO2 shipping emissions

Regulation (EU) 2015/757 establishes a system for monitoring, reporting and verification of CO2 emissions and other relevant information from ships

Objective: Trigger the uptake of emission reductions measures by the removal of market barriers, especially those linked to the lack of transparency

- Ships above 5000 GT performing maritime transport activities
- EEA related voyages and in EEA ports
- Annual reporting and publication of aggregated emissions data on a per ship basis
- Verification of data by independent, accredited verifier
- First monitoring period 1 January 2018 – 31 December 2018:
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EU action addressing CO2 shipping emissions (cont.)

- Foundation for any measure
- Provides reliable information on ship efficiency and can help removing market barriers
- Drives forward the international debate
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EU action addressing CO2 shipping emissions (cont.)

- Monitoring Plan
- Bunker Delivery Note
- Tank Sounding
- Flow Meters
- Emission Measurement
- Annual Emissions Report
- Central database
- Verification
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EU action addressing CO2 shipping emissions (cont.)

- National enforcement authority
  - Provide a list of ships that may be in breach with the regulation

- Ship
  - Submit verified emissions reports
  - Submit monitoring plan and emissions reports

- Verifier
  - Issue a document of compliance

- European Commission
  - Enforcement measures (if necessary)
  - Compliance Cycle
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EU action addressing CO2 shipping emissions (cont.)

**EU MRV**

- Foundation for any measure
- Provides reliable information on ship efficiency and can help removing market barriers
- Drives forward the international debate
Directive on the deployment of alternative fuels infrastructure (2014/94/EU)

In 2014, the EU has adopted the Directive on the deployment of alternative fuels infrastructure (2014/94/EU), which..

- Requires Member States to develop national policy frameworks for the market development of alternative fuels and their infrastructure;

- Foresees the use of common technical specifications for recharging and refueling stations;

- Paves the way for setting up appropriate consumer information on alternative fuels, including a clear and sound price comparison methodology.
**Why Alternative Fuels in Shipping?**

**GHG emissions vs Air Pollution**

**GHG (Greenhouse Gases)** - $CO_2$ (Carbon Dioxide), $CH_4$ (Methane), $N_2O$ (Nitrous Oxide), HFCs (Hydro Fluorocarbons), PFCs (Perfluorocarbons) and $SF_6$ (Sulphur Hexafluoride).

**Other Relevant Substances** - $NO_x$ (Nitrogen Oxides), $SO_x$ (Sulphur Oxides), NMVOC (Non-Methane Volatile Organic Compounds), CO (Carbon Monoxide) and PM (Particulate Matter, including Black Carbon).

*Alternative fuels are excellent solutions for air pollution. However, from a GHG perspective, some have limited advantages and therefore are transitory solutions to zero-carbon fuels needed.*
The Directive on the deployment of alternative fuels infrastructure (2014/94/EU) specifies specifically for the maritime sector:

- Electricity supply for transport – shore-side [Article 4] to be installed as a priority in ports of the TEN-T Core Network, and in other ports, by 31 December 2025, unless there is no demand, and the costs are disproportionate to the benefits, including environmental benefits.

- Natural gas supply for WATERBORNE transport [Art 6.1 – 6.2], at maritime ports throughout the TEN-T Core Network by 31 December 2025 at the latest.

- Standards and technical specifications [Annex II]
Article 4 → *Electricity supply for transport – shore-side*

- Member States shall ensure that the need for shore-side electricity supply for inland waterway vessels and sea-going ships in maritime and inland ports is assessed in their NPFs.

- Such shore-side electricity supply shall be installed as a priority in ports of the TEN-T Core Network, and in other ports, by 31 December 2025, unless there is no demand, and the costs are disproportionate to the benefits, including environmental benefits.
Art 6.1 – 6.2 → Natural gas supply for WATERBORNE transport

Member States shall ensure, through their NPFs, that an appropriate number of refuelling points for LNG are put in place...:

- at maritime ports to enable LNG inland waterway vessels or sea-going ships to circulate throughout the TEN-T Core Network by 31 December 2025 at the latest.

- at inland ports to enable LNG inland waterway vessels or sea-going ships to circulate throughout the TEN-T Core Network by 31 December 2030 at the latest.
Directive on the deployment of alternative fuels infrastructure (2014/94/EU)

Annex II  →  Standards and technical specifications
European standards for shore-side electricity

→ Shore-side electricity supply for seagoing ships
Shore-side electricity supply for seagoing ships, including the design, installation and testing of the systems, shall comply with the technical specifications of the IEC/ISO/IEEE 80005-1 standard.

→ Shore-side electricity supply for inland waterway vessels
LNG refuelling points for waterborne vessels compatible with ISO/TC 67
European standards for natural gas supply

→ LNG refuelling points for waterborne vessels compatible with ISO/TC 67
GHG emissions trends in the main economic sectors
Low-emission mobility

• Low-emission mobility: an essential component of the shift to the low-carbon, circular economy

• Transport sector challenges
  • About one quarter of greenhouse gas emissions
  • Dependence on oil for more than 90% of its need
  • Major cause of air pollution in cities
  • Global competition and third countries' market access

• Level of ambition for transport
  • GHG emissions at least 60% lower than in 1990 by mid-century, and firmly on the path towards zero
  • Emissions of air pollutants to be drastically reduced without delay
  • Decrease oil import dependency
  • Increase innovation and competitiveness
EU Strategy for low-emission mobility

• Integrated and comprehensive approach, mix of policy instruments, mutually supporting and reinforcing

• Main levers for regulatory actions
  • Efficiency of the transport system
  • Low-emission alternative energy for transport
  • Zero-emission vehicles
  • Vehicle efficiency standards

• Cross-cutting initiatives for an enabling environment
Scaling up the use of low-emission alternative energy

- The transition to low-emission alternative energy in transport needs to accelerate, it will also contribute to Energy Security

- Effective framework to incentivise low-emission energy (including advanced biofuels, renewable electricity and synthetic fuels) to be put in place

- Transition of food-crop based biofuels to advanced biofuels

- Infrastructure for alternative fuels needs to be rolled-out

- Obstacles to electro-mobility need to be removed

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<td>• FQD setting a greenhouse gas (GHG) reduction target for fuel suppliers, requiring them to reduce the GHG intensity of the fuel mix by 6% in 2020.</td>
<td>• RED setting targets for renewable energy consumption, including a sub-target mandating 10% of energy used in transport to be produced with renewable sources</td>
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<td>• Both: introduced a set of sustainability criteria</td>
<td>• Not: accounting for indirect land use change (ILUC) emissions → ILUC Directive (EU) 2015/1513</td>
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<td>• Biofuels required to provide at least a 35% GHG reduction compared to fossil fuels</td>
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### Transport fuel policy up to 2020

#### Fuel Quality Directive
- 6% GHG target by 2020 relative to fuel baseline in 2010
- Applicable to fuel suppliers
- Implementation by April 2017
- Contributions:
  - Biofuels
  - Fuels of non-biological origin
  - Low-carbon fossil fuels (CNG, LNG, LPG)
  - Upstream emission reductions (reduction of flaring and venting)
  - Electricity

#### Renewable Energy Directive
- 10% target for **renewable energy** in transport by 2020
- Applicable to Member States
- Contributions:
  - Biofuels
  - Renewable fuels of non-biological origin
  - Electricity
  - Specific support for advanced biofuels (e.g. biofuels produced from waste and residues, cellulose) and electricity

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**Cap on food-based biofuels**
The FQD and the RED set out the following sustainability requirements:

For biofuels to count towards the greenhouse gas emission reduction targets, they must meet certain sustainability criteria to minimise the undesired impacts from their production.

- **Greenhouse gas emissions from biofuels must be lower than from the fossil fuel they replace** – at least 50% (for installations older than 5 October 2015) and 60% for newer installations.

- **The raw materials for biofuels cannot be sourced from land with high biodiversity or high carbon stock.**
Recast of RED: RED II

- November 2016: European Commission package ‘Clean Energy for all Europeans’ RED II proposal
- June 2018: final compromise EU institutions was agreed
- November 2018: EP approved new targets for renewables, EE and second generation biofuels confirming agreement RED II

**NB FQD:** No plans to extend the greenhouse gas reduction target beyond the year 2020, addressing the decarbonisation of transport fuels after 2020 via RED II.
Increasing the share of **low carbon and renewable fuels in transport** through an **EU blending mandate on fuel suppliers**

- **Target level** increasing over time from **1.5% energy share in 2021 to 6.8% in 2030**
- **Focus** is on advanced and waste-based biofuels, power-to-gas/liquid, and renewable electricity

**Food and feed based biofuels don't count** towards the transport target; their contribution to the overall 27% target is phased down from 7% in 2021 to 3.8% in 2030.

**2025 Review** of GHG saving and innovation effects
Recast of RED: RED II

- overall EU target for Renewable Energy Sources (RES) consumption by 2030 increased from 27% to 32%;
- a sub-target for RES in transport was introduced in the final agreement: MS must require fuel suppliers a minimum of 14% of the renewable energy in road and rail transport by 2030;
- Each MS to define Integrated National Energy and Climate Plans following GLs Energy Union Governance Regulation.

NB Fuels used in the aviation and maritime sectors are excluded from the 14% obligation but these sectors can opt to contribute to the target. The contribution of non-food renewable fuels supplied to these sectors will count 1.2 times their energy content.
Feedstock of the advanced biofuels in the RED II recast 2021-2030:

Feedstocks included in Annex IX are as follows:

»» Part A (i.e. advanced biofuels):

- Algae, if cultivated on land in ponds or photobioreactors;
- Biomass fraction of MSW from unsorted household waste;
- Bio-wastes separately collected from households;
- Biomass fraction of agro-industrial waste not fit for food or feed;
- Straw;
- Animal manure;
- Sewage sludge;
- Palm oil mill effluent and empty palm fruit bunches;
- Tall oil pitch;
Feedstock of the advanced biofuels in the RED II recast 2021-2030 cont:

- Crude glycerine;
- Bagasse (sugar cane residue)
- Grape marcs and wine lees;
- Nut shells;
- Husks;
- Cobs cleared of kernels of corn;
- Biomass fraction of waste and residues from forestry and forest industries;
- Other non-food cellulosic material, also includes industrial residues after the extraction of vegetable oils, sugars, starches and proteins;
- Other ligno-cellulosic materials.
CO2 emission standards for heavy-duty vehicles in the EU:

On 17 May 2018, the European Commission presented a legislative proposal setting the first ever CO2 emission standards for heavy-duty vehicles in the EU.

The proposed targets for average CO2 emissions from new lorries:
In 2025, 15% lower than in 2019 - **mandatory and can be achieved using technologies that are already available on the market.**

In 2030, at least 30% lower than in 2019 (indicative target, subject to review in 2022) - to incorporate additional information on the new technologies needed to meet this target.
CO2 emission standards for heavy-duty vehicles in the EU:

Scope: large lorries, which account for 65% to 70% of all CO2 emissions from heavy-duty vehicles -> 2022, the scope to be extended to include other vehicle types such as smaller lorries, buses, coaches and trailers

The proposal also includes a mechanism to incentivise the uptake of zero- and low-emission vehicles, in a technology-neutral way:

System of super credits will reward those manufacturers who will invest more in innovative technologies, while preserving the environmental integrity of the CO2 targets. It also includes zero-emission buses which are needed for cleaner air in cities.
CO2 emission standards for heavy-duty vehicles in the EU:


The proposed targets are set for the EU-wide average emissions of new cars and vans in a given calendar year from 2025 on, with stricter targets applying from 2030.

The proposal also includes a mechanism to incentivise the uptake of zero- and low-emission vehicles, in a technology-neutral way.
CO2 emission standards for heavy-duty vehicles in the EU:

incentivise the uptake of zero- and low-emission vehicles, in a technology-neutral way:

Manufacturers achieving a share of zero- and low-emission vehicles, which is higher than the proposed benchmark level of 15% in 2025 and 30% in 2030, will be rewarded in the form of a less strict CO2 target. For determining that share, account is taken of the emission performance of the vehicles concerned. As a consequence, a zero-emission vehicle is counted more than a low-emission vehicle.
Possible take home:

- perhaps early to discuss a fuel standard, as the way forward for the marine sector still needs to become more concrete and is likely hybrid
- strong incentives are needed for real transition, fuel standard may not be sufficient to achieve this (California experience of 8y)
- other incentives and regulatory action should (also) be considered
- compromise solutions may take long
- time-window is limited for showing progress
Thank you!

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