SUSTAINABLE & SMART MOBILITY STRATEGY

FuelEU Maritime

FuelEU Maritime Regulation
European Commission
Directorate-General for Mobility and Transport
Unit D.1 – Maritime Transport and Logistics
### Fitfor55 maritime instrument

<table>
<thead>
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<th>Fitfor55 maritime instrument</th>
<th>In short/ Objective</th>
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| **ETS** – Extension of the Emission Trading Scheme to maritime transport | • Carbon tax/ Trading scheme  
• Promote Energy Efficiency and Energy Transition |
| **AFIR** – Alternative Fuels Infrastructure Regulation | • Require EU ports to develop shore-power  
• Bunkering infrastructure for alternative fuels. |
| **FuelEU Maritime Regulation** | • Promote the use of renewable and low-carbon fuels in maritime transport. |
| **Renewable Energy Directive (REDIII)** | • Renewable Energy targets for transport sector  
• Sustainability criteria and Certification framework for renewable fuels. |
Abating maritime emissions requires:

- Improving energy efficiency ➔ **using less fuel**
- Using renewable and low carbon fuels ➔ **using cleaner fuels**

Complementary FuelEU – ETS – AFIR - ETD

- ETS promotes energy savings while FuelEU addresses **fuel technology**.
- FuelEU addresses fuel demand, RED fuel supply and AFIR fuel distribution
- Taxation levels for renewable and low-carbon fuels and for electricity at berth are consistent with FuelEU goals.
• Focus on fuel and on demand – promotion of uptake of renewable and low-carbon fuels for maritime transport – complement to Energy Efficiency

• Technology-neutral approach: maritime operators will need to use an increasing proportion of zero and low carbon sustainable fuels, without obligation to use a specific technology

• Establishes target reduction % for the yearly average GHG intensity of the energy used on-board (gCO2eq/MJ)

<table>
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<th>Year</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
<th>2040</th>
<th>2045</th>
<th>2050</th>
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<tbody>
<tr>
<td>%</td>
<td>-2%</td>
<td>-6%</td>
<td>-14,5%</td>
<td>-31%</td>
<td>-62%</td>
<td>-80%</td>
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• Exemptions: Small islands < 200,000 residents; PSO connections between island MS and another MS and between an island and the mainland of the same MS; outermost regions; transhipment ports; ice class ships and ships navigating in ice.

• Scope: ships above 5000 GT, intra-EU traffic + 50% international, EU ports (same as for ETS)

• Additional requirement for Zero-Emission at berth (OPS and alternative zero-emission technologies) - compulsory as of 2030 for container and passenger vessels (some exemptions up to 2035)

• Inclusion of CO2, methane and nitrous oxide on a full Well-to-Wake calculation: allows fair comparison of fuels

\[
\text{GHGe} [\text{gCO2eq}] = (\text{WtT (fuel, electricity)} + \text{TtW (combustion, slip)})
\]

• Flexibility mechanism via banking and borrowing: surpluses and (small) deficits can be carried over to the next year

• Voluntary and open pooling mechanism to reward/ incentivise overachievers and encourage the rapid deployment of the most advanced options

• Non-compliance – deterrent financial penalty

• Monitoring and Reporting is based on MRV approach, with some additional data (e.g. calculation of Compliance Balance)
Technologies for compliance with FuelEU Maritime

**Onboard Carbon Capture and Storage**
Use of OCCS not yet recognized as an option for FuelEU compliance – included in the Revision for future assessment and consideration – technology needs to be demonstrated.

**Zero Emission Technologies – Auxiliary Power Units**

**Solar Sails – Rigid sails – Photovoltaic Panels**
Benefit under FuelEU – Wind Reward Factor + Energy supplied by renewable/alternative source of power.

**Sails – Rigid sails**
Benefit under FuelEU – Wind Reward Factor.

**Onshore Power Supply**
Connection to OPS will benefit of GHG intensity = ‘0’ gCO2e/MJ – zero WtT emission factor for OPS electricity.

**Non-CO2 Tank-to-Wake emissions**
Technologies for abatement of non-CO2 emissions may become relevant to improve GHG performance of energy conversion systems/engines.

**Improved Hull Paints**
Improvement of Energy Efficiency – Not a measure to improve GHG intensity of the Energy Used.

**Bulbous bow**
Improvement of Energy Efficiency – Not a measure to improve GHG intensity of the Energy Used.

**Onboard Electrical Energy Storage**
Onboard battery system may be used to supply zero-emission energy while at berth. Possible to charge at sea and be used at berth. If used only for energy efficiency they will have limited value for FuelEU.

**Optimization of Propeller – Rudder – Aft Shape**
Improvement of Energy Efficiency – Not a measure to improve GHG intensity of the Energy Used.

**Advanced Multi-fuel engines/ Fuel Cells**
Multi-Fuel Engines or Fuel Cells, with technologies for methane slip mitigation.

**Air Bubbles – Hull Lubrication**
Improvement of Energy Efficiency – Not a measure to improve GHG intensity of the Energy Used.

**Renewable and Low-Carbon Fuels**
Use of renewable and low carbon fuels – direct reduction of GHG intensity of the energy used.

**ZET**

**Air Bubbles**

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Auxiliary Power Units – Benefit under FuelEU – Wind Reward Factor + Energy supplied by renewable/alternative source of power.

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Containerships and passenger ships (>5,000GT) required to connect to onshore power supply, securely moored at berth, **in all AFIR ports, as from 1 January 2030.**

Also, **in all non-AFIR ports, as from 1 January 2035, for all ports that develop OPS capacity.**

In all **non-AFIR ports** from 1 January 2030, if decided by Member States.

Ships at anchorage not covered, but voluntary opt-in provision for MS.
Eligibility of Renewable and Low-Carbon Fuels

(Biofuels):
- **Sustainability** and GHG saving criteria - RED Article 29
- No “food-and-feed” crop Biofuels

(RFNBOs and Recycled Carbon Fuels):
- GHG saving threshold - RED Article 27(2)

(Low-Carbon Synthetic Fuels):
Revised (recast) Gas Directive

Fuels not meeting criteria treated as fossil fuels
### GHG Fuel Certification

- **Feedstock**
  - Biomass
  - Renewable

- **Production**
  - Biofuels
  - RFNBOs
  - Low-Carbon Synthetic Fuels

- **Distribution**
  - How can distribution be considered (should be at all?)

- **Blending**
  - Blending with fossil fuels will be the predominant case

- **Bunkering**
  - How to include Bunkering in the Certification of the Fuel

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**RED Certification** – Proof of Sustainability

**FuelEU – GHG Fuel Certification**

- **GHG Fuel Certification** – Essential for level playing field
- Fuel Certificate – to be **submitted together with BDN**
- Need to include **GHG savings for each fuel product** supply
- Blends need to provide relevant information to **ALL parts blended**
- Fuel Certification for Bunkering **outside EU – OK!** – Fuel Certification Companies
**Governance:**
- Monitoring and reporting is based on MRV approach – MRV data input.
- FuelEU-specific additional data (e.g. calculation of compliance balance, recording of penalties, exchange and notifications between user groups)
- **Monitoring Template → FuelEU Report → Verification Report**

**FuelEU Penalties:**
- Deterrent financial penalty in case of non-compliance with GHG intensity target.
- Compliance Balance (Function of deficit/surplus x energy used)
- Separate penalty in case of non-compliance with requirements for additional Zero-Emissions at berth.
- Allocation of revenues from penalties to MS budgets.

**FuelEU Database:**
- Central IT system to support compliance and functioning of the Regulation.
- Associated to THETIS-MRV – “FuelEU Module”
- Developed, hosted and managed by EMSA

**Report and review:**
- Extensive report and review clause with the first reporting deadline on 31 December 2027 and every five years thereafter.
- Commitment to look in the future at:
  - Onboard Carbon Capture and Storage
  - Black Carbon
  - Geographic Scope and Ship Size
  - Alignment with IMO.
Secondary Legislation

- 14 Implementing and Delegated Acts
- Important building blocks for implementation of FuelEU
- Covering OPS, updates to Annex-II, RFNBOs, Zero Emission Technologies, Governance, FuelEU database, amongst others.

FAQ/HelpDesk/Communication

- FAQ under development addressing most pressing questions in support of implementations
- HelpDesk: Fitfor55@emsa.europa.eu
- Several Events under planning to reach out to stakeholders (webinars, etc)

RLCF Alliance
Renewable and Low-Carbon Fuels Alliance

- Focus on uptake of availability and scalability of renewable and low carbon fuels.
- 200+ members, including operators, fuel suppliers, member states, etc.
- Maritime Roundtable focused on forecasting low-GHG marine fuel demand, in accordance with the FuelEU GHG intensity reduction curve.

Other Fitfor55

- Implementation of other Fitfor55 waterborne instruments will be decisive for successful FuelEU implementation
- Interdependency mainly on AFIR (for shore-power availability) and in RED (for fuel certification)
- ETS implementation will also present important interdependencies, notably regarding the mitigation of risk of re-routing.

ESSF
European Sustainable Shipping Forum

- Sub-group on Sustainable Alternative Power for Shipping working on FuelEU implementation
- Workstreams on Zero Emission Technologies, GHG Fuel Certification, Certification of Engines for lower methane emissions

FuelEU Maritime
Dimensions of FuelEU Implementation

- EMSA supporting with Governance aspects of the FuelEU
- FuelEU Data Base currently under development – will be the “heart” of the Implementation
Questions to:

Fitfor55@emsa.europa.eu