

Sustainable maritime fuels

'Fit for 55' package: The FuelEU Maritime proposal

OVERVIEW

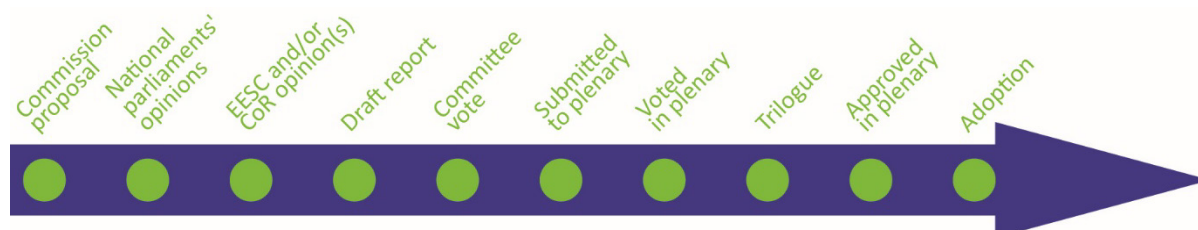
In July 2021, the European Commission put forward the 'fit for 55' package of legislative proposals, aimed at ensuring the success of the European Green Deal. The FuelEU Maritime regulation is one of these proposals and, together with four other proposals, it seeks to steer the EU maritime sector towards decarbonisation.

To support the uptake of sustainable maritime fuels, the Commission proposes to limit the carbon intensity of the energy used on board ships. Accordingly, the proposal sets a fuel standard for ships and introduces a requirement for the most polluting ship types to use onshore electricity when at berth. It puts the responsibility for compliance on the shipping company.

In the European Parliament, the Committee on Transport and Tourism (TRAN) led the work on this file. Parliament adopted its position for interinstitutional negotiations in October 2022. The Council adopted its general approach in July 2022. A trilogue agreement was reached on 23 March 2023. The final act was signed on 13 September 2023 and was published in the Official Journal of the EU on 22 September 2023. It entered into force on 12 October 2023.

Proposal for a regulation of the European Parliament and of the Council on the use of renewable and low-carbon fuels in maritime transport and amending Directive 2009/16/EC

<i>Committee responsible:</i>	Transport and Tourism (TRAN)	COM(2021) 562
<i>Rapporteur:</i>	Jörgen Warborn (EPP, Sweden)	14.7.2021
<i>Shadow rapporteurs:</i>	Vera Tax (S&D, The Netherlands)	2021/0210(COD)
	Elsi Katainen (Renew, Finland)	
	Jutta Paulus (Greens/EFA, Germany)	Ordinary legislative procedure (COD)
	Johan Van Overtveldt (ECR, Belgium)	(Parliament and Council on equal footing – formerly 'co-decision')
	Marco Campomenosi (ID, Italy)	
	João Pimenta Lopes (The Left, Portugal)	
<i>Procedure completed.</i>	Regulation 2023/1805 OJ L 234, 22.9.2023, pp. 48–100.	



Introduction

While shipping is one of the least carbon-intensive ways to transport goods, in 2018 it generated [2.9 %](#) of global anthropogenic CO₂ emissions. In the EU, ships generated [13.5 %](#) of all greenhouse gas (GHG) emissions from transport that year, substantially less than did road transport (71 %) and aviation (14.4 %). Despite a drop in activity in 2020 due to the coronavirus pandemic, shipping is expected to grow, fuelled by rising demand for primary resources and container transport.

An international sector by nature, shipping is regulated by the International Maritime Organization (IMO). The IMO is not new to the idea of reducing GHG emissions from shipping: it adopted its [initial strategy](#) in this regard in 2018, setting itself the goal to reduce average carbon intensity (CO₂ per tonne-mile) by at least 40 % by 2030 and by 70 % in 2050, as well as to cut total emissions by at least 50 % by 2050 (compared to 2008) and phase them out as soon as possible. While the IMO is to review its initial strategy in 2023, international pressure has been mounting on it to act faster. Ahead of the [COP26 conference](#) in Glasgow, the UN Secretary-General António Guterres [affirmed](#) that shipping and airlines have failed to cut their GHG emissions and their current commitments are rather aligned with warming above 3°C than with the 1.5°C goal.

The EU, in line with its commitment under the Paris Agreement, has decided to become a climate-neutral economy by 2050. It charted its path towards success in the 2019 [European Green Deal](#) and adopted the [European Climate Law](#), which made the goals of keeping the global temperature increase to well below 2°C and pursuing efforts to keep it to 1.5°C legally binding. To get there, it set a new EU target for 2030 of reducing GHG emissions by at least 55 % compared to 1990 levels, which would require contributions from all sectors of the economy.¹

In its December 2020 [sustainable and smart mobility strategy](#), the European Commission outlined its planned steps to transforming the EU transport system in line with the goals of the European Green Deal. In July 2021, it published the '[fit for 55](#)' [package](#) with a first set of 13 legislative proposals.

Existing situation

EU maritime transport moves [77 %](#) of external trade and 35 % of all trade by value among the EU countries, while around 9 % of the traffic is estimated to be between ports within the same EU country (domestic voyages). Ships operating for these activities use bunker fuels that are tax exempt, internationally, as well as in the EU.

Current EU legislation regulates the following aspects related to shipping fuels:²

- the Alternative Fuels Infrastructure Directive ('AFID', [2014/94/EU](#));
- the Regulation on the monitoring, reporting and verification of CO₂ emissions from maritime transport ('EU MRV', Regulation [2015/757/EU](#));
- the Directive on a reduction in the sulphur content of certain liquid fuels ([2016/802/EU](#));
- the recast Renewable Energy Directive ('RED', [2018/2001/EU](#)).

Five proposals in the Commission's 'fit for 55 package' have an impact on shipping:

- a revised Directive on the EU emissions trading system (EU-ETS, [COM\(2021\) 551](#));
- FuelEU Maritime;
- a revised AFID;
- a revised Directive on Energy Taxation ([COM\(2021\) 563](#));
- A revised Renewable Energy Directive (RED II, [COM\(2021\) 557](#)).

Parliament's starting position

In its resolution of 27 April 2021 on technical and operational measures for more efficient and cleaner maritime transport ([2019/2193\(INI\)](#)), Parliament called on the Commission to apply the 'polluter-pays' principle and promote the use of alternatives to heavy fuels, including through tax exemptions. Furthermore, the Parliament voiced its support for a gradual phase-out of heavy fuel oil in shipping and for technological neutrality, provided it is consistent with EU environmental targets. Warning against carbon leakage, it underlined the need to preserve the competitiveness of the European maritime transport sector. Finally, it insisted that all readily deployable options in reducing maritime emissions should be used, including transitional technologies such as LNG.

In 2020, the Parliament's resolution ([2019/2956/RSP](#)) on the European Green Deal called for measures to move away from the use of heavy fuel oil and for investments in research into new technologies to decarbonise shipping, and in the development of zero-emission and green ships.

In its resolution of 25 October 2018 on the deployment of infrastructure for alternative fuels in the EU ([2018/2023\(INI\)](#)), the Parliament called on the Commission to support the decarbonisation of the maritime sector, with a clear focus on innovation, digitalisation and adaptation of ports and ships. It also supported the deployment of shore-side electricity supply at both inland and maritime ports.

Preparation of the proposal

The Commission ran an open [public consultation](#) between July and September 2020 and received 136 responses. Stakeholder groups favoured technology neutrality and preferred a goal-based approach to a prescriptive one, which could lead to technology lock-in and stranded assets.

The FuelEU maritime proposal was accompanied by an impact assessment (IA). External consultants Ecorys and CE Delft conducted a [study](#) in support of the IA. Between August and September 2020, they carried out a targeted consultation with experts from the European Sustainable Shipping Forum ([ESSF](#)) and a parallel series of interviews with stakeholders, including industry representatives and national authorities. Moreover, in September 2020, the Commission organised a roundtable with ESSF members and the European Ports Forum. Stakeholders agreed that the biggest barriers were high fuel and investment costs together with uncertainty for investors, and asked for more certainty in terms of planned climate and environmental requirements for shipping.

The above-mentioned study pointed to the need for EU policy action. Given that ships would have the possibility to bunker outside the EU, the study recommended that the policy target fuels used on voyages to and from EU ports, rather than fuels sold in the EU. As the lack of demand for clean fuels was seen to be the main problem, the policy should target the demand side rather than supply.

The [impact assessment](#) takes as its starting point the need to provide legal certainty, focus on the demand side to stimulate production and use renewable and low-carbon fuels while addressing the issue of carbon leakage. It considers three policy options, each using a different approach to the choice of technology and the way the required performance is to be achieved. The first option is a prescriptive approach involving the use of shares of specific fuels; here, the regulator chooses the technology. By comparison, both the second and the third options are goal-based, leaving the choice of technology to market operators but setting maximum GHG intensity limits for the energy used on board a ship. In addition, the third option includes a flexibility mechanism allowing for pooling and multipliers for zero-emission technologies. All options require freight and passenger ships to use shore-side electricity supply (OPS) or an equivalent zero-emission technology. The third option was evaluated as the preferred one, as it has the best balance between objectives and costs, accommodates the need for flexibility, and would bring €58.4 billion in net long-term benefits.

The European Parliamentary Research Service (EPRS) published an [initial appraisal](#) of the Commission's impact assessment on 18 February 2022.

The changes the proposal would bring

The Council and the Parliament reached a provisional agreement on the Commission proposal, by force of which they introduced changes to the proposal's original text, now formally approved by both institutions and published in the Official Journal of the EU (for details, see the Section on 'Legislative process' below). The [proposal](#), as tabled by the Commission, sought to drive the uptake of low-carbon fuels, by introducing limits on the carbon intensity of the energy used on board ships, and mandates the use of onshore power supply (OPS) in EU ports.

The Commission proposed that reductions of annual average **GHG intensity of energy** used on board would start from 2025, with a modest 2 % improvement compared to a 2020 baseline, but increasingly stringent requirements over time, with a 6 % improvement required by 2030 and a 75 % cut by 2050.

These requirements were to apply to all of the energy used on board a ship in or between EU ports, but to only 50 % of the energy used by ships arriving at or departing from EU ports on voyages to or from third countries. In terms of size of vessel, the requirements were proposed to apply to commercial vessels above 5 000 gross tonnes, regardless of flag.³

According to the proposal, shipping companies were to be responsible for compliance. The new fuel standards were to apply to ships using fuels bought within the EU, but also to fuels purchased outside the EU.

The proposal introduced a methodology for lifecycle analysis of fuels and common principles for fuel monitoring, reporting, verification and accreditation. The proposed system sought to be separate from and additional to the existing [EU MRV system](#). Ships would have to carry a valid FuelEU compliance certificate. Flexibility was envisaged for both ships and companies through averaging and pooling.

The proposal stipulated that, from January 2030, freight and passenger ships staying at EU ports for more than two hours would also have to connect to **shore-side electricity supply** (also known as 'onshore power supply', [OPS](#)) and use this electricity for all energy needs while at berth, unless they used zero-emission technologies or were in an emergency situation. According to the proposal, until the end of 2034, exemptions were to be allowed for cases when ships could not connect to OPS because connection points were unavailable in port or because the port installation was not compatible with the on-board OPS equipment. This flexibility was to be significantly reduced from 2035 onwards. Harmonised penalties were envisaged for non-compliance with both the fuel standards and with the OPS requirements. The revenues collected were to feed into the Innovation Fund⁴ and help finance the production of renewable maritime fuels and other greening activities in the maritime sector.

Advisory committees

This legislative procedure requires that both the European Economic and Social Committee (EESC) and the European Committee of the Regions (CoR) be consulted. The EESC in its [opinion](#) of 8 December 2021 (rapporteur: Constantine Catsambis, Employers – Group I, Greece) considers that the proposal should be harmonised with IMO regulations, including on the safety of fuels used by ships. Moreover, it cautions that energy transformation and decarbonisation of shipping can only be successful if there is social acceptance and the *modus operandi* of shipping and other sectors are safeguarded. The EESC regards the impact of the FuelEU Maritime proposal on shipping as disproportionate compared to other industries, and the long-term measures needed for the 2030-2050 GHG reductions as 'largely target-shooting' based on technologies yet to be developed and matured. Therefore, it calls for concentrated R&D support, some flexibility for the industry to be able to adapt and for fuel choice neutrality.

The CoR's [Commission](#) for Territorial Cohesion Policy and EU Budget decided on 28 October 2021 not to draw up an opinion on the proposal.

National parliaments

National parliaments were invited to scrutinise the proposal for any subsidiarity issues by [8 November 2021](#). The Irish Houses of Oireachtas, in their [reasoned opinion](#) on six of the 'fit for 55' proposals, argue that these do not contain sufficient quantitative and qualitative indicators to allow a full assessment of all the implications, and therefore fall short on the principle of subsidiarity.

Stakeholder views⁵

Before the publication of the 'fit for 55' package, [FuelsEurope](#), representing EU **refineries**, recommended that regulation of fuels should be based on their well-to-wake carbon intensity. They suggested setting a carbon intensity limit for maritime transport, and making the ship's operator responsible, as technology-neutral steps incentivising the development of clean fuels.

EU **maritime ports** ([ESPO](#)) called for a goal-based and technology-neutral approach, to support innovation and avoid stranded assets. They also insisted on recognition for the role of LNG as a transition fuel and on certainty about the support for investments made from 2021 to at least 2027. Both organisations pointed out the need for cooperation with the IMO in view of adopting a global approach.

Stakeholders' reactions following the July publication of the 'fit for 55' systematically consider not only the Fuel EU Maritime proposal but also its linkages to other proposals in the package. The inclusion of the maritime sector in the EU-ETS and the FuelEU Maritime proposal have been [criticised](#) by the ICS for imposing unilateral regional measures on international shipping, potentially undermining progress towards IMO rules.

Having expressed their preference for an international (IMO) solution, European **shipowners** ([ECSA](#)) agree with the objective to increase the uptake of cleaner fuels in shipping but point at the lack of consistency among the 'fit for 55' package proposals. As to the FuelEU Maritime proposal, the ECSA points out that, for fuel purchased outside the EU, the calculation of carbon savings would be based on documents from non-EU fuel suppliers. Besides making enforcement problematic, this could also distort competition between fuel suppliers and raise safety issues linked to the biofuels' flashpoint. Moreover, they propose making EU fuel suppliers, as opposed to shipping companies, responsible for meeting the fuel standards. Further, they regard the setting-up of a new monitoring and verification system as burdensome and suggest extending the existing MRV. Finally, shipowners consider that ships should not be penalised when OPS is not available in ports.

A May 2021 [study](#) commissioned by the ECSA and the ICS cautioned that the existing multiplier of 1.2 for renewable fuels is not enough to incentivise the uptake of clean shipping fuels and recommended a higher multiplier and concrete targets on fuel suppliers to make clean shipping fuels and energy available. It recommended making fuel suppliers responsible for ensuring that low-carbon fuel blends are safe, fit for purpose and available in sufficient quantities in EU ports.

[Transport&Environment](#) (T&E), an **environmental NGO**, warns that despite the electrification ambitions, ports risk fossil gas lock-in. If no green fuels are available for refuelling in European ports, the switch to low-carbon fuels cannot happen. They underline the important link between the FuelEU Maritime proposal and the revised proposal on alternative fuels infrastructure, and consider that the Commission is 'betting on the wrong horse' when promoting LNG. Instead, the T&E suggests that the EU legislation should set binding targets only for the refuelling infrastructure for green fuels, to accelerate the uptake of truly sustainable fuels in shipping, such as green hydrogen and ammonia, as these are indispensable for making the sector decarbonised by 2050. They insist that the proposed LNG mandate should be removed and investment into fossil infrastructure avoided. Finally, they also suggest speeding up the ambition for the electrification of ports, as the OPS supply technology is far from new and all ship types can technically be equipped with it.

The DNV sees the future of shipping as determined by an interplay of three drivers: regulations and policies, access to investors and capital, as well as cargo-owner and consumer expectations. In their series of [industry insights](#), they estimate that, while the revised EU-ETS would increase the costs of emitting CO₂ significantly, the FuelEU Maritime proposal, once adopted, would mandate the shift to lower carbon fuels, with a potentially significant technical impact on ships. However, this impact would largely depend on the kind of fuels that become available. Given the way the calculation is set up, the DNV affirms that conventional energy-saving devices that simply reduce fuel consumption would not be enough to make ships compliant. They expect that, at least initially, the new EU set of rules regulation would encourage the uptake of LNG and drop-in biofuels.

Expert views

In a trio of 2021 reports, **World Bank** experts address the uncertainty about the general benefits or 'disbenefits' of [using LNG](#) as maritime bunker fuel. They recall that the LNG controversy lies in the fact that, when used as shipping fuel, LNG has an immediate positive impact on air quality, but its capability to contribute to both short- and long-term GHG reductions is questionable. They find that there is a consensus across the literature and industry that LNG, due to its carbon intensity, cannot form a large proportion of the bunker fuel mix in 2050. Therefore, they work with three infrastructure scenarios: that of a transitional role for LNG ('use it now and reuse it later with other fuels'), a temporary one ('use it and then stop') and a limited one ('limited use overall').

In conclusion, they [recommend](#) that, given the uncertainties surrounding the GHG benefits of LNG, 'new public policy for LNG as a bunker fuel should be avoided'. By this, they mean both policies that give LNG a regulatory advantage over oil-delivered shipping fuels and measures covering only well-to-tank GHG emissions. They also suggest cutting existing policy support to LNG and regulating methane emissions both in the LNG supply chain and in the use of LNG on board ships. Public support should focus on research, development and deployment of zero-carbon bunker fuels. The report recommends that shipowners opt for investments into increased energy efficiency and make sure their future investments are compatible with multiple zero-carbon candidate bunker fuels, among which they regard [ammonia and hydrogen](#) as the most promising.

Legislative process

In the Council, a progress report was considered at the [Transport Council](#) meeting on 9 December 2021. The Council subsequently adopted its [general approach](#) in July 2022.

The Council's negotiating position maintained the proposed scope in terms of size of ships concerned and the targets for reducing the greenhouse gas intensity of energy used on board ships, as proposed by the Commission, but amends a number of other elements. It proposed to revise the provisions on calculating greenhouse gas intensity and the resulting penalties and fines. It also clarifies the role of companies, verifiers and the public authorities, and on the monitoring, reporting and verification procedures.

It added some possibilities for temporary exemptions, for instance with regard to small islands and outermost regions. The Council position also seeks to stimulate demand for renewable fuels of non-biological origin (RFNBOs).

In the European Parliament, the Committee on Transport and Tourism (TRAN) took the lead (rapporteur: Jörgen Warborn, EPP, Sweden), while the Committee on Environment, Public Health and Safety (ENVI) and the Committee on Industry, Research and Energy (ITRE) were both associated under Rule 57 of the Parliament's Rules of Procedure.

The TRAN committee adopted its [report](#) on 3 October 2022, and the Parliament voted on it in plenary on 19 October, thus finalising its [negotiating position](#). As with the Council position, the Parliament's position supported the scope proposed by the Commission, as well as the possibility to grant exemptions regarding small islands and outermost regions.

However, while keeping the Commission's proposed cuts for 2025 and 2030, the Parliament's position introduced higher targets than those proposed by the Commission for reducing the GHG intensity of energy used on board ships from 2035 onwards: 20 % as of 2035; 38 % from 2040; 64 % as of 2045; and 80 % as of 2050. It also introduced a target of 2 % for the use of renewable fuels of non-biological origin from 2030.

Trilogue negotiations concluded with a [provisional agreement](#), reached on 23 March 2023.

According to the agreed text, in comparison to the reference value of 91.16 grams of CO₂ equivalent per MJ, the GHG intensity of energy used on board ships will have to be reduced by 2 % as of 2025, 6 % as of 2030, 14.5 % as of 2035, 31 % as of 2040, 62 % as of 2045 and 80 % as of 2050.

The rules would apply to ships with a gross tonnage of more than 5 000 that are used for transporting passengers or cargo for commercial purposes. Warships, naval auxiliaries, fish-catching or fish-processing ships, wooden ships of a primitive build, ships not propelled by mechanical means, or government ships used for non-commercial purposes would be exempted.

The requirements would apply to the energy used during the stay within a port in the EU, the energy used on voyages between two EU ports, half of energy used on voyages departing from or arriving in ports located in EU outermost regions and half of energy used on voyages between an EU port and a third-country port.

According to the provisional agreement, Member States are allowed to make use of some temporary exemptions, for example, for certain voyages between Member State ports and ports of the same Member State located in an island with fewer than 200 000 permanent residents. Similarly, Member States may exempt voyages between a port of call located in an outermost region and another port of call located in an outermost region.

To promote the use of renewable fuels of non-biological origin (RFNBOs), the provisional agreement introduced a new article into the proposal, allowing a 'multiplier' to be used when calculating the GHG intensity of the energy used on board ships, in effect allowing the energy from RFNBOs to count twice. Subject to certain conditions, such as sufficient production capacity and availability to the maritime sector, a 2 % RFNBO usage target would take effect as of 2034 if the Commission reports that in 2031 RFNBO amount to less than 1 % in the fuel mix.

With regard to OPS, the agreed text stipulates that from 1 January 2030 onwards, a ship moored at the quayside in a port of call that is covered by Article 9 of the Alternative Fuels Infrastructure Regulation (AFIR), must connect to on-shore power supply and use it for all its electrical power demand at berth. From 1 January 2035 onwards, a ship moored at the quayside in a port of call that is not covered by Article 9 of AFIR, where the quay is equipped with available on-shore power supply, would have to connect to on-shore power supply and use it for all its electrical power demand at berth. Some exemptions, such as making a port call due to unforeseen circumstances or emergencies, would apply.

The text also stresses that the revenues generated from FuelEU penalties are to be used to support the rapid deployment and use of renewable and low-carbon fuels in the maritime sector.

The new rules were approved at the Parliament's plenary sitting on [11 July 2023](#). The Council approved the text on [25 July 2023](#). The final act was signed on 13 September 2023, was published in the Official Journal of the EU on [22 September 2023](#) and entered into force on 12 October 2023.

The regulation will apply from 1 January 2025, with the exception of Articles 8 and 9, which will apply from 31 August 2024.

EUROPEAN PARLIAMENT SUPPORTING ANALYSIS

Erbach G., [Monitoring, reporting and verification of CO2 emissions from maritime transport](#), EPRS, European Parliament, October 2020.

Nelissen D., Maertens S. et al., [The aviation and maritime sectors and the EU-ETS: challenges and impacts](#), Research for TRAN committee, Policy Department for Structural and Cohesion Policies, DG IPOL European Parliament, July 2021.

Pape M., [Decarbonising maritime transport: The EU perspective](#), EPRS, European Parliament, October 2020.

Soone J., [Towards a revision of the Alternative Fuels Infrastructure Directive](#), EPRS, European Parliament, July 2020.

Tuominen M., ['Fit for 55' package: Fuel EU Maritime](#), initial appraisal of a European Commission impact assessment, EPRS, European Parliament, February 2022.

OTHER SOURCES

[Sustainable maritime fuels \(FuelEU Maritime Initiative\)](#). ['Fit for 55' package](#), Legislative Observatory, European Parliament.

ENDNOTES

- ¹ The maritime sector is the only one without specific GHG reduction commitments in the EU.
- ² While the title of the Commission proposal announces upcoming modifications to the [Directive 2009/16/EC](#), this directive does not deal with fuels but with the way EU port states control a ship's compliance with a large set of EU rules.
- ³ Exempted: warships, naval auxiliaries, fish-catching or fish-processing ships, wooden ships of a primitive build, ships not propelled by mechanical means, or government ships used for non-commercial purposes.
- ⁴ As defined in [Directive 2003/87/EC](#).
- ⁵ This section aims to provide a flavour of the debate and is not intended to be an exhaustive account of all different views on the proposal. Additional information can be found in related publications listed under 'European Parliament supporting analysis'.

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