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REPORT

From:	General Secretariat of the Council
To:	Permanent Representatives Committee (Part 1)
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Subject:	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 • Analysis of the final compromise text with a view to agreement

I. INTRODUCTION

1. On 14 July 2021, the Commission submitted to the European Parliament and to the Council a proposal for a Regulation on the use of renewable and low-carbon fuels in maritime transport ('FuelEU Maritime')[1], as part of the 'Fit for 55' package (the 'package').

2. The European Economic and Social Committee adopted its opinion on the abovementioned proposal on 8 December 2021, while the European Committee of the Regions declined to deliver an opinion.

[1] ST 10327/21, ADD 1, ADD 2 and ADD 3.

3. Following intensive preparatory work, the Council agreed on a general approach on 2 June 2022 and gave a mandate to the Presidency to engage in negotiations with the European Parliament.

4. The European Parliament appointed the Committee on Transport and Tourism (TRAN) as the committee responsible for the FuelEU Maritime proposal and Mr Jörgen Warborn (SE, EPP) as rapporteur. The European Parliament adopted its position in plenary on 19 October 2022.

5. The co-legislators swiftly engaged in negotiations and four trilogues were held, on 27 October 2022, 8 December 2022, 16 February 2023 and 22 March 2023. At the last trilogue a provisional agreement was reached between the co-legislators, resulting in the final compromise text as set out in Annex I to this report.

II. MAIN ELEMENTS OF THE FINAL COMPROMISE TEXTS

6. On the **main political issues**, the compromise agreed provisionally with the Parliament consists of the following elements:

6.1. Scope and exemptions (Article 2)

While the Regulation will apply to ships above 5000 GT, several exemptions are provided to address specific situations of outermost regions, small islands (under 200 000 permanent residents) as well as areas economically highly dependent on their maritime connectivity ('PSO routes');

6.2. Provisions on ice-classed ships and navigation in ice (Articles 3, 7(3), 14(1) and Annexes III and IV)

Sailing in ice conditions and the technical properties of ice-classed ships cause additional costs; therefore, the Regulation allows companies to apply a limited adjusted amount of energy used on-board for ice-classed ships. In addition, until the end of 2034, a share of the additional energy used during sailing in ice can be exempted for the specific periods that ice-class vessels face conditions of navigation in ice;

6.3. Greenhouse gas intensity reduction targets of energy used on-board and the use of renewable fuels of non biological origin – "RFNBO" (Articles 4, 4a and Annex I)

The greenhouse gas intensity reduction targets of energy used on-board by ships increase over time as follows: 2% from 1 January 2025; 6% from 1 January 2030; 14,5% from 1 January 2035; 31% from 1 January 2040; 62% from 1 January 2045 and 80% from 1 January 2050.

Moreover, in order to support to the uptake of sustainable RFNBOs, the Regulation introduces the possibility to use a "multiplier" until 2034, allowing the energy from RFNBOs to count twice. In addition, a 2% RFNBO sub-target will apply as of 2034 if, further to monitoring of the market, the Commission reports the share of RFNBO in the maritime bunker fuels used by ships covered by the Regulation to be less than 1% by 2031.

In order to ensure technological neutrality and avoid unduly discriminating against other fuels that achieve similar greenhouse gas intensity savings as RFNBOs, an "equivalence clause" is also included;

6.4. Energy used at berth - OPS and zero-emission technologies (Article 5)

As of 2030, ships moored at the quayside will have the obligation to connect to OPS in the so-called "AFIR ports". This obligation is extended to non-AFIR ports from 2035, when OPS is available. For the period between 2030 and 2035, Member States have the possibility to introduce such an obligation for ships to connect to OPS in non-AFIR ports as well, if available.

Exceptions from the obligation to use OPS are provided for a number of objective reasons, including cases where the ship is unable to connect. From 2035, the number of exceptions which apply in such cases will be limited per ship during a reporting period (10% of the port calls but no more than ten times), in order to ensure both compliance with the climate objectives and the fair treatment of the companies;

6.5. Certification of fuels (Article 9 and Annex II)

The Regulation excludes fossil fuels from the certification process, both for the Well-to-Tank (upstream) and Tank-to-Wake (downstream) emission phases. As regards the Well-to-Tank emission phase, while acknowledging that any certification process should be in line with existing Union legislation, the Regulation also includes an explicit reference to the "recast Gas Directive", once adopted and where applicable;

6.6. Penalties (Article 20 and Annex III)

The revenues generated and collected from the payment of "FuelEU penalties" should promote the distribution and use of renewable and low-carbon fuels in the maritime sector and help maritime operators meet their climate and environmental goals. Member States will receive these revenues and report transparently on how they use them;

6.7. Other provisions

a) Implementing and delegated acts (Articles 12 and 13)

In order to ensure uniform conditions for the implementation of this Regulation, the Commission will adopt implementing acts to set out, inter alia, further specifications of the rules for verification activities (in Article 12). The Commission is also empowered to adopt delegated acts in order to supplement this Regulation in respect to the methods and criteria of accreditation of verifiers (Article 13);

b) Report and review (Article 28)

With a view to ensure consistency and avoid any duplication or legal uncertainty, the Commission is tasked to prepare, within one year after the publication of the Regulation, a report on its interaction with any other sectorial legislation. Moreover, the Commission will also submit reports every five years on the functioning of this Regulation, including possible social impact, impact on the evolution of the technologies and market for renewable and low-carbon fuels (carbon capture, black carbon) and the use of the revenues generated by the FuelEU penalties;

c) Annexes

Technical adjustments have been made to the Annexes, to both ensure consistency with the provisionally agreed text and include updated figures, where relevant.

III. CONCLUSION

7. The Permanent Representatives Committee is invited to:

a) confirm the agreement on the final compromise text as set out in Annex I to this note, in view of reaching an agreement at first reading with the European Parliament.

b) authorise the Presidency to inform the European Parliament that, should the European Parliament adopt its position at first reading, in accordance with Article 294 paragraph 3 of the Treaty, in the form set out in the text contained in Annex I to this note (subject to revision by the legal linguists of both institutions), the Council will, in accordance with Article 294, paragraph 4 of the Treaty, approve the European Parliament's position at first reading and the act shall be adopted in the wording which corresponds to the European Parliament's position.

ANNEX

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 (Text with EEA relevance)

2021/0210(COD)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 100(2) thereof,

Having regard to the proposal from the European Commission,

After transmission of the draft legislative act to the national parliaments,

Having regard to the opinion of the European Economic and Social Committee[2],

Having regard to the opinion of the Committee of the Regions[3],

Acting in accordance with the ordinary legislative procedure,

Whereas:

[2] OJ C , , p. .

[3] OJ C , , p.

(1) Maritime transport accounts for around 75% of EU external trade and 31% of EU internal trade in terms of volume. At the same time, ship traffic to or from ports in the European Economic Area accounts for some 11% of all EU CO_2 emissions from transport and 3-4% of total EU CO_2 emissions. 400 million passengers embark or disembark annually in ports of Member States, including around 14 million on cruise ships. Maritime transport is therefore an essential component of Europe's transport system and plays a critical role for the European economy. The maritime transport market is subject to strong competition between economic actors in the Union and beyond for which a level playing field is indispensable. The stability and prosperity of the maritime transport market and its economic actors rely on a clear and harmonised policy framework where maritime transport operators, ports and other actors in the sector can operate on the basis of equal opportunities. Where market distortions occur, they risk putting ship operators or ports at a disadvantage compared to competitors within the maritime transport sector or in other transport sectors. In turn, this**that** can result in a loss of competitiveness of the maritime transport industry, **fewer jobs** and a loss of connectivity for citizens and businesses.

(1a) **The Blue Economy created a total of about 5.7 million jobs, of which 3.2 million through direct employment in the established sectors and an additional 2.5 million generated via their respective supply chains. EU seaports alone create about 2.5 million jobs (direct and indirect), of which only about half a million are captured by sectoral statistics. This is because ports generate employment and economic benefits in other sectors, such as logistics, shipping maritime services, etc. The seven established sectors of the EU Blue Economy generated a gross value added (GVA) of €183.9 billion in 2019[4].**

4 *[1a] European Commission, The EU Blue Economy Report (2022)*

(1b) **Compared to other modes of transport, maritime transport remains the most carbon efficient mode of transport per ton km**[5]. ***At the same time, ship traffic to or from ports in the European Economic Area accounts for some 11 % of all EU CO_2 emissions from transport and 3 to 4 % of total EU CO_2 emissions. CO_2 emissions from maritime transport are expected to increase, unless further action is taken. All sectors of the economy must contribute to the swift reduction of GHG emissions towards net-zero GHG emissions by 2050 at the latest as enshrined in Regulation (EU) 2021/1119. It is therefore essential for the Union to set out an*** **appropriate** ~~***ambitious***~~ ***pathway for the swift ecological transition of the maritime sector, which would also contribute to maintaining and further promoting its global leadership in the green technologies, services and solutions, and to further stimulating job creation in the related value chains while retaining competitiveness.***

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5 ~~*[1a European Community Shipowners' Association report "The Economic Value of the EU Shipping Industry", 2020.]*~~

[1a] Commission Staff Working Document accompanying the Communication from the Commission on a Sustainable and Smart Mobility Strategy, 9.12.2020

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(2) To enhance the Union's climate commitment under the Paris Agreement ~~and set out the steps to be taken to achieve~~**adopted under the United Nations Framework Convention on** Climate ~~neutrality by 2050, and to translate the political commitment into a legal obligation, the Commission adopted the (amended~~**Change**[7] **(the 'Paris Agreement'), Regulation (EU)** ~~proposal for a Regulation~~**2021/1119** of the European Parliament and of the Council ~~on~~**of 30 June 2021** establishing the framework for achieving climate neutrality ~~and amending Regulation (EU) 2018/1999 ('~~European Climate Law~~)~~[1] ~~as well as the Communication 'Stepping up Europe's 2030 climate ambition'~~[2]~~. This also integrates the target of reducing~~**')**[8] **aims at cutting** greenhouse gas ~~(GHG)~~ emissions by at least 55% compared to 1990 levels by 2030 **and puts the Union on a path to becoming climate neutral by 2050,** ***at the latest.*** **Additionally**~~. Accordingly~~, various complementary policy instruments are needed to ***promote and speed up*** ~~motivate~~ the use of sustainably produced renewable and low-carbon fuels, ~~included~~**including** in the maritime transport sector***, whilst respecting the principle of technological neutrality***. The necessary technology development and **its** deployment ~~has to happen~~**have to ~~take place~~ be under way** by 2030 to prepare for much more rapid change thereafter. ***It is also essential to foster innovation and to support research for emerging and future innovation such as emerging alternative fuels, eco-design, bio based materials, wind propulsion and wind-assisted propulsion.***

(3) In the context of fuel transition to renewable and low ~~carbon fuels~~**carbon-fuels** and substitute sources of energy, it is essential to ensure the proper functioning of and fair competition in the EU maritime transport market regarding ~~marine~~**maritime** fuels, which account for a substantial share of ship operators' costs. ***Policy measures*** **should** ***~~must~~ therefore be cost-effective.*** Differences in fuel requirements across Member States ~~of the Union~~ can significantly affect ship operators'-economic performance and negatively impact competition in the market. Due to the international nature of shipping, ship operators may easily bunker in third countries and carry large amounts of fuel***, which could also contribute to a risk of loss of competitiveness of Union ports vis-à-vis non-Union ports***. This may lead to carbon leakage and detrimental effects on the competitiveness of the sector if the availability of renewable and ~~low carbon~~**low-carbon** fuels in maritime ports under the jurisdiction of a Member State is not accompanied by requirements for their use that apply to all ship operators arriving at and departing from ports under the jurisdiction of Member States. **Therefore,** this Regulation should lay down measures to ensure that the penetration of renewable **and** low-carbon fuels in the ~~marine~~**maritime** fuels market takes place under the conditions of fair competition on the EU maritime transport market.

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7 ~~COM(2020) 563 final~~**[1]** **OJ L 282, 19.10. 2016, p. 4.**

8 ~~COM(2020) 562 final~~**[2]** **OJ L 243, 9.7.2021.**

(3a) ***The*** **maritime** ***sector is*** **subject to** ~~***characterised by fierce***~~ **strong** ***international competition. Major differences in regulatory burdens across flag states have*** **often** ~~***exacerbated***~~ **led to** ***unwanted practices such as the reflagging of vessels. The sector's intrinsic global character underlines the importance of a flag-neutral approach and of a favourable regulatory environment, which*** **would help** ~~***is a precondition for***~~ ***attracting new investment and safeguarding the competitiveness of European ports, ship owners and operators.***

(4) In order to produce an effect on all the activities ~~of~~**in** the maritime transport sector,~~ it is appropriate that this Regulation covers a share of the voyages between a port under the jurisdiction of a Member State and port under the jurisdiction of a third country.~~ this Regulation should thus apply to half of the energy used by a ship performing voyages arriving at a port under the jurisdiction of a Member State from a port outside the jurisdiction of a Member State, half of the of the energy used by a ship performing voyages departing from a port under the jurisdiction of a Member State and arriving at a port outside the jurisdiction of a Member State, the entirety of the energy used by a ship performing voyages arriving at a port under the jurisdiction of a Member State from a port under the jurisdiction of a Member State, and the energy used at berth in a port under the jurisdiction of a Member State. Such~~ coverage of a share of the energy used by a ship in both incoming and outgoing voyages between the Union and third countries~~ **application** ensures the effectiveness of this Regulation, including by increasing the positive impact on the environment of such framework.~~ Simultaneously, such~~ ***This*** framework ~~limits~~ ***should limit*** the risk of evasive port calls and the risk of delocalisation of ~~transhipment~~**rerouting** activities outside the Union. In order to ensure smooth operation of maritime traffic **and to avoid distortions in the internal market**, a level playing field among maritime transport operators and among ports~~, and avoid distortions in the internal market~~, **with regard to** all journeys arriving or departing from ports under jurisdiction of Member States, as well as the stay of ships in those ports should be covered by ~~uniform~~**consistent** rules contained in this Regulation.

(4a) **Given that this Regulation will result in additional adjustment and administrative costs, the overall regulatory burden for the maritime sector will need to be kept under close review. Against this backdrop, the report evaluating the functioning of this Regulation should assess the extent to which the objectives of the Regulation have been met and to which extent it has impacted the competitiveness of the sector. Such report should also cover the interaction of this Regulation with other relevant legislative acts, including possible actions and measures that have been or could be taken to reduce the total cost pressure on the sector.**

(4ab) The Commission and Member States competent authorities should continuously adapt to best-practice administrative procedures and take measures to ensure consistency and avoid duplication in sectoral legislation and simplify the enforcement of this Regulation, thereby keeping the administrative burden on ship owners, operators, ports and verifiers to a minimum.

(4b) In order to ensure the necessary degree of legal and investment certainty, this Regulation should be ~~closely aligned to and~~ consistent with Regulation XXXX-XXX (Alternative Fuels Infrastructure Regulation), the Directive2003/87/EC (EU ETS), **Directive *XXXX-XXX (Renewable Energy Directive), and Directive 2003/96/EC (Energy Taxation Directive).* Such consistency would ensure *~~Such alignment should result in~~ a coherent legislative framework for the shipping sector, that contributes to significantly increasing the production of sustainable alternative fuels, ensures the deployment of the necessary infrastructure and incentivises the use of these fuels in a steadily growing share of vessels.***

(4c) Consultations between the managing body of the port and port users and other relevant stakeholders, as provided for in Article 15(2) of Regulation (EU) 2017/352 of the European Parliament and of the Council establishing a framework for the provision of port services and common rules on the financial transparency of ports should be used to coordinate the availability of port services with regard to the alternative fuel supply that is planned and deployed in individual ports, as well as with regard to the demand expected from vessels calling on those ports.

(4c) The obligation for ports to provide on-shore power supply, laid down in [AFIR Regulation], should be matched by a corresponding obligation in this regulation for ships to connect to such charging infrastructure while moored along the quayside, in order to ensure the effectiveness of that infrastructure and avoid the risk of stranded assets

(5) The rules laid down in this Regulation should apply in a non-discriminatory manner to all ships regardless of their flag. For reasons of coherence with Union and international rules in the area of maritime transport, ***and in order to limit the administrative burden,*** this Regulation should **apply to ~~focus on~~ ships with a gross tonnage (GT) above 5 000 and should** not apply to 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**. Even though these latter ships above 5 000 GT represent only approximately 55% of all ships calling at ports under the Regulation (EU) 2015/757 of the European Parliament and of the Council, they are responsible for about 90% ~~a large majority~~ of carbon dioxide (CO2) emissions from the maritime sector. The Commission should regularly reassess the situation, with a view to eventually extending the scope to ships with a gross tonnage below 5000.**

(5a) **Member States which have no maritime ports in their territory, no accredited verifier, no ships flying their flag that fall within the scope of this Regulation, and which are not an administering State within the meaning of this Regulation would not need to take any action concerning the requirements relating thereto in this Regulation as long as those conditions are fulfilled**

(5a) **With the increased costs of shipping for the vessels which do not comply with the requirements of this Regulation, there is in the absence of a global measure a risk of circumvention. Evasive port calls to ports outside of the Union and relocation of transhipment activities to ports outside of the Union will not only diminish the environmental benefits of internalising the cost of emissions from maritime activities but may lead to additional emissions due to the extra distance travelled to evade application of this Regulation. It is therefore appropriate to exclude from the concept of port of call certain stops at non-Union ports. That exclusion should be targeted to ports in the Union's vicinity where the risk of evasion is the largest. A limit of 300 nautical miles from a port under the jurisdiction of a Member State constitutes a proportionate response to evasive behaviour, balancing the additional burden and the risk of evasion. Moreover, the exclusion from the concept of port of call should only target stops by containerships at certain non-Union ports, where the transhipment of containers accounts for most container traffic. For such shipments, the risk of evasion, in the absence of mitigating measures, also consists in a shift of port hub to ports outside the Union, aggravating the effects of the evasion. To ensure the proportionality and equal treatment of the measure, account should be taken to measures in third countries that have an effect equivalent to this Regulation**

(5b) **Taking into account the special characteristics and constraints of the outermost regions of the Union, notably their remoteness and insularity, special consideration should be given to preserving their accessibility and efficient connectivity by maritime transport. Therefore, only half of the energy used on voyages departing from or arriving to a port of call located in an outermost region should be included in the scope of this Regulation. For the same reasons, temporary exemptions should be allowed for voyages between a port of call located in an outermost region and another port of call located in an outermost region, and to the energy used during their stay within the port of calls of the corresponding outermost regions.**

(5b) **In order to take into account the specific situation of island regions, as underlined in Article 174 of the Treaty, and the need to preserve connectivity between islands and peripheral regions with central regions of the Union, temporary exemptions should be allowed for voyages performed by passenger ships other than cruise passenger ships between a port of call under the jurisdiction of a Member State and a port of call under the jurisdiction of the same Member State located in an island with fewer than 200 000 permanent residents.**

(5d) **The Member States without the land border with other Member states are particularly dependant on their maritime connection to the rest of the Union notably in order to maintain the necessary connectivity for their citizens. Therefore, such Member States have to rely on the public service contracts or public service obligations in order to achieve this goal as concerns passenger ships. A temporary exemption should contribute to this compelling need to provide a service of general economic interest and ensure the connectivity as well as economic, social and territorial cohesion.**

(5da) **In addition to a general possibility for Member States to exempt voyages by passenger ships, other than cruise passenger ships, to islands with fewer than 200 000 permanent residents, a similar possibility should be granted to Member States with regards to domestic voyages to islands, which are performed within the framework of a public service contract or subject to a public service obligation. Such obligations and contracts have been established by Member States in order to ensure an appropriate level of connectivity to island regions, at affordable prices, which would otherwise not have been achieved by market forces. Member States should be entitled to temporarily exempt such voyages by passenger ships between its mainland and an island of the same Member State, in order to retain the conditions under which the public service contracts or obligations were established and ensure the sustained connectivity, as well as economic, social and territorial cohesion of the select island**

(5db) **Article 2, point 1 of Council Regulation (EEC) No 3577/92[9] assimilates the ports situated in Ceuta and Melilla as islands ports. Even though they are not island ports by nature, their geographical position in mainland Africa results in the fact that in relation to mainland Europe and, in particular, to Spain, those ports are comparable to island ports because they have no land links with Spain. Therefore, Ceuta and Melilla should be considered as island ports in relation to the temporary exemption for the maritime cabotage between mainland of the Member States and the islands under their jurisdiction.**

(5f) **Sailing in ice conditions and the technical properties of ice-classed ships cause additional costs to the maritime transport, especially in the northern parts of the Baltic Sea, which could be further increased by this Regulation. These additional costs of ice-classed ships due to sailing in ice conditions and due to their technical properties should thus be mitigated with a view to ease the energy transition costs for these vessels. To that purpose, companies should be [~~temporarily~~] allowed to apply a limited adjusted amount of energy used on-board for ice-classed ships. In addition, for a limited period of time, the present Regulation allows a share of the additional energy used during sailing in ice to be exempted for the specific periods that ice-class vessels face conditions of navigation in ice. To this end a verifiable methodology should be in place that allows correlation between exempted share of energy and actual ice navigation conditions. The Commission should reassess such methodology, notably in light of the robustness of the monitoring of the data necessary to report the distance and the additional energy of navigation in ice conditions, in the view of a possible prolongation of this measure.**

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[9] Council Regulation (EEC) No 3577/92 of 7 December 1992 applying the principle of freedom to provide sevices to maritime transport within Member States (maritime cabotage) (OJ L 364, 12.12.1992, p. 7).

(5g) **In order to create a clear and predictable legal framework and in doing so encourage the market development and deployment of the most sustainable and innovative fuel technologies with growth potential to meet future needs, a dedicated incentive for renewable fuels of non-biological origins is necessary in view of the significant decarbonisation potential of such fuels, and in view of their estimated production costs in the short and mid terms. When produced from renewable electricity and carbon captured directly from the air, synthetic fuels can achieve as high as 100% emissions savings compared to fossil fuels. They also have considerable advantages compared to other types of sustainable fuels with regards to resource efficiency (in particular for water needs) of the production process. However, their production costs are currently much higher than the market price of conventional fuel and are projected to continue to be so in the mid term. Therefore, this Regulation should introduce a dedicated and temporary multiplier supporting the uptake of this technology.**

(6) The ~~person or organisation~~**entity** responsible for **ensuring** the compliance with this Regulation should be the shipping company, defined as the shipowner or any other organisation or person, such as the manager or the bareboat charterer, that has assumed the responsibility for the operation of the ship from the shipowner and that, on assuming such responsibility, has agreed to take over all the duties and responsibilities imposed by the International Management Code for the Safe Operation of Ships and for Pollution Prevention **as implemented within the Union by Regulation (EC) No 336/2006 of the European Parliament and of the Council**[10]**. That**~~. This~~ definition is based on the definition of 'company' in Article 3, point (d)**,** of Regulation (EU) 2015/757 of the European Parliament and of the Council[1]~~, and~~[11]**, and is** in line with the global data collection system established in 2016 by the International Maritime Organization (IMO). ~~In line with the polluter pays principle, the shipping company could, by means of a contractual arrangement, hold the entity that is directly responsible for the decisions affecting the greenhouse gas intensity of the energy used by the ship accountable for the compliance costs under this Regulation. This entity would normally be the entity that is responsible for the choice of fuel, route and speed of the ship.~~

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10 ~~Regulation (EU) 2015/757 of the European Parliament and of the Council of 29 April 2015 on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport, and amending Directive 2009/16/EC (OJ L 123, 19.5.2015, p. 55)~~**[1] OJ L 64, 4.3.2006, p. 1**.

11 . **[2] Regulation (EU) 2015/757 of the European Parliament and of the Council of 29 April 2015 on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport, and amending Directive 2009/16/EC (OJ L 123, 19.5.2015, p. 55).**

(6a) **Whilst the company should remain responsible for fulfilling monitoring and reporting obligations under this Regulation, as well as for paying the FuelEU penalties, in accordance with the 'polluter pays' principle and to promote the uptake of cleaner fuels, the entity responsible for purchasing the fuel and/or taking operational decisions that affect the greenhouse gas intensity of the energy used by the ship could, through contractual agreements with the latter, in case of compliance deficit, reimburse or otherwise compensate the company with respect to the cost of the FuelEU penalties resulting from the operation of the ship. The company may, on contractual basis, request the verifier to calculate the amounts of the penalties corresponding to the operation of the ship by the other entity during the reporting period. For the purpose of this Regulation, operation of the ship means determining the cargo carried, the route and the speed of the ship.**

Similarly, whilst the company should remain responsible for fulfilling monitoring and reporting obligations under this Regulation, as well as for paying the FuelEU penalties, companies and fuel suppliers could, by means of contractual arrangements, agree on mutual commitments to produce, supply and purchase predetermined quantities of certain fuels. Such contractual arrangements could foresee the liability of fuel suppliers to compensate the company for the payment of penalties in cases where fuels were not made available to the company as agreed.

(7) ~~In order to limit the administrative burden, in particular that of smaller operators, this Regulation should not apply to wooden ships of a primitive build and ships not propelled by mechanical means and focus on ships with a gross tonnage above 5 000. Even though these latter ships represent only approximately 55% of all ships calling at ports under the Regulation (EU) 2015/757~~**The development and deployment of new fuels and energy solutions requires a coordinated approach to match supply, demand and the provision of appropriate distribution infrastructure. While the current European regulatory framework already partly addresses fuel production with Directive (EU) 2018/2001 of the European Parliament and of the Council[12] and fuel distribution with Directive 2014/94/EU** of the European Parliament and of the Council[13]**, there is also a need for a tool that establishes increasing levels of demand for renewable and low-carbon**~~, they are responsible for 90% of the carbon dioxide (CO_2) emissions from the~~ maritime ~~sector~~**fuels**.

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12 **[1] Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (OJ L 328, 21.12.2001, p. 82).**

13 **[2] Directive 2014/94/EU of the European Parliament and of the Council of 22 October 2014 on the deployment of alternative fuels infrastructure (OJ L 307, 28.10.2014, p. 1).**

(8) ~~The development and deployment of new fuels and energy solutions requires a coordinated approach to match supply, demand and the provision of appropriate distribution infrastructure. While the current European regulatory framework already partly addresses fuel production with Directive (EU) 2018/2001 of the European Parliament and of the Council[14] and distribution with Directive 2014/94/EU of the European Parliament and of the Council[2], there is also a need for a tool that establishes increasing levels of demand of renewable and low-carbon maritime fuels~~**While instruments such as carbon pricing or targets on the carbon intensity of activity promote improvements in energy efficiency, they are not suited to bring about a significant shift towards renewable and low-carbon fuels in the short and medium term. A specific regulatory approach dedicated to the deployment of renewable and low-carbon maritime fuels and substitute sources of energy, such as wind or electricity, is therefore necessary**.

(9) ~~While instruments such as carbon pricing or targets on the carbon intensity of activity promote improvements in energy efficiency, they are not suited to bring about a significant shift towards renewable and low-carbon fuels in the short and medium term. A specific regulatory approach dedicated to the deployment of renewable and low-carbon marine fuels and substitute sources of energy, such as wind or electricity, is therefore necessary~~**Policy intervention to stimulate demand for renewable and low-carbon maritime fuels should be goal-based and respect the principle of technological neutrality. Accordingly, limits should be set on the GHG intensity of the energy used on-board by ships without prescribing the use of any particular fuel or technology**.

Such limits should be set in relation to a reference value, corresponding to the fleet average greenhouse gas intensity of the energy used on-board by ships in 2020 determined on the basis **of** data monitored and reported in the framework of Regulation (EU) 2015/757, the methodology and default values laid down in Annex***es*** I ***and II*** to this Regulation.

(10) ~~Policy intervention to stimulate demand~~**Development and deployment** of renewable and low-carbon ~~maritime fuels~~**fuels with a high potential for sustainability, commercial maturity and a high potential for innovation and growth to meet future needs** should be ~~goal-based and respect the principle of technological neutrality. Accordingly, limits~~**promoted. This will support creating innovative and competitive fuels markets and ensure sufficient supply of sustainable maritime fuels in the short and long term to contribute to Union transport decarbonisation ambitions, while strengthening Union's efforts towards a high level of environmental protection. For this purpose, sustainable maritime fuels produced from feedstocks listed in Parts A and B of Annex IX to Directive (EU) 2018/2001, as well as synthetic maritime fuels** should be ~~set on the greenhouse gas intensity of the energy used on-board by ships without prescribing the use of any particular fuel or technology~~ **eligible. In particular, sustainable maritime fuels produced from feedstocks listed in Part B of Annex IX to Directive (EU) 2018/2001 are essential, as the most commercially mature technology for the production of such maritime fuels with a view to decarbonising martime transport will already be available in the short term**.

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14 ~~Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (OJ L 328, 21.12.2001, p. 82).~~

(11) ~~Development and deployment of renewable and low carbon~~**Indirect land-use change occurs when the cultivation of crops for biofuels, bioliquids and biomass** fuels ~~with a high potential for sustainability, commercial maturity and a high potential for innovation and growth to meet future needs should be promoted. This will support creating innovative and competitive fuels markets and ensure sufficient supply of sustainable maritime fuels in the short and long term to contribute to Union transport decarbonisation ambitions, while strengthening Union's efforts towards a high~~**displaces traditional production of crops for food and feed purposes. Such additional demand increases the pressure on land and can lead to the extension of agricultural land into areas with high-carbon stock, such as forests, wetlands and peatland, causing additional GHG emissions and loss of biodiversity. Research has shown that the scale of the effect depends on a variety of factors, including the type of feedstock used for fuel production, the level of additional demand for feedstock triggered by the use of biofuels, bioliquids and biomass fuels, and the extent to which land with high-carbon stock is protected worldwide. The level of GHG emissions caused by indirect land-use change cannot be unequivocally determined with the** level of ~~environmental protection. For this purpose, sustainable maritime~~**precision required for the establishment of emission factors required by the application of this Regulation. However, there is evidence that all** fuels produced from feedstock ~~listed in Parts A and B of Annex IX of Directive (EU) 2018/2001, as well as synthetic maritime~~**cause indirect land-use change to various degrees. In addition to the GHG emissions linked to indirect land-use change – which is capable of negating some or all GHG emissions savings of individual biofuels, bioliquids or biomass** fuels ~~should be eligible. In particular, sustainable maritime fuels produced from feedstock listed in Part B of Annex IX of~~ **indirect land-use change poses risks to biodiversity. That risk is particularly serious in connection with a potentially large expansion of production determined by a significant increase in demand. Accordingly, the use of food and feed crop-based fuels should not be promoted under this Regulation.** Directive (EU) 2018/2001 ~~are essential, as currently the most commercially mature technology to decarbonise martime transport already~~**already limits and sets a cap on the contribution of such biofuels, bioliquids and biomass fuels to the GHG emissions savings targets** in the ~~short term~~**road and rail transport sector considering their lower environmental benefits, lower performance in terms of greenhouse gas reduction potential and broader sustainability concerns**.

(11a) In order to encourage the early market development and deployment of the most sustainable and innovative fuel technologies with growth potential to meet future needs, a dedicated incentive for renewable fuels of non-biological origin (RFNBO) is necessary. This family of fuels has high potential to introduce renewable energy into the marine bunker fuel mix. Therefore, this Regulation introduces a combination of measures to ensure the support to the uptake of sustainable RFNBOs, including the possibility to use a "multiplier" until 2034, allowing the energy from RFNBOs to count twice. In addition, a 2% RFNBO subtarget should apply as of 2034, if, further to monitoring of the market, the Commission reports the share of RFNBO in the maritime bunker fuels used by ships covered by the Regulation to be less than 1% by 2031.

This combination of measures to support RFNBO is intended to give ship operators and fuel suppliers a signal of opportunity for the uptake of this family of renewable, scalable and sustainable fuels. On the one hand, it provides an end target giving the fuel suppliers certainty of the future minimum demand. On the other hand, it gives the market a chance to find the most efficient way to adjust accordingly.

Given that a market for maritime RFNBO is yet to develop, this Regulation includes safeguards and flexibility towards different possible market uptake scenarios.

Although RFNBO present a high potential to meet decarbonization needs in the maritime sector, it cannot be excluded that other fuels may also present comparable decarbonization potential. Factors like technology maturity or availability to the maritime sector may affect the uptake of renewable and low carbon fuel options in different ports. Therefore, it is central to ensure technological neutrality and avoid unduly discriminating against other fuels that achieve similar GHG intensity reductions as RFNBOs, which according to RED Directive is at least 70% greenhouse gas emissions savings, or penalising ships that use fuels other than RFNBOs.

(12) ~~Indirect land-use change occurs when the cultivation of crops for biofuels, bioliquids and biomass fuels displaces traditional production of crops~~**The maritime sector has currently insignificant levels of demand** for food and feed ~~purposes. Such additional demand increases the pressure on land and can lead to the extension of agricultural land into areas with high-carbon stock, such as forests, wetlands and peatland, causing additional greenhouse gas emissions and loss of biodiversity. Research has shown that the scale~~**crops-based biofuels, bioliquids and biomass fuels, since over 99% of currently used maritime fuels are of fossil origin. Therefore, the non-eligibility of food and feed crop-based fuels to contribute for the objectives of this Regulation also minimises any risk to slow down the decarbonisation** of the ~~effect depends on a variety of factors, including the type of feedstock used for fuel production, the level of additional demand for feedstock triggered by the use of~~**transport sector, which could otherwise result from a shift of crop-based** biofuels~~, bioliquids and biomass fuels, and the extent to which land with high-carbon stock is protected worldwide. The level of greenhouse gas emissions caused by indirect land-use change cannot be unequivocally determined with the level of precision required for the establishment of emission factors required by the application of this regulation. However, there is evidence that all fuels produced from feedstock cause indirect land-use change to various degrees. In addition to the greenhouse gas emissions linked to indirect land-use change – which is capable of negating some or all greenhouse gas emissions savings of individual~~ **from the road to the maritime sector. It is essential to minimise such a shift, as road transport currently remains by far the most polluting transport sector and the maritime transport currently uses predominanetly fuels of fossil origin. It is therefore appropriate to avoid the creation of a potentially large demand for food and feed crop-based** biofuels, bioliquids ~~or~~**and** biomass fuels ~~– indirect land-use change poses risks to biodiversity. This risk is particularly serious in connection with a potentially large expansion of production determined by a significant increase in demand. Accordingly, no feed and food~~ **by promoting their use under this Regulation. Accordingly, the additional GHG emissions and loss of biodiversity caused by all types of food and feed** crop-based fuels ~~should be promoted. Directive (EU) 2018/2001 already limits and sets a cap on the contribution of such biofuels, bioliquids and biomass to the GHG emissions savings targets in the road and rail transport sector considering their lower environmental benefits, lower performance in terms of greenhouse reduction potential and broader sustainability concerns~~**require that those fuels be considered to have the same emission factors as the least favourable pathway**.

(13) ~~However, this approach must be stricter in the maritime sector. The maritime sector has currently insignificant levels of demand for food and feed crops-based biofuels, bioliquids and biomass fuels, since over 99% of currently used marine~~**The long lead times associated to *with* the development and deployment of new** fuels ~~are of fossil origin. Therefore, the non-eligibility of food and feed crop-based fuels under this Regulation also minimises any risk to slow down the decarbonisation of the transport sector, which could otherwise result from a shift of crop-based biofuels from the road to the maritime sector. It is essential to minimise such a shift, as road transport currently remains by far the most polluting transport sector and the~~**and energy solutions for maritime transport*, as well as the long average lifespan of ships, which typically range between 25 and 30 years,* require rapid action and the establishment of a clear and predictable long-term regulatory framework facilitating planning and investment from all the stakeholders concerned. Such regulatory framework will facilitate the development and deployment of new fuels and energy solutions for** maritime transport**, and encourage investment from stakeholders. Such regulatory framework should also define limits for the GHG intensity of the energy used on-board by ships until 2050. Those limits should become more ambitious over time to reflect the expected technology development and increased production of renewable and low-carbon maritime** ~~currently uses predominanetly fuels of fossil origin. It is therefore appropriate to avoid the creation of a potentially large demand of food and feed crops-based biofuels, bioliquids and biomass fuels by promoting their use under this Regulation. Accordingly, the additional greenhouse gas emissions and loss of biodiversity caused by all types of feed and food crop-based fuels require that these~~ fuels ~~be considered to have the same emission factors as the least favourable pathway~~.

(14) ~~The long lead times associated to the development and deployment of new fuels and energy solutions for maritime transport require rapid action and the establishment of a clear and predictable long-term regulatory framework facilitating planning and investment from all the stakeholders concerned. A clear and stable long-term regulatory framework will facilitate the development and deployment of new fuels and energy solutions for maritime transport, and encourage investment from stakeholders. Such framework should define limits for the greenhouse gas intensity of the energy used on-board by ships until 2050. Those limits~~**This Regulation should establish the methodology and the formula that should apply to the calculation of the yearly average GHG intensity of the energy used on-board by a ship. That formula should be based on the fuel consumption reported by ships and consider the relevant emission factors of the consumed fuels. The use of substitute sources of energy, such as wind or electricity,** should ~~become more ambitious over time to reflect the expected technology development and increased production of marine renewable and low-carbon fuels~~**also be reflected in the methodology**.

(15) ~~This Regulation should establish the methodology and the formula that should apply to calculate the yearly average greenhouse gas intensity of the energy used on-board by a ship. This formula should be based on the fuel consumption reported by ships and consider the relevant emission factors of these fuels. The use of substitute sources of energy, such as wind or electricity, should also be reflected in the methodology~~**In order to provide a more complete picture of the environmental performance of the various energy sources, the GHG performance of fuels should be assessed on a well-to-wake basis, taking into account the impacts of energy production, transport, distribution and use on-board. This is to incentivise technologies and production pathways that provide a lower GHG footprint and real benefits compared to the existing conventional fuels**.

(16) ~~In order to provide a more complete picture of the environmental~~**The well-to-wake** performance of ~~the various energy sources, the GHG performance of~~**renewable and low-carbon maritime** fuels should be ~~assessed on a well-to-wake basis, taking into account the impacts of energy production, transport, distribution and use on-board. This is to incentivise technologies and production pathways that provide a lower GHG footprint and real benefits compared to the existing conventional fuels~~**established using default or actual and certified emission factors covering the well-to-tank and tank-to-wake emissions. The well-to-tank emission factors and the tank-to-wake CO2 emission factors of fossil fuels should however only be determined through the use of default emission factors as provided for by this Regulation**.

16a) In the event of technological progress of new GHG abatement technologies, such as on-board carbon capture, the Commission should assess the possibility to reflect, in the compliance formula of this Regulation, the contribution of such technologies to lowering the GHG direct emissions onboard ships.

(17) **A comprehensive approach on all the most relevant GHG emissions (CO_2, CH_4 and N_2O) is necessary to promote the use of energy sources providing a lower GHG footprint overall. In order to reflect the global warming potential of methane and nitrous oxides, the limit set by this Regulation should therefore be expressed in terms of 'CO_2 equivalent'**~~The well-to-wake performance of renewable and low-carbon maritime fuels should be established using default or actual and certified emission factors covering the well-to-tank and tank-to-wake emissions. The performance of fossil fuels should however only be assessed through the use of default emission factors as provided for by this Regulation~~.

(18) ~~A comprehensive approach on all the most relevant GHG emissions (CO_2, CH_4 and N_2O) is necessary to promote the use of~~**The use of renewable energy sources and alternative propulsion, such as wind and solar energy, greatly reduces the GHG intensity of the overall ship** energy ~~sources providing a lower GHG footprint overall. In order to reflect the global warming potential of methane and nitrous oxides, the limit set by this Regulation should therefore be expressed in terms of 'CO_2 equivalent'~~**use. The difficulty to accurately measure and quantify those energy sources (intermittence of the energy use, direct transfer as propulsion, etc.) should not impede their recognition in the overall ship energy use through means of approximations of their contribution to the ship's energy balance**.

(19) ~~The use of renewable energy sources and alternative propulsion, such as wind and solar energy, greatly reduces the greenhouse gas intensity of the overall ship energy use. The difficulty to accurately measure and quantify these energy sources (intermittence of the energy use, direct transfer as propulsion, etc.) should not impede their recognition in the overall ship energy use through means of approximations of~~**Air pollution produced by ships (sulphur oxides, nitrogen oxides and particulate matter) in ports is a significant concern for coastal areas and port cities. Therefore, specific and stringent obligations should be imposed to reduce emissions from ships moored at the quayside.**

(20) **The use of on-shore power supply (OPS) abates** air pollution produced by ships ~~(sulphur oxides, nitrogen oxides and particulate matter) at berth is a significant concern for coastal areas and port cities. Therefore, specific and stringent obligations should be imposed to reduce emissions at berth from ships that draw power from their engines during their stay in port. According to the data collected within the framework of Regulation (EU) 2015/757 in 2018, passenger ships and containerships are~~**as well as reduces the amount of GHG emissions generated by maritime transport. OPS represents an increasingly clean power supply available to ships , in view of the growing** ***shares of*** renewables ~~**share**~~ ***and fossil free energy sources*** **in the EU electricity mix. While only the provision on OPS connection points is covered by Directive 2014/94/EU , the demand for and, as a result, the deployment of this technology have remained limited. Therefore, specific rules should be established to mandate the use of OPS by containerships and passenger ships, being** the ship categories **which are** producing the highest amount of emissions per ship **while moored at the quayside, according to the data collected within the framework of Regulation (EU) 2015/757 in 2018** ~~at berth. Accordingly, emissions from these categories of ships should be addressed as a priority~~.

21) ~~The use of on-shore power supply (OPS) abates air pollution produced by ships as well as reduces the amount of GHG emissions generated by maritime transport. OPS represents an increasingly clean power supply available to ships at berth, in view of the growing renewables share in the EU electricity mix. While only the provision on OPS connection points is covered by Directive 2014/94/EU (Alternative Fuels Infrastructure Directive – AFID), the demand for and, as a result, the deployment of this technology has remained limited. Therefore specific rules~~**In addition to OPS, other technologies might be capable of offering equivalent environmental benefits in ports. When the use of an alternative technology is demonstrated to be equivalent to the use of OPS, a ship** should be ~~established to mandate the use of OPS by the most polluting ships~~**exempted from the obligation to use OPS**.

(22) ~~In addition to OPS, other technologies might be capable of offering equivalent environmental benefits in ports. When the use of an alternative technology is demonstrated to be equivalent to the use of OPS, a ship~~**Different OPS projects and solutions have been tested for ships at anchorage, but there is currently no mature and scalable technical solution available. For this reason, the obligation to use OPS should be limited to ships moored at the quayside in the first place. Nevertheless, the Commission should regularly reassess the situation, with a view to extending this obligation to ships at anchorage, when the due technologies are mature enough. In the meantime, Member States** should be ~~exempted from its use of OPS~~**allowed to impose such obligation to ships at anchorage, for example in ports that are already equipped with such technology or are located in areas where any pollution should be avoided**.

(23) Exceptions ~~to the~~ **from the obligation to** use ~~of~~ OPS should also be provided for a number of objective reasons, ~~certified~~**subject to verification** by the ~~managing body~~**competent authority of the Member State** of the port of call **or any entity duly authorised, after consultation of any relevant entities** ~~**the managing body of the port**~~ **where appropriate,** and limited to unscheduled **and not systematic** port calls for reasons of safety or saving life at sea, ~~for~~**to** short stays of ships **moored at the quayside**~~at berth~~ of less than two hours as this is the minimum time required for connection, ~~and for~~**to unavailability or incompatibility of OPS, to** the use of on-board energy generation under emergency situations **and to maintenance and functional tests**.

(24) **In the ports falling under the requirements of Article 9 of AFIR**[15]**,** exemptions in case of unavailability or incompatibility of OPS should be limited after ship and port operators have had sufficient time to make the necessary investments, in order to provide the necessary incentives for those investments and avoid unfair competition. ~~As of 2035~~, **Ship operators should plan carefully their port calls to make sure that they can carry out their activities when moored at the quayside without emitting air pollutants and GHG, in order to protect the environment in coastal areas and port cities. A limited number of exemptions in case of unavailability or incompatibility of OPS should be maintained to cater for situations where OPS was not supplied, for reasons beyond the control of the ship operator.**

In order to mitigate the risk of stranded assets, incompatibility of OPS infrastructure on board and at berth as well as alternative fuel demand and supply imbalances, frequent consultation meetings between relevant stakeholders should be organised to discuss and take decisions on requirements and future plans.

(24a) **The requirement for ports to provide OPS, laid down in Regulation XXXX-XXX (Alternative Fuels Infrastructure Regulation), takes into account the types of vessels served and the respective traffic volumes of maritime ports. The requirement for ships to connect to OPS should not apply to vessels when calling at ports outside the scope of the OPS requirement by that Regulation, unless the port has OPS installed and available at the visited quayside. In that event, the ship should be required to connect.**

(24b) **Considering the positive effects of the use of OPS on local air pollution and the need to incentivise the ramp up of this technology in the short term, the carbon intensity of the production of the electricity supplied at berth should be counted ~~at~~ as zero. The Commission should envisage the possibility to take into account the *actual* GHG emissions associated to the electricity delivered via OPS at a later stage.**

(24c) The implementation of this Regulation should take due account of the diverse governance models for ports across the Union, in particular as regards the responsibility for issuing a certificate exempting a vessel from the obligation to connect to OPS.

(24d) Coordination between ports and ship operators is crucial to ensure smooth connection procedures to on-shore power in ports. Ship operators should inform the ports they call at about their intentions to connect to on-shore power and the amount of power needed during the given call, in particular when it exceeds the estimated needs for this ship category

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15 **Exact title to be added later.**

(24e) From 2035, the number of exceptions to the obligation to connect to on-shore power supply, granted under this Regulation, which apply to certain cases where the ship is unable to connect to that power supply, should be limited per ship during a reporting period. To ensure fair treatment of ships and to reflect the differences in their operating profiles, the number of exceptions should reflect the frequency of their port calls but should never amount to more than ten port calls per reporting period. However, a ship should not be penalised and calls should not be counted against the maximum number of exceptions, where, prior to arrival to a port, the ship has requested to connect to on-shore power supply and this request has been confirmed by the port or the duly authorised entity, but the ship is unable to do so, and it is able to demonstrate that it could not have reasonably known it would be unable to connect.

(25) A robust ***and transparent*** monitoring, reporting and verification system should be put in place by this Regulation in order to trace compliance with its provisions. Such system should apply in a non-discriminatory way to all ships and require third party verification in order to ensure the accuracy of the data submitted within ~~this~~**that** system. In order to facilitate achieving the objective of this Regulation, any data already reported for the ~~purpose~~**purposes** of Regulation (EU) 2015/757 should be used, when necessary, for verifying compliance with this Regulation in order to limit administrative burden imposed on companies, verifiers and ~~maritime~~**competent** authorities.

(26) Companies should be responsible for monitoring and reporting the amount and type of energy used on-board by ships in navigation and at berth, as well as other relevant information, such as information on the type of engine on board or presence of wind assisting technologies, with a view to showing compliance with the limit on the ~~greenhouse gas~~ **GHG** intensity of the energy used on-board by a ship set out by this Regulation. To facilitate the fulfilment of ~~these~~**those** monitoring and reporting obligations and the verification process by the verifiers, similarly to Regulation (EU) 2015/757, companies should document the envisaged monitoring method and provide further details on the application of the rules of this Regulation –in a monitoring plan. The monitoring plan, as well as its subsequent modifications, if applicable, should be submitted to **and assessed by** the verifier.

(26a) In order to limit the administrative burden, a unique monitoring, reporting and verification system for shipping companies should~~, to the extent possible,~~ be achieved for the implementation of European regulations on reduction of GHG emissions from shipping. To that purpose, shortly after the publication of this Regulation, the Commission should examine the consistency and possible duplication between this Regulation and Regulation (EU) 2015/757 and, where appropriate, prepare a legislative proposal to amend this Regulation or Regulation (EU) 2015/757.

(27) ***A robust*** certification ***and monitoring*** of fuels is essential to achieve the objectives of this Regulation and guarantee the environmental integrity of the renewable and low-carbon fuels that are expected to be deployed in the maritime sector. Such certification should be undertaken by means of a transparent and non-discriminatory procedure. With a view to facilitating certification and limiting the administrative burden, ~~the certification of~~ **the certification of fuels defined in accordance with Directive (EU) 2018/2001 or, where applicable, with the relevant provisions of a Union legal act for the internal markets in renewable and natural gases and in hydrogen,** should rely on the rules established by **those Union legal acts for certification. That** approach ~~of~~**to** certification should also apply to fuels bunkered outside the Union, which should be considered as imported fuels, in a similar way as **in** Directive (EU) 2018/2001. ~~When~~**Where** companies intend to depart from the default values provided for by **those Union legal acts** or **by** this new framework, ~~this~~**that** should only be done when values can be certified by one of the voluntary schemes recognised under Directive (EU) 2018/2001 **or, where applicable, under a Union legal act for the internal markets in renewable and natural gases and in hydrogen and establishing certain greenhouse gas emission saving thresholds, as well as methodologies for their calculation** (for well-to-tank values).

(27bis) The possibility to calculate actual Tank-to-Wake emission factors, deviating from those defined in Annex-II of this Regulation, should be made available to operators, provided that such calculation is determined in accordance and supported by recognised international standards relevant for the subject matter. Such calculation of Tank-to-Wake emission factors should be primarily scoped to laboratory testing or direct emissions measurement of slipped emissions from energy converters, including internal combustion engines, fuel cells and associated reforming units, gas turbines or boilers. Tank-to-Wake CO2 actual emission factors, being associated to the fuel composition rather than the energy converter, should not be different from the default values presented in Annex-II. These should only be recalculated, in particular for synthetic fuels or biofuels in case of any relevant international standard is developed for the effect. It should not be possible to deviate from the default values presented for the CO2 combustion emission factors for fossil fuels.

(28) Verification ~~by accredited verifiers should ensure the accuracy and completeness of the monitoring and reporting by companies and the compliance with this Regulation~~**activities are carried out by verifiers**. In order to ensure impartiality ***and effectiveness***, verifiers should be independent and competent legal entities and should be accredited by national accreditation bodies established pursuant to Regulation (EC) No 765/2008 of the European Parliament and of the Council[16]. **Verifiers should be equipped with means and staff commensurate with the size of the fleet for which they perform verification activities under this Regulation. Verification should ensure the accuracy and completeness of the monitoring and reporting by companies and the compliance with this Regulation.**

[16] **[1]** Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products and repealing Regulation (EEC) No 339/93 (OJ L 218, 13.8.2008**, p. 30**).

(29) Based on the data and information monitored and reported by companies, the verifiers should calculate and establish the yearly average ~~greenhouse gas~~ **GHG** intensity of energy used on-board by a ship and the ship's balance with respect to the limit, including any compliance surplus or deficit, as well as the respect of the ~~requirements~~**obligation** to use ~~on-shore power supply at berth~~**OPS** . The verifier should notify ~~this~~**that** information to the company concerned. Where the verifier is the same entity as the verifier for the ~~purpose~~**purposes** of Regulation (EU) 2015/757, such notification could be done together with the verification report under that Regulation. ~~Such information should be then reported by the company concerned to the Commission.~~

(30) The Commission should establish and ensure the functioning of an electronic **FuelEU** database that registers the performance of each ship and ensures its compliance with this Regulation**. This database should be used for all most important actions necessary to fullfill the obligations set out in this Regulation.** In order to facilitate reporting and limit administrative burden to companies, verifiers and other users, ~~this~~**that** electronic database should build upon the existing THETIS-MRV module ~~and take into account~~**or, to the extent possible, should be developed as an upgraded version of it. That electronic database should also enable** the possibility to reuse information and data collected for the ~~purpose~~**purposes** of Regulation (EU) 2015/757.

(31) Compliance with this Regulation would depend on elements that could be beyond control of the company, such as issues related to fuel availability or fuel quality. Therefore, companies should be allowed the flexibility of rolling-over a compliance surplus from one year to another or borrowing an advance compliance surplus, within certain limits, from the following year. The use of OPS at berth, being of high importance for local air quality in port cities and coastal areas should not be eligible for similar flexibility provisions.

(32) In order to avoid technology lock-in and continue supporting the deployment of most performant solutions, companies should be allowed to pool the performances of different ships**. To this purpose,** ~~and use~~ the possible over-performance of one ship **could be used** to compensate ~~for~~ the under-performance of ~~another ship~~**other ships, provided that the total pooled compliance is positive**. This creates a possibility to reward overcompliance and incentivates investment in more advanced technologies. The possibility to opt for pooled compliance should remain voluntary and **should be** subject to agreement of the **companies** concerned ~~companies~~.

(33) A document of compliance ('FuelEU ~~certificate~~**document** of compliance') issued by a verifier **or, where applicable, the competent authority of the administering State,** following the procedures established by this Regulation, should be ~~kept on board~~**held by** ships as evidence of compliance with the limits on the ~~greenhouse gas~~**GHG** intensity of the energy used on-board by a ship ~~a~~**and** with the ~~requirements~~**obligations** on the use of OPS ~~at berth~~. Verifiers ~~should inform the Commission~~**or, where applicable, the competent authority** of the **administering State should record in the FuelEU database the** issuance of ~~such documents~~**the FuelEU document of compliance**.

(34) The number of non-compliant port calls should be determined by verifiers in accordance with a set of clear and objective criteria taking into account all ~~the~~ relevant information, including time of stay, the amount of each type and energy consumed, and the application of any excluding conditions, for each port call **falling under the scope of this Regulation**. ~~This~~**That** information should be made available by the companies to the verifiers for the purpose of determining compliance.

(35) Without prejudice to the possibility of complying through the flexibility and pooling provisions, the ships that do not meet the limits on the yearly average ~~greenhouse gas~~**GHG** intensity of the energy used on-board ~~shall~~**should** be subject to a **FuelEU** penalty that has dissuasive effect~~. The penalty should be proportionate~~**, isproportionate** to the extent of the non-compliance and ~~remove~~**removes** any economic advantage of non-compliance, thus preserving a level playing field in the sector. ~~It~~**The FuelEU penalty** should be based on the amount and cost of renewable and low-carbon ~~fuel~~**fuels** that the ships should have used to meet the requirements of ~~the~~**this** Regulation.

(36) ~~The~~**A FuelEU** penalty **should be** imposed **also** for each non-compliant port call**. That FuelEU penalty** should be proportionate to the cost of using the electricity ~~and~~ at sufficient level**, should** ~~to~~ have a dissuasive effect from the use of more polluting energy sources~~. The penalty~~ **and** should be ~~based on the power installed on board the vessel, expressed in megawatts, multiplied by a fixed penalty in EUR per hour of stay~~**equal to a fixed amount in EUR multiplied by the established total electrical power demand of the ship at berth and by the total number of rounded-up hours spent** at berth **in non-compliance with OPS requirements**. Due to lack of accurate figures on the cost of providing OPS in the Union, this rate should be based on the EU average electricity price for non-household consumers multiplied by a factor of two to account for other charges related to the provision of the service, including among others connection costs and investment recovery elements.

(37) The revenues generated **and collected by the administering States** from the payment of **FuelEU** penalties should be used to promote the distribution and use of renewable and low-carbon fuels in the maritime sector and help maritime operators to meet their climate and environmental goals.~~ For this purpose these revenues should be allocated to the the Innovation Fund referred to in Article 10a(8) of Directive 2003/87/EC.~~

(38) Enforcement of the obligations relating to this Regulation should be based on existing instruments, ~~namely~~**including** those established under ~~Directive~~**Directives** 2009/16/EC[17] **and 2009/21/EC** of the European Parliament and of the Council[1] ~~and Directive 2009/21/EC of the European Parliament and of the Council~~[218]**. Additionally, Member States should lay down the rules on effective, proportionate and dissuasive sanctions applicable to infringements of this Regulation. To avoid undue or double punishment for the same infringements, such sanctions should not duplicate the FuelEU penalties applied in case a ship has a compliance deficit or made non-compliant port calls**. The document confirming compliance of the ship with the requirements of this Regulation should be added to the list of certificates and documents referred to in Annex IV to Directive 2009/16/EC.

(38a) In order to reduce the administrative burden on shipping companies, one Member State for each shipping company should be responsible for supervising the enforcement of this Regulation. The provisions laid down in the ETS Directive[19] should be used to determine the administering State in respect of each shipping company. The administering State should be allowed to conduct additional checks on the compliance of a specific ship with this Regulation, for the two previous reporting periods and should also ensure that the FuelEU penalties are paid in due time.

(39) Given the importance of consequences that the measures taken by the verifiers under this Regulation—– may have for the companies concerned, in particular regarding the determination of non-compliant port calls, calculation of the amounts of **FuelEU** penalties and refusal to issue a FuelEU ~~certificate~~**document** of compliance, those companies should be entitled to apply for a review of such measures to the competent authority ~~in~~**of** the Member State where the verifier was accredited. In the light of the ~~fundamental~~ right to an effective remedy, enshrined in Article 47 of the Charter of Fundamental Rights of the European Union, decisions taken by the competent authorities ~~and the managing bodies of the port~~ under this Regulation should be subject to ~~judicial review~~**review by a court of the Member State of that competent authority**, carried out in accordance with ~~the~~**its** national law ~~of the Member State concerned~~.

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17 **[1]** Directive 2009/16/EC of the European Parliament and of the Council of 23 April 2009 on port State control (OJ L 131, 28.5.2009, p. 57).

18 . **[2]** Directive 2009/21/EC of the European Parliament and of the Council of 23 April 2009 on compliance with flag State requirements (OJ L 131, 28.5.2009, p. 132).

19 **Exact title to be added later.**

(40) In order to maintain a level playing field through the efficient functioning of this Regulation, the power to adopt acts in accordance with Article 290 of the Treaty on the Functioning of the European Union should be delegated to the Commission in respect of amendment of the list of well-to-wake emission factors, **information about the RFNBO sub-target, supplementing** ~~amendment~~ **the existing table with additional zero emission technologies, establishment of further methods and criteria of accreditation of verifiers,** adaptation of ~~the~~**a FuelEU** penalty factor~~, accreditation of verifiers, adaptation~~ **based on the developments in the cost of energy and amendment** of the ~~penalty~~ **numerical** factor **amount of the FuelEU penalty, based on the indexation of the average cost of electricity in the Union,** ~~, and modalities for the payment of penalties~~. It is of particular importance that the Commission carry out appropriate consultations during its preparatory work, including at expert level, and that those consultations be conducted in accordance with the principles laid down in the Interinstitutional Agreement ~~on Better Law-Making~~ of 13 April 2016 **on Better Law-Making**[20]. In particular, to ensure equal participation in the preparation of delegated acts, the European Parliament and the Council receive all documents at the same time as Member States' experts, and their experts systematically have access to meetings of Commission expert groups dealing with the preparation of delegated acts.

(41) In order to ensure uniform conditions for the implementation of this Regulation, implementing powers should be conferred on the Commission. Those powers should be exercised in accordance with Regulation (EU) No 182/2011 of the European Parliament and of the Council[21]. When establishing**,** by means of implementing acts**, the list of neighbouring container transhipment ports excluded from the definition of ports of call, the criteria for assessment of the production capacity and availability of RFNBOs in the maritime sector and the method to calculate the factor of price difference between RFNBOs and fossil fuels, the specification of rules for the application of the RFNBO sub-target, if applicable, the detailed criteria for acceptance ~~criteria~~ of the technologies and the way they are operated to be considered as zero-emission technologies, the information and the procedure for providing such information by ships intending to connect to OPS or use a zero-emission technology in ports,** the templates for standardised monitoring plans, including the technical rules for their uniform application**, the list of international standards and certification references to demonstrate actual tank-to-wake emission factors, further specifications of the rules for verification activities, ~~further methods and criteria for the accreditation of verifiers~~, rules for access rights to and the functional and technical specifications of the FuelEU database and models for the FuelEU document of compliance ~~the modalities for the payment of the remedialFuelEU penalties,~~** the Commission should take into account the possibility of reusing information and data collected for the ~~purpose~~**purposes** of Regulation (EU) 2015/757.

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20 **[1] OJ L 123, 12.5.2016, p. 1.**

21 **[1]** Regulation (EU) No 182/2011 of the European Parliament and of the Council of 16 February 2011 laying down the rules and general principles concerning mechanisms for control by Member States of the Commission's exercise of implementing powers (OJ L 55, 28.2.2011, p. 13).

(42) Given the international dimension of the maritime sector, a global approach to limiting the ~~greenhouse gas~~**GHG** intensity of the energy used by ships is preferable as it ~~could be regarded as~~ ***would be significantly*** more effective due to its broader scope. In this context, and with a view to facilitating the development of international rules within the ~~International Maritime Organisation (IMO)~~**IMO**, the Commission should share relevant information on the implementation of this Regulation with the IMO and other relevant international bodies**,** and relevant submissions should be made to the IMO***, continuing the EU's efforts to promote ambitious maritime decarbonisation targets on an international level***. Where an agreement on a global ~~aproach~~**approach** is reached on matters of relevance to this Regulation, the Commission should review ~~the present~~**this** Regulation with a view to aligning it, where appropriate, with the international rules.

(42b) The Commission should ensure implementation and availability of tools for collaboration and exchange of best practices for the maritime transport sector, as defined in the 'Better Regulation Guidelines[22].

(43) **Since the objective of this Regulation, namely** the uptake of renewable and low-carbon fuels and substitute sources of energy by ships arriving at, within or departing from ports under the jurisdiction of a Member State across the Union, ~~is not an objective that can~~**cannot** be sufficiently achieved by the Member States without risking to introduce barriers to the internal market and distortions of competition between ports and between maritime operators~~. This objective can~~**, but can rather** be better achieved by introducing uniform rules at Union level that create economic incentives for maritime operators to continue operating unimpededly while meeting obligations on the use of renewable and low-carbon fuels~~. Accordingly~~, ~~the~~ the Union may adopt measures, in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty on European Union. In accordance with the principle of proportionality as set out in that Article, this Regulation does not go beyond what is necessary in order to achieve that objective~~,~~**.**

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22 *European Commission, Brussels, Commission Staff Working Document, Better Regulation Guidelines, 3.11.2021 SWD(2021) 305 final*

HAVE ADOPTED THIS REGULATION:

CHAPTER I

GENERAL PROVISIONS

Article 1

Objective and purpose

This Regulation lays down uniform rules imposing:

(a) ~~the~~ ***a*** limit on the greenhouse gas ('GHG') intensity of energy used on-board by a ship arriving at, staying within or departing from ports under the jurisdiction of a Member State and

(b)(b) ~~the~~ ***an*** obligation to use on-shore power supply or zero-emission technology in ports under the jurisdiction of a Member State

~~in order~~ with the purpose to increase consistent use of renewable and low-carbon fuels and substitute sources of energy in maritime transport across the Union, *in line with the* objective of reaching *Union*-wide ~~*'s objective of reaching*~~ *climate neutrality at the latest by 2050* while ensuring ~~the~~its smooth operation, creating regulatory certainty for the uptake of renewable and low-carbon fuels and sustainable technologies ~~of maritime traffic~~ and avoiding distortions in the internal market.

Article 2

Scope

This Regulation applies to all ships above a gross tonnage of 5000 **that serve the purpose of transporting passengers or cargo for commercial purposes**, regardless of their flag, in respect ~~to~~ ***of***:

(a) the energy used during their stay within a port of call under the jurisdiction of a Member State,

(b) the entirety of the energy used on voyages from a port of call under the jurisdiction of a Member State to a port of call under the jurisdiction of a Member State, ~~and~~ **without prejudice to paragraph 1(ba),**

Article 2 – paragraph 1 – point b a (new)

ba) **one** ***half of the energy used on voyages departing from or arriving at a port of call located in an outermost region under the jurisdiction of a Member State, and***

~~a~~ **one** half of the energy used on voyages departing from or arriving ~~to~~ ***at*** a port of call under the jurisdiction of a Member State, where the last or the next port of call is under the jurisdiction of a third country.

The Commission shall, by 31 December 2025, by means of implementing acts establish a list of neighbouring container transhipment ports and update that list by 31 December every two years thereafter.

Those implementing acts shall list a port as a neighbouring container transhipment port where the share of transhipment of containers, measured in twenty-foot equivalent unit, exceeds 65 % of the total container traffic of that port during the most recent twelve-month period for which relevant data are available and where that port is located outside the Union but less than 300 nautical miles from a port under the jurisdiction of a Member State.

For the purpose of this paragraph, containers shall be considered to be transhipped when they are unloaded from a ship to the port for the sole purpose of being loaded onto another ship.

The list established by the Commission shall not include ports located in a third country for which that third country effectively applies measures equivalent to this Regulation.

Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 27(3).

(1bis) Member States may exempt, at the latest until 31 December 2029, specific routes and ports from the application of paragraphs 1(a) and 1(b) concerning the energy used on voyages performed by passenger ships other than cruise passenger ships between a port of call under the jurisdiction of a Member State and a port of call under the jurisdiction of the same Member State located in an island with less than 200.000 permanent residents, and concerning the energy used during their stay within a port call of the corresponding island. Member States shall notify those exemptions prior to their entry into force to the Commission, which shall publish them in the Official Journal of the European Union.

(1ter) ***Member States may, in respect of the energy used on voyages between a port of call located in an outermost region and another port of call located in an outermost region, and in respect of the energy used during their stay within the ports of call of the corresponding outermost regions, exempt specific routes and ports from the application of paragraph 1(a) and (ba). Member States shall notify those exemptions prior to their entry into force to the Commission, which shall publish them in the Official Journal of the European Union. No such exemptions shall apply beyond 31 December 2029.***

(1quater) The Member States having no land border with another Member State may exempt from the application of paragraph 1, the passenger ships performing transnational voyages under the public service obligations or public service contracts to the port of calls of other Member States. No such exemptions shall apply beyond 31 December 2029.

Member State shall notify such exemptions prior to their entry into force to the Commission, which shall publish them in the OJEU.

~~**By way of derogation, this Regulation shall not apply to passenger ships performing voyages under the scope of a public service obligation between Cyprus and other Member States until 31 December 2029.**~~

This Regulation does not apply to warships, naval auxiliaries, fish-catching or fish-processing ships, wooden ships of a primitive build, ships not propelled by mechanical means, or ~~government~~ ships **owned or operated by a government and** used **only** for non-commercial purposes.

Member States may exempt from the application of paragraph 1, passenger ships providing maritime transport services within the meaning of Regulation (EEC) No 3577/92 under public service obligation or public service contract, operating before the entry into force of this Regulation, for the specific routes between their mainland ports of call and ports of call under their jurisdiction located in an island or the cities of Ceuta and Melilla. No such exemptions shall apply beyond 31 December 2029.

Member State shall notify such exemptions prior to their entry into force to the Commission, which shall publish them in the OJEU.

For the purposes of the application of this provision, the territories of Ceuta and Melilla shall be considered as ports of call located in an island.

Article 3

Definitions

For the purposes of this Regulation, the following definitions apply:

(a) 'greenhouse gas emissions' means the release of carbon dioxide (CO_2), methane (CH_4) and nitrous ~~oxides~~**oxide** (N_2O) into the atmosphere;

(b) 'biofuels' means biofuels as defined in Article 2, point (33), of Directive (EU) 2018/2001;

(c) ‘biogas’ means biogas as defined in Article 2, point (28), of Directive (EU) 2018/2001;

(d) ‘recycled carbon fuels’ means recycled carbon fuels as defined in Article 2, point (35), of Directive (EU) 2018/2001

(e) ‘renewable fuels of non-biological origin’ means renewable fuels of non-biological origin as defined in– Article 2, point (36), of Directive (EU) 2018/2001;

(ea) ‘ice edge’ is defined by paragraph 4.4. of the WMO Sea-Ice Nomenclature, March 2014 as the demarcation at any given time between the open sea and sea ice of any kind, whether fast or drifting;

(f) ‘food and feed crops’ means food and feed crops as defined in Article 2, point (40), of Directive (EU) 2018/2001;

(g) ‘zero-emission technology’ means a technology ~~fulfilling the requirements of Annex III that does not imply~~**that does not imply, when used to provide energy,** the release of the following greenhouse gases and air pollutants into the atmosphere by ships: carbon dioxide (CO_2), methane (CH_4), nitrous ~~oxides~~**oxide** (N_2O), sulphur ~~oxides~~**oxides** (SO_x), nitrogen ~~oxides~~**oxides** (NO_x) and particulate matter (PM);

(h) ‘substitute sources of energy’ means renewable ~~wind or solar~~ energy generated on-board or electricity supplied from on-shore power supply;

(ha) ‘wind assisted propulsion~~ship~~’ means ~~a ship which has the capacity of~~ propulsion, whether ~~being~~ partially or fully, of any type of vessel ~~propelled~~ by wind energy harnessed by means of wind assistance propulsion systems, such as, inter alia, rotor sails, kites, hard or rigid sails, soft sails, suction wings~~,~~ or turbines ~~and hullforms sails, rigid sails, Flettner rotors or kites~~

(i) ‘port of call’ means a port **where ships stop to load or unload cargo or to embark or disembark passengers; stops for the sole purposes of refuelling, obtaining supplies, relieving the crew, going into dry-dock or making repairs to the ship, its equipment, or both, stops in port because the ship is in need of assistance or in distress, ship-to-ship transfers carried out outside ports, stops for the sole purpose of taking shelter from adverse weather or rendered necessary by search and rescue activities, and stops of containerships in a neighbouring container transhipment port listed in the implementing act adopted pursuant to Article 2, first paragraph point (ca), are excluded** ~~are excluded of call as defined in Article 3, poin (b) of Regulation (EU) 2015/757~~;

(j) ‘voyage’ means voyage as defined in Article 3, point (c) of Regulation (EU) 2015/757;

(ja) ‘outermost region’ means ~~**an oversea**~~ **a territory listed in Article 349 TFEU;**

(k) ‘company’ means company as defined in Article 3, point (d) of Regulation (EU) 2015/757;

(l) ‘gross tonnage’ (GT) means GT as defined in Article 3, point (e) of Regulation (EU) 2015/757;

(m) ‘ship at berth’ means ship at berth as defined in Article 3, point (n) of Regulation (EU) 2015/757;

(ma) ‘ship at anchorage’ means a ship at berth which is not moored at the quayside;

(n) ‘energy use on-board’ means the amount of energy, expressed in mega joules (MJ), used by a ship for propulsion and for the operation of any on-board equipment, at sea or at berth;

(o) ‘greenhouse gas intensity of the energy used on-board’ means the amount of greenhouse gas emissions, expressed in grams of CO_2 equivalent established on a well-to-wake basis, per MJ of energy used on-board;

(p) ‘well-to-wake’ means a method for calculating emissions that takes into account the greenhouse gas impact of energy production, transport, distribution and use on-board, including during combustion

(q) ‘emission factor’ means the average emission rate of a greenhouse gas relative to the activity data of a source stream, assuming complete oxidation for combustion and complete conversion for all other chemical reactions;

(qa) ‘ice class’ means the notation assigned to the ship by the competent national authorities of the flag state or an organisation recognised by that state, showing that the ship has been designed for navigation in sea-ice conditions;

Article 3 – paragraph 1 – point q b (new)

(qb) 'sailing in ice conditions' means the sailing by an ice class ship in a sea area within the ice edge;

(r) ‘on-shore power supply’ means the system to supply electricity to ships at berth, at low or high voltage, alternate or direct current, including ship side and ~~shore~~ **port** side installations, when feeding directly the ship main distribution switchboard for powering hotel, service workloads or charging secondary batteries;

(r2) ‘electrical power demand at berth’ means the demand in electricity from a ship at berth for powering all energy needs based on electricity on board;

(r3) ‘established total electrical power demand of the ship at berth’ means the highest value, expressed in kilowatts, of the total demand in electricity of the ship at berth, including hotel and cargo handling workloads;

(s) ‘verifier’ means a legal entity carrying out verification activities, which is accredited by a national accreditation body pursuant to Regulation (EC) No 765/2008 and this Regulation;

(u) ‘FuelEU ~~certificate~~**document** of compliance’ means a ~~certificate~~**document** specific to a ship, issued to a company by a verifier, which confirms that that ship has complied with this– Regulation for a specific reporting period;

(v) 'passenger ship' means a ship ~~that carries more than 12 passengers, including cruise ships, high speed passenger crafts, and ships with facilities to enable road or rail vehicles to roll on and roll off the vessel~~**as defined in Article 2, point (i) of Directive (EU) 2016/802**;

(v2) 'cruise passenger ship' means a passenger ship not having a cargo deck, designed exclusively for commercial transportation of passengers in overnight accommodation on a sea voyage;

(w) 'containership' means a ship designed exclusively for the carriage of containers in holds and on deck;

(x) 'non-compliant port call' means a port call ~~of~~ during which the ship does not comply with the requirement of Article 5(1), and none of the exceptions provided for in Article 5(3) apply;

(y) 'least favourable pathway' means the most carbon-intensive production pathway used for any given fuel;

(z) 'CO_2 equivalent' means the metric measure used to compute the emissions from CO_2, CH_4 and N_2~~O on~~**O on** the basis of their global-warming potential, by converting amounts of CH_4 and N_2O to the equivalent amount of carbon dioxide with the same global warming potential;

(aa) 'compliance balance' means the measure of a ship's over- or under-compliance with regards to the limits to the yearly average greenhouse gas intensity of the energy used on-board by a ship **or the subtarget for renewable fuels of non-biological origin**, which is calculated in accordance with Annex ~~V.~~**III Part A;**

(bb) 'compliance surplus' means a compliance balance with a positive value~~.~~**;**

(cc) 'compliance deficit' means a compliance balance with a negative value;

(dd) 'total pool compliance balance' means the sum of the compliance balances of all ships included in the pool~~.~~**;**

(ee) 'managing body of the port' means any public or private body as defined in Article 2(5) of Regulation (EU) 2017/352 of the European Parliament and of the Council[23];

(ff) 'administering State' means the administering Member State in respect of a shipping company as defined and determined respectively in Articles 3(w) and 3gd of Directive 2003/87/EC of the European Parliament and of the Council, without prejudice to the choice of the competent authorities in charge within the relevant Member State[24];

(gg) 'reporting ~~monitoring~~ period' means a period from 1 January until 31 December of the year during which information according to Article 14.1 shall be monitored and recorded. For voyages starting and ending in two different calendar years, the respective data shall be accounted under the calendar year concerned;

(hh) 'verification period' means the calendar year directly following the reporting period;

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23 **[1]** Regulation (EU) 2017/352 of the European Parliament and of the Council of 15 February 2017 establishing a framework for the provision of port services and common rules on the financial transparency of ports (OJ L 57, 3.3.2017, p. 1).

24 **This provision might be further aligned, pending the outcome of the negotiations on the revision of Directive 2003/87/EC.**

CHAPTER II

REQUIREMENTS ON ENERGY USED ON-BOARD BY SHIPS

Article 4

Greenhouse gas intensity limit of energy used on-board by a ship

1. The yearly average greenhouse gas intensity of the energy used on-board by a ship during a reporting period shall not exceed the limit set out in paragraph 2.

2. The limit referred to in paragraph 1 shall be calculated by reducing the reference value of **91.16** grams of CO_2 equivalent per MJ by the following percentage:

   - -[25]2% from 1 January 2025;

   - -6% from 1 January 2030;

   - - 1**4,5**% from 1 January 2035;

   - - ***31***% from 1 January 2040;

   - - ***62***% from 1 January 2045 ;

   - - ***80***% from 1 January 2050.

3. The greenhouse gas intensity of the energy used on-board by a ship shall be calculated as the amount of greenhouse gas emissions per unit of energy according to the methodology specified in Annex I.

[25] **Please note that all symbols "minus" have been deleted.**

4. The Commission is empowered to adopt delegated acts in accordance with Article 26 to amend Annex II in order to include the well-to-wake emission factors related to any new sources of energy or to adapt the existing emission factors to ensure consistency with future international standards or the legislation of the Union in the field of energy, ***in accordance with the best available scientific and technical knowledge.***

Use of Renewable Fuels of Non-Biological Origin

1. **As provided for in Annex I for the calculation of the greenhouse gas intensity of the energy used on-board by a ship, from 1 January 2025 to 31 December 2033, a multiplier of "2" can be used to reward the ship for the use of renewable fuels of non -biological origin.**

2. **The Commission shall monitor, calculate and publish annually, on the basis of the data recorded in the FuelEU Database and at the latest 18 months after the end of each reporting period, the share of renewable fuels of non-biological origin in the yearly energy used on-board by ships covered by this Regulation.**

3. **If the share of renewable fuels of non-biological origin referred to in paragraph 2 for reporting period 2031 is less than 1%, a subtarget of 2% for such fuels in the yearly energy used on-board by a ship shall apply from 1 January 2034, subject to paragraph 5.**

4. **Paragraph 3 shall not apply, where the monitoring results provided for in paragraph 2, available before 1 January 2033, demonstrate that the share referred to in paragraph 2 is more than 2%.**

5. **If, based on the monitoring activities referred to in paragraph 2 and following the Commission assessment, there is evidence of insufficient production capacity and availability to the maritime sector, uneven geographical distribution or a too high price of renewable fuels of non-biological origin, the subtarget provided for in paragraph 3 shall not apply.**

6. **The Commission shall adopt implementing acts, in accordance with examination procedure referred to in Article 27(3) to specify the criteria for the assessment provided for in paragraph 5 and the method to calculate the factor of price difference between renewable fuels of non-biological origin and fossil fuels used in [Annex III, cell 14].**

7. The Commission is empowered to adopt delegated acts in accordance with Article 26 to:

- supplement elements referred to in paragraph 5;

- inform about the non applicability of the subtarget referred to in paragraph 3, resulting from the monitoring or assessment in paragraphs 2 or 5, respectively.

8. Where the subtarget referred to in paragraph 3 applies, the Commission shall adopt, by 31 December 2033, implementing acts in accordance with the examination procedure referred to in Article 27(3) to further specify the rules for the application of paragraph 3 as regards:

a) verification and calculation as defined in Article 15;

b) applicable flexibility mechanisms as defined in Articles 17 and 18

c) applicable FuelEU penalties as defined in Article 20 and [Annex IV].

9. The subtarget established in paragraph 3, if relevant, shall not apply to a ship, which demonstrates that the same share of the yearly energy used on-board is met by fuels providing equivalent greenhouse gas savings and are certified pursuant to the provisions of Article 9, excluding biofuels referred to in Annex IX, Part B of Directive (EU) 2018/2001.

10. This Article shall not apply to the share of yearly energy used on-board by ships derived from onshore power supply.

Article 5

Additional zero-emission requirements of energy used at berth

1. From 1 January 2030, a ship moored at the quayside in a port of call ~~under the jurisdiction of a Member~~ State[*] which is covered by Article 9 of Regulation XXXX-XX (Alternative Fuels Infrastructure Regulation) shall connect to on-shore power supply and use it for all its electrical power demand at berth.

[*] *This reference might need to be reintroduced since it is already included in paragraph 1b and consistency should be ensured all over the text.*

1a. From 1 January 2035, a ship moored at the quayside in a port of call which is not covered by Article 9 of Regulation XXXX-XX (Alternative Fuels Infrastructure Regulation), where the quay is equipped with available on-shore power supply, shall connect to on-shore power supply and use it for all its electrical power demand at berth.

1b. From 1 January 2030 and until 31 December 2034, a Member State may decide that, in a port or some parts of a port located in its jurisdiction which is not covered by Article 9 of Regulation XXXX-XX (Alternative Fuels Infrastructure Regulation), after consulting relevant stakeholders, including the managing body of the port where appropriate, a ship moored at the quayside shall connect to on-shore power supply and use it for all its electrical power demand at berth. The Member State shall notify its decision to the Commission a year prior to its application, which must start at the beginning of a reporting period. The Commission shall publish the information in the Official Journal of the European Union and provide an updated list of the concerned ports which shall be easily accessible.

Paragraphs 1, **1a and 1b** shall apply to:

(a) containerships;

(b) passenger ships.

3. Paragraph**s** 1, **1a and 1b** shall not apply to ships:

(a) that are **moored at the quayside**~~at berth~~ for less than two hours, calculated on the basis of hour of departure and arrival monitored **and recorded** in accordance with Article 14;

(b) that use zero-emission technologies **that comply with the general requirements provided for in Annex III and are listed and specified in the delegated and implementing acts adopted in accordance with Article 5(4), for all their electrical power demand at berth, while moored at the quayside** ~~**for their electrical power demand at berth, while moored at the quayside**, as specified in Annex III~~;

(c) that, **due to unforeseen circumstances beyond the control of the ship**, have to make an unscheduled **and not systematic** port call for reasons of safety or saving life at sea~~, due to unforeseen circumstances beyond the control of the ship~~, **other than those already excluded by Article 3(i)**;

(d) that are unable to connect to on-shore power supply due to unavailable connection points in a port;

(da) that are unable to connect to on-shore power supply because exceptionally the electrical grid stability is at risk, due to insufficient available shore-power to satisfy the ship's required electrical power demand at berth;

(e) that are unable to connect to on-shore power supply because the shore installation at the port is not compatible with the on-board on-shore power equipment ***provided that the installation for shore-connection on-board the ship is certified in accordance with the standards specified in Annex II of Regulation XXXX-XXX (Alternative Fuels Infrastructure Regulation) for seagoing ships' shore connection systems***;

(f) which, for a limited period of time, require the use of on-board energy generation, under emergency situations representing immediate risk to life, the ship, the environment or for other reasons of force majeure~~.~~**;**

(g) which, while remaining connected, for a period of time limited to the strict necessary, require the use of on-board energy generation for maintenance tests, or for functional tests carried out upon request of an officer from a competent authority or the representative of a recognised organization undertaking a survey or inspection.

4. **The Commission is empowered to adopt and regularly update:**

- delegated acts in accordance with Article 26 to supplement the non-exhaustive table provided for in Annex III with other technologies that achieve zero emission, in the meaning of Article 3(g); and

- - implementing acts in accordance with Article 27(3) to establish the detailed criteria for acceptance, including the definition of system boundaries and certification requirements, to be considered as fulfilling the general requirements for zero-emission technologies, provided for in Annex III, including its future updates.

Such implementing acts should be adopted by 30 June 2024, or when other technologies referred to in Annex III are available, within a reasonable delay.

5. Ships shall inform in advance the competent authority of the Member State of the port of call or any entity duly authorized prior to entry into ports about their intentions to connect to on-shore power supply or their intention to use a zero-emission technology in application of paragraph 3(b).

Ships that intend to connect to on-shore power supply shall also indicate the amount of power they expect to require during that call.

The competent authority of the Member State of the port of call or any entity duly authorised shall confirm to the ship the availability or not of connection to on-shore power supply upon receipt of the information referred to in the first sub-paragraph.

The Commission shall, by means of implementing acts, specify the information to be provided and the procedure for providing the information. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 27(3).

5bis The competent authority of the Member State of the port of call or any entity duly authorized, after consultation of the managing body of the port where appropriate, shall determine and record in the FuelEU database, without delay, the following information:

a) the application of any exception set in paragraph 3 ~~points (a), (b), (c), (d), or (e);~~

(b) the non application by a ship of the requirement of paragraphs 1, 1a and 1b without being eligible to any exception set in paragraph 3.

6. From 1 January 2035, **in ports falling under the requirements of Article 9 of AFIR [*correct title to be added*], it shall only be possible to apply the exceptions provided for in paragraph 3, points (d), (da) and (e) to a maximum number of port calls corresponding to 10% of that ship's total number of port calls that took place during a reporting period, rounded up to the nearest whole number, where relevant, or to maximum 10 port calls during the relevant reporting period, whichever is lower.**

A port call shall not be counted for the purpose of compliance with this provision where the company demonstrates**, on the basis of the exchange of information provided for in paragraph 5,** that it could not have reasonably known that the ship will be unable to connect **to on-shore power supply for any of the reasons** referred to in paragraph 3, points (d), (da) or (e).

7. ~~Emergency situations resulting in the need to use on-board generators, referred to in paragraph 3, point (f),~~**A Member State may decide that, in a port or some parts of a port located in its jurisdiction, containerships or passenger ships at anchorage are covered by the same obligations made to ships moored at the quayside in this Regulation. The Member State shall notify its decision to the Commission a year prior to its application, which must start at the beginning of a reporting period. The Commission** shall ~~be documented and reported by the ship to the managing body~~**publish the information in the *Official Journal of the European Union* and provide an updated list** of the ~~port~~**concerned ports which shall be easily accessible**.

CHAPTER III

COMMON PRINCIPLES AND CERTIFICATION

Article 6

Common principles for monitoring and reporting

1. In accordance with Articles 7 to 9, companies shall, for each of their ships, monitor and report on the relevant data during a reporting period. They shall carry out that monitoring and reporting within all ports under the jurisdiction of a Member State and for any voyages ~~to or from a port under the jurisdiction of a Member State~~**mentioned in Article 2(1)**.

2. Monitoring and reporting shall be complete and cover the energy used on-board by ships **at any time**, while the ships are at sea as well as at berth. Companies shall apply appropriate measures to prevent any data gaps within the reporting period.

3. Monitoring and reporting shall be consistent and comparable over time. To that end, companies shall use the same monitoring methodologies and data sets subject to modifications assessed by the verifier. Companies shall enable reasonable assurance of the integrity of the data to be monitored and reported.

4. Companies shall obtain, ~~record, compile,~~ analyse and ~~document~~**store for at least five years all** monitoring data **and documentation**, including assumptions, references, emission factors**, Bunker Delivery Notes as complemented pursuant to Annex I** and activity data, ***and any other information*** **needed to verify compliance *with this Regulation***, in a transparent and accurate manner, **in paper or electronic form,** so that the verifier can– determine the greenhouse gas intensity of the energy used on-board by ships.

5. In undertaking the monitoring and reporting activities set out in Articles 7 to 9 and 14 of this Regulation, information and data collected for the purpose of Regulation (EU) 2015/757 shall be used where appropriate.

Article 7

Monitoring plan

1. By 31 August 2024, companies shall submit to the verifiers a monitoring plan for each of their ships indicating the method chosen from among those set out in Annex I to monitor and report the amount, type and emission factor of energy used on-board by ships and other relevant information.

2. For ships falling under the scope of this Regulation for the first time after 31 August 2024, companies shall submit a monitoring plan to the verifier without undue delay and no later than two months after each ship's first call in a port under the jurisdiction of a Member State.

3. The monitoring plan shall consist of a complete and transparent documentation and shall contain at least the following elements:

(a) the identification and type of the ship, including its name, its IMO identification number, its port of registry or home port, and the name of the ship-owner;

(b) the name of the company and the address, telephone and e-mail details of a contact person;

(c) a description of the energy conversion systems installed on-board, and the related power capacity expressed in megawatt (MW);

(d) a description ~~that the ship has installed and certified equipment to allow connection to onshore power supply, at a specified voltage and frequency, including the gear specified in IEC/IEEE 80005-1 (High Voltage) and IEC/IEEE 80005-3 (Low Voltage) or is equipped with substitute sources of energy~~**, for ships ~~within the scope of~~ referred to in Article 5(2), of the standards and characteristics of the equipment to allow connection to on-shore power supply,** or a zero-emission technology [~~as specified in Annex III~~];

(da) the value of the established total electrical power demand of the ship at berth, as provided in its Electrical load balance or Electrical load study used to demonstrate compliance with Regulations 40 and 41 of Chapter II-1 of the SOLAS Convention, as approved by its flag Administration or a recognised organisation as defined in the IMO Code for Recognized Organizations adopted by Resolution MEPC237(65). In case the ship is not able to provide this reference, the value considered is 25% of the total of the maximum continuous ratings of the main engines of the ship as specified in their EIAPP certificate delivered in application of the MARPOL Convention or, if the engines are not required to have an EIAPP certificate, on the nameplate of the engines;

(e) a description of the intended source(s) of energy to be used on-board while in navigation and at berth to comply with the requirements set out in Articles 4 and 5***;***

(f) a description of the procedures for monitoring the fuel consumption of the ship as well as the energy provided by substitute sources of energy or a zero-emission technology ~~[as specified in Annex III]~~;

(g) ~~well-to-wake~~ **a description of the procedures for monitoring and reporting the well-to-tank and tank-to-wake** emission factors ~~referred to in Annex~~**of energy to be used on-board, in accordance with the methods specified in Article 9 and Annexes I and** II;

(h) a description of the procedures used to monitor the completeness of the list of voyages;

(i) a description of the procedures used for determining activity data per voyage, including the procedures, responsibilities, formulae and data sources for determining and recording the time spent at sea between the port of departure and the port of arrival and the time spent at berth;

(j) a description of the procedures, systems and responsibilities used to update any of the data contained in the monitoring plan over the reporting period;

(k) a description of the method to be used to determine surrogate data for closing data gaps ***or for identifying and correcting data errors;***

(l) a revision record sheet to record all the details of the revision history~~.~~**;**

(m) information on the ice class of the ship, if the company requests to exclude the additional energy due to the ship's ice class from the scope of the energy used on-board;

(n) information on the ice class of the ship and a description of a verifiable procedure for monitoring the distance travelled for the whole voyage and when sailing in ice conditions, the date, time and position when entering and leaving the ice conditions and fuel consumption when sailing in ice conditions, if the company requests to exclude the additional energy due to sailing in ice conditions from the scope of the energy used on-board.

(o) for a ship equipped with wind assisted propulsion ~~ship~~, the description of the installed wind propulsion equipment onboard and the values of P_{Wind} and P_{Prop} as defined in Annex I;~~associated available effective power of the wind assisted propulsion systems as calculated in accordance with the 2021 guidelines on treatment of innovative energy efficiency technologies for calculation and verification of the attained EEDI and EEXI (MEPC.1/Circ.896);~~

4. Companies shall use standardised monitoring plans based on templates. The Commission shall, by means of implementing acts, determine those templates, including the technical rules for their uniform application. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 27(3).

Article 8

Modifications to the monitoring plan

1. Companies shall check regularly, and at least annually, whether a ship's monitoring plan reflects the nature and functioning of the ship and whether any of the data it contains can be improved**,** ***corrected or updated***.

2. Companies shall modify the monitoring plan ***without undue delay*** in any of the following situations

(a) where a change of company occurs;

(b) where new energy conversion systems, new types of energy, ~~including~~**new systems for connection to on-shore power supply, or new** substitute sources of energy or a zero-emission technology ~~[as specified in Annex III]~~ are in use;

(c) where a change in availability of data, due to the use of new types of measuring equipment, new sampling methods or analysis methods, or for other reasons, may affect the accuracy of the data collected;

(d) **where verifiers, competent authorities or companies have found that** data resulting from the monitoring method applied has been found to be incorrect;

(e) where **verifiers have identified** any part of the monitoring plan is identified as not being in conformity with the requirements of this Regulation and the company is required by the verifier to revise it.

Article 8 – paragraph 2 – point e a (new)

(ea) where **verifiers, competent authorities or companies have found the** ***methods to prevent data gaps and identify data*** ~~***errors have been found***~~ ***to be inadequate to ensure data*** **accuracy, completeness** ~~***solidity***~~ ***and transparency.***

3. Companies shall notify to the verifiers without undue delay any proposals for modification of the monitoring plan.

Article 9

Certification of biofuels, biogas, renewable liquid and gaseous transport fuels of non-biological origin and recycled carbon fuelsand emission factors**26**

c. Where biofuels, biogas, renewable fuels of non-biological origin and recycled carbon fuels, as defined in Directive (EU) 2018/2001, are to be taken into account for the purposes referred to in Articles 4(1) of this Regulation, the following rules apply:

c. ~~greenhouse gas emission factors of~~ biofuels and biogas that **do not** comply with the sustainability and greenhouse gas saving criteria set out in Article 29 of Directive (EU) 2018/2001 **or that are produced from food and feed crops** shall be ~~determined according to the methodologies set out in that Directive~~**considered to have the same emission factors as the least favourable fossil fuel pathway for this type of fuel**;

26 Any possible technical adjustment in Annexes I or II will be done at a later stage.

(b) ~~greenhouse gas emissions factors of~~ renewable fuels of non-biological origin and recycled carbon ~~fuel that~~ **fuels that do not** comply with the greenhouse gas emission savings thresholds set out in Article ~~27(3)~~**25(2)** of Directive (EU) 2018/2001 ~~-~~ shall be ~~determined according to the methodologies set out in that Directive;~~**considered to have the same emission factors as the least favourable fossil fuel pathway for this type of fuels.**

1bis. Fuels not covered in paragraph 1 shall be considered to have the same emission factors as the least favourable fossil fuel pathway for the type of fuel in question, unless they have been certified pursuant to Union legislation for the internal markets in renewable and natural gases and in hydrogen, establishing a greenhouse gas emission saving threshold and an associated methodology to calculate greenhouse gas emission from production of such fuels.

2. **On the basis of the Bunker Delivery Notes as complemented pursuant to Annex I,** companies shall provide accurate, ***complete*** and reliable data on the GHG emission intensity and the sustainability characteristics of **fuels to be taken into account for the purposes referred to in Articles 4(1) of this Regulation,** ~~biofuels, biogas, renewable fuels of non-biological origin and recycled carbon fuel, verified by~~ **as certified under** a scheme that is recognised by the Commission in accordance with Article 30(5) and (6) of the Directive (EU) 2018/2001 **or, where applicable, the relevant provisions of Union legislation for the internal markets in renewable and natural gases and in hydrogen**.

3. **Companies shall not ~~divert~~ diverge from the default values for the well-to-tank emission factors reported in Annex II for fossil fuels. Without prejudice to paragraph 1,** companies shall be entitled to ~~divert~~ ***diverge*** from the ~~established~~ default values for the ~~tank-to-wake~~**well-to-tank** emission factors **reported in Annex II** provided that actual values are certified ~~by means of laboratory testing or direct emissions measurements.~~**, under a scheme that is recognised by** the Commission. **This certification shall be done in accordance with ~~the relevant EU law, including~~** ~~is empowered to adopt delegated acts~~ Article ~~26, in order to supplement this Regulation by establishing the rules on conducting the laboratory testing and direct emissions measurements~~**30(5) and (6) of the Directive (EU) 2018/2001 for biofuels, biogas, renewable fuels of non-biological origin and recycled carbon fuels or, where applicable, the relevant provisions of Union legislation for the internal markets in renewable and natural gases and in hydrogen**.

4. Companies shall be entitled to diverge from the default values for the tank-to-wake emission factors defined in Annex II, with the exception of tank-to-wake CO2 emission factors for fossil fuels, provided that actual values are certified by means of laboratory testing or direct emissions measurements.

4a. The Commission is empowered to adopt implementing acts to specify which international standards and certification references are accepted for demonstration of actual tank-to-wake emission factors. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 27(3).

CHAPTER IV

VERIFICATION AND ACCREDITATION

Article 10

~~*Verification activities*~~***Assessment of the monitoring plan***

1. **For each ship and in the case of change of verifier,** the verifier shall assess the conformity of the monitoring plan with the requirements laid down in Articles 6 to ~~9~~**8**. Where the verifier's assessment identifies non-conformities with those requirements, the company concerned shall ***without undue delay*** revise its monitoring plan accordingly and submit the revised plan for a final assessment by the verifier before the reporting period starts. The company concerned shall agree with the verifier on the timeframe necessary to introduce those revisions. That timeframe shall in any event not extend beyond the beginning of the reporting period.

1bis. Modifications of the monitoring plan under points (b), (c) and (d) of Article 8(2) shall be subject to an assessment by the verifier. Following the assessment, the verifier shall notify the company concerned whether those modifications are in conformity with the requirements laid down in Articles 6 to 8.

1ter. The verifier shall record the monitoring plan and the modified monitoring plan, once satisfactorily assessed, in the FuelEU database. The monitoring plan and the modified monitoring plan shall be accessible to the administering State.

Article 11

General obligations and principles for the verifiers

1. The verifier shall be independent from the company or from the operator of a ship and shall carry out the activities required under this Regulation in the public interest. For that purpose **and i*n order to exclude potential conflicts of interest***, neither the verifier nor any part of the same legal entity shall be a company or ship operator, the owner of a company, or be owned by them, nor shall the verifier have relations with the company that could affect its independence and impartiality.

2. The verifier shall assess the reliability, credibility**, accuracy and completeness** ~~and accuracy~~ of the data and information relating to the amount, type and emission factor of the energy used on-board by ships, in particular:

(a) the attribution of fuel consumption and the use of substitute sources of energy to voyages **and at berth**;

(b) the reported fuel consumption data and related measurements and calculations;

(c) the choice and the employment of emission factors;

(d) the use of on-shore power supply or the presence of exceptions **recorded in the FuelEU database** ~~certified~~ in accordance with Article 5(5)~~.~~**;**

(e) the information required under Article 9(2).

3. The assessment referred to in paragraph 2 shall be based on the following considerations:

(a) the reported data are coherent in relation to estimated data that are based on ship tracking data and characteristics such as the installed engine power;

(b) the reported data are free of inconsistencies, in particular when comparing the total volume of fuel purchased annually by each ship and the aggregate fuel consumption during voyages;

(c) the collection of the data has been carried out in accordance with the applicable rules; and

(d) the relevant records of the ship are complete and consistent.

Article 12

Verification procedures

1. The verifier shall identify potential risks related to the monitoring and reporting process by comparing reported amount, type and emission factor of the energy used on-board by ships with estimated data based on ship tracking data and characteristics such as the installed engine power. Where significant ~~deviations~~ ***divergences*** are found, the verifier shall carry out further analyses.

2. The verifier shall identify potential risks related to the different calculation steps by reviewing all data sources and methodologies used by the company.

3. The verifier shall take into consideration any effective risk control methods applied by the company concerned to reduce levels of uncertainty associated with the accuracy specific to the monitoring methods used.

4. **On the request of the verifier,** the company concerned shall provide ~~the verifier with~~ any additional information that enables ~~it~~**the verifier** to carry out ~~the~~**its** verification ~~procedures.~~ **activities. Where necessary to determine the reliability, credibility, accuracy and completeness of reported data and information,** the verifier ~~may~~**shall** conduct checks during the verification process**. In case of doubts, the verifier may conduct site visits at the premises of the company or on-board the ship. The company shall allow the verifier to access the premises of the company or the ship, in order to facilitate its verification activities** ~~to determine the reliability of reported data and information~~.

5. The Commission shall adopt implementing acts in order to further specify the rules for the verification activities referred to in this Regulation, at least on the following elements: competencies of verifiers, documents to be provided by companies to verifiers, risk assessment – including checks – to be carried out by verifiers, assessment of the conformity of the monitoring plan, verification of the FuelEU report, materiality level, reasonable assurance of verifiers, misstatements and non-conformities, content of the verification report, recommendations for improvements, site visits and communication between companies, verifiers, competent authorities and the Commission. The rules specified in those implementing acts shall be based on the principles for verification provided for in Articles 10 to 12 and on relevant internationally accepted standards. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 27(3).

Article 13

Accreditation of verifiers

1. Verifiers shall be accredited for activities under the scope of this Regulation by a national accreditation body pursuant to Regulation (EC) No 765/2008. **By the end of each year,** ***the national accreditation body shall*** ~~***regularly***~~ ***notify to the Commission the list of accredited verifiers, together with all relevant contact information.***

2. Where no specific provisions concerning the accreditation of verifiers are laid down in this Regulation, the relevant provisions of Regulation (EC) No 765/2008 shall apply.

2bis. Verifiers shall be equipped at all times with means and staff commensurate with the size of the fleet for which they perform verification activities under this Regulation and with sufficient expertise, notably in maritime transport, to carry out the tasks required by this Regulation. They shall be capable of assigning their means and staff to every place of work, when and as needed for the tasks to be carried out in application of this Regulation.

2ter. Any competent authority identifying non-conformities of a verifier's activities within the scope of this Regulation shall inform the competent authority of the Member State of the national accreditation body having accredited the verifier. The competent authority of the Member State of the national accreditation body shall request its national accreditation body to take into account this information as part of its surveillance activities.

3. The Commission is empowered to adopt delegated acts in accordance with Article 26, in order to supplement this Regulation by establishing **~~establish~~ further methods and criteria of accreditation of verifiers, at least on the following elements: request for accreditation for activities under the scope of** this Regulation**, assessment of verifiers by the national accreditation bodies, surveillance activities performed by the national accreditation bodies to confirm the continuation of the** ~~by establishing further methods and criteria of~~ accreditation**, administrative measures to be adopted in case the verifier does not satisfy the requirements of this Regulation, and requirements for national accreditation bodies in order to be competent to provide accreditation to** ~~of~~ verifiers **for activities under the scope of this Regulation, including reference to harmonised standards**. The methods **and criteria** specified in those delegated ~~**[implementing** acts **/ delegated acts]**~~ shall be based on the principles for verification provided for in Articles 10 ~~and 11~~**to 12** and on relevant internationally accepted standards. **Those ~~[implementing acts/delegated acts]~~ shall be adopted in accordance with ~~[the examination procedure referred to in Article 27(3) /~~ Article 26. ~~]~~**

CHAPTER V

RECORDING, VERIFICATION, REPORTING AND ASSESMENT OF COMPLIANCE

Article 14

Monitoring and recording

1. **As of 1 January 2025,** based on the monitoring plan referred to in Article 7, and following the assessment of that plan by the verifier, companies shall **monitor and** record, for each ship arriving in or departing from a port of call, and for each voyage **mentioned in** A**rticle 2(1)** ~~to or from a port of call under the jurisdiction of a Member State,~~ the following information:

(a) port of departure and port of arrival including the date and hour of departure and arrival and time spent at berth;

(b) for each ship ~~that the requirement of~~**to which** Article 5(1) applies, the connection to and use of on-shore power or the ~~existence~~**application** of any of the exceptions listed in Article 5(3) **as confirmed pursuant to Article 5(5ter, point a), where applicable**;

(c) the amount of each type of fuel consumed at berth and at sea;

(cbis.) the amount of electricity delivered to the ship via on-shore power supply;

(d) ~~the well-to-wake emission factors~~ for each type of fuel consumed at berth and at sea, ~~broken down by well-to-tank~~**the well-to-tank emission factor**, **the** tank-to-wake **emission factors of combusted fuel and the tank-to-wake emission factors of slipped fuel associated to the different fuel consumers onboard** ~~and fugitive emissions~~, covering all relevant greenhouse gases;

(e) the amount of each type of substitute source of energy consumed at berth and at sea~~.~~**;**

(f) the ship's ice class, if the company requests to exclude the additional energy due to ship's ice class from the scope of the energy used on-board. To establish the correspondence between ice classes, HELCOM Recommendation 25/7 shall be used;

(g) the ship's ice class, the date, time and position when entering and leaving the ice conditions, the amount of each type of fuel consumed and the distance travelled when sailing in ice conditions, ~~the distance travelled when sailing in ice conditions~~ as well as the total distance travelled for all voyages during the reporting period ~~and the distance travelled during the voyage~~, if the company requests to exclude the additional energy due to sailing in ice conditions from the scope of the energy used on-board.

2. Companies shall record the information and data listed in paragraph 1 ~~on annual basis~~ in a ***timely and*** transparent manner ~~that enables~~ ***and compile them on annual basis to enable*** the verification of compliance with this Regulation by the verifier.

3. By ~~30 March of each~~**31 January of the reporting** year, companies shall provide to the verifier **a ship-specific FuelEU report containing all** the information referred to in paragraph 1 **and the monitoring data and documentation referred to in Article 6(4) for the reporting period**.

4. In the event of the transfer of a ship from one company to another:

(a) the previous company shall notify to the verifier the information referred to in paragraph 1 for the time during which it has assumed the responsibility for the operation of the ship. As close as practical to the day of the completion of the transfer and no later than one month thereafter this information shall be verified and recorded in the FuelEU database in accordance with Article 15 by the verifier that performed verification activities for the ship under the previous company; and

(b) without prejudice to sub-paragraph (a), the new company assuming the responsibility for the operation of the ship on 31 December of the reporting period shall be responsible for the compliance of the ship with the requirements of Articles 4 and 5 for the entire reporting period during which the transfer or multiple transfers took place.

Article 15

Verification and calculation

1. Following the verification ~~laid down~~**as set out** in Articles 10 to 12, the verifier shall assess the quality, completeness and accuracy of the **FuelEU report. To this purpose, the verifier shall use any information contained in the FuelEU database, including** information provided ~~by the company~~**on port calls** in accordance with Article ~~14(3)~~**5**.

1bis. Where the verification assessment concludes, with reasonable assurance from the verifier, that the FuelEU report is free from material misstatements, the verifier shall notify to the company a verification report stating that the FuelEU report complies with this Regulation. The verification report shall specify all issues relevant to the work carried out by the verifier.

1ter. Where the verification assessment identifies misstatements or non-conformities with this Regulation, the verifier shall inform the company thereof in a timely manner. The company shall then *without undue delay*[2] correct the misstatements or non-conformities so as to enable the verification process to be completed in time and shall submit to the verifier an amended FuelEU report and any other information that was necessary to correct the non-conformities identified. In its verification report, the verifier shall state whether the amended FuelEU report complies with this Regulation. Where the communicated misstatements or non-conformities have not been corrected and lead to material misstatements, the verifier shall notify to the company a verification report stating that the FuelEU report does not comply with this Regulation.

2. On the basis of the ~~information verified according to paragraph 1~~**compliant FuelEU report**, the verifier shall:

(a) calculate, using the method specified in Annex I, the yearly average greenhouse gas intensity of the energy used on-board by the ship concerned;

(b) calculate, using the formula specified in Annex ~~V~~**III Part A**, the ship's compliance balance;

(c) calculate the number of non-compliant port calls in the previous reporting period including the time spent **moored at the quayside and, where applicable in accordance with Article 5(7), at anchorage,** ~~at berth~~ for each ~~non-compliant~~ port call **non compliant with the requirements set in Article 5**.

(d) calculate the amount of the yearly energy used on-board by a ship, excluding energy derived from onshore power supply;

(e) calculate the amount of the yearly energy used on-board by a ship derived from the renewable fuels of non-biological origin.

3. **By 31 March of the reporting year,** the verifier shall notify to the company **the information referred to in paragraph 2 and record in the FuelEU database the compliant FuelEU report, the verification report and** the information referred to in paragraph 2.

All the recorded information shall be accessible to the administering State.

15bis. Article 15bis

Additional checks by a competent authority

1. At any time and for the two previous reporting periods, the competent authority of the administering State in respect of a shipping company may, for any of its ships, conduct additional checks of any of the following:

(a) the compliant FuelEU report established in application of Articles 14 and 15;

(b) the verification report established in application of Article 15;

(c) the calculations made by the verifier in application of Article 15(2).

2. On the request of the competent authority, the company shall provide any necessary information or document enabling the competent authority to conduct additional checks and shall allow the access to the premises of the company or the ship to facilitate the checks.

3. The competent authority shall issue an additional checks report including, where applicable, the updated calculations made in application of Article 15bis(1)(c), the updated amount of the compliance surplus or of the advance compliance surplus and the updated amount of the FuelEU penalty.

4. Where the report referred to in paragraph 3 finds misstatements, non-conformities or miscalculations resulting in a non-conformity to the requirements set out in Articles 4 or 5 of this Regulation and, consequently, in a FuelEU penalty or a modification of the amount of a FuelEU penalty already paid, the competent authority shall notify to the company the corresponding amount of the FuelEU penalty or of the modified FuelEU penalty. Member States shall ensure that the company responsible for the ship during the period subject to the additional checks shall pay an amount equal to the FuelEU penalty or that modified FuelEU penalty within one month after its notification, in accordance with the modalities referred to in Article 20.

5. The competent authority shall withdraw without delay in the FuelEU database the FuelEU document of compliance of the ship whose company has not paid in due time the penalties referred to in paragraph 4 and shall notify this withdrawal to the company in a timely manner. It shall issue the document of compliance again when an amount equal to the FuelEU penalty has been paid, provided that the other conditions set out in this Regulation for holding this document are fulfilled by the company.

6. Paragraph 5 shall not apply to a ship which has been transferred to a company other than the one that assumed the responsibility for its operation during the period subject to the additional checks.

7. The actions referred to in this Article, the additional check report and ~~as well as~~ the proof of the payments shall be recorded without delay in the FuelEU database by the entities performing these actions.

15ter. Article 15ter

Supporting tools and guidance

The Commission shall develop appropriate monitoring tools, as well as guidance and risk-based targeting tools, to facilitate and coordinate verification and enforcement activities related to this Regulation. As far as practicable, such guidance and tools shall be made available to the Member States, the verifiers and the national accreditation bodies for information sharing purpose and in order to better ensure robust enforcement of this Regulation.

Article 16

ComplianceFuelEU database and reporting

1. The Commission shall develop, ensure functioning and update an electronic ~~compliance~~ **FuelEU** database for the monitoring of compliance with ~~Articles 4 and 5. The compliance~~**this Regulation. The FuelEU** database shall be used to keep a record of the **actions related to verification activities, of the** compliance balance of the ships**, including** ~~and~~ the use of the flexibility mechanisms set out in Articles 17 and 18**, of** ***the use of the exemptions set out in Article 5(3)***[1] **and of the actions related to the payment of the penalties** ***incurred under Article 20*** **and the issuance of the FuelEU document of compliance**. It shall be accessible to the companies, the verifiers, the competent authorities and **any duly authorized entity, the national accreditation bodies, the European Maritime Safety Agency and** the Commission**, with appropriate access rights and functionalities corresponding to their respective responsibilities in the implementation of this Regulation**.

1bis. Any elements recorded or modified in the FuelEU database shall be notified to the entities to which they are accessible.

2. The Commission shall, by means of implementing acts, lay down the rules for access rights and the functional and technical specifications**, including notification rules and filtering,** of the ~~compliance~~**FuelEU** database. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 27(3).

Article 17

Banking and borrowing of compliance surplus between reporting periods

1. ***Based on the information referred to in Article 15(2),*** where the ship has**,** for the reporting period, a compliance surplus **on its greenhouse gas intensity as referred to in Article 4(2) or, if applicable, on the subtarget for fuels of non-biological origin as referred to in Article 4a(3)**, the company may bank it to the same ship's compliance balance for the following reporting period. The company shall record the banking of the compliance surplus to the following reporting period in the ~~compliance~~**FuelEU** database subject to approval by its verifier. The company may no longer bank the compliance surplus once the FuelEU ~~certificated~~**document** of compliance has been issued.

2. **On the basis of the information referred to in Article 15(2),** where the ship has a compliance deficit for the reporting period, the company may borrow an advance compliance surplus of the corresponding amount from the following reporting period. The advance compliance surplus shall be added to the ship's balance in the reporting period and ~~subtracted from the same ship's balance in the following reporting period. The amount to be subtracted~~**the advance compliance surplus multiplied by 1.1 shall be subtracted from the same ship's balance** in the following reporting period ~~shall be equal to the advance compliance surplus multiplied by 1.1~~. The advance compliance surplus may not be borrowed:

   (a) for the amount exceeding by more than 2% the limit set out in Article 4(2), multiplied by the energy consumption of the ship calculated in accordance with Annex I;

   (b) for two consecutive reporting periods.

3. By 30 April of the ~~year following the~~ reporting ~~period~~**year**, the company shall record the advance compliance surplus, following approval by its verifier, in the ~~compliance~~**FuelEU** database.

4. When a ship does not have any port call in the Union during the reporting period and has borrowed an advance compliance surplus in the previous reporting period, the competent authority of the administering State shall notify by 1 June of the reporting year to the company the amount of the [FuelEU] penalty mentioned in Article 20(1bis) initially avoided by means of borrowing this advance compliance surplus, multiplied by 1.1.

Article 18

Pooling of compliance

1. The compliance balances **for greenhouse gas intensity as referred to in Article 4(2) and, if applicable, the subtarget for fuels of non-biological origin referred to in Article 4a(3)** of two or more ships, ~~which are verified by the same verifier~~**as calculated in application of Article 15(2)**, may be pooled for the purposes of fulfilling the requirements of Article 4 **and, if applicable, Article 4a(3)**. A ship's compliance balance may not be included in more than one pool in the same reporting period.

Two separate pools may be used for greenhouse gas intensity target and for the subtarget for fuels of non-biological origin.

2. ~~By 30 March of the year following the reporting period~~**To that end**, the company shall notify ~~to the verifier~~**in the FuelEU database** the intention of including the ship's compliance balance in a pool ~~for the immediately preceding reporting period. In the case where the ships participating in~~**, the allocation of the total compliance balance of** the pool ~~are controlled by two or more companies, the companies shall make a joint notification to the verifier~~**to each individual ship, and the choice of the verifier selected for verifying this allocation**.

2bis. In the case where the ships participating in the pool are controlled by two or more companies, the notification, including the allocation of the total compliance balance of the pool to its ships and the choice of the verifier selected for verifying the allocation of the total compliance balance of the pool to each individual ship, shall be accepted by all the companies concerned in the FuelEU database.

3. ~~By 30 April of the year following the reporting period, the pool shall be recorded in the~~**A pool is valid only if the total pooled compliance is positive, if ships which had a compliance deficit as calculated in application of Article 15(2) do not have a higher** compliance ~~database by the verifier. The composition of the pool shall not change~~**deficit after the allocation of the pooled compliance and if ships which had a compliance surplus as calculated in application of Article 15(2) do not have a compliance deficit** after ~~that date~~**the allocation of the pooled compliance**.

4. ~~In case of pooled compliance under paragraph 1 of this Article, and for the purposes of Article 15(2)(b), the company may decide how to allocate the total compliance balance of the pool to each individual ship, provided that the total pool compliance balance is respected. In case where the ships participating in the pool are controlled by two or more companies, the total compliance balance of the pool shall be allocated in accordance~~**A ship shall not be included in a pool if it does not comply** with the ~~method specified in the joint notification~~**obligation set out in Article 22**.

5. If the ~~pool average~~**total pooled** compliance balance results in ~~the~~**a** compliance surplus for an individual ship, Article 17(1) applies.

6. Article 17(2) does not apply to a ship participating in the pool.

7. ~~The company may no longer include the ship's compliance balance in a pool once the FuelEU certificate of~~ **By 30 April of the reporting year, the selected verifier shall record in the FuelEU database the definitive composition of the pool and allocation of the total pooled** compliance ~~has been issued~~**balance to each individual ship**.

Article 19

*FuelEU ~~certificate~~**document** of* compliance

1. By 30 June of the ~~year following the~~ reporting ~~period~~**year**, the verifier shall issue a FuelEU ~~certificate~~**document** of compliance for the ship concerned, provided that the ship does not have a compliance deficit, after possible application of Articles 17 and 18, ~~and~~ does not have non-compliant port calls **and complies with the obligation set out in Article 22**.

1bis. Where FuelEU penalties pursuant to Article 20(1bis) or Article 20(2bis) are due, the competent authority of the administering State shall, by 30 June of the reporting year, issue a FuelEU document of compliance for the ship concerned, provided that an amount equal to the FuelEU penalties has been paid.

2. The FuelEU ~~certificate~~**document** of compliance shall include the following information:

(a) identity of the ship (name, IMO identification number and port of registry or home port);

(b) name, address and principal place of business of the ship-owner;

(c) identity of the verifier;

(d) date of issue of this ~~certificate~~**document**, its period of validity and the reporting period it refers to.

3. The FuelEU ~~certificate~~**document** of compliance shall be valid for ~~the~~**a** period of 18 months after the end of the reporting period**, or expire if a new document is issued in the meantime**.

4. The verifier ~~shall inform the Commission and the flag~~**or where applicable the competent authority of the administering** State~~,~~ **shall record in the FuelEU database** without delay, ~~of~~ the ~~issuance of any~~ **issued** FuelEU ~~certificate~~**document** of compliance.

5. The Commission shall adopt implementing acts establishing models for the FuelEU ~~certificate~~**document** of compliance, including electronic ~~models~~**templates** . Those implementing acts shall be adopted in accordance with the advisory procedure referred to in Article 27(2).

Article 20

~~***FuelEU***~~ ***FuelEU*** penalties

1. ~~Where on~~**Before** 1 May of the **reporting year on the basis of the calculation undertaken pursuant to Article 15(2) and after application of Articles 17 and 18, where applicable,** ~~year following the reporting period the ship has a compliance deficit, the company shall pay a penalty.~~ the verifier shall ~~calculate the amount of the penalty on the basis~~**record in the FuelEU database the verified compliance balances** of the ~~formula specified Annex V~~**ship for greenhouse gas intensity as referred to in Articles 4(2) and, if applicable, for the subtarget for fuels of non-biological origin, as referred to in Article 4a(3)**.

In case a ship has a compliance deficit for the subtarget for fuels of non-biological origin, as referred to in Article 4a(3), the FuelEU penalty shall be calculated in accordance with the formula specified in Annex [III].

1bis. The administering State in respect of a company shall ensure that, for any of its ships having a compliance deficit for greenhouse gas intensity as referred to in Articles 4(2) or, if applicable, for the subtarget for fuels of non-biological origin, as referred to in Article 4a(3) on 1 June of the reporting year, after a possible validation by their competent authority, the company shall pay by 30 June of the reporting year an amount equal to the FuelEU penalty resulting from the application of the formulas specified in Annex III] Part B. When a ship has a compliance deficit for two consecutive reporting periods or more, that amount shall be multiplied by 1 + (n -1)/10, where n is the number of consecutive reporting periods for which the company is subject to a FuelEU penalty for this ship.

1ter. The administering State in respect of a company shall ensure that, for any of its ships which is in the situation referred to in Article 17(4), the company shall pay by 30 June of the reporting year an amount equal to the FuelEU penalty notified pursuant to that Article.

2. ~~The company shall pay a penalty for each non-compliant port call. The verifier shall calculate the amount of the penalty by multiplying the amount of EUR 250 by megawatts of power installed on-board and~~**Before 1 May of the reporting year, where applicable on the basis of the calculation undertaken pursuant to Article 15(2), the verifier shall record in the FuelEU database the total number of hours spent moored at the quayside** by the ~~number of completed hours spent at berths~~**ship in non-compliance with the requirements set in Article 5**.

2bis. The administering State in respect of a company shall ensure that for any of its ships which made at least one non-compliant port call, after a possible validation by their competent authority, the company shall pay by 30 June of the reporting year an amount equal to the FuelEU penalty resulting from the multiplication of EUR 1.5 by the established total electrical power demand of the ship at berth and by the total number of rounded-up hours spent at berth in non-compliance with the requirements set in Article 5.

2ter. Member States shall have the necessary legal and administrative framework in place at national level to ensure the fulfilment of the obligations concerning the imposition, payment and collection of the FuelEU penalties provided for in this Regulation.

3. ~~Notwithstanding Article 19(1), the verifier shall issue a FuelEU certificate of compliance once the penalties referred to in paragraphs 1 and 2 of this Article have been paid.~~ The actions referred to in this Article as well as the proof of the ~~financial~~ payments ~~in accordance with Article 21~~ shall be recorded **without delay** in the FuelEU ~~certificate of compliance~~**database by the entities who had performed those actions**.

3bis. The company shall remain responsible for the payment of the FuelEU penalties, without prejudice to the possibility to conclude contractual agreements with the commercial operators of the ship that foresee the liability of the latter to reimburse the company for the payment of the FuelEU penalties referred to in this Article, when the responsibility for the purchase of the fuel or the operation of the ship is assumed by the commercial operator. For the purposes of this paragraph, operation of the ship shall mean determining the cargo carried, the route and the speed of the ship.

3ter. The company shall remain responsible for the payment of the FuelEU penalties, without prejudice to the possibility to conclude contractual agreements with fuel suppliers that foresee the liability of the latter to reimburse the company for the payment of the FuelEU penalties referred to in this Article.

4. The Commission is empowered to adopt delegated acts in accordance with Article 26 to amend Annex ~~V~~[**III]** ~~V~~ in order to adapt the **factor defined in cells 7 and, where applicable, cell 14 of the table in Part B of that Annex and used in the** formula referred to in paragraph 1 of this Article, ~~and to amend the amount of the fixed penalty~~**based on the developments in the cost of energy, and to amend the numerical factor** laid down in paragraph ~~2~~**2bis** of this Article, ~~taking into account the developments in the~~ **based on the indexation of the average** cost of ~~energy~~**electricity in the Union**.

5. Member States ~~should~~ shall endeavour to ensure that the revenues generated from FuelEU penalties, or the equivalent in financial value of those revenues, are used to support the rapid deployment and use of renewable and low carbon fuels in the maritime sector, by stimulating the production of greater quantities of renewable and low carbon fuels for the maritime sector, facilitating the construction of appropriate bunkering facilities or electric connection ports in ports, and supporting the development, testing and deployment of the most innovative technologies in the fleet to achieve significant emission reductions.

Member States shall by 30 June 2030, and every five years thereafter, make public a report on the use of revenues generated from the Fuel EU penalties over the five-year period preceding the year of such report, including information on the beneficiaries and the level of expenditure concerning the objectives listed in the first subparagraph.

Article *22*

*Obligation to ~~carry~~**hold** a* valid *FuelEU ~~certificate~~**document** of compliance ~~on-board~~*

1. **By 30 June of the reporting year,** the ships calling at a port under the jurisdiction of a Member State**, arriving at, within or departing from a port under the jurisdiction of a Member State*, and which have carried out voyages during that reporting period, shall hold** ~~shall carry on-board~~ a valid FuelEU ~~certificate~~**document** of compliance.

2. The Fuel EU ~~certificate~~**document** of compliance issued for the ship concerned in accordance with Article 19 shall constitute evidence of compliance with this Regulation.

Article 23

Enforcement

1. Member States shall lay down the rules on sanctions applicable to infringements of this Regulation and shall take all measures necessary to ensure that they are implemented. The sanctions provided for must be effective, proportionate and dissuasive. Member States shall notify those provisions to the Commission by [dd/mm/20xx], and shall notify to the Commission without delay any subsequent amendments.

2. Each Member State shall ensure that any inspection of a ship in a port under its jurisdiction carried out in accordance with Directive 2009/16/EC includes checking that **the ship holds** a valid FuelEU ~~certificate~~**document** of compliance. ~~is carried on board~~.

3. Where a ship has failed to present a valid FuelEU ~~certificate~~**document** of compliance for two or more consecutive reporting periods and where other enforcement measures have failed to ensure compliance, the competent authority of the Member State of the port of call may, **in respect of a ship not flying the flag of that Member State and** after giving the opportunity to the company concerned to submit its observations, issue an expulsion order. **In case** the competent authority of the Member State ~~shall notify the~~ **of the port of call decides to issue an** expulsion order**, it shall notify it** to the Commission, the other Member States and the flag State concerned **through the FuelEU database**. Every Member State, with the exception of any Member State whose flag the ship is flying, shall refuse entry of the ship which is subject to the expulsion order into any of its ports until the company fulfils its obligations. Where the ship flies the flag of a Member State **and enters one of its ports or is found with such failure while in one of its ports**, the Member State concerned shall, after giving the opportunity to the company concerned to submit its observations, order a flag detention until the company fulfils its obligations.

4. The fulfilment of those obligations shall be confirmed by the notification of a valid FuelEU ~~certificate~~**document** of compliance to the competent national authority which issued the expulsion order. This paragraph shall be without prejudice to the provisions of international law applicable in the case of ships in distress.

5. Sanctions against a specified ship by any Member State shall be notified to the Commission, to the other Member States and to the flag State concerned **through the FuelEU database**.

Article 24

Right to review

1. The companies shall be entitled to apply for a review of the calculations and measures addressed to them by the verifier under this Regulation, including the refusal to issue a FuelEU ~~certificate~~**document** of compliance pursuant to Article 19(1). **The application for review shall be lodged, within one month of the notification of the result of calculation or of the measure by the verifier, with the competent authority of the Member State in which the verifier has been accredited.**

3. The decisions taken under this Regulation by the ~~managing body of the port~~**competent authority of a Member State** shall be subject to ~~judicial~~ review **by a court of the Member State of that competent authority**

Article 25

Competent authorities

Member States shall designate one or more competent authorities as responsible for the application and enforcement of this Regulation ('competent authorities'). They shall communicate their names and contact information to the Commission. The Commission shall publish on its website the list of competent authorities.

CHAPTER VI

DELEGATED AND IMPLEMENTING POWERS AND FINAL PROVISIONS

Article 26

Exercise of delegation

1. The power to adopt delegated acts is conferred on the Commission subject to the conditions laid down in this Article.

2. The power to adopt delegated acts referred to in Articles ~~4(6), 5(4), 9(3), 13(3), 20(4), and 21(3)~~ **4(4), 9(4), and 20(4)** shall be conferred on the Commission for an indeterminate period of time from [date of entry into force of this Regulation].

3. The delegation of power referred to in Articles ~~4(7), 5(4), 9(3), 13(3), 20(4)~~**4(4), 9(4)**, ~~and 21(3)~~ **and 20(4)** may be revoked at any time by the European Parliament or by the Council. A decision to revoke shall put an end to the delegation of the power specified in that decision. It shall take effect the day following the publication of the decision in the ***Official Journal of the European Union***~~Official Journal of the European Union~~ or at a later date specified therein. It shall not affect the validity of any delegated acts already in force.

4. Before adopting a delegated act, the Commission shall consult experts designated by each Member State in accordance with the principles laid down in the Interinstitutional Agreement on Better Law-Making of 13 April 2016.

5. As soon as it adopts a delegated act, the Commission shall notify it simultaneously to the European Parliament and to the Council.

6. A delegated act adopted pursuant to Articles ~~4(7), 5(4), 9(3), 13(3), 20(4), and 21(3)~~**4(4), 9(4), and 20(4)** shall enter into force only if no objection has been expressed either by the European Parliament or by the Council within a period of two months of notification of that act to the European Parliament and the Council or if, before the expiry of that period, the European Parliament and the Council have both informed the Commission that they will not object. That period shall be extended by two months at the initiative of the European Parliament or of the Council.

Article 27

Committee procedure

1. The Commission shall be assisted by the Committee on Safe Seas and the Prevention of Pollution from ships (COSS) established by Regulation (EC) 2099/2002 of the European Parliament and of the Council[27]. That committee shall be a committee within the meaning of Regulation (EU) No 182/2011.

2. Where reference is made to this paragraph, Article 4 of Regulation (EU) No 182/2011 shall apply. ~~Where the opinion of the Committee is to be obtained by written procedure, that procedure shall be terminated without result when, within the time-limit for delivery of the opinion, the chair of the committee so decides~~

3. Where reference is made to this paragraph, Article 5 of Regulation (EU) No 182/2011 shall apply. Where the committee delivers no opinion, the Commission shall not adopt the draft implementing act and the third subparagraph of Article 5(4) of Regulation (EU) No 182/2011 shall apply.

Article 28

Report and review

0. Within one year after the publication of this Regulation, the Commission shall present a report to the <u>European</u> Parliament and to the Council examining the interaction and convergence ~~consistency and possible duplication~~ between this Regulation and Regulation (EU) 2015/757 or any other sectorial legislation. Where appropriate, the report may be accompanied by a legislative proposal.

[27] Regulation (EC) No 2099/2002 of the European Parliament and of the Council of 5 November 2002 establishing a Committee on Safe Seas and the Prevention of Pollution from Ships (COSS) and amending the Regulations on maritime safety and the prevention of pollution from ships (OJ L 324, 29.11.2002, p. 1).

1. The Commission shall report to the European Parliament and the Council, by 31 December 2027, and every five years thereafter at the latest, the results of an evaluation on the functioning of this Regulation, including possible impacts affecting market distortions or port evasion, on the evolution of the technologies and market for renewable and low-carbon fuels, zero-emission technologies in maritime transport and on-shore power supply including at anchorage, the use of the revenues generated by the FuelEU penalties, and of its impact on the competitiveness of the maritime sector in the Union. In this report, the Commission shall consider, *inter alia* ~~possible amendments including but not limited to~~:

(0) the material and geographical scope of this Regulation, as regards decreasing the gross tonnage threshold referred to in Article 2(1) [28]*;* **or expanding the share of energy used by ships in voyage to and from third countries referred to in Article 2 point (c);**

(a) the limit referred to in Article 4(2), with the view to fulfilling the objectives set out in Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality;

(b) the ship types and size to which Article 5(1) applies and an extension of the obligations referred to in Article 5(1) to ships at anchorage;

(c) the exceptions listed in Article 5(3);

(d) the counting of the electricity delivered via on-shore power supply in Annex I and the well-to-tank emission factor associated to this electricity defined in Annex II;

(e) the possibility to include dedicated mechanisms for the most sustainable and innovative fuel technologies with a significant decarbonisation potential, in order to create a clear and predictable legal framework and encourage the market development and deployment of such fuel technologies;

[28] The explicit reference to "**400 GT**" has been hereby added upon EP's specific request but the Presidency suggests not to include it.

(f) the calculation of the compliance balance for ships requesting to exclude the additional energy due to sailing in ice conditions ~~and/or due to their ice-class~~ set out in Annexes [III] and [IV], and the possible prolongation of these provisions after 31 December 2034;

(ff) the possibility to include energy provided by wind in the calculation of the greenhouse gas intensity of the energy used onboard set out in Annex I, subject to the availability of a verifiable method for monitoring and accounting wind propulsion energy;

ffa) the possibility to include new greenhouse gas abatement technologies, such as on-board carbon capture, in the calculation of the greenhouse gas intensity of the energy used onboard set out in Annex I, subject to the availability of a verifiable method for monitoring and accounting the captured carbon;

ffb) the possibility to cover additional elements in this Regulation, in particular black carbon emissions;

ffc) the need for measures to address attempts by companies to evade the requirements of this Regulation.

The Commission shall consider, if appropriate, whether to accompany this report by a proposal to amend this Regulation.

2. In the event of the adoption by the International Maritime Organization of a global GHG fuel standard or global greenhouse gas intensity limits for the energy used onboard by ships, ~~for~~ maritime ~~transport,~~, the Commission shall, without delay, present a report to the European Parliament and to the Council. The Commission shall in that report examine that global measure as regards its ambition in light of the objectives of the Paris Agreement and its overall environmental integrity. It shall also examine any issue related to the possible articulation or alignment of this Regulation with that measure, including the need to avoid duplicating regulation of greenhouse gas emissions from maritime transport at Union as well as international level. Where appropriate, the report may be accompanied by a legislative proposal to amend this Regulation, consistent with the Union economy-wide greenhouse gas emission commitments, and with the aim of preserving the environmental integrity and effectiveness of the Union climate action.

2a. The Commission shall include in the report provided for in point (1) an evaluation of the social impacts of this Regulation in the maritime sector, including on its workforce.

2aa. In the report provided for in paragraph 1 the Commission should assess the extent to which the implementation of the Regulation has met its objectives and to which extent it has impacted the competitiveness of the maritime sector. The Commission's report should also refer to its interaction with other relevant legislative acts, identifying provisions that may be updated and simplified, as well as actions and measures that have been or could be taken to reduce the total cost pressure on the maritime sector. The report shall also assess the burden incurred by businesses, as a part of the analysis of the efficiency of this Regulation.

The Commission shall consider, if appropriate, whether to accompany this report by a proposal to amend this Regulation, in view of the outcome of the abovementioned assessment.

2b. The Commission shall monitor the implementation of this Regulation in relation to maritime transport, in particular to detect evasive behaviour in order to prevent this at an early stage and including consideration of outermost regions.

The monitoring results shall be reflected in the biannual report referred to in Article 1, first paragraph, point (6), introductory part, amending provision, numbered paragraph (2) of Article 3ge of Directive (…) of the European Parliament and of Council amending Directive 2003/87/EC [ETS].

Article 29

Amendments to Directive 2009/16/EC

The following point shall be added to the list set out in Annex IV to Directive 2009/16/EC: '51. The FuelEU ~~certificate~~**document** of compliance issued under Regulation (EU) xxxx on the use of renewable and low-carbon fuels in maritime transport'.

Article 30

Entry into force

This Regulation shall enter into force on the twentieth day following that of its publication in the ***Official Journal of the European Union***~~Official Journal of the European Union~~. It shall apply from 1 January 2025**, with the exception of Articles 7 and 8 that shall apply from 31 August 2024**.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels,

For the European Parliament	For the Council
The President	The President

Annex I

METHODOLOGY FOR ESTABLISHING THE GREENHOUSE GAS INTENSITY ~~LIMIT~~ O~~N~~**F** THE ENERGY USED ON-BOARD BY A SHIP

For the purpose of calculating the greenhouse gas intensity ~~limit~~ of the energy used on-board **by** a ship, the following formula, referred to as Equation (1) shall apply:

$GHG\ intensity\ \left[\frac{gCO2eq}{MJ}\right] = f_{wind} \times (WtT + TtW)$ **Equation (1)**	
WtT	$\frac{\sum_i^{n\ fuel} M_i \times CO_{2eq\ WtT,i} \times LCV_i + \sum_k^c E_k \times CO_{2eq\ electricity,k}}{\sum_i^{n\ fuel} M_i \times LCV_i \times RWD_i + \sum_k^c E_k}$
TtW	$\frac{\sum_i^{n\ fuel} \sum_j^{m\ engine} M_{i,j} \times [\left(1 - \frac{1}{100} C_{\sout{engine}\ slip\ j}\right) \times (CO_{2eq,TtW,i,j}) + (\frac{1}{100} C_{\sout{engine}\ slip\ j} \times CO_{2eq\ TtW,slip\sout{page},i,j})]}{\sum_i^{n\ fuel} M_i \times LCV_i \times RWDi + \sum_k^c E_k}$
f_{wind}	Reward factor for wind assisted propulsion

Where the different terms and notations used are presented in the table below:

Term	Explanation
i	Index corresponding to the fuel types delivered to the ship in the **reporting** ~~reference~~ period
j	Index corresponding to the fuel **consumer** ~~combustion~~ units on board the ship. For the purpose of this Regulation the **fuel consumer** units considered are the main engine(s), auxiliary engine(s)**,** ~~and fired oil~~ boilers**, fuel cells and waste incinerators**
k	Index corresponding to the **on-shore power supply connection points** ~~**electrical charging** connection points (*c*) where electricity is supplied per connection point~~.
n	**Total number of fuel types delivered to the ship in the reporting period**
c	**Total number of on-shore power supply connection points** ~~Index corresponding to the number of electrical charging points~~
m	**Total number of fuel consumer units** ~~Index corresponding to the number of energy **fuel** consumers~~
$M_{i,j}$	Mass of ~~the specific~~ fuel *i* ~~oxidised in~~ **consumed by fuel** consumer **unit** *j* [gFuel]
E_k	Electricity delivered to the ship *per* ~~**electrical charging** connection~~ **on-shore power supply connection** point *k* ~~if more than one~~ [MJ]
$CO_{2eqWtT,i}$	WtT GHG emission factor of fuel *i* [gCO_{2eq}/MJ]
$CO_{2eq\ electricity,k}$	WtT GHG emission factor associated to the electricity delivered to the ship at berth *per* ~~**electrical charging** connection~~ **on-shore power supply connection** point *k* [gCO_{2eq}/MJ]
LCV_i	Lower Calorific Value of fuel *i* [MJ/gFuel]
$RWDi$	**In the case the fuel *i* of non-biological origin, a reward factor of 2 *from 1 January 2025 to 31 December 2033* can be applied. Otherwise $RWD_i = 1$.**
$C_{slip\ j}$	~~**E**ngine **F**fuel slippage (~~**N**on-combusted fuel~~)~~ coefficient as a percentage of the mass of the fuel *i* **consumed** ~~used~~ by ~~combustion~~ **fuel consumer** unit *j* [%]. **C_{slip} includes fugitive ~~emissions (emissions before the "engine")~~ and slipped emissions**~~.~~

$C_{fCO_{2i,j}}, C_{fCH_{4,i,j}}, C_{fN_2O_{,i,j}}$	TtW GHG emission factors by combusted fuel *i* in **fuel consumer** ~~combustion~~ unit *j* [gGHG/gFuel]
$CO_{2eq,TtWi,j}$	TtW CO_2 equivalent emissions of combusted fuel *i* in **fuel consumer** ~~combustion~~ unit *j* [gCO_2eq/gFuel] $CO_{2eq,TtWi,j} = \left(C_{cfCO_2,j} \times GWP_{CO_2} + C_{cfCH_{4,j}} \times GWP_{CH_4} + C_{cfN_2O_{,j}} \times GWP_{N_2O}\right)_i$ Equation (2)
$C_{sfCO_{2i,j}}, C_{sfCH_{4,i,j}}, C_{sfN_2O_{,i,j}}$	TtW GHG emission factors by slipped fuel *i* towards ~~combustion~~ **fuel consumer** unit *j* [gGHG/gFuel]
$CO_{2eq,TtWslipi,j}$	TtW CO_2 equivalent emissions of slipped fuel *i* towards **fuel consumer** ~~combustion~~ unit *j* [gCO_2eq/gFuel] $CO_{2eq,TtWslip_{i,j}} = \left(C_{sfCO_2,j} \times GWP_{CO_2} + C_{sfCH_4j} \times GWP_{CH_4} + C_{sfN_2O,j} \times GWP_{N_2O}\right)_i$ **Where: $C_{sf\,CO2,}$ and $C_{sf\,N2O,}$ are set to zero.**
$GWP_{CO_2}, GWP_{CH_4,}$ GWP_{N_2O}	CO_2, CH_4, N_2O Global Warming Potential over 100 years**, which are:** ~~$GWP_{CO_2} = 1$; $GWP_{CH_4} = 29{,}8$; $GWP_{N_2O} = 273$~~**defined in Directive (EU) 2018/2001, Paragraph 4 of Part C of Annex V**

~~In the case of fossil fuels, the default values in Annex II shall be used.~~

For the purpose of this regulation the term $\sum_k^c E_k \times CO_{2eq\,electricity,k}$ in the numerator of Equation (1) shall be set to zero.

Method for determining [M_i]

The [M_i] mass of fuel shall be determined using the amount reported in accordance with the framework of the reporting under Regulation (EU) 2015/757 for voyages falling within the scope of this Regulation based on the chosen monitoring methodology by the company.

Method for determining WtT GHG emission factors

The WtT emissions are determined on the basis of the methodology contained in this Annex as provided in Equation (1).

The WtT GHG emission factors ($CO_{2eqWtT,i}$) defalt values are contained in Annex II.

In the case of fossil fuels, only the default values in Annex II shall be used.

Actual values may be used provided that they are certified, under a scheme that is recognised by the Commission in accordance with Article 30(5) and (6) of the Directive (EU) 2018/2001 for biofuels, biogas, renewable fuels of non-biological origin and recycled carbon fuels, or, where applicable, the relevant provisions of Union legislation for the internal markets in renewable and natural gases and in hydrogen, in application of Article 9(3).

~~For non-fossil fuels, wherever values different from the default values in Annex II are used, these shall be based on relevant Bunker Delivery Notes (BDNs), for the fuels delivered to the ship in the reference period, for at least equal quantities of fuels as the one determined as being consumed in scope of the regulated journey in accordance with point A.~~

~~The WtT GHG ($CO_{2eqWtT,i}$) of the fuels (which are not fossils fuels) are established in Directive (EU) 2018/2001. The actual values, contained in the Directive that shall be used for the purpose of~~

~~this Regulation, in accordance with the methodology, are those without combustion[29]. For those fuels for which pathways are not included in the Directive and for fossil fuels, the WtT GHG emission factors ($CO_{2eqWtT,i}$) default values are contained in Annex II.~~

Fuel Bunker Delivery Note (BDN)

Under existing MARPOL Annex VI regulations, the BDN is mandatory and information to be included in the bunker delivery note is specified.

For the purposes of this regulation:

1) BDNs including fuels other than fossil fuels used on board shall be complemented with the following information regarding those fuels:

- **Lower Calorific Value [MJ/g].**
- **For biofuels, *E* values as established in accordance with the methodologies laid down in Directive (EU) 2018/2001, Part C of Annex V and Part B of Annex VI [gCO2eq/MJ] and related evidence of compliance with the rules set out in that Directive for those fuels, identifying the fuel production pathway,**
- **For fuels other than fossil fuels and biofuels, WtT GHG emission factor CO2eq [gCO2eq/gFuelMJ] and related certificate identifying the fuel production pathway,**

2. [In case of product blending, information required by this regulation shall be given for each product].

~~BDN~~ Electricity Delivery Note (EDN)

For the purposes of this regulation, relevant **E~~B~~**DNs for electricity delivered to the ship shall contain at least the following information:

1. supplier: name, address, telephone, email, representative
2. receiving ship: IMO number (MMSI), ship name, ship type, flag, ship representative
3. port: name, location (LOCODE), terminal/ berth
4. **on-shore power supply connection** ~~connection **electrical charging**~~ point: ~~OPS-SSE connection point,~~ connection point details
5. **on-shore power supply** ~~connection electrical charging~~ time: date/time of commencement/finalisation
6. energy supplied: power fraction allocated to supply point (if applicable) [kW], electricity consumption (kWh) for the billing period, peak power information (if available)
7. metering

~~[29] Reference is made to Directive (EU) 2018/2001, Annex V.C.1.(a) to the term e_u 'emissions from the fuel in use'~~

Method for determining TtW GHG <u>emission</u> factors

The TtW emissions are determined on the basis of the methodology contained in this Annex as provided in Equation (1) and Equation (2)

<u>The TtW GHG emission factors ($CO_{2eq,TtW,j}$) default values are contained in Annex II.</u>

<u>In accordance with its monitoring plan referred to in Article 7 and upon assessment by the verifier, other methods, such as direct CO_{2eq} measurement, laboratory testing, may be used if it enhances the overall accuracy of the calculation, in application of Article 9(4).</u>

~~For the purpose of this Regulation, the TtW GHG emission factors ($CO_{2eq,TtW,j}$) that shall be used to determine the GHG emissions are contained in Annex II. The CO_2 C_f factors shall be the ones established in Regulation (EU) 2015/757 and are reported in the Table for easy reference. For fuels whose factors are not included in the said regulation, default factors as contained in Annex II shall be used.~~

~~In accordance with its compliance plan referred to in Article 6 **<u>7</u>**and upon assessment by the verifier, other methods, such as direct CO_{2eq} measurement, laboratory testing, may be used if it enhances the overall accuracy of the calculation.~~

Method for determining TtW fugitive <u>and slipped</u> emissions

Fugitive **<u>and slipped</u>** emissions are emissions caused by the amount of fuel that does not reach the combustion chamber of the combustion unit or that is not consumed by the ~~energy converter~~ **<u>fuel consumer unit</u>** because they are un-combusted, vented, or leaked from the system. For the purpose of this Regulation, fugitive **<u>and slipped</u>** emissions are taken into account as a percentage of the mass of the fuel used by the **<u>fuel consumer unit</u>** ~~engine~~. The default values are contained in Annex II.

Methods for determining the reward factors linked to <u>wind assisted propulsion</u> ~~substitute sources of energy~~

In case **<u>wind assisted propulsion is</u>** ~~substitute sources of energy are~~ installed on board, a reward factor ~~for substitute sources of energy~~ can be applied, ~~. In case of wind power such reward factor is~~ determined as follow:

Reward factor for wind assisted propulsion - WIND (f_{wind})	$\frac{P_{Wind}}{P_{Prop}}$
0,99	0,**<u>05</u>**~~1~~
0,97	0,**<u>1</u>**~~2~~
0,95	⩾ 0,**<u>15</u>**~~3~~

<u>Where:</u>

- **<u>P_{Wind} is the available effective power of the wind assisted propulsion systems and corresponds to f_{eff} * P_{eff} as calculated in accordance with the *2021 ~~guidelines~~ guidance on treatment of innovative energy efficiency technologies for calculation and verification of the attained EEDI and EEXI* (MEPC.1/Circ.896);</u>**
- **<u>P_{Prop} is the propulsion power of the ship and corresponds to P_{ME} as defined in the *2018 guidelines on the method of calculation of the attained energy efficiency design index (EEDI) for new ships* (IMO resolution MEPC.308(73), as amended) and the *2021 guidelines on the method of calculation of the attained energy efficiency existing ships index (EEXI)* (IMO resolution MEPC.333(76)). In case where shaft motor(s) are installed, $P_{Prop} = P_{ME} + P_{PTI(i),shaft}$.</u>**

The ship GHG intensity index is then calculated by multiplying the result of Equation (1) by the reward factor.

Annex II

DEFAULT EMISSION FACTORS

The default emissions factors contained in the table below shall be used for the determination of the greenhouse gas intensity index referred to in Annex I of this Regulation, except when companies divert from these default emissions factors in application of Article 9(3) and (4).

~~The emissions factors for fossils fuels contained in this Annex shall be used for the determination of the greenhouse gas intensity index referred to in Annex I of this Regulation.~~

~~The emissions factors of biofuels, biogas, renewable fuels of non-biological origin and recycled carbon fuels shall be determined according to the methodologies set out in Annex 5 part C of Directive (EU) 2018/2001.~~

In the table:

- TBM stands for To Be Measured
- N/A stands for Not Available
- The dash means not applicable
- **E is established in accordance with the methodologies laid down in Directive (EU) 2018/2001, Part C of Annex V and Part B of Annex VI**

Where a cell indicates either TBM or N/A, unless a value is demonstrated in accordance with the provisions of Article 9, the highest default value of the fuel class in the same column shall be used.

Where, for a particular fuel class, all cells in the same column indicate either TBM or N/A, unless a value is demonstrated in accordance with the provisions of Article 9, default value of the least favourable fossil fuel pathway shall be used.

~~Table 1 – Default factors~~

1	2	3	4	5	6	7	8	9
			WtT	TtW				
Fuel Class/ ~~Feedstock~~	**Pathway name**	LCV $\left[\frac{MJ}{g}\right]$	$CO_{2eq\,WtT}$ $\left[\frac{gCO2eq}{MJ}\right]$	**~~Energy Converter~~ Fuel Consumer Unit Class**	$C_{f\,co_2}$ $\left[\frac{gCO2}{gFuel}\right]$	$C_{f\,CH_4}$ $\left[\frac{gCH_4}{gFuel}\right]$	$C_{f\,N_2O}$ $\left[\frac{gN_2O}{gFuel}\right]$	C_{slip} As % of the mass of the fuel used by the engine
Fossil	HFO ISO 8217 Grades RME to RMK	0,0405	13,5	ALL ICEs ~~Gas Turbine Steam Turbines and Boilers Aux Engines~~	3,114 ~~MEPC245 (66) Regulation (EU) 2015/757~~	0,00005	0,00018	-
	LSFO	0,0405	13,2 crude 13,7 blend	ALL ICEs ~~Gas Turbine Steam Turbines and Boilers Aux Engines~~	3,1**5**1	0,00005	0,00018	-
	ULSFO	0,0405	13,2	ALL ICEs	3,114	0,00005	0,00018	-

1	2	3	4	5	6	7	8	9
			WtT	**TtW**				
Fossil	VLSFO	0,041	13,2	ALL ICEs	3,206 ~~MEPC245 (66) MRV Regulation~~	0,00005	0,00018	-
	LFO ISO 8217 Grades RMA to RMD	0,041	13,2	ALL ICEs	3,151 ~~MEPC245 (66) Regulation (EU) 2015/757~~	0,00005	0,00018	-
	MDO MGO ISO 8217 Grades DMX to DMB	0,0427	14,4	ALL ICEs	3,206 ~~MEPC245 (66) Regulation (EU) 2015/757~~	0,00005	0,00018	-
	LNG	0,0491	18.5 ~~20.9~~	LNG Otto (dual fuel medium speed)	2,75**05** ~~MEPC245 (66) Regulation (EU) 2015/757~~	0	0,00011	3,1
				LNG Otto (dual fuel slow speed)				1,7
				LNG Diesel (dual fuel slow speed)				0~~,~~.2
				LBSI				~~N/A~~ **2.6**[30]
	LPG	0,046	7,8	A**LL**~~I~~ ICEs	3,03**0** Buthane 3,00**0** Propane ~~MEPC245 (66) Regulation (EU) 2015/757~~	TBM	TBM	**N/A**
	H2 (natural gas)	0,12	132	Fuel Cells	0	0	-	~~-~~**N/A**
				ICE	0	0	TBM	
	NH3 (natural gas)	0,0186	121	Fuel Cells	0	0	TBM	-
				ICE				
	Methanol (natural gas)	0,0199	31,3	A**LL**~~I~~ ICEs	1,375 ~~MEPC245 (66) Regulation (EU) 2015/757~~	TBM	TBM	-

[30] Figure extracted from the fourth IMO Greenhouse Gas Study: Fourth IMO GHG Study 2020 - Full report and annexes.pdf.

1	2	3	4	5	6	7	8	9
			WtT	TtW				
Biofuels	Ethanol **Production Pathways of Directive (EU) 2018/2001** ~~E 100~~	**Value as set out in Annex III of Directive (EU) 2018/2001** ~~0,0268 0,0372 0,044 0,05~~	$\boldsymbol{E - \frac{C_{fco_2}}{LCV}}$ ~~Ref. to Directive (EU) 2018/2001~~	A**LL**~~ll~~ ICEs	1,913 ~~MEPC245 (66) Regulation (EU) 2015/757~~	TBM	TBM	-
	Bio-diesel **Production Pathways of Directive (EU) 2018/2001** ~~Main products / wastes / Feedstock mix~~			ALL ICEs	2,834	~~0,00005~~ TBM	~~0,00018~~ TBM	-
	Hydrotreated Vegetable Oil (HVO**) Production Pathways of Directive (EU) 2018/2001** ~~Main products / wastes / Feedstock mix~~			ALL ICEs	3,115	0,00005	0,00018	-
	Liquefied Bio-~~LNG~~ **methane as transport fuel (Bio-LNG) Production Pathways of Directive (EU) 2018/2001** ~~Main products / wastes / Feedstock mix~~			LNG Otto (dual fuel medium speed)	2,75~~0~~**0**~~5~~ ~~MEPC245 (66), Regulation (EU) 2015/757~~	**0** ~~0,00005~~	**0,00011** ~~0,00018~~	3,1
				LNG Otto (dual fuel slow speed)				1,7
				LNG Diesel (dual fuels)				0.2
				LBSI				N/A
	Bio-methanol Production Pathways of Directive (EU) 2018/2001			**ALL ICEs**	**1,375**	**TBM**	**TBM**	**-**
	Other Production Pathways of Directive (EU) 2018/2001			**ALL ICEs**	**3,115**	**0,00005**	**0,00018**	**-**

1	2	3	4	5	6	7	8	9
			WtT	**TtW**				
	Bio-H2 **Production Pathways of Directive (EU) 2018/2001** ~~Main products / wastes / Feedstock mix~~	**Value as set out in Annex III of Directive (EU) 2018/2001** ~~0,12~~	N/A	Fuel Cells	0	0	0	-
				ICE	0	0	TBM	
Renewable Fuels of Non-Biological Origin (RFNBO)- - e-Fuels	e-diesel	0,0427	**~~N/A~~** Ref. to Directive (EU) 2018/2001)	ALL ICEs	3,206 ~~MEPC245 (66) Regulation (EU) 2015/757~~	0,00005	0,00018	-
	e-methanol	0,0199	**~~N/A~~** Ref. to Directive (EU) 2018/2001)	All ICEs	1,375 ~~MEPC245 (66) Regulation (EU) 2015/757~~	0,00005	0,00018	-
	e-LNG	0,0491	**N/A** Ref. To Directive (EU) 2018/2001)	LNG Otto (dual fuel medium speed)	2,750~~5~~ ~~MEPC245 (66) Regulation (EU) 2015/757~~	0	0,00011	3.1
				LNG Otto (dual fuel slow speed)				1,7
				LNG Diesel (dual fuels)				0.2
				LBSI				N/A
	e-H2	0,12	**~~N/A~~** Ref. to Directive (EU) 2018/2001)	Fuel Cells	0	0	0	-
				ICE	0	0	TBM	
	e-NH3	0,0186	**N/A** ~~0~~	**Fuel Cells** ~~No engine~~	0	N/A	TBM	N/A
				ICE	**0**	**N/A**	**TBM**	**N/A**
	e-LPG	**N/A**	**N/A**		**N/A**	**N/A**	**N/A**	**N/A**
	e-DME	**N/A**	**N/A**		**N/A**	**N/A**	**N/A**	**-**
Others	Electricity	-	~~106,3~~ EU **ENERGY** MIX ~~2020 72 EU ENERGY MIX 2030~~	**On-shore power supply** (OPS)	-	-	-	-

Column 1 identifies the class of the fuels namely Fossils, Liquid Biofuels, Gaseous Biofuels, e-Fuels~~;~~**.**

Column 2 identifies the name or the pathway**s** of the relevant fuels within the class. ~~For the Liquid Biofuels, Gaseous Biofuels, RFNBO (e-Fuels) the values for the WtT section shall be taken from Directive (EU) 2018/2001 (without combustion[31]); for fossils fuels only the default values in the table shall be used.~~

Column 3 contains the Lower Calorific Value of the fuels expressed in [MJ/g]. **For liquid biofuels, values of Energy content by weight (lower calorific value, MJ/kg) as set out in Annex III of Directive (EU) 2018/2001 shall be converted in MJ/g and used.**

Column 4 **contains the WtT GHG emission factors in [gCO_{2eq}/MJ]:**~~;~~

a) **For liquid biofuels, the default values shall be calculated by using the values of *E* established in accordance with the methodologies laid down in Directive (EU) 2018/2001, Part C of Annex V for all liquid biofuels except bio-LNG and Part B of Annex VI for bio-LNG, and on the basis of default values associated to the particular biofuel used as a transport fuel and its production pathway, laid down in that Directive, Part D and E of Annex V for all liquid biofuels except bio-LNG and in Part D of Annex VI for bio-LNG. However, the values of *E* need to be adjusted by subtracting the ratio of the values contained in column 6 ($c_{f\ CO2}$) and column 3 (LCV). This is required in this regulation, which separates the WtT and the TtW calculations, to avoid double counting of emissions;**~~;~~
b) **For RFNBO and other fuels not mentioned under above subparagraph a) to be taken into account for the purpose referred to in Article 4(1) of this Regulation, default values are to be either calculated by using the methodology of the delegated act taken on basis of Article 28(5) of Directive (EU) 2018/2001[32], or, if applicable, in similar methodology if defined under Union legislation for the internal markets in renewable and natural gases and in hydrogen, pursuant to Article 9(1)(1bis).**

~~contains the CO_{2eq} emissions values in [gCO_{2eq}/MJ]. For fossils fuels only the default values in the table shall be used. For all other fuels, (except were expressly indicated), values shall be calculated by using the methodology or the default values as per in Directive (EU) 2018/2001 deducted of the combustion emissions considering full oxidation of the fuel[33].~~

~~**For RFNBO, default values are to be either calculated by using the methodology of the delegated act taken on basis of Article 28(5) of Directive (EU) 2018/2001[34].**~~

~~31 Reference is made to Directive (EU) 2018/2001, Annex V.C.1.(a) to the term e_u 'emissions from the fuel in use';~~

32 **Or on basis of the corresponding provisions in the amended Directive, according to the progress of the co-legislators.**

~~33 Reference is made to Directive (EU) 2018/2001, Annex V.C.1.(a) to the term e_u 'emissions from the fuel in use'~~

34 **Or on basis of the corresponding provisions in the amended Directive, according to the progress of the co-legislators.**

Column 5 identifies the main types/classes of ~~energy converter~~ **fuel consumer unit**s such as 2 and 4 strokes Internal Combustion Engines (ICE) Diesel or Otto cycle, **Lean-Burn Spark-Ignited (LBSI) engines,** ~~gas turbines~~, fuel~~s~~ cells**,** etc.

Column 6 contains the emission factor C_f for CO_2 in [gCO_2/gfuel]. Emission~~s~~ factors values as specified in the Regulation (EU) 2015/757 ~~(or IMO MEPC245 (66) as amended)~~ shall be used. For all those fuels not contained in Regulation (EU) 2015/757, the default values ~~contained~~ **are specified** in the **T**table~~should be used. Values certified by a by a~~**n accredited** ~~trusted certifier (under the relevant provisions made in Directive (EU) 2018/2001) can be used in place of the default values~~.

Column 7 contains the emission factor C_f for methane in [gCH_4/gfuel]. ~~Default values as contained in the table shall be used. Values certified by~~ **~~an accredited certifier~~** ~~mean of testing can be used in place of the default values.~~ For LNG fuels, C_f for methane are set to zero.

Column 8 contains the emission factor C_f for nitrous oxide in [gN_2O/gfuel]. ~~Default values as contained in the table shall be used. Values certified by~~ **~~an accredited certifier~~** ~~mean of testing can be used in place of the default values.~~

Column 9 identifies the part of fuel lost as fugitive **and slipped** emissions (C_{slip}) measure**d** as % of mass of fuel used by the specific ~~energy converter~~ **fuel consumer unit**. ~~Default values as contained in the table shall be used. Values certified by~~ **~~an accredited certifier~~** ~~mean of testing can be used in place of the default values.~~ For fuels such as LNG for which the fugitive **and slipped** emissions ~~(slip)~~ exist~~s~~, the amount of fugitive **and slipped** emissions as presented in **the** Table ~~1~~ is expressed in % of the mass of fuel used (Column 9~~). The values contained in Column 9 shall be used, in accordance with equation (1).~~ The values of C_{slip} in **the** Table ~~(1)~~ are calculated at 50% of the **full** engine load.

Revised Annex III

GENERAL REQUIREMENTS FOR ZERO-EMISSION TECHNOLOGIES

The following non-exhaustive table identifies types of technologies as well as general requirements for their operation to be considered as zero-emission technologies within the meaning of Article 3(g).

Types of technology	General requirements for operation
Fuel cells	Power supplied by on-board fuel cells with a fuel or a system ensuring that, when used to provide energy, it does not release **any emissions mentioned in point g of Article 3** ~~any greenhouse gases or air pollutants~~ into the atmosphere.
On-board Electrical Energy Storage	Power supplied by on-board electrical energy storage systems **previously** charged via: - onboard power generation at sea - ~~on-shore power or~~ **shore side** battery charging - battery swapping
On-board power generation from wind and solar energy	Power supplied by on-board renewable energy sources, either directly supplying to the ship grid or via charging of on-board intermediate Electrical Energy Storage.

Power supplied by on board technologies not identified above that achieve zero emission, in the meaning of Article 3(g), can be added to this table by way of delegated acts in accordance with Article 5(4).

The fulfilling of the general requirements indicated above and in Article 5(4) for other technologies as well as of the detailed criteria for acceptance specified in the implementing acts adopted in accordance with Article 5(4) of this Regulation must be proved by relevant documentation.

Annex III

FORMULAS FOR CALCULATING THE COMPLIANCE BALANCE AND **FUELEU** PENALT**IES** LAID DOWN IN ARTICLE 20(1**bis**)

A. FORMULAS FOR CALCULATING THE SHIP'S COMPLIANCE BALANCE

a) For the purpose of calculating the compliance balance of a ship for **greenhouse gas intensity as referred to in Articles 4(2)** the following formula shall apply:

Compliance balance [gCO_{2eq}~~/MJ~~] =	$(GHGIE_{target} - GHGIE_{actual}) \times [\sum_i^{nfuel} M_i \times LCV_i + \sum_k^c E_k]$

Where:

gCO_{2eq}	Grams of CO_2 equivalent
$GHGIE_{target}$	Greenhouse gas intensity limit of the energy used on-board a ship according to Article 4(2) of this Regulation
$GHGIE_{actual}$	Yearly average of the greenhouse gas intensity of the energy used on-board a ship calculated for the relevant reporting period

For any ship having ice-class IC, IB, IA or IA Super or an equivalent ice class, the company may request, until 31 December 2034, to exclude the additional energy consumption, due to sailing in ice conditions.

For any ship having ~~and/or due to~~ ice-class IA or IA Super or an equivalent ice class, the company may request to exclude the additional energy consumption, due to the technical characteristics of the ship.

For both cases, the calculation of the compliance balance above, the values of M_i shall be replaced by the adjusted mass of fuel M_{iA} defined in Annex IV and the value of $GHGIE_{actual}$ to be used for calculating the compliance balance shall be recalculated with the corresponding values of M_{iA}.

b) For the purpose of calculating the compliance balance of a ship **with respect to the subtarget of renewable fuels of non-biological origin (RFNBO) according to Article 4a (3),** the following formula shall apply:

$\boldsymbol{CB_{RFNBO}[MJ]} =$	$\left(\mathbf{0.02} \times \left(\sum_{\mathbf{i}}^{\mathbf{n\ fuel}} \mathbf{M_i} \times \mathbf{LCV_i}\right)\right) - \left(\sum_{\mathbf{i}}^{\mathbf{n\ RFNBO}} \mathbf{M_i} \times \mathbf{LCV_i}\right)$

Where :

$\boldsymbol{CB_{RFNBO}}$	***Compliance Balance in MJ of RFNBO subtarget according to Article 4a(3) of this regulation***
$\sum_{\mathbf{i}}^{\mathbf{n\ RFNBO}} \mathbf{M_i} \times \mathbf{LCV_i}$	***Annual sum of energy used from RFNBO***

B. FORMULA FOR CALCULATING THE FUELEU PENALTIES LAID DOWN IN ARTICLES 20(1BIS)

The amount of the **FuelEU** penalt**ies** laid down in Article 20(1bis) shall be calculated as follows:

a) FuelEU penalty with respect to compliance balance for greenhouse gas intensity of the ship according to Article 4(2)

FuelEU Penalty =	~~*Compliance balance /* GHGIE$_{actual}$*) x conversion factor from MJ to tonnes of VLSFO (41.0 MJ / kg) x EUR 2400*~~ $$\frac{\lvert Compliance\ Balance \rvert}{GHGIE_{actual} \times 41000} \times 2400$$

1. FuelEU Penalty	**2. Is in EUR**
3. $\lvert Compliance\ Balance \rvert$	**4. Is the absolute value of the compliance balance**
5. 41000	**6. Is 1 metric ton of VLSFO that is equivalent to 41000 MJ**
7. 2400	**8. Is the amount to be paid in EUR per equivalent metric ton of VLSFO**

b) FuelEU Penalty with respect to the subtarget for fuels of non-biological origin, as defined in Article 4a(3)

If $CB_{RFNBO} > 0$, the amount of the FuelEU penalty laid down in Article 20(1a) shall be calculated as follows:

FuelEU Penalty (RFNBO) =	$\frac{\mathbf{CB_{RFNBO}}}{41000} \times \mathbf{P_d}$
9. ~~Remedial~~ FuelEU Penalty	**10. Is in EUR**
11. $\mathbf{CB_{RFNBO}}$	**12. Is the value of the compliance balance for RFNBO**
13. Pd	**14. Price difference between RFNBOs and fossil fuel compatible with ship installation**
15. 41000	**16. Is 1 metric ton of VLSFO that is equivalent to 41000 MJ**

Annex IV

CALCULATION OF ADJUSTED MASS OF FUEL FOR ICE NAVIGATION

This Annex describes how to calculate:

- **the additional energy due to technical characteristics of a ship having the ice class IA or IA Super or an equivalent ice class**
- **the additional energy used by a ship having the ice class IC, IB, IA or IA Super or an equivalent ice class due to sailing in ice conditions**
- **the adjusted mass [Mi A] after the deduction of the additional energy, allocated to each fuel i**

Additional energy due to ice class

The additional energy consumption due to the technical characteristics of a ship having the ice class IA or IA Super or an equivalent ice class is calculated as follows :

$$E_{additional\ due\ to\ ice\ class} = 0.05 \times \left(E_{voyages,total} - E_{additional\ due\ to\ ice\ conditions}\right)$$

Where:
$E_{voyages,\ total}$ **denotes the total energy consumed for all voyages and;**
$E_{additional\ due\ to\ ice\ conditions}$ **denotes the additional energy consumption due to sailing in ice conditions.**

The total energy consumed for all voyages is calculated using :

$$E_{voyages,total} = \sum M_{i,voyages,total} \times LCV_i$$

Where:
$M_{i,\ voyages,\ total}$ **denotes the mass of fuel *i* consumed for all voyages within the scope of the regulation and;**
LCV_i **the lower calorific value of fuel *i*.**

Additional energy due to sailing in ice conditions

The additional energy consumption due to sailing in ice conditions is calculated as follows :

$$E_{additional\ due\ to\ ice\ conditions} = E_{voyages,total} - E_{voyages,open\ water} - E_{voyages,ice\ conditions,adjusted}$$

Where:
$E_{voyages,open\ water}$ **denotes the energy consumed on voyages in open water and;**
$E_{voyages,ice\ conditions,adjusted}$ **denotes the adjusted energy consumed in ice conditions.**

$E_{additional\ due\ to\ ice\ conditions}$ **cannot be higher than** $1.3 \times E_{voyages,open\ water}$

The energy consumed for voyages that include sailing in open water only is calculated as follows:

$$E_{voyages,open\ water} = E_{voyages,total} - E_{voyages,ice\ conditions}$$

Where:

$E_{voyages,ice\ conditions}$ **denotes energy consumed for sailing in ice conditions, which is calculated as follows :**

$$E_{voyages,ice\ conditions} = \sum M_{i,voyages,ice\ conditions} \times LCV_i$$

Where:

$M_{i,voyages,ice\ conditions}$ **denotes the mass of fuel *i* consumed for sailing in ice conditions, within the scope of the Regulation.**

The adjusted energy consumed in ice conditions is calculated as follows:

$$E_{voyages,ice\ conditions,adjusted} = D_{ice\ conditions} \times \frac{E}{D_{open\ water}}$$

Where:

$D_{ice\ conditions}$ **denotes the aggregated distance travelled when sailing in ice conditions within the scope of the regulation.**

$\frac{E}{D_{open\ water}}$ **is the energy consumption per distance travelled in open water calculated as follows:**

$$\frac{E}{D_{open\ water}} = \frac{(E_{voyages,total} - E_{voyages,ice\ conditions})}{(D_{total} - D_{ice\ conditions})}$$

Where:

$E_{voyages,ice\ conditions}$ **denotes the energy consumption when sailing in ice conditions and;**

D_{total} **is the aggregated annual distance travelled within the scope of the regulation.**

Total additional ice energy due to ice class and sailing in ice conditions

$$E_{additional\ ice} = E_{additional\ due\ to\ ice\ class} + E_{additional\ due\ to\ ice\ conditions}$$

Adjusted mass [$M_{i,A}$]

The company shall allocate the total additional ice energy $E_{i\ additional\ ice}$ to the different fuels i used during the year, with the following conditions:

Σ E i additional ice = E additional ice

For each fuel i,

$$E_{i,additional\ ice} \leq M_i \times LCV_i$$

The [$M_{i,A}$] adjusted mass of fuel is calculated as follows :

$$M_{i,A} = M_i - \frac{E_{i,additional\ ice}}{LCV_i}$$