Decarbonisation: existing EU policy

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Decarbonising Maritime Transport
EXPERT WORKSHOP
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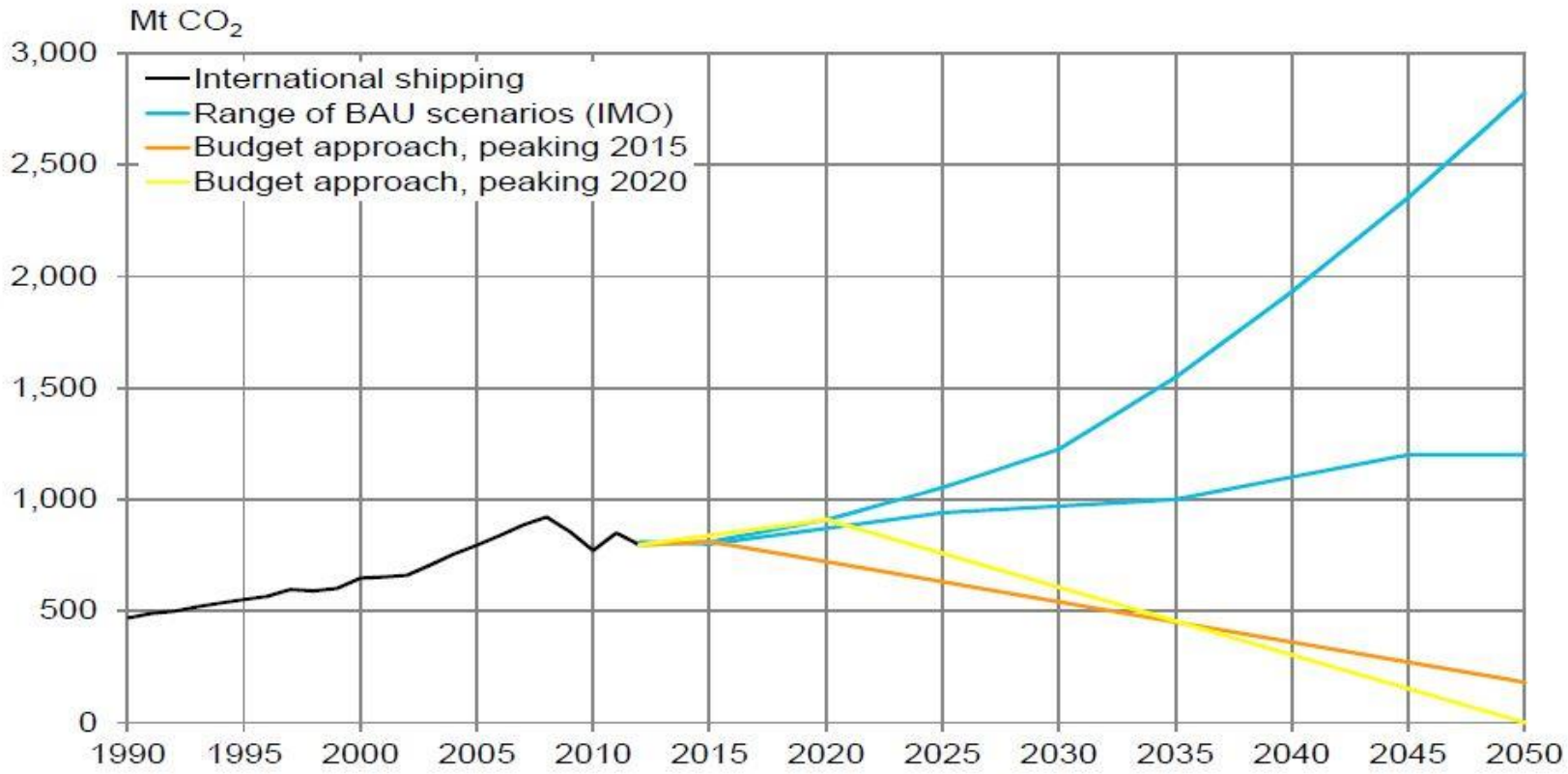
The challenge of decarbonisation

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)

- Fuel Quality Directive and Renewable Energy Directive

- CO2 emissions heavy trucks and light road road transport

The challenge of decarbonisation

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:

The challenge of decarbonisation

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

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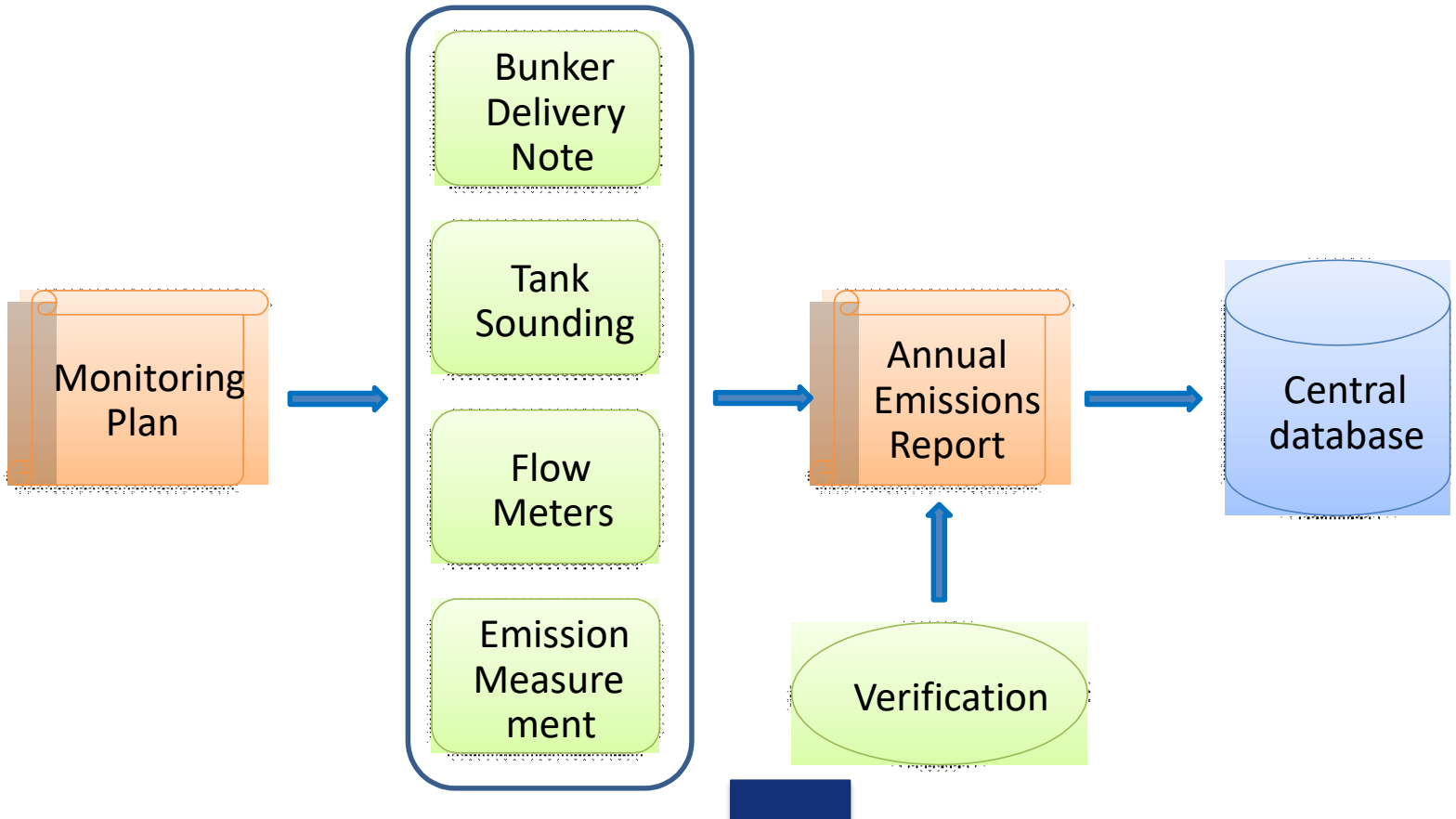
EU action addressing CO2 shipping emissions (cont.)



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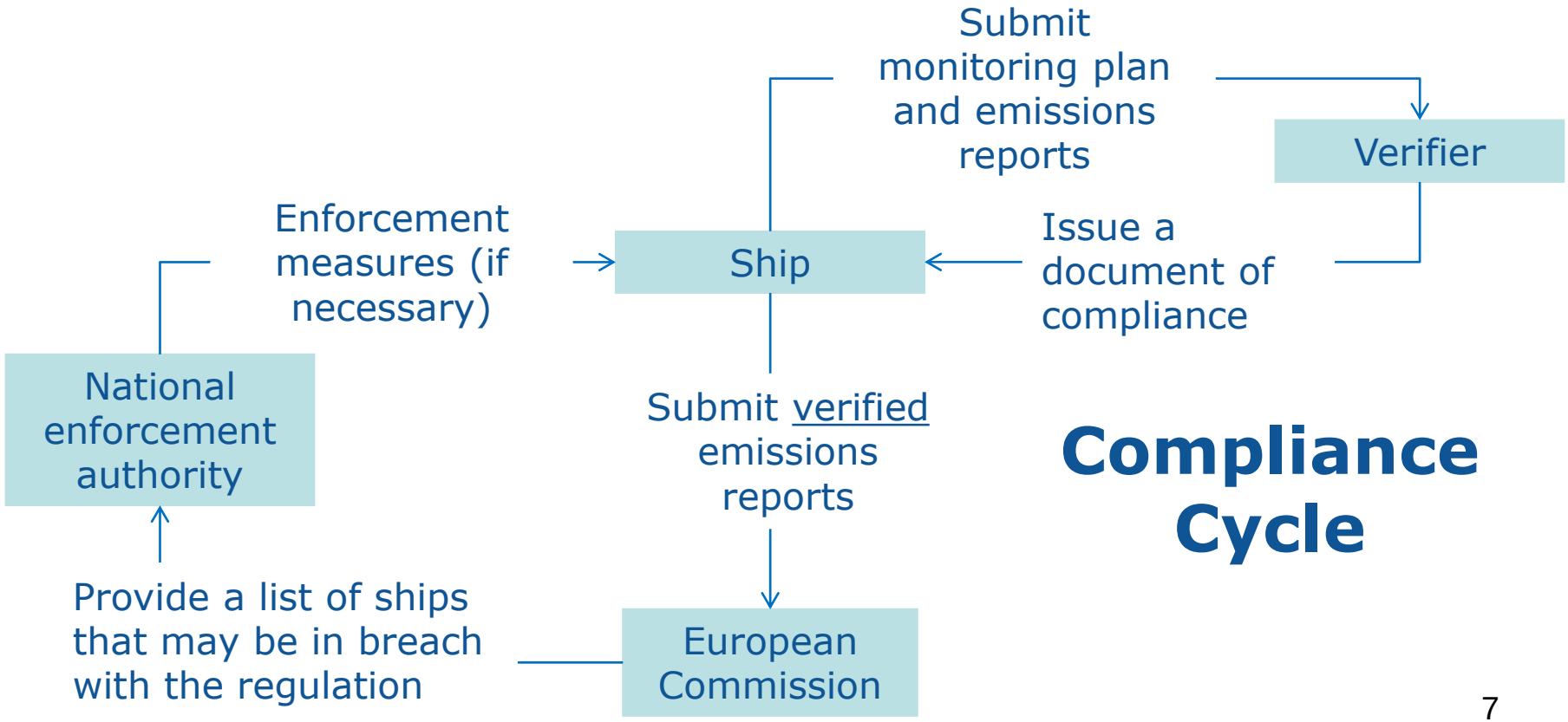
EU action addressing CO2 shipping emissions (cont.)



The challenge of decarbonisation

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.

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

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]

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

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.

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

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

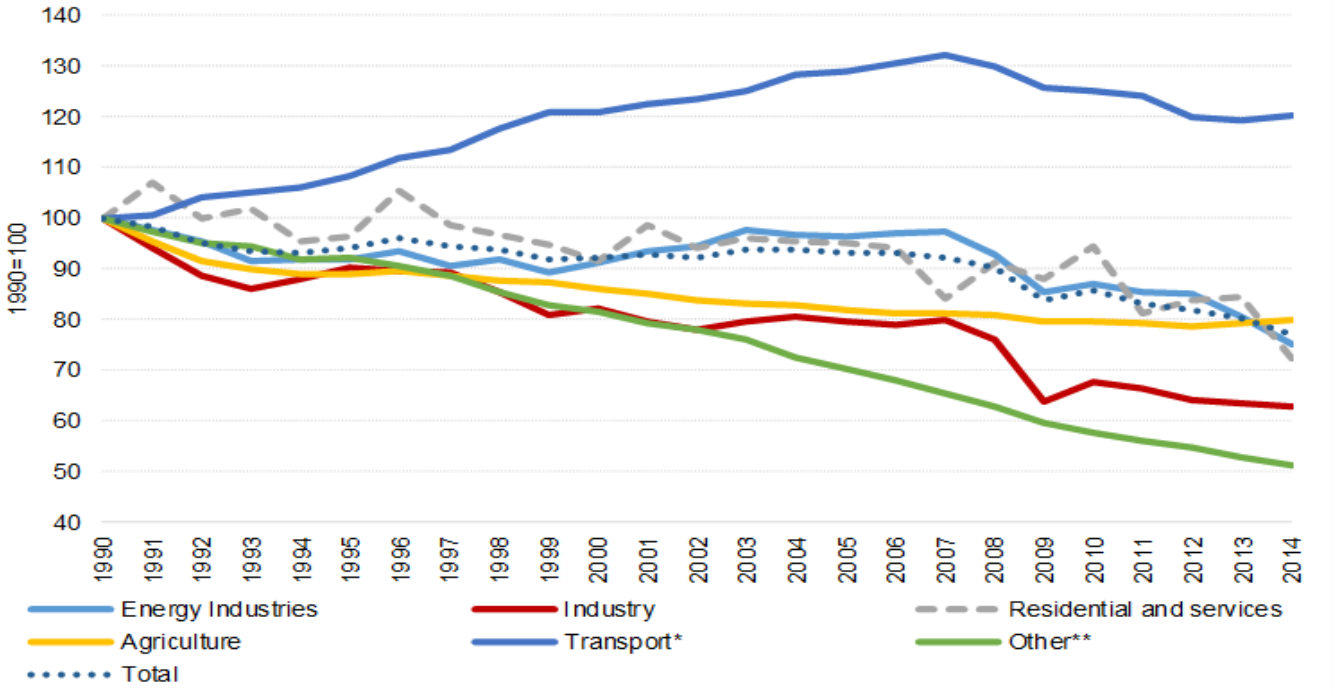
→Shore-side electricity supply for seagoing ships
Shore-side electricity supply for seagoing ships, including the design, installation and testing of the systems, shall comply with the technical specifications of the IEC/ISO/IEEE 80005-1 standard.

→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



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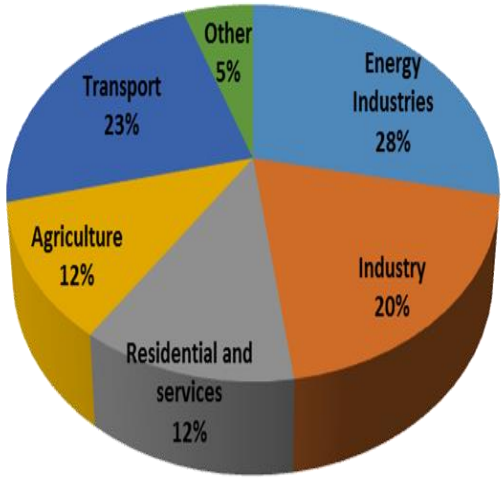


Low-emission mobility

- 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

EU2020 climate and energy package: European Union passed

two major directives on bioenergy and biofuels in 2009: The Renewable Energy Directive (2009/28/EC) and the Fuel Quality Directive (2009/30/EC)

Fuel Quality Directive

- 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.
- Both: introduced a set of sustainability criteria
- Biofuels required to provide at least a 35% GHG reduction compared to fossil fuels

Renewable Energy Directive

- RED setting targets for renewable energy consumption, including a sub-target mandating 10% of energy used in transport to be produced with renewable sources
- Not: accounting for indirect land use change (ILUC) emissions → ILUC Directive (EU) 2015/1513

Cap on food-based biofuels

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*

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

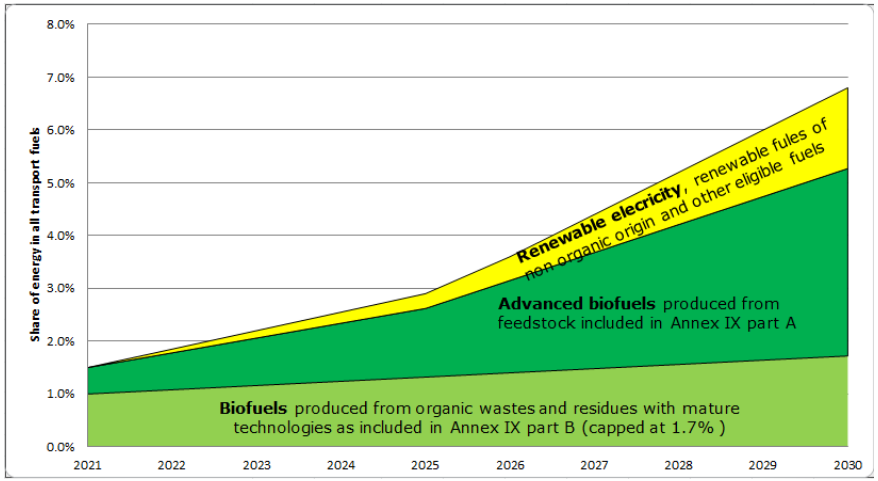
- November 2016: European Commission package 'Clean Energy for all Europeans' RED II proposal

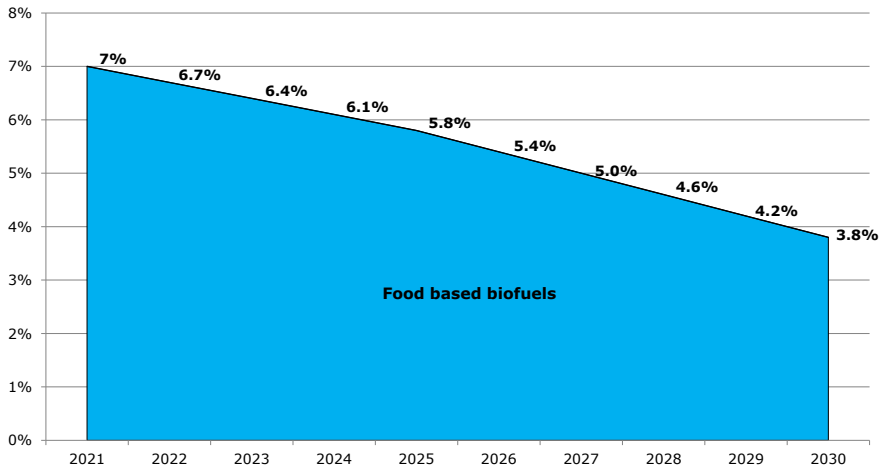
- June 2018: final compromise EU institutions was agreed

- 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.

Commission proposal for post-2020 policy on transport fuels





- 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;*

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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:

On 8 November 2017, the European Commission presented a legislative proposal setting new CO2 emission standards for passenger cars and light commercial vehicles (vans) in the European Union for the period after 2020

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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