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Article

Crossing the "European Green Deal" Maritime Measures and the Unfair Competition on the ETS Tax Regime—The Deviation Traffic Danger between EU and Non-EU Hub Ports!

Duarte Lynce de Faria[1]

Abstract: The maritime industry contributes to over 80% of global trade and ranks as the sixth-largest emitter of greenhouse gases. The International Maritime Organization has taken strides to reduce these emissions, while the European Union spearheads efforts to establish sustainable maritime transport. However, meeting decarbonisation targets poses significant challenges, with the potential implications of adopting an EU Emission Trading System (ETS) on shipping allowances, particularly at specific borders. If not managed effectively, this could result in diversifying regular container shipping routes away from EU ports, potentially leading to increased shipping emissions and disrupting the logistics trade and security chain. These challenges are exacerbated by the International Maritime Organization's lack of a carbon fee on bunkering, which creates an imbalance. The ETS Directive has fostered unfair competition between EU and non-EU ports due to discrepancies in applying emission unit allowances. It is imperative to implement preventive measures to contain and prevent the shift of operations from EU ports to nearby ports, ensure equitable treatment of EU transhipment ports and their competitors, and thwart carbon leakage. Additionally, the recent Houthis attacks on the Red Sea have significantly impacted shipping costs on the Cape of Good Hope route to Europe, necessitating increased allowances to and from Europe.

Keywords: decarbonization; emission unit allowances; emission trading system; EU ETS directive; european green deal; fit for 55; international maritime organization; suez canal; traffic deviation; transhipment ports

1. Introduction[2]

Climate change and the transition to clean energy have emphasised the need for governments, international organisations, financial institutions, investors and consumers to achieve environmental sustainability, including the maritime sector. It is important to note that maritime transport is the primary mode of global trade, accounting for over 80% of all trade. Nevertheless, the maritime industry is the sixth-largest emitter of greenhouse gases (GHGs) due to its size, despite being more efficient than air or road transport for moving goods. The International Maritime Organisation (IMO) has predicted that emissions could increase by 250% by 2050 if no action is taken to counter it.

Maritime transport also has negative environmental impacts, such as the discharge of gases like sulphur oxides, nitrogen oxides, and aerosols into the sea and oil spills. However, they are less

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[2] This article's framework and maritime safety scenario are based on our book, *"The (New) Law of Maritime Safety—the Ship, States, Conventions and their Autonomy"*, 2nd edition, Almedina, Coimbra, Portugal, October 2023, ISBN 978-989-40-1295-5.

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frequent and have significant consequences when they do occur. Maintaining the traditional shipping business is not sustainable. Those not taking sustainability standards will face increasing fees and significant financial penalties.

On the other hand, those who invest in fleet modernisation and green technology may become more competitive by increasing fuel efficiency, provided appropriate incentives are given, and no financial penalties are imposed.

MARPOL is the primary international convention preventing marine pollution from ships, with the latest supplement (Annex VI) to prevent pollution from ship emissions. As of 2020, the maximum permitted sulphur content was reduced to 0.5% outside emission control areas and 0.1% within emission control areas, requiring a fuel with lower sulphur content or emission abatement systems like scrubbers.

Since 2013, MARPOL Annex VI has provided for technical and operational energy efficiency measures that help reduce combustion emissions, including the "Energy Efficiency Design Index" (EEDI) for new ships and the Ship Energy Efficiency Management Plan (SEEMP) for the world fleet.

In 2018, IMO adopted an initial strategy for reducing GHG emissions from ships, setting out a vision that confirmed IMO's commitment to reducing GHG emissions from international shipping. It has adopted a strategy to reduce GHG emissions, aiming for a reduction of at least 50% by 2050, with 2008 as a reference.

In October 2018, IMO approved a follow-up programme intended to be used as a planning tool in meeting the timelines identified in the Initial IMO Strategy up to 2023.

In October 2020, a new version of the EEDI[3] (the EEXI) was proposed for retroactive application, while SEEMP is expected to require operational efficiency improvement objectives. Despite criticisms of ambiguity and lack of specificity, the draft was approved at the 75th meeting of the IMO's MEPC in November 2020 and has been in force since January 1, 2023. Meanwhile, in June 2021, the new EEDI was adopted at the 76th meeting.

In July 2023, IMO adopted the 2023 IMO Strategy on Reducing GHG Emissions from Ships, following the agreed-upon programme of follow-up actions[4].

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[3] EEXI - Efficiency Design Index for Existing Ships.

[4] Levels of ambition directing the 2023 IMO GHG Strategy are as follows (in Annex 15 of Resolution MEPC.377(80), adopted on 7 July 2023):

(1) carbon intensity of the ship to decline through further improvement of the energy efficiency for new ships to review to strengthen the energy efficiency design requirements for ships;

(2) carbon intensity of international shipping to decline to reduce CO2 emissions per transport work, as an average across international shipping, by at least 40% by 2030, compared to 2008;

(3) uptake of zero or near-zero GHG emission technologies, fuels and/or energy sources to increase uptake of zero or near-zero GHG emission technologies, fuels and/or energy sources to represent at least 5%, striving for 10% of the energy used by international shipping by 2030; and

(4) GHG emissions from international shipping to reach net zero to peak GHG emissions from international shipping as soon as possible and to reach net-zero GHG emissions by or around, i.e. close to 2050, considering different national circumstances, whilst pursuing efforts towards phasing them out as called for in the Vision consistent with the long-term temperature goal set out in Article 2 of the Paris Agreement.

Indicative checkpoints to reach net-zero GHG emissions from international shipping are as follows:

(1) to reduce the total annual GHG emissions from international shipping by at least 20%, striving for 30%, by 2030, compared to 2008; and

(2) to reduce the total annual GHG emissions from international shipping by at least 70%, striving for 80% by 2040, compared to 2008.

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In the meantime, the European Union is leading the way in creating sustainable maritime transport. For example, Regulation (EU) No 1257/2013 on ship recycling was drafted before the Hong Kong Convention entered into force, seen as a measure to hasten its entry into force. The EU has also pushed for more stringent measures to reduce GHG emissions. These requirements may become mandatory for third parties wishing to establish trade relations with a member state.

In 2015, the European Union adopted Regulation (EU) No 2015/757 on the monitoring, reporting and verifying CO2 emissions from maritime transport (EU MRV). This measure aims to collect data on CO2 emissions from ships of more than 5,000 GT calling at European ports.

Currently, the EU MRV works in parallel with the IMO Data Collection System for ships entering European ports, resulting in two reports simultaneously. Meanwhile, the European Parliament voted in favour of a 40% reduction in CO2 emissions from ships by 2030, supporting a proposal to revise the EU MRV and to add ships to the EU ETS. At the same time, the EU has launched an international call to apply for an Ocean Fund to be financed by the revenues generated by the ETS to make ships more efficient by 2030.

It is also expected that the system defined by the "Taxonomy of the European Union" (EU Taxonomy) [5] will cover sea transport. Indeed, after the Technical Expert Group (TEG) recommendations excluded most of the shipping industry from its application, the Commission launched a public consultation on the first selection criteria in November 2020, including new maritime transport rules.

In the framework of the proposals subject to consultation, ships used in maritime and inland waterway transport are classified with low (or no) emissions[6] according to certain criteria. They could be nominated as "environmentally sustainable" under the taxonomy system.

Due to the regulatory framework, the global shipping industry is taking urgent action on climate change and environmental sustainability. The Sustainable Shipping Initiative (SSI) has created a roadmap to achieve full environmental sustainability by 2040. Although voluntary, participating in

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The principles guiding the 2023 IMO GHG Strategy include:

(1) the need to be cognizant of the principles enshrined in instruments already developed, such as:

(a) the principle of non-discrimination and the principle of no more favourable treatment, enshrined in MARPOL and other IMO conventions; and

(b) the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances, enshrined in UNFCCC, its Kyoto Protocol and the Paris Agreement;

(c) the requirement for all ships to give complete effect, regardless of flag, to implementing mandatory measures to ensure the effective implementation of this Strategy;

(d) the need to consider the impacts of measures on States, including developing countries, on LDCs and SIDS, and their specific emerging needs, as recognized in the Revised Strategic Plan for the Organization (resolution A.1149(32)); and

(e) the need for evidence-based decision-making balanced with the precautionary approach as set out in resolution MEPC.67(37).

[5] "European Union Taxonomy" or "UE Taxonomy" refers to a classification system of environmentally sustainable economic activities in Europe. The purpose of this system is to create a list of such activities, which is essential for establishing sustainable investments and implementing the European Green Deal. Providing clear definitions for businesses, investors, and policymakers and ensuring that the list of environmentally sustainable economic activities is accurate is expected to reduce market fragmentation, create more certainty for investors, and allow for better investment planning. Regulation (EU) No 2020/852, which came into effect on July 12, 2020, establishes a framework for developing the taxonomy in the European Union and defines four conditions that must be met for an economic activity to be considered "environmentally sustainable." The regulation also identifies six environmental objectives: mitigating climate change, adapting to climate change, sustainable use and protection of water and marine resources, transitioning to a circular economy, preventing and controlling pollution, and protecting and restoring biodiversity and ecosystems.

[6] Except ships engaged in the transport of fossil fuels.

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this initiative will provide benefits such as new financing opportunities with good conditions and increased security for financiers.

Financial institutions are adopting frameworks like the Poseidon Principles and the Sustainability Linked Loan Principles (SLLP) to integrate climate change into lending decisions. These monitor shipping groups' decarbonisation targets and establish a relationship between credits and environmental sustainability targets.

In the short term, specific European Union and global frameworks are essential to reducing greenhouse gas emissions from ships. Shipowners who wish to participate in commercial maritime routes involving European ports must comply with increasingly demanding environmental criteria in the short term. The failure of the IMO to adopt these criteria may lead to other international organisations and port state control organisations taking unilateral measures.

While fleet modernisation costs are significant, proactive operators can benefit from favourable credit conditions for investment in green technology. In the long term, those not investing in green technology will become less competitive as their fleet's energy efficiency reduces and the market sanctions them.

Environmental sustainability in maritime transport is important for climate change and quality of life and is essential for global shipowners' medium and long-term competitiveness.

2. The European Green Deal

The European Commission decided on December 11, 2019, to send the European Parliament, the European Council, the Economic and Social Committee, and the Committee of the Regions a communication called "European Green Deal" (EGD)[7].

With this Communication, the Commission proposes to tackle climate and environmental challenges through a new strategy for sustainable growth. In conjunction with other international efforts and responses to the 2030 Agenda and the UN Sustainable Development Goals implementation, the Commission aims to achieve zero net emissions of greenhouse gases by 2050 and decouple growth from resource use.

This transition strategy should be citizen-focused, participatory, equitable, and inclusive (leaving no one behind), protecting natural capital, health, and well-being from environmental risks. It intends to draw an evolutionary roadmap on the main policies and measures for implementing the EGD. This situation requires adopting new transformative policies and the resulting implementation measures.

The EGD sets out its objectives and then defines the policies and measures to achieve them. The eight objectives are as follows:

(i) Raise the EU's climate ambition for 2030 and 2050;

(ii) Provide clean, secure and affordable energy;

(iii) Mobilise industry for the circular and clean economy;

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[7] See https://eur-lex.europa.eu/resource.html?uri=cellar:b828d165-1c22-11ea-8c1f-01aa75ed71a1.0008.02/DOC_1&format=PDF. On climate change and impacts on biodiversity, see the following documents in the reference:

(a) Intergovernmental Panel on Climate Change (IPCC): special report on the impact of a 1.5°C global warming;

(b) Intergovernmental Scientific and Policy Platform on Biodiversity and Ecosystem Services: The global assessment report on Biodiversity and Ecosystem Services, 2019;

(c) International Resources Panel: Global Resources Outlook – 2019: Natural Resources for the Future We Want;

(d) European Environment Agency: The European environment – state and outlook 2020: knowledge for transition to a sustainable Europe).

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(iv) Build and renovate in an energy and resource-efficient manner;

(v) Accelerate the transition to sustainable and intelligent mobility;

(vi) "From farm to fork": designing a fair, healthy and environmentally friendly food system;

*(vii)*Preserve and restore ecosystems and biodiversity;

(viii) Adopt a zero pollution ambition for an environment free of toxic substances.

Then, under the title *"Integrating sustainability into all European Union policies"*, the EGD elaborates on the various possible ways of financing policies and measures to achieve the eight objectives outlined above. The Commission estimates that achieving the EGD by 2030 will require an additional annual investment of €260 billion, or around 1.5% of 2018 GDP, with public and private funding.

The Commission's direct contributions include devoting 25% of all programmes to climate mainstreaming, creating new revenue streams in the EU budget called 'own resources'—such as those on non-recycled plastic packaging waste—and allocating 20% of auctioning revenues within the EU ETS.

In addition to the review of the ETS, considering the allocation of additional revenues to the EU budget, also the role of the *Innovation Fund* and the *Modernisation Fund* – which are not financed by the EU long-term budget – will be reviewed so that both can contribute to selected projects under a sustainability benchmark. The idea is that at least 30% of the Investment Fund will contribute to projects that fight climate change and that the banking entities will increase their climate targets.

The EGD should also provide for a *Just Transition Fund* (in addition to the substantial contribution from the EU budget) to support those most vulnerable to climate change and environmental degradation in accompanying significant structural change. The regions and sectors most affected by the transition are those with a higher dependence on fossil fuels or high carbon-emitting processes.

Improved financial conditions are essential for the private sector to enter as a key figure in the ecological transition, i.e., a financing strategy for sustainable investments. These measures include the creation of the taxonomy for the classification of environmentally sustainable activities, the improvement of investors' and companies' opportunities with the easy identification of sustainable and credible investments and the integrated management of climate and environmental risks in the financial system.

From a national perspective, national budgets could increasingly use greening tools by reorienting public investment, consumption, and taxation towards green priorities, considering environmental risks. How should green public investment be assessed regarding the quality of public finances?

Tax reforms can also contribute to economic growth and resilience to climate shocks, contributing to a transition with equity and fairness. For example, by removing fossil fuel subsidies and reallocating part of the tax burden from workers to polluters, member states can use VAT as a mechanism to support organic products.

It is also necessary to review "State Aid" in the environment and energy fields, support an effective transition to climate neutrality by 2050, and phase out fossil fuels.

Research into new technologies is essential for the European Union to demonstrate the competitive advantage of clean energy, supported by programmes like Horizon Europe, with funding of at least 35% of its budget to support new climate solutions. Partnerships with industry and member states will be the way to support that goal in transport, including batteries, clean hydrogen, zero-emission steel production and circular bio-based sectors, as well as the areas to be built.

The role of training institutions is essential for explaining the changes necessary for the transition to the community, reinforcing the sustainable quality of school buildings and activities, and carrying out professional improvement and requalification.

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Another important aspect is simplifying legislation and procedures, using digital platforms with support tools that address sustainability and innovation issues.

In summary, the EGD aims to implement a new growth strategy underpinned by an energy transition aimed at responding to the challenges posed by climate change and environmental degradation, improving the quality of life of current and future generations.

We will now examine the essential impacts of this EGD on the maritime port sector.

3. The European Commission's Current Initiatives in the Maritime Port Sector

It is widely believed that the maritime port sector should be regulated in matters with a global impact, such as energy transition and decarbonisation. However, any regulation in this sector must consider the global dimension of international maritime transport.

Therefore, a roadmap that can be practically implemented in the maritime port sector is necessary. This roadmap should have targets and measures that are financially sustainable (from both public and private sources), realistic, reliable, and agreed upon by public authorities and private agents.

The most challenging issue for the fleet would be the energy transition. It may be crucial to adopt measures to change the paradigm in ships, especially in new builds, such as obligating ports to provide electrification of terminals for ships at berth – the on-shore power supply, OPS - and limiting the cleaning of "scrubbers" – the exhaust gas cleaning systems or filtering systems of exhaust emissions from ships, EGCS - in port.

However, starting from the current situation and forecasts, it is necessary to launch the appropriate measures and policies. In the case of maritime transport and ports, sixteen points of interest to the EGD, which have a significant impact on the sector, have been selected:

(i) The vision of how to achieve climate neutrality by 2050[8] as current policies will only allow a 60% reduction in greenhouse gas emissions by 2050, increasing the target of at least a 50% reduction by 2030 to approach 55% compared to 1990 levels;

(ii) Carbon pricing throughout the economy (i.e., including shipping) without, however, allowing carbon emissions to escape to other countries with lower environmental ambitions or to be imported into other countries with higher carbon intensity;

(iii) The continued decarbonisation of the energy system is essential for achieving climate objectives, as more than 75% of the EU's greenhouse gas emissions come from energy production and use. Priority must be given to energy efficiency and the development of an energy sector based on renewable energy sources, phasing out coal and decarbonising the gas sector (i.e., with carbon-free gases);

(iv) Building smart and innovative infrastructure contributing to climate neutrality under the TEN-E, such as smart grids, hydrogen grids, carbon capture, storage and use, and energy storage, also enabling sectoral integration;

(v) The decreasing annual level of extraction of raw materials[9] poses a huge global risk, as about half of the greenhouse gas emissions and over 90% of the biodiversity loss and pressure on water resources come from the extraction of resources and their transformation into materials,

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[8] A Clean Planet for All – A long-term EU strategy for a thriving, modern, competitive and climate-neutral economy [COM (2018) 773].

[9] See Global Resources Outlook, 2019: Natural Resources for the Future We Want, Painel Internacional de Recursos; and https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=cei_srm030&plugin=1.

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fuels and food. However, the industrial process needs to change as it remains heavily dependent on extracting new raw materials, with only 12% of the materials coming from recycling. The supply of sustainable raw materials also needs to be ensured, particularly those needed for clean technologies, for digital, space and defence applications, diversifying the supply between primary and secondary sources;

(vi) The need for the industry to develop pioneering projects in source use and climate research with commercial applications by 2030 in production in key industrial sectors, including clean production of hydrogen, fuel cells and other alternative fuels, energy storage and carbon capture, energy storage and carbon capture, storage and use;

(vii) The use of the green and digital challenge, together with the industrial strategy and the objective of modernising the economy, to design a new action plan for the circular economy, focusing on resource-intensive sectors such as textiles, construction, electronics and plastics;

(viii) At the same time, taking measures to ensure that digital technologies such as artificial intelligence systems, 5G technology, cloud and proximity computing and the internet of things can accelerate and maximise the impact of the energy transition;

(ix) The promotion of building renovation, reducing energy bills and energy poverty, contributing to modernising the economy and taking advantage of the opportunities offered by the circular economy;

(x) The assumption is that transport (road, rail, aviation and maritime/inland waterways) is responsible for 25% of the European Union's greenhouse gas emissions, and these figures continue to rise. A 90% reduction in transport emissions will be needed by 2050 to achieve climate neutrality. The priority will be rail and inland waterways to replace domestic road freight transport (75% of the total). Priority to multimodality and revision of the Combined Transport Directive to include rail and maritime and inland waterway transport, including short sea shipping;

(xi) Transport prices should reflect their environmental and health impact. Fossil fuel subsidies should end, and current tax exemptions, including those for aviation and maritime transport fuels, should be reviewed. It will be proposed to extend the Emissions Trading System to the maritime sector (i.e., carbon rights that can be extended to road transport) as well as to reduce the number of allowances given to airlines for free;

(xii) Regulating access to ports for the most polluting ships and making ships at berth use shore-side electricity (OPS);

(xiii) The substantial reduction in the use of chemical fertilisers, antibiotics and pesticides, as well as the risks associated with the latter;

(xiv) The new strategy to protect biodiversity and to preserve and restore forests in Europe, to increase CO2 absorption, reduce the incidence and extent of forest fires and promote the bioeconomy;

(xv) The promotion of a sustainable "blue economy" to alleviate multiple pressures on land resources and in the fight against climate change;

(xvi) Adopting an action plan for zero water, air and soil pollution.

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Based on these sixteen points, it is now important to identify the Commission's main initiatives underway or planned to address the EGD in the maritime port sector.

The European Commission's 2021 Work Programme provided a list of different types of activities that have an impact on the environment and alternative fuels targets and standards. These activities were categorised into three groups: direct impact, potential impact, and supporting activities. The supporting activities are mentioned in the annexes of the Work Programme [10]. Furthermore, there are also regulations, such as Regulation No 2017/352, on port services that are considered as they relate to the current state of the sector[11].

As regards those with a direct impact and which are specific to the sector, the following twelve main ones were[12]:

1) The revision of the guidelines on the Trans-European Transport Network (TEN-T) (Regulation No 2013/1315);
2) The study on the capacity for environmental improvement of European Seaports[13]
3) The revision of the air quality directives;
4) The marine fuels regime, which complements the FuelEU Maritime Initiative with the revision of the Alternative Fuel Infrastructure Directive (Directive No 2014/94/EU) and the Renewable Energy Directive (Directive No 2018/2001)[14];
5) The revision of the EU ETS to cover maritime transport (Directive No 2003/87/EC);
6) The Port Services Regulation (PSR) (Regulation No 2017/352);
7) The Directive on Waste Reception Facilities for Ships (PRF) (Directive No 2019/883);
8) The revision of the system of entry and exit of third-country nationals at the borders of the Union (EES) (Regulation No 2017/2226);

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[10] https://ec.europa.eu/info/publications/2021-commission-work-programme-key- documents_en.

[11] For EU legislation concerning the maritime sector and safety and environmental protection, see https://ec.europa.eu/transport/modes/maritime/safety/ actions_en. The areas covered are classification societies, vessel traffic monitoring, port state control, maritime accident investigation, insurance on maritime claims, pollution originating from ships, marine equipment requirements and the legislation on maritime safety (passenger safety, port state control, vessel traffic monitoring, flag state and recognised organisations (mostly classification societies), seafarer standards, pollution prevention, accident investigation, insurance and liability, safety requirements, European Maritime Safety Agency – EMSA and Committee on Safe Seas and the Prevention of Pollution from Ships – COSS)).

[12] This list is based on the European Commission's programme for 2021 (in Brussels, 19.10.2020, COM(2020) 690 final, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee of the Regions, "Commission Work Programme 2021 – A Union of vitality in a world of fragility", Brussels, 19.10.2020) and the various announcements concerning the main projects of the "European Green Deal" and aspects of maritime and port security) and further developments.

[13] International competition and its foundations at https://etendering.ted.europa.eu/cft/cft-display. html?cftId=7546.

[14] The marine fuels regime complements the FuelEU Maritime Initiative by establishing a regulatory framework to promote low-emission and renewable fuels in the maritime sector. In addition to these revisions, the marine fuels regime will also include measures to promote the uptake of low-emission and renewable fuels in the maritime sector. This could include incentives for using low-emission fuels, such as tax breaks or subsidies, and the development of standards for low-emission fuels).

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9) The revision of the maritime safety control and monitoring regime, through the revision of the acquis on Port State Control (PSC) (Directive No 2009/16/EC), Flag State Control (FSC) (Directive No 2009/21/EC), on the investigation of marine casualties (Directive No 2009/18/EC) and on vessel traffic monitoring and information system (VTMIS) (Directive No 2002/59/EC);
10) The Marine Fuel Directive (on sulphur content) (Directive No 2016/802);
11) The revision of the waste shipment regulation (Regulation No 1013/2006);
12) The new Critical Entity Resilience Directive and the revision of the Network and Information Security Systems Directive (Directive No 2016/1148) (NIS Directive).

In those regarding the development of health and safety at work, alternative fuels, smart mobility and environmental standards, namely:

(i) The European Strategy for Adaptation to Climate Change[15];
(ii) The revision of the European Climate Law (Regulation No 2018/ 1999);
(iii) The Strategy for Sustainable and Intelligent Mobility;
(iv) The European Action Plan on the Circular Economy;
(v) The Environmental Impact Assessment (EIA);
(vi) The Strategic Environmental Assessment (SEA);
(vii) The European Strategic Framework on Health and Safety at Work (2021-2027);
(i) The Taxonomy of Sustainable Financing (Regulation No 2020/852);
(ii) The revision of the Trans-European Energy Network (TEN-E);
(iii) The revision of the Energy Efficiency Directive;
(iv) The revision of the Energy Tax Directive;
(v) The Water Framework Directive;
(vi) The revision of the Birds and Habitats Directives (HABITATS);
(vii) The revision of the Environmental Noise Directive (END);
(viii) The International Convention on Environmental Impact Assessment in a Transboundary Context (ESPOO 1991);
(ix) The International Convention on Wetlands (RAMSAR 1971).

Finally, as for those who support them, the following:

[15] At the end of February 2021, the Commission launched a new strategy proposal (COM (2021)82final, 24.02.2021) for adaptation to climate change as an update of the 2013 document and to be definitively adopted in the middle of this year. The aim is to design the path towards a resilient Union posture by 2050, prepared for the unavoidable impacts of climate change. The Commission estimates that annual losses as a result of climate change stand at around €12 billion per year, to which must be added the losses resulting from warming by three degrees relative to pre-industrial levels, amounting to at least €170 billion per year. The new strategy is based on three pillars: improving knowledge, planning an adaptation plan, and the climate risk classification and acceleration of adaptation measures. A key component is developing and expanding the Climate-ADAPT platform managed by the European Environment Agency (EEA), which will share data and information on climate change. The strategy includes several actions grouped under three priorities: mainstreaming climate adaptation into tax policy, environmentally based solutions (for carbon removal) and local adaptation action.

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(i) The revision of the CEF (Connecting Europe Facility) model to support the TEN-T;

(ii) Horizon Europe (HE);

(iii) The Fair Energy Transition Mechanism;

(iv) The Digital Strategy and the European Industrial Strategy;

(v) The State Aid General Block Exemption Regulation (GBER) review.

Without considering all these initiatives or legislation in force, we will now try to summarise the main topics that will determine the future of the maritime port sector and its articulation with the fight against climate change and energy transition. However, the issue of green hydrogen will be dealt with at the end of this work.

As a preliminary framework, the main objectives of the Portuguese presidency in the first half of 2021 (three years ago), which were spotted as more relevant to the sector, shall be used, in addition to specific initiatives and conferences.

Under the motto *"Time to deliver: for a fair, green and digital recovery"*[16], the programme mentioned the following in the area of transport and energy:

(i) Encouraging the attractiveness of the railway for transporting people and goods;

(ii) The promotion of intermodality with maritime transport through commercial ports;

(iii) An increased offer of services and information, and

(iv) The trans-European transport network (TEN-T) supports the completion of the core network by 2030 and the strengthening of its density within the Union, in particular by increasing its capillarity in peripheral areas and greater connectivity of the outermost regions;

(v) A commitment to green hydrogen as a determining factor in energy transition and as an economic, industrial, scientific and technological opportunity fostering the growth of the green hydrogen market and the corresponding regulatory conditions.

Turning to the proposed revision of the guidelines for trans-European transport networks (TEN-T)[17], it is important to understand the need to strengthen the last-mile connections to the network's endpoints by improving port intermodality.

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[16] In https://www.2021portugal.eu/media/e0rjnvdj/programme-for-the-portuguese-presidency-of-the-council-of-the-european-union-en.pdf.

[17] The trans-European transport networks have several connection corridors, including the Atlantic Corridor, which develop various projects of geographic interconnection. That Corridor connects the ports of the Iberian Peninsula with the port of Le Havre and the cities of Strasbourg and Mannheim with conventional and high-speed railway lines, promoting continuity between Lisbon, Madrid, Paris, Strasbourg, Mannheim and Le Havre. The corridor has a multimodal dimension, using rail, road, inland waterway and maritime transport. The current bottlenecks to its development on the railways are the links between Lisbon and Madrid, the lack of electrification of the Porto-Valladolid section on the Spanish side and the continuing differences in gauge, electrification, signalling and size of trains between the two countries and between Spain and France (San Sebastian-Bordeaux section). The Madrid freight transit and Vitoria connection sections are also being assessed. The Connecting Europe Facility (CEF) is the fund that acts as a strategic instrument to support investment in transport, energy and digitalisation infrastructures. In the area of transport, the CEF supports TEN-T investments. During the 2014-2019 period, the CEF secured around €23.3 billion in co-financing of projects. The Innovation and Networks Executive Agency (INEA) technically and financially manages the

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At that time, the Commission intended to introduce qualitative requirements for improving the "last mile" connection. Regarding alternative fuel infrastructure, besides considering minimum requirements, the question is whether, geographically, quantitative objectives per ocean basin rather than per port alone should be considered[18].

The current European Union transport policy framework (Regulation No 2013/1315) aims to facilitate European transport and reduce regional, economic and social disparities by developing interconnectable air, road, rail and maritime infrastructure. One of the most important aspects of this framework is revising the guidelines, which set out national and Union investments in transport infrastructure and funding targets under specific initiatives, particularly the Connecting Europe Facility (CEF).

The guidelines were revised to adopt measures to ensure the decarbonization and reduction of air pollutant emissions within the transport system, measures concerning the resilience and quality of infrastructure, and measures providing for innovation, digitalization, and automation.

The main objectives to be included in the revised network guidelines were facilitating multimodal transport chains, ensuring connectivity, reducing environmental costs, applying EU quality standards and innovative transport solutions across the board, establishing cross-border physical infrastructure, improving dual use of the network, removing bottlenecks and reducing transport emissions by 90%.

The adjustment and redesign of the network must consider changes in transport flows within the Union and with third countries, as well as enhance accessibility and connectivity with all regions and provide for the control of cross-border mobility.

The progressive decarbonization of the transport sector requires that energy policy (particularly the TEN-E framework) and transport infrastructure policy (TEN-T) be closely interlinked to reduce transport emissions. One indispensable measure for this objective will be the mandatory construction of infrastructure to supply low-emission vehicles.

However, given their differentiation, it is questionable whether ships should be integrated into the network policy. It seems much more appropriate to initiate decarbonization in the maritime port sector by acting in ports through grid or energy infrastructures (for example, by adopting an on-power shore supply facility or creating an energy self-sustainable community) in maritime terminals.

In addition, better coordination is required between the core network corridors and the Rail Freight Corridors network, the Inland Waterway Transport network, Short Sea Shipping initiatives and nodes in urban areas, and the transport chain in general to improve multimodal services in the proximity of the trans-European transport network's terminal points ("Last Mile").

Another important aspect to consider is whether the requirements of certain core network infrastructures should be extended to the whole network, namely, alternative fuels, road quality and safety infrastructures, the components of the comprehensive network, and the digital and intelligent infrastructure, rail interoperability, including traffic management systems (ERTMS, "The European Rail Traffic Management System") and urban nodes and the transport chain. In addition, the revision of the TEN-T should be articulated with national energy, climate and air quality plans, noise abatement plans and (river) basin management plans.

Network infrastructures need to be more resilient in adapting to climate change (waterways, roads, railways and ports), in requiring better structural quality (bridges and tunnels), in preparing for civil emergencies (contingency planning) and in responding to public order and security changes (military mobility, investment monitoring and foreign investment, particularly in ports and terminals).

Innovation, digitalization, and automation issues must be reviewed in light of the objective of decarbonizing the transport sector, enhancing the progressive automation of transport, and integrating new equipment such as drones. The requirements of the intelligent and digital network

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implementation of parts of the CEF programme, Horizon 2020 and the previous programmes (TEN-T 2007-2013, Marco Polo). See https://ec.europa.eu/ transport/themes/infrastructure.

[18] https://ec.europa.eu/transport/sites/transport/files/2019-stf-consultation-analysis.pdf.

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components must be readjusted, with a finer definition of the digital components required in each mode of transport to boost innovative, sustainable and efficient services.

Regarding policy options for the network, different priorities could guide its development: clean fuels (adapting infrastructure to this end), infrastructure efficiency and resilience (particularly in multimodality), and innovation and digitalization (energy efficiency as the standard)—or a combination of the three priorities.

European decarbonization will require measures that regulate activity between companies in the Union and third countries and others that prevent the relocation of companies outside the Union (CBAM, "Carbon Border Adjustment Mechanism"). The solution could be introducing an import tax for non-EU companies that do not meet the Union's benchmarks. In this way, the price of imports should reflect the emissions at the production source. However, the compatibility of this system with World Trade Organisation rules may be questioned, and the sectors to which CBAM may be applied may be chosen jointly[19]. This system implies a generic application to all imports, especially in energy-intensive industrial sectors such as cement, steel, aluminium, hydrocarbon refining, paper, glass, chemicals, and fertilizers.

Another key topic concerns the issue of "green ports", i.e., the Commission's initiative to study the capacity of Europe's seaports to become "green" ports. The study will list the factors affecting that capacity and seek to maintain or improve their economic development. It is also important to consider the reduction of emissions in ports (through the OPS connection) and the reduction of road traffic through better integration into the city's road network and the greater use of railways. In these terms, adopting a sustainable, intelligent mobility strategy is essential to achieve the progressive decarbonization of ports.

Regarding the review of the air quality directives, the Commission aims to set new benchmarks for avoiding high concentrations of pollution, aligning them more closely with the recommendations of the World Health Organisation, whose guidelines are being revised. The review also aims to improve all clean ambient air legislation, considering lessons learned from the 2019 assessment[20]. This evaluation concluded that the directives were ineffective enough and that some of their objectives had yet to be achieved.

Scientific knowledge recommends greater ambition and tends to harmonize, monitor, model and divulge air quality plans.

The initiative aims to improve legislation on air quality to avoid, prevent or reduce harmful effects of air pollution on human health and the environment, in line with the ambition to eliminate all polluting emissions, as expressed in the European Green Deal.

The European Parliament has produced a preliminary report on air quality directives and the ongoing review. The report outlines several recommendations for the sector[21], including supporting the Commission's plan to eliminate polluting emissions. It emphasizes the need for a holistic approach to tackle air pollution, which requires integrating air quality into EU policies such as climate, energy, transport, industry, agriculture, and waste. The report recommends that the Commission and the member states strengthen their emissions legislation, focusing on reducing emissions at the source. It warns that most member states will unlikely meet the emission reduction commitments set by Directive No 2016/2284/EU (NCE, "National Emission Ceilings Directive") for 2030 and 2050. The report also calls for stringent measures to reduce emissions from transport, including road, maritime, and aviation, as well as industrial installations, agriculture, and energy production.

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[19] See https://www.europarl.europa.eu/committees/pt/towards-a-wto-compatible-eu-carbon-borde/product-details/20210204CAN59622.

[20] "Fitness Check of the Ambient Air Quality Directives" in https://ec.europa.eu/environment/air/pdf/SWD2019427F1AAQ%20Fitness%20Check.pdf.)

[21] In https://www.europarl.europa.eu/doceo/document/ENVI-PR-663232_EN.pdf.

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As part of the *"FuelEU Maritime Initiative"*, the Commission aims to introduce an obligation to prohibit emissions by certain types of ships, particularly ferries and cruise ships, while berthed or anchored in port by adopting electricity grid connection systems (OPS). The Commission's proposal intends to regulate the demand for clean fuels and increase incentives for their use. This proposal will be complemented by revising the Alternative Fuel Infrastructure Directive (Directive No 2014/94/EU) (AFID Directive).

The alternative marine fuels initiative aims to regulate the demand for infrastructure and the use of alternative fuels. However, meeting the objective depends on global developments, the different roadmaps for ships to reduce emissions, and the definition of specific objectives in conjunction with the AFID Directive. Meeting the objective will not be easy without stimulating investment in new technologies and research.

Four possible roadmaps for reducing emissions are as follows: mandatory OPS in port for the most polluting ships with few exceptions (essentially, ferries, cruise and container ships, with individual verification of emission levels); life cycle GHG emission cap linked to mandatory OPS for the most polluting ships (target ships will be similar to the previous one); identical to the previous one with GHG emission calculation to be done by "pool" of ships or with incentives for those exceeding the requirements (somewhat similar to the EU ETS carbon credit system); include energy efficiency of ships (grams of CO2/tonne per nautical mile) – for example in the "slow steaming" decision – as a basis for the decision on alternative fuels obligation.

Ship operators are more concerned about alternative fuels than the OPS link, which reinforces the idea of starting the process with OPS facilities in ports. Adopting roadmaps can only occur by linking the alternative fuels initiative with the AFID, Renewable Energy Directive (RED), and Energy Taxation Directive (ETD). On the other hand, certain generic definitions, such as "most polluting/polluting ships," require attention, including whether to cover the emission of all GHG gases or only CO2, the interaction with the ETS system, and whether ports will be obliged to install the OPS network or if there will be exceptions from the point of view of balancing investments with demand (or specific funding for this purpose).

The AFID Directive requires member states to assess the necessity of OPS systems for inland and maritime navigation in ports. The aim is to ensure that these systems are deployed promptly in priority ports and other ports by the end of 2025 unless there is no demand or the deployment costs outweigh the benefits, including environmental ones. Additionally, the Directive requires member states to provide fixed and mobile refuelling points for LNG bunkers, at least in core ports, by the end of 2025.

The Directive will evaluate the term "alternative fuels" and specify the types of fuels involved, including their differentiation by production source, such as fossil or renewable. Methane and ammonia may be added to the list of alternative fuels, which means that LNG will be included under this definition.

The OPS and LNG bunker matters should be discussed among all participants in the maritime-port sector, including ship operators, port authorities, and energy suppliers at each port. This discussion will ensure that a balance is found between supply and demand. There is an urgent need for investment in OPS systems and LNG bunker terminals in ports.

Current studies on alternative fuels cover various types such as biofuels, ammonia, hydrogen, assisted propulsion technology (such as wind-assisted propulsion and "hull air cavity lubrication")[22] and other emerging technologies.

4. Other EU Initiatives

From the perspective of port management, Regulation No. 2017/352 established the framework for providing port services and common rules for port financial transparency, known as the Port Services Regulation (PSR). The aim was to regulate the provision of port services, protect port operators from uncertainties, and make public and private investments more efficient.

[22] It consists of injecting air into the wet surfaces of the ship's hull to improve its hydrodynamics.

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It sets out the conditions for the free provision of port services, including requirements that may be imposed concerning safety and environmental matters, the circumstances under which the number of operators may be limited and, in these cases, selection procedures. In addition, common rules are set on the transparency of charging for public funds and infrastructure and port service charges, among others, by ensuring that the port community is consulted. It also introduces a new mechanism for handling complaints and disputes between community members. Finally, it requires all providers to provide adequate training for their staff.

In the field of the collection and treatment of ship waste, Directive No 2019/883 (PRF) is in force, which is aligned with the provisions of the MARPOL Convention, but in some cases, goes beyond the convention as it does not sufficiently cover operations in port, establishing the financial, operational and legal responsibilities of all operators. The aim is to make ships (entering or leaving EU ports) deliver all waste generated on board, making any discharge at sea illegal.

The Directive's provisions will become mandatory and enforceable as part of Port State Control (PSC) inspections and appropriate measures for ships to benefit from and be economically encouraged to use port waste collection infrastructures. In addition, special attention is drawn to the collection of rubbish or litter, not only from commercial vessels but also by extending it to fishing vessels and recreational craft above a certain minimum tonnage. The aim is to reduce illegal discharges of oil residues, sewage, rubbish, litter and residues from ships' emission filters ("scrubbers").

Another important initiative, particularly for ferries and cruise ships, concerns revising the automatic monitoring system for third-country nationals crossing borders (EES) contained in Regulation No 2017/2226. The aim is to speed up and strengthen the procedures for checking third-country nationals at borders. The system intends to record their name, type of travel document, biometric data, and the date and place of entry and exit.

Regarding the sector, the control points will be made before boarding and at the landing of the ships, and the system will have an articulation with the European Travel and Information System (ETIAS). For ferry and cruise ship ports, it will be necessary to foresee that all passengers must be monitored in the port area. Therefore, to ensure that the flow of passengers from vehicles boarding ferries (or disembarking) is continuous, ports must be equipped with new monitoring solutions. European support will be required for this.

The joint initiative to revise the provisions on Port State Control (PSC), Flag State Control (FSC), Maritime Accident Investigation (MAI), and the Vessel Traffic Monitoring System (VTMIS) aims to update the texts, mostly issued in 2009 under the "Third Maritime Safety Acquis" (or "Erika III package"). Naturally, the articulation of this revision between them is essential.

Essentially, the aim is to improve maritime safety standards by bringing the texts into line with the relevant parts of the IMO *"Triple I Code"* as regards the responsibilities of flag, coastal and port states and the monitoring of classification societies, stepping up inspections and their standards, improving the quality of ships in the Union countries' fleets and the procedures for responding to IMO audits. The digitization of seafarers' certificates is also envisaged, ensuring their rapid movement from one ship operator to another and the new and updated ship registers.

In the area of accident investigation, the aim is to protect fishing boat crews and the environment, ensure harmonization of procedures and keep the Union in line with the latest accident investigation and analysis instruments. Finally, regarding VTMIS, the aim is to improve databases, exchange information on vessel traffic monitoring, and update the applicable procedures, particularly regarding updating data and exchanging information on the SafeSeaNet system (SSN). The essential idea is the extension and articulation of the SSN with other systems (particularly LRIT, Long Range Identification and Tracking, AIS, Automatic Identification System and CSND, Clean Sea Net Data) to provide more comprehensive information to the entire maritime-port community, far beyond the information on the position and course of ships. Another important aspect concerns the adequacy of the VTMIS to the data reporting formalities of Directive No 2010/65.

Directive No 2016/802/EC ("Sulphur Directive") is a key aspect concerning monitoring the percentage of components in fuels and, more recently, the content of sulphur oxides in marine fuels,

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which contribute to the deposition of acids in soil and water. The Directive also contains certain specifications for bunker fuels for ships calling at Union ports, obligations regarding the fuels defined in the Directive, and placing certain types (e.g., MGO, Marine Gas Oils) on the market[23].

The revision of Regulation No 1013/2006 on ship waste (during dismantling), also known as WSR (waste ship management), aims to align it to move towards a circular economy. This revision ensures that ship waste and dismantling operations are conducted using procedures that protect the environment and health while regulating waste import and export with third countries and its movement between member states. Differentiated procedures will be applied to waste depending on its type (e.g., harmful or non-harmful), destination, and purpose of treatment (recycling or making it available for other purposes).

The main objectives of the WSR review are as follows:

a) Facilitate the reuse and recycling of the waste in the Union to add value.
b) Simplify procedures to implement the WSR and streamline the internal market for reuse or recycling, thereby enabling the transition to a circular economy.
c) Restricting the export of harmful waste to third countries or waste that can be treated internally, preventing the accumulation of untreated waste, abolishing decommissioning operations that do not meet Union requirements, and strengthening legal enforcement concerning illegal decommissioning.
d) Taking measures to tackle dismantling in the Union and combat illegal exports by monitoring waste shipments and improving sustainable waste management in third countries.

Legislation on the resilience of critical entities is crucial for “open loop scrubbers” or “hybrid system scrubbers,” which use seawater regularly to clean up waste. Other scrubbers (“closed loop scrubbers”) should be treated similarly to the usual collection of ship-generated waste in ports.

Member states can ensure that they prevent, withstand, absorb, and recover from disruptive incidents, regardless of their cause - natural threats, accidents, terrorism, internal threats, or public health emergencies (such as the current pandemic crisis). Member states must designate which ports are to be considered “critical entities” and, in this case, adopt risk assessments, take appropriate technical and organizational measures to enhance resilience, and report disruptive incidents to the relevant national authorities depending on the type of incidents.

Closely linked to this initiative is the timely proposed revision[24] of the NIS Directive on cybersecurity (NIS1), now in force with the approval of the NIS2 Directive, which is closely related

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[23] The latest developments in the world fleet indicate increased use of scrubbers (EGCS, "exhaust gas cleaning systems") to the detriment of the use of low sulphur fuel. The type of gas filter raises other problems, namely when they use seawater to clean them, and therefore the discharge of waste into the sea, and should be treated per European legislation. The issue is particularly relevant to the so-called "open loop scrubbers" or hybrid system scrubbers that regularly use seawater for waste cleaning. The others ("closed loop scrubbers") should be treated similarly to the usual collection of ship-generated waste in ports.

[24] It should be clarified that in Portugal, the National Centre for Cybersecurity (CNCS) is responsible for implementing the measures foreseen in the NIS 1.0 and acting as the National Cybersecurity Authority so that, within the scope of the NIS Cooperation Group, the NIS 2.0 process evolves as necessary given society's growing digitalisation.

On the other hand, the National Strategy for the Sea 2021-2030 also contemplates points related to the theme, including actions in the respective action plan in which initiatives are included. We reiterate the importance of choosing funding sources at the European Union level for implementing the measures recommended in the NIS 2.0, particularly in the maritime and port area, which is considered indispensable for its full implementation.

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to an initiative that focuses on cybersecurity resilience and response and involves the response of both public and private entities.

The NIS2 Directive extended the current Directive's scope by adding new sectors critical to the economy and society. It has introduced a size factor, which means that all medium-sized and large companies in the sectors covered will fall under the terms of the Directive. As "essential entities," ports must adapt to the new cybersecurity requirements.

These main points could significantly impact the maritime port sector's development of the European Green Deal. However, when developing the sector's activities, it is important to consider all seafarers' occupational health and safety issues, alternative fuels and smart mobility, energy transition, and climate change measures[25].

Finally, establishing ports (or at least major commercial ports) as "critical infrastructure" in the European Union, which implies that, both from the point of view of prevention and resilience in the face of disruptive events or, specifically, in terms of cyber security, they will have to be able to comply with the new security requirements, which requires an adaptation plan for compliance. This is the only way to ensure their role in the economy and social stability (as witnessed during the current pandemic).

[25] Meanwhile, on 14 July 2021, the European Commission launched a series of legislative proposals under the name "Fit for 55%" This is an acquis currently under review, assessment or development to meet the legally enshrined goal of reducing emissions by at least 55% by 2030. About the maritime-port sector, it involves five interlinked issues to be either ring-fenced or reviewed:

FuelEU Maritime – On alternative marine fuels, greenhouse gas emission reduction targets for ships are introduced from 2025, covering intra-EU voyages, 50% of emissions from inbound and outbound voyages, and emissions at the quay;

AFIR (previously referred to as AFID, it is now changed from a Directive to a Regulation) – Alternative Fuel Infrastructure Regulation by which OPS requirements for all TEN-T Core and Comprehensive ports with mandatory OPS thresholds and the requirement of infrastructure (bunkers) in ports for certain alternative fuels (OPS, LNG) by 2025;

RED – Renewable Energy Directive, a new target of 40% for renewable energy in the European Union by 2030 and introduction of a higher target of 13% GHG reduction in transport by 2030, and increase of the submission for advanced biofuels from at least 0.2% in 2022 to 0.5% in 2025 and 2.2% in 2030, and introduction of submission of 2.6% for RFNBOs (hydrogen); ETD – Energy Taxation Directive, contemplating phasing out the tax exemption for marine fuels, with one-tenth per year between 2023-2033, greater ease of applying for the OPS/renewables tax exemption through opt-in, and for a ten-year transitional period (2023-33), minimum zero rates will apply to sustainable biofuels and biogas, low carbon fuels, renewable fuels of non-biological origin, advanced sustainable biofuels and biogas and electricity;

ETS (Emissions Trading Scheme – EU-ETS) provides the extension of the current EU-ETS Directive to the maritime sector, with the ETS proposed to start with a phase-in of emissions in 2024, with 40% of emissions covered in 2024, increasing to 70% of emissions in 2025 and 100% of emissions covered in 2026. The maritime ETS would cover CO2 emissions from 50% of inbound voyages (from a non-EU port calling at an EU port), 50% of outbound voyages from an EU port to a port outside the EU, intra-EU voyages (between two EU ports), emissions from a ship berthed in an EU port. The allowances should be accountable and payable in the middle of the next year (in 2025, 40% of 2024, 2026, 70% of 2025 and in 2027 and further, 100% of the previous years).

See, among all, https://climate.ec.europe.eu/eu-action/transport/reduction emissions shipping sector.

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5. The Emission Trading System (ETS) forward to Include Shipping Emissions—The Imbalance Situation

The European Union has amended Directive No 2003/87/EC to include shipping emissions in the EU Emission Trading System (EU ETS) and extend this to other sectors. The EU ETS has operated since 2005 and was the world's first. Based on the carbon market and its increased price, the installations covered by the system have reduced emissions by about 35% from 2005 to 2019[26].

This initiative aimed to reduce greenhouse gas (GHG) emissions by at least 55% by 2030. The system covers emissions of carbon dioxide (CO2), nitrous oxide (N2O), and perfluorocarbon (PFC) - created in aluminium production. So far, the system has covered heat and power plants, intensive industries (refineries, steel plants, cement plants, ceramic and cellulose plants, petrochemical plants, among others), commercial aviation, and producers of N2O and PFCs.

The ETS review has included the first amendment to the "Market Stability Reserve" (MSR), which also aimed to adapt it to the global aviation system known as CORSIA (Carbon Offsetting and Reduction Scheme for International Aviation). However, more than the carbon market is required to achieve the intended emissions reduction within the set deadlines. Other complementary policies are well needed, particularly in transportation and energy, which impact investments in infrastructure and clean technologies.

This ETS global package shall result in a 43% reduction in emissions in 2030 (compared to 2005), consistent with the global reduction target of 40% by the same date. With the new target (55% in 2030, about 1990), the reduction rate has needed to be reviewed, with the corresponding legislative changes, particularly in the maritime and aviation sectors, whose emissions have grown internationally by about 50% since 1990.

In the maritime sector, the increase in emissions in recent decades and the limited options for decarbonization make it essential to adopt measures starting from the pandemic recovery itself. Although emissions from bunker fuel sold in the European Union are monitored, they are not covered by the ETS system or any other Union climate legislation and are outside the Paris Agreement.

The Commission has decided to extend the ETS to maritime transport and analyze emissions from buildings, road transport, and potentially all fossil fuel emissions to improve their efficiency, expanding the EU emissions market. In parallel with the ETS and the MSR review, innovation and modernization funds should be set up to support the desired transition and decarbonization[27].

The issue has led to many different positions. While there is a generic commitment by ship operators to reduce emissions, a July 2020 study published by ECSA (European Community Shipowners' Association) and ICS (International Chamber of Shipping) highlights a very significant set of disadvantages that will result from including international shipping in the regional emissions market, preferring the global option of a version of Market-Based Measure (MBM)[28].

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[26] The "Fit For 55" package in July 2021 has considered a basket of measures to address GHG emissions for the shipping sector as follows: Extension of ETS to Maritime Transport (ETS), Revision of the Renewable Energy Directive (RED), Revision of Alternative Fuels Infrastructure Directive (AFIR), Revision of the Energy Taxation Directive (ETD) and New FuelEU Regulation. However, the IMO push forward an international assessment and implementation of efficient measures for climatic transition has been delayed, dangerously jeopardising the EU efforts. Maritime transport is international and needs worldwide measures, at last!

[27] ETS revenues (from the allowances market) will be allocated to EU Member States and the EU budget. For this purpose, port authorities (and, generally, managing bodies) must include port projects in each Member State's national energy and climate plans.

[28] See https://www.ecsa.eu/sites/default/files/publications/CESA-ICS-2020-Study-on-UE-ETS.pdf. Page 10 states: *"This report concludes that applying an Emissions Trading System to shipping, in particular a regional system, would be unlikely to provide an approach that will positively support decarbonisation by the entire*

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Although one can defend the Commission's proposal to include maritime transport in the carbon market, the final wording could be clearer, given that the options range from intra-European trade to global maritime trade, considering some or all journeys.

A somewhat conciliatory hypothesis, which does not greatly affect international maritime trade, could be to link a significant part of the emissions of ocean transport (i.e., long distance). Another directly related aspect is the application of the proceeds of the maritime ETS market to investment in the sector and, if necessary, to benefit from the aviation scheme (CORSIA), which, like shipping, is mainly international.

Several options for the revision of the ETS are currently being considered, including the following:

(i) The linear reduction of the factor to reach the 55% reduction target in 2030, updating the system to a value close to the current level of emissions with the interaction of MSR;

(ii) The operating parameters of the MSR should be reviewed in light of annual auction volumes and the percentage applied to the total number of allowances in circulation;

(iii) The extension of the ETS to maritime transport and, potentially, to emissions from buildings, road transport and, in general, from fossil fuels;

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global sector, *as envisaged by the IMO Strategy*, *especially when compared with a global carbon price/levy on the fuel oil purchased for consumption by ships"*.

In Resolution MEPC.377 (80), adopted on 7 July 2023 (MEPC 80/17/Add.1, Annex15), IMO has recalled the "2023 IMO Strategy on Reduction of GHG Emissions for Ships", revoking the 2018 Initial IMO GHG Strategy. The indicative checkpoints to reach net-zero GHG emissions from international shipping are as follows: (1) to reduce the total annual GHG emissions from international shipping by at least 20%, striving for 30%, by 2030, compared to 2008; and (2) to reduce the total annual GHG emissions from international shipping by at least 70%, striving for 80%, by 2040, compared to 2008. On 1 January 2023, it became mandatory for all ships to calculate their Energy Efficiency Existing Ship Index (EEXI) and establish their annual operational carbon intensity indicator (CII) and CII rating. This way, ships get a rating of their energy efficiency (A, B, C, D, E). A ship running on low-carbon fuel gets a higher rating than one on fossil fuel. In March 2024 at MEPC81, the IMO progressed on adopting GHG measures to meet the targets set in the new 2023 IMO GHG strategy. This includes work on a *Global Fuel Standard* (technical element) and a *global pricing mechanism* (economic element) as part of the mid-term measures. A GHG Fuel Standard (GFS) will control the GHG intensity of fuel by prescribing a maximum intensity and gradually lowering the limit at predetermined intervals. There are two core proposals for GFS as follows: (1) A direct well-to-wake (WtW) metric (supported by the EU) and (2) A tank-to-wake (TtW) metric with a categorisation on well-to-tank (WtT) and sustainability criteria (supported by China, Latin America and Norway). On the other hand, a GHG pricing mechanism is thought to provide an economic incentive for the sector to reduce its fuel consumption through energy-efficient technologies and fuels. Whilst EU countries and Pacific Island nations continue to advocate for a mandatory global levy, some countries such as China, Russia, and some in Latin America and Africa think it would be an unacceptable tax on trade (see summary on MEPC81 at ESPO-C-4285 of 5 of April 2024). Its implementation results from an impact study currently carried out by UNCTAD and DNV. From the study's conclusions, it will then be decided how to move the study's conclusions fee in parallel with the medium-term technical measures. The measures would need to be adopted in 2025 for entry into force in 2027.

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(iv) Improved support for investments and innovations covering low or zero carbon emissions or their capture, such as specific medium- or long-term carbon contracts where the (low emission) producer has a guaranteed carbon price through an innovation fund;

(v) The ETS contribution to challenges regarding the transition to climate neutrality and its impacts, including the use of revenues from auctioning and the modernization and innovation fund;

(vi) Provisions to prevent the relocation of unauthorized carbon emitters outside the Union and import products that have not been manufactured with Union emissions benchmarks (Carbon Leakage Provisions), with the adoption of a Carbon Border Adjustment Mechanism to compensate for lower importation costs.

Given that the IMO is not proceeding towards decarbonization at equal speed, the ETS Directive has created unfair competition between EU ports and neighbouring non-EU ports because emission unit allowances (EUAs) apply differently or may not apply.

The current plan for ETS Maritime has raised serious concerns about the system's extra-EU application, which could lead to carbon and business leakage at the expense of EU ports. The revised ETS Directive includes a "port of call" definition that only incorporates ports where ships stop to load or unload cargo or embark or disembark passengers while excluding calls in "neighbouring container transhipment ports."

However, loopholes allow shipping companies to evade ETS costs related to extra-EU voyages. For instance, they can easily avoid or reduce these costs by calling at ports outside the EU or through transhipment. That means that shipping companies can change the order of their port calls and add a non-EU port before calling in the EU.

However, the EU ETS Implementing Regulation has ruled out this option for some ports, including Tanger Med (Morocco) and East Port Said (Egypt), which are excluded from the definition of "port of call" under the ETS. Nevertheless, this evasion option remains possible in all other non-EU ports.

Another option for shipping companies is transhipment evasion using the hub-and-spoke model. They can drop off cargo in a non-EU transhipment port and then distribute it via smaller (feeder) vessels to EU ports (this is happening now, and simultaneously, with the routes diverted by Cape of Good Hope due to the Houthis threat).

This option may lead to a shift in port traffic and transhipment activities from EU ports to non-EU ports, resulting in significant business and economic losses. Theoretically, this evasion option is possible at any non-EU port, including Tanger Med and East Port Said.

Given these risks and loopholes, the EU Commission must take action to prevent carbon and business leakage, protect EU ports, and ensure that the ETS Maritime achieves its intended goals. Although the revised ETS Directive contains measures to address the risks of carbon and business leakage, more must be done to close the loopholes, allowing shipping companies to evade ETS costs.

It is reassuring that the revised ETS Directive contains a review clause that requires the Commission to monitor port traffic changes and propose measures to address evasion if it is established. Nonetheless, proactive measures are essential to prevent these risks from materializing.

In the last months of 2023, several transitory solutions have already been proposed to prevent unfair competition between EU ports and non-EU ports by some member states, namely, Portugal, Spain, Italy, Greece, Croatia, Malta and Cyprus. At the time being, six proposals that have been launched to balance the unfair situation are as follows:

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(i) a targeted maritime-related adjustment of the ETS Directive – we will support changes presented by the Commission, as appropriate, directed at keeping the competitiveness of EU ports and shipowners, especially focused on transhipment operations;

(ii) a transitory "stop the clock" clause, for instance, allowing for a deferred period of application of ETS;

(iii) concrete measures to contain and avoid the shift of operations from EU ports to neighbouring third countries ports, already in its 2024 report or before if needed – time is of the essence to avoid the shift of operations;

(iv) ensure a level playing field in the treatment of the EU transhipment ports and their competitors in neighbouring third countries;

(v) the close monitoring of the list of third country ports within the 300 nautical miles – for the time being, only two have been identified, but other ports may need building conditions to join this list;

(vi) a consistent action within international fora, especially in IMO, to implement a market-based measure to reduce greenhouse gas emissions – as members of IMO, we will strive in this direction. We should collectively strive for global action at the IMO level immediately.

If the "stop the clock" option (suspension) is not feasible, an "ex-ante" solution could be considered. Until traffic deviations are monitored to confirm their existence, postponing the EU Allowances (EUAs) accountability and payment must be considered, especially in the south hub EU ports. According to the Directive, the MRV (Regulation No 2015/757) should be submitted in March 2025, while the EUAs should be surrendered in September 2025[29].

It must be stressed that these transhipment services will be transferred outside the EU area, often increasing the distance sailed by vessels and, thus, the carbon leakage, jeopardizing the environmental goals. Furthermore, it is too difficult to have them back soon!

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[29] The EU MRV regulation establishes rules whereby shipping companies report the reported carbon dioxide (CO2) emissions annually and other relevant information from ships calling EEA ports. CO2 emissions are the largest component of greenhouse gas emissions from maritime transport. Hence, after 1 January 2024, the scope of the MRV regulation has expanded to include CH4 and N2O emissions from shipping. Additionally, from 1 January 2025, the amended EU MRV regulations will apply to general cargo ships between 400 and 5000 GT and offshore ships of 400 GT and above. The EU MRV and the EU ETS are integrated, and emissions data from the existing EU MRV is the basis for the EU ETS. Starting in 2025, the shipping company must submit verified aggregated emissions data to the competent authority by 31 March each year. This data will be based on the MRV Emissions Reports for the previous year. This means the EUAs for 2024 will only be surrendered in September 2025.

According to a study commissioned by the Royal Belgian Shipowners' Association (see a summary at https://www.seanews.com.tr/eus-emissions-trading-system-fraught-with-contractual-risks/200421/#google_vignette), the ETS is fraught with ambiguities and contractual risks for shipowners, operators, and charterers, especially when it states that the responsible entity must be the same for EU MRV and EU ETS. Sometimes, this cannot be the case. This complexity of the responsibility chain requires a concerted effort to accomplish the transition to environmentally sustainable shipping practices. Anyway, it's another difficulty for the full implementation of ETS to maritime transport that needs to be carefully reviewed quickly, along with the utmost unfair application of ETS in southern European countries.

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Thus, this "ex-ante" solution seems suitable as it allows for the monitoring and study of the behaviour of the markets and shipping lines without causing any disruption to the parties involved.

Let us also comment briefly on the consequences of the Houthi rebels' missile attacks on ships playing the Red Sea route over the last 2023 months. Cape of Good Hope's lengthy voyage diversion for Europe-bound vessels has multiplied fuel consumption, adding around 9.000 nautical miles, or 80%, to the distance sailed[30].

ETS credits have increased dramatically, and it is uncertain how long this situation will persist. Therefore, shipping companies must be aware of higher emissions liabilities in the future.

Another important issue: let us recall that the Energy Taxation Directive (ETD) states that EU countries are required to achieve cumulative end-use energy savings for the entire obligation period (running from 2021 to 2030), equivalent to new annual savings of at least 0.8% of final energy consumption in 2021-2023, at least 1.3% in 2024-2025, 1.5% in 2026-2027, and 1.9% in 2028-2030.

This Directive is now under review. Concerning the maritime sector, the proposal from 2021 introduces taxation for fuels supplied for use by vessels, limited to vessels in intra-EU waterborne navigation.

A new taxation is overcome because the bunkering activity triggers taxation. If a ship bunkers in an EU port and is followed by another call at an EU port, all the bunkered fuel will be taxed. Thus, such a proposal would impact EU ports, especially those with important bunkering activities.

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[30]Clarksons Research has reported that container ship transits from the Gulf of Aden to the Mediterranean decreased by 91% in the first half of December due to the diversion of around 620 vessels. Bunker and crude tanker transits decreased by 37% and 31%, respectively. Meanwhile, tonnage arrivals at Cape of Good Hope have increased 81% since December (see Clarkson Research report on assessing the impact of the Red Sea situation on the shipping market on 3rd January 2024).

The disruption of these critical trade routes has caused spot freight rates to increase by two to three times compared to pre-disruption levels. Additionally, charter rates have increased by 28% since December.

Moreover, Hamburg-based maritime technology firm Ocean Score has noted that the widespread diversion of marine traffic has raised shipping companies' costs due to the significant increase in exposure to the EU ETS. Ocean Score has estimated that the route via the Cape has tripled bunker consumption due to the longer distance and an approximate 25% increase in sailing speed from 16 to 20 knots (see https://www.offshore-energy.biz/shippings-eu-ets-costs-could-nearly-triple-due-to-red-sea-crisis-oceanscore-says/, 12th March 2024).

These ship's increased speeds are in force to compensate for at least some of the longer distance, keeping sailing times and the additional tonnage needed at adequate levels to and from Europe. However, of course, this impacts bunker consumption and emissions and, consequently, the ETS credits.

Ocean Score reported that for a container ship with a capacity of 14,000 twenty-foot equivalent units (TEUs), the number of EU Allowances (EUA) or carbon credits needed to cover its emissions would increase from 1800 per voyage to 5200 per voyage due to the current 40% liability requirement under the three-year phase-in of the EU Emissions Trading System (ETS) starting from 1st January 2024. This requirement will increase to 70% next year and 100% in 2026.

According to Ocean Score, this would translate into an increase in allowances costs from €98,000 to €285,000 per voyage in 2024, based on the current carbon price of around €55 per tonne of CO2, or a hike of €18 per TEU. If the volatile carbon price returns to the level of around €100 that it reached in 2023, these costs would nearly double.

However, if the EU ETS reaches 100% of emissions (last phase), we would see another 250% increase, bringing the cost mark-up per box to around €80. This does not consider that changes in sailing speeds, vessel sizes and utilisations, and the overall energy efficiency of the vessel used will all significantly impact the costs.

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So, together with the ETS—which already has an unfair situation in EU southern countries, as explained—it would imply an extra taxation on top of the ETS charge for SSS within the EU.

However, the review was not approved last April, and the document seems to be being held again[31].

On this matter, Spain presented at the Transport Council on June 18 a document emphasising the imminence (or already happening) of traffic deviation in south EU hub ports, proposing (and in some cases reinforcing) efficient measures to refrain from that diversion due to ETS maritime.

Nine Member States (Spain, Cyprus, Greece, Croatia, Italy, Lithuania, Malta, Portugal, and Romania) have expressed concerns over carbon and business leakage, calling on the Commission to monitor the extension of EU ETS to maritime transport adequately.

In synthesis, the proposals laid down in the Spanish letter were as follows[32]:

(i) Incorporate a risk assessment in the monitoring mechanism included in the EU ETS, including predictive criteria to anticipate possible route deviations.

(ii) Immediately start the review process of the Directive and begin designing measures that would be applied in the event of route deviations to anticipate and allow immediate action to prevent those deviations.

(iii) Establish a network of focal points in the Member States to exchange information on analysing and monitoring the application of the EU ETS to the maritime sector at the national level.

(iv) Recalling the strengthened efforts already approved in December, the Council will look for global and ambitious solutions at the IMO level to safeguard the competitiveness of EU shipping and ports.

Spain has also pointed out that the important thing is to tax the emissions of containers according to their origin and route, not the ship they travel on, which is the newest approach that has to be evaluated.

On the same Transport Council, the Commission stated that it intends to publish a report with the first monitoring results by the end of this year and assess which adaptations, if any, are needed to review the legislation. Nevertheless, it seems to be too late to act.

However, with the full support of the proposals mentioned, adopting an expedited and additional method for monitoring traffic deviation is pivotal.

The deviation assessment on the hub ports, where the risk is unacceptable, will be efficiently conducted and monitored using an expedited method whose assessment is updated at least every three or six months. This measure reassures that a deviation or evasive behaviour will call the Commission to propose adequate measures following number 3 of article 3gg of the ETS Directive, ensuring swift and accurate responses.

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[31] During the first semester of 2024, the Belgian EU Presidency tried to reach an overall political agreement to review the Energy Taxation Directive. However, it failed during the last meeting of the Council Taxation Working Party on 25 April 2024, when different delegations opposed (or made reservations) the compromise proposal, particularly about the maritime pillar.

Consequently, the file seems to be on hold again. As this is a taxation file, the Parliament can only give a non-binding opinion. The Council can decide independently but needs to adopt the Directive unanimously (see ESPO C-4314, 07 May 2024).

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[32] Vide ESPO Circular ESPO C-4355 25 June 2024, *EU ETS Member States letter on carbon and business leakage discussed in Transport Council.*

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6. Conclusions

The European Commission's "European Green Deal" communication, sent on December 11, 2019, proposes a comprehensive strategy to tackle climate and environmental challenges. The proposed plan aims to achieve sustainable growth by adopting new transformative policies and measures which are citizen-focused, participatory, equitable, and inclusive, ensuring that no one is left behind. The Commission aims to draw an evolutionary roadmap on the main policies and measures for implementing the European Green Deal (EGD), which should be aligned with the 2030 Agenda and the UN Sustainable Development Goals.

The EGD outlines eight objectives, which are as follows:

(i) Raise the EU's climate ambition for 2030 and 2050;

(ii) Provide clean, secure, and affordable energy;

(iii) Mobilise industry for the circular and clean economy;

(iv) Build and renovate in an energy and resource-efficient manner;

(v) Accelerate the transition to sustainable and intelligent mobility;

(vi) "From farm to fork": designing a fair, healthy, and environmentally friendly food system;

(vii) Preserve and restore ecosystems and biodiversity;

(viii) Adopt a zero-pollution ambition for an environment free of toxic substances.

The Commission estimates that achieving the EGD by 2030 will require an additional annual investment of €260 billion, or around 1.5% of 2018 GDP, with public and private funding. The plan also includes various financing strategies, such as creating new revenue streams, reviewing state aid in the environment and energy fields, and allocating 20% of auctioning revenues within the EU ETS.

The Communication also highlights the critical role of innovation and the private sector in the ecological transition. The Commission proposes to create a taxonomy of environmentally sustainable activities and improve opportunities for investors and companies by easily identifying sustainable and credible investments. The plan also includes measures to integrate the management of climate and environmental risks into the financial system.

The EGD provides a Just Transition Fund to support a just transition. In addition to the substantial contribution from the EU budget, this fund will support those most vulnerable to climate change and environmental degradation accompanying significant structural change. The regions and sectors most affected by the transition are those with a higher dependence on fossil fuels or high carbon-emitting processes.

Finally, the EGD highlights the importance of researching new technologies to demonstrate clean energy's competitive advantage. The Commission proposes to allocate at least 35% of the budget of Horizon Europe, its flagship research and innovation program, to support new climate solutions. Partnerships with industry and member states will be the way to support the goal of transforming the EU economy and society sustainably.

The European Union is taking significant steps to address climate change by amending Directive No 2003/87/EC to include shipping emissions in the EU ETS. This initiative aims to reduce GHG emissions by at least 55% by 2030. The EU ETS has operated since 2005 and was the world's first carbon market.

This ETS legislation will result in a 43% reduction in emissions in 2030 compared to 2005, consistent with the global reduction target of 40% by the same date. With the new target (55% in 2030, about 1990), the reduction rate needs to be reviewed, and the corresponding legislative changes need to be made, particularly in the maritime and aviation sectors. These sectors' emissions have grown internationally by about 50% since 1990, making it essential to adopt measures starting from the pandemic recovery itself.

Although emissions from bunker fuel sold in the European Union are monitored, they are not covered by the ETS system or any other Union climate legislation and are outside the Paris Agreement. The Commission has decided to address this issue by extending the ETS to maritime transport and other sectors.

The cost of the EU ETS is a significant concern and will vary based on the type and segment of the ship. The full financial impact of the system will be seen after some time, as it will be phased in

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over the next few years. According to an analysis by Clarksons Research, a VLCC sailing from Ras Tanura to Rotterdam will require approximately $200,000 in allowances this year, which represents 4% of current freight costs, based on 2022 trading patterns and an EUA price of $90 per ton. These data are expected to increase to 10% in 2026 when the EU ETS is fully implemented.

These figures show the significant financial incentives created by the EU ETS to reduce greenhouse gas emissions in the short term. They also emphasize the importance of utilizing existing and proven technology to improve fuel efficiency. Even a small percentage of fuel saved can make a difference in companies' EU ETS bills, helping them stay competitive.

Optimizing voyages can help companies minimize fuel consumption and emissions for each sea passage while providing more predictability on future fuel consumption and costs. This option should be an obvious choice, as these systems can be deployed with little to no CAPEX and save an average of 10% fuel consumption on some routes, even shorter intra-European routes. Weather routing can be tailored to help maximize the fuel savings delivered by wind propulsion systems or alternative fuels, helping to achieve even better environmental and financial outcomes.

Tracking and proactively managing performance at a vessel and fleet level must be a key pillar of companies' strategies for reducing their emissions in line with the tightening requirements of the EU ETS and FuelEU, which is forthcoming.

Options for revising the ETS include reducing linear emissions, extending it to maritime transport and fossil fuels, improving support for low or zero carbon emissions, provisions to prevent carbon emitters from relocating and adopting a Carbon Border Adjustment Mechanism (CBAM).

Given that the IMO is not proceeding towards decarbonization at equal speed, the ETS Directive has given rise to serious unfair competition (and the Emission Taxation Directive review, fortunately, has been stated on hold). Therefore, it is essential to adopt measures that ensure a level playing field and a fair transition towards a low-carbon economy.

Suppose the "stop the clock" option cannot be used until the IMO approves the carbon bunkering tax. Last year, we tried to forward it to an *"ex-ante"* solution, proposing delaying the payment of EU Allowances (EUAs) until it is confirmed whether traffic deviations are occurring.

Therefore, postponing the EU Allowances (EUAs) accountability and payment could be considered, especially in the South Hub EU ports, to avoid traffic deviations and monitoring to confirm and measure their existence.

The computing/payment of the allowances resulting from the calls in the EU ports less than 300 miles from neighbouring ports shall be suspended and computed in an autonomous account until assertive and accurate monitoring of traffic deviations is performed over those ports. In such a case, several articles of the Directive may support this measure and should be interpreted extensively to prevent/sustain that behaviour.

The Directive requires MRV (Regulation No 2015/757) to be submitted in March 2025 and EUAs to be surrendered in September 2025. This solution seemed appropriate because it allows for monitoring and analysis of the markets and shipping lines' behaviour without causing any disruption to the involved parties

This solution was the most adequate for the time being. It does not hamper parts while giving time to monitor/study the behaviour of markets and shipping lines. It would refrain from deviation plans for the shipping lines and should be publicly announced immediately[33].

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[33] Unfortunately, what we have previewed started to happen. The direct threat to the competitiveness of the EU ports in the Mediterranean and southern Europe by transhipment ports in North Africa is real. On 17th February 2024, Maersk, the second largest shipping company in the world, decided to concentrate its traffic in Tanger Med, a Moroccan port (see https://www.economiadigital.es/valencia/empresas/maersk-puente-marruecos-puerto-valencia.html).

The decision has two immediate repercussions: it removes the shipowner from the Port of Valencia and avoids the Emissions Trading System (ETS) payment. As we have seen, the ETS system forces shipping companies that unload goods in Europe to pay based on the miles they have sailed,

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Unfortunately, this "ex-ante" proposal did not have the necessary approval. So, it is of utmost importance to immediately implement preventive measures to contain (and avoid) the shift of operations from EU ports to neighbouring ports (and others not classified like those), ensure a level playing field in treating the EU transhipment ports and their competitors, and avoid carbon leakage.

At present, we must consider other increasing costs and ETS credits: container ship transits from the Gulf of Aden to the Mediterranean decreased by 91% in the first half of December due to the diversion of around 620 vessels and bunker and crude tanker transits decreased by 37% and 31%, respectively, due to Houthis attacks. It must be recalled that diverting vessels from Asia bound for Europe route around Africa adds to the original pattern of nine to fourteen days.

These ship's increased speeds are in force to compensate for at least some of the longer distance, keeping sailing times and the additional tonnage needed at adequate levels to and from Europe. However, of course, this impacts bunker consumption and emissions and, consequently, the ETS credits.

In the EU South (and nearby), TangerMed and Algeciras ports are almost congested, with more requests to handle extra cargo than planned. However, the impact is global: major transhipment hubs (such as Singapore) face severe congestion and declining port productivity due to a huge change in regular line patterns and vessel rerouting.

Carriers and shippers will continue to face challenges and concerns in the remaining year and probably the next one, with most companies still diverting around Africa and with increasing logistic costs over the consumers. This diversion, plus the ETS diversion, would cause multiple changes in maritime patterns and the logistic chain.

In conclusion, there is an urgent need for the adoption of an amendment to the ETS Directive or an expedited action of the Commission to contain the forecast diverting regular container lines in the

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polluting their CO2 emissions. According to Maersk, Morocco is becoming increasingly popular as a sourcing location. Truck transport from Morocco to Spain has recently experienced double-digit growth, creating pressure on the route.

Another shipowner, Hapag-Lloyd, uses Morocco to skip the Port of Valencia and bring oranges from South Africa into Europe. Their business proposition is a multimodal service that connects Morocco with Spain and the rest of Europe.

Maersk believes Morocco is on its way to becoming a strategic centre in North Africa. One key is European ports' fiscal differences when complying with the ETS payment compared to the absence of this extra cost in African port infrastructures.

The Valencian port community, the largest in maritime logistics services in Spain, is asking for equal costs and legislation for all ports. Maersk sees a business opportunity in the following: the EU and Morocco established a free trade area more than two decades ago, and trade between the two could expand in the coming years.

One of the issues to be analysed when Maersk's operations are fully implemented will be the pollution balance that this decision has. The "Moroccan Bridge" assumes that Tanger Med receives the cargo in mega-ships. It is redistributed in 'feeder' ships (smaller) to Algeciras, and from there, it is distributed throughout Spain and the rest of Europe (of course, also to Portugal).

Everybody should be concerned about the situation in the hub's ports of Southern Europe in the Mediterranean, particularly Sines, Algeciras, Valencia, Barcelona, Genoa, Malta, and the ports of Croatia, Greece, and Cyprus, not only with the mother ship deviation traffic to Tanger Med but also to the ports of North Africa and Turkey.

The option of landing these goods in Morocco to avoid paying the pollution tax ends up causing greater pollution in Spain. This will become more pronounced if the Maersk containers have to be loaded on trucks and transported along the current roads towards the rest of Europe.

We will assist in traffic deviation to non-European ports in Southern Europe, increasing congestion, disrupting the safety and security of traditional logistic chains in Europe, increasing the carbon footprint, undermining the aim of the European Green Deal, and sacrificing the market.

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vicinity of non-EU ports, increasing the emissions on shipping and degrading the logistics trade and security chain.

It shall implement preventive and reactive measures to avoid (and contain) the shift of operations from EU ports to neighbouring ports, ensure a level playing field in treating the EU transhipment ports and their competitors, and avoid carbon leakage.

The proposed action, specifically in number 3 of article 3gg of the Directive, suggests an immediate and expedited method of deviation assessment on the main hub ports on the southern flank of the EU. This action is designed to prevent traffic loss to non-European countries (North Africa and Turkey, namely), thereby maintaining the competitiveness of EU ports[34].

It should be noted that a *"perfect storm"* seems to be arriving regarding shipping costs to Europe.

Therefore, the European Commission must take immediate action to sustain this unfair competition and playing field!

Marcus Aurelius, the Roman Emperor, has noted that we have to act when he recalled that:

"Waste no more time arguing about what a good man should be. Be one".

ACRONYMS LIST

AFID	Alternative Fuel Infrastructure Directive - Directive No 2014/94/EU
AFIR	Alternative Fuel Infrastructure Regulation
AIS	Automatic Identification System
CBAM	Carbon Border Adjustment Mechanism
CEF	Connecting Europe Facility
CII	Carbon Intensity Indicator (IMO)
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
COSS	Committee on Safe Seas and the Prevention of Pollution from Ships
CSND	Clean Sea Net Data
ECSA	European Community Shipowners' Association
EEDI	Energy Efficiency Design Index (IMO)
EES	Entry-Exit System (EU)
EEXI	Efficiency Design Index for Existing Ships (IMO)
EGCS	Exhaust Gas Cleaning Systems
EGD	European Green Deal
EMSA	European Maritime Safety Agency

[34] Recalling the number 3 of article 3gg of ETS Directive: *The Commission shall monitor the implementation of this Chapter in relation to maritime transport, in particular to detect evasive behaviour in order to prevent such behaviour at an early stage, including giving consideration to outermost regions, and report biennially from 2024 on the implementation of this Chapter in relation to maritime transport and possible trends regarding shipping companies seeking to evade the requirements of this Directive.*

The Commission shall also monitor impacts regarding, inter alia, possible transport cost increases, market distortions and changes in port traffic, such as port evasion and shifts of transhipment hubs, the overall competitiveness of the maritime sector in the Member States, and in particular impacts on those shipping services that constitute essential services of territorial continuity.

If appropriate, the Commission shall propose measures to ensure the effective implementation of this Chapter in relation to maritime transport, in particular measures to address trends regarding shipping companies seeking to evade the requirements of this Directive.

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ERTMS	European Rail Traffic Management System
ETD	Energy Taxation Directive
ETIAS	European Travel and Information System
ETS	Emission Trade System (EU)
EU Taxonomy	Taxonomy of the European Union
EUAs	Emission Unit Allowances (EU)
FSC	Flag State Control
GDP	Gross Domestic Product
GFS	GHG Fuel Standard (IMO)
GHG	Greenhouse gases
ICS	International Chamber of Shipping
IMO	International Maritime Organization
IPCC	Intergovernmental Panel on Climate Change
LDCs	Least Developed Countries
LRIT	Long Range Identification and Tracking
MAI	Maritime Accident Investigation
MARPOL	International Convention for the Prevention of Pollution from Ships
MBM	Market-Based Measures
MEPC	Marine Environment Protection Committee (IMO)
MGO	Marine Gas Oil
MRV	Monitoring, Reporting and Verifying CO2 Emissions from Maritime Transport (EU)
MSR	Market Stability Reserve
NCE	National Emission Ceilings Directive - Directive No 2016/2284/EU
NIS2	Measures for a High Common Level of Cybersecurity across the Union (II) - Directive No 2022/2555/EU
OPS	On-Shore Power Supply
PFCs	Perfluorocarbon Emissions
PRF	Port Reception Facilities Directive - Directive No 2019/883/EU
PSC	Port State Control
PSR	Port Services Regulation
RED	Renewable Energy Directive
SEEMP	Ship Energy Efficiency Management Plan
SIDS	Small Island Developing States
SLLP	Poseidon's Principles and the Sustainability Linked Loan Principle
SSN	Safe Sea Net
SSS	Short Sea Shipping
TEG	Technical Expert Group for Taxonomy (EU)
TEN-E	Trans-European Energy Network
TEN-T	Trans-European Transport Network
UNCTAD	United Nations Conference on Trade and Development
UNFCCC	United Nations Framework Convention on Climate Change
VTMIS	Vessel Traffic Monitoring System

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WSM	Waste Ship Management – Reg. 1013/2006/EC (ship's dismantling)

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