CHAPTER 12

A Study on Emissions Pricing in Maritime Transport and a Model Proposal

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INTRODUCTION

Maritime transport is the mode of transportation that freight is carried at the lowest cost. With the effect of cost advantage, the demand for maritime transport in world trade has increased, and the world merchant fleet has started to grow. However, as the merchant fleet multiplied, ships became a source of emissions, and the environmental damage of maritime transport began to increase.

The maritime authority IMO, a participant in the Kyoto Protocol as a UN expert agency, directs the process as an essential part of

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the international struggle to reduce greenhouse gas emissions from maritime transport.

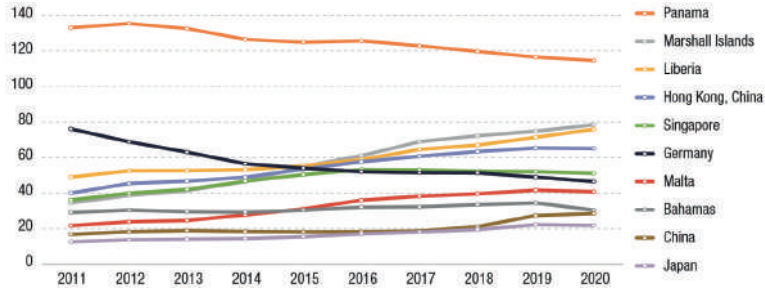
IMO and other authorities have enacted sanctions based on environmental benefit and protection to build a more ecological world fleet of ships. Since the Kyoto Protocol is valid until 2020, the Paris Climate Agreement, which has similar aims to the protocol, has gained priority on the global platform. In particular, IMO and the EU Commission have accelerated the research with the effect of the Paris Climate Agreement to reduce ship-sourced environmental damage. Thus, essential studies regarding the decarbonization process in maritime transport have begun over the years.

This study examines financial offers for pricing carbon emissions from maritime transport. For this reason, firstly, we explained the importance of carbon emissions in marine transportation, then "Market Based Measures"-MBMs were mentioned, and lastly, we examined financial offers for the pricing of carbon emissions from maritime transport.

1. The Importance of Carbon Emissions in Maritime Transport

The share of maritime transport in global air pollution; varies depending on the fuel and energy consumption of the ships. In other words, a ship causes air pollution in direct proportion to the energy and fuel consumed. In maritime transport, there isn't a widely used yet other option other than fossil fuel-consuming and similar systems to provide the power needed for medium and large-scale commercial ships. Therefore, zeroing the emissions caused by maritime transport, which carries approximately %90 of the world trade, can't be foreseen in the short term. However, the research for solutions on the subject has continued for a long time. Also, they have been continued advanced engineering studies for technologies and approaches that will increase energy efficiency and reduce carbon intensity in ships (Ölçer, 2021: 48 – 49).

In scientific studies about maritime transport, it has been suggested that emissions can be reduced by about % 80 by using "alternative fuels such as hydrogen, ammonia, biofuels, and electrification from renewable sources." (IMEAK DTO, Circular No: 1179, 2021: 1). Carbon emissions caused by ships belonging to flag states between 2011 and 2021 are shown in Graph 1.



Graph 1. Carbon Emissions by Flag State 2011-2021 Period (Annual/ Million Tons)

Source: (UNCTAD, 2021: 106)

The UN, which carbon emission has frequently revived to its global agenda in recent years, emphasized that one of the essential solutions in the fight against global warming is to reduce fossil fuel consumption. In this context, as an expert organization, the IMO affiliated with the UN has initiated various action plans to reduce carbon emissions in maritime transport and to "zero" them by the end of the century. Also, the international marine industry attaches great importance to achieving the "zero carbon emission" target by 2050. In this context, by 2030, we should build thousands of zero-carbon ships. Furthermore, the majority of ships should achieve zero carbon emissions by 2050. But on the other hand, the maritime industry participants have claimed that current technologies aren't sufficient to reach the 2050 targets (IMEAK DTO, Circular No: 1179, 2021: 1-2).

Research regarding reducing and pricing emissions from maritime transport continues at the MEPC meetings within the scope of IMO. Furthermore, the negotiation process on alternative financial model proposals to finance the decarbonization process continues.

On the other hand, IMO has followed developments regarding the EU Green Deal and the extension of the ETS, including the maritime industry (IMEAK DTO, Circular No: 1149, 2021: 1).

3.Market Based Measures-MBMs

Market-Based Measures (MBMs) that have been developed to reduce the greenhouse gas from international shipping have been evaluated since MEPC 56 took place in 2006. Subsequently, "*MEPC 55 work plan ceased at MEPC 59 (July 2009), where the Committee recognized that technical and operational measures would not be sufficient to satisfactorily reduce the amount of greenhouse gas emissions from international shipping in view of the growth projections of world trade."* MBMs serves to two main purposes (https://www.imo.org (01.06.2022)).

- providing an economic incentive for the maritime industry to reduce its fuel consumption by investing in more fuel-efficient ships and technologies and to operate ships in a more energy efficient-manner (in-sector reductions); and
- offsetting in other sectors of growing ship emissions (out-of-sector reductions)

Governments and observer organizations propose MBMs to date. These can be expressed with the help of Table 1.

Table 1. MBMs

International Fund for GHG emissions from ships (GHG Fund) (Cyprus, Denmark, the Marshall Islands, Nigeria and IPTA (MEPC 60/4/8))	Establishes a global reduction target for international shipping, set by either UNFCCC or IMO. Emissions above the target line would be offset largely by purchasing approved emission reduction credits. The offsetting activities would be financed by a contribution paid by ships on every tonne of bunker fuel purchased.
Leveraged Incentive Scheme (LIS) (Japan (MEPC 60/4/37))	Greenhouse Gas Fund contributions are collected on marine bunker. Part thereof is refunded to ships meeting or exceeding agreed efficiency benchmarks and labelled as "good performance ships".
Port State Levy (Jamaica (MEPC 60/4/40))	Levies a uniform emissions charge on all vessels calling at their respective ports based on the amount of fuel consumed by the respective vessel on its voyage to that port (not bunker suppliers).
Ship Efficiency and Credit Trading (SECT) (United Sates (MEPC 60/4/12)	Subjects all ships to mandatory energy efficiency standards. As one means of complying with the standard, an efficiency-credit trading programme would be established. These standards would become more stringent over time,
Vessel Efficiency System (VES) (World Shipping Council (MEPC 60/4/39))	Establishes mandatory efficiency standards for new and existing ships. Each vessel would be judged against a requirement to improve its efficiency by X% below the average efficiency (baseline) for the specific vessel class and size. Standards would be tiered over time with increasing stringency. Existing ships failing to meet the required standard through technical modifications would be subject to a fee applied to each tonne of fuel consumed.
Global Emission Trading System (ETS) for international shipping (Norway (MEPC 61/4/22))	Sets a sector-wide cap on net emissions from international shipping. A number of allowances (Ship Emission Units) corresponding to the cap would be released into the market each year via a global auctioning process. The units could then be traded.

Global Emissions Trading System (ETS) for international shipping (United Kingdom (MEPC 60/4/26))	Differs from the Norwegian ETS proposal in two aspects: the method of allocating emissions allowances (national instead of global auctioning) and the approach for setting the emissions cap (set with a long-term declining trajectory).
Emissions Trading System (ETS) for International Shipping (France (MEPC 60/4/41))	Sets out additional details on auction design under a shipping ETS. In all other aspects the proposal is similar to the Norwegian ETS proposal.
Market-Based Instruments: a penalty on trade and development (Bahamas (MEPC 60/4/10))	Insists that the imposition of any costs should be proportionate to the contribution by international shipping to global CO2 emissions.
Rebate Mechanism (RM) for a market-based instrument for international shipping (IUCN (MEPC 60/4/55))	Compensate developing countries for the financial impact of a MBM. It could be applied to any maritime MBM which generates revenue.

Source: (https://www.imo.org/ (01.06.2022))

While there are no valid MBMs on a global or industry scale, national or regional carbon pricing initiatives exist. EU ETS or various national carbon taxes can be contextualized in this context (Hughes, 2020: 46). Although there are opposing views on MBMs in the IMO, there have been positive developments regarding MBMs in Europe. In a statement made in 2019, the President of the European Commission stated that maritime transport would be included in the ETS as part of the Green Deal. This approach of the EU Commission is essentially an MBM proposal (Psaraftis et al., 2021: 2). At this point, a new discussion has emerged regarding the preference of tax or ETS on carbon pricing in the maritime industry.

3. Financial Offers Regarding Carbon Emissions in Maritime Transport

Maritime associations have made some offers regarding the pricing of maritime transport emissions**.** However, proposals have still been evaluated. Offers to price of ship emissions consist of "EU Commission EU ETS Approach, ICS - Global Carbon Tax Approach, IMO - Maritime Research Fund and ECSA Evaluations".

3.1. EU Commission – EU ETS Approach

To reduce emissions from maritime transport, the EU Commission developed a three-step strategy in 2013 (https://ec.europa.eu (08.12.2021)).

- "Monitoring, reporting and verification of CO_2 emissions from large ships using EU ports
- Greenhouse gas reduction targets for the maritime transport sector
- Further measures, including market-based measures, in the medium to long term."

The European Parliament and the Council highlighted to the need for action on ship emissions with the latest amendment on the EU-ETS Directive by the Directive (EU) 2018/410. They have been started to action and calls to examine transport emissions from IMO or the EU from 2023, including preparatory work and stakeholder consultations. (https://ec.europa.eu (08.12.2021)).

On 14 July 2021, the EU Commission aimed to reduce by at least % 55 by 2030 compared to 1990 levels to greenhouse gas emissions and for this reason, they presented the "Fit for 55 Package" (FIT 55) (IMEAK DTO Environment Unit, 2021: 60).

According to offer;

"The ETS will affect both intra-EU and extra-EU voyages. A ship travelling strictly within the EU will pay for all of the carbon dioxide it emits, whereas a ship that crosses into or out of the EU will pay for 50% of the carbon dioxide it emits (regardless of how much of that journey lies inside or outside the EU). All emissions from port stays at EU ports are included, but ships under 5,000 GT will be excluded from the scheme." (https://www.napa.fi (09.07.2022)).

If IMO develops an offer on the subject, the EU Commission has stated that it will evaluate the possible situation regarding the EU ETS of maritime transport (https://www.verifavia-shipping.com (30.12.2021)).

It is planned to be utilized from the gradual system when including emissions from maritime transport to the ETS. This system is as follows (https://www.europarl.europa.eu (09.07.2022)).

The requirement to surrender allowances would be gradually phased in during 2023-2025,

- 20% of verified emissions for 2023,
- 45% for 2024,
- 70 % for 2025,
- and 100 % from 2026 onwards.

Who will be responsible for the ship's carbon emissions, which is included in the ETS, is also a topic of discussion. The responsible party will gain rights that will provide economic benefits and the obligations brought by the new technic. The responsible party will be able to generate revenue from the sale of reserve emissions allowances while facing increasing operational and reporting requirements. The EU voted to change the definition of a firm to include time charter and other parties responsible for providing and paying for ship fuel. Thus, the EU signaled that the EU's

emission measures would target companies operating commercial ships. In this context, determining the responsible party is one of the current debates in the maritime industry in the short term. According to parties following the EU Commission's negotiations, if the emissions from maritime transport are included in the ETS, the new system to be experienced in the marine industry can be expressed as follows. (IMEAK DTO Enviorment Unit, 2021: 65):

- Shipowners will pay emission permit allowances to be able to trade under the ETS."
- Earned revenues coming from the ETS won't be allocated to all participants for the development of alternative fuels or technologies.

These statements stem from the expectations of the parties who follow the negotiation process closely. There are essential details that need to be explained about the new system and included in the ETS of carbon emissions from maritime transport. The new system should clearly state the identity of the addressee, the limits of rights and obligations, and assurances regarding fund management and supervision. ETS is criticized generally because of its legal gap by other participants, especially EPSO. Because, with the entry into force of the ETS offer, shipping companies that don't want to be sanctioned will be able to find various ways to get rid of this obligation by changing their routes to reduce their costs. For this, it is enough for them to enter the ports that don't have a coast to the EU. For this reason, EPSO emphasizes the need for harmonization between the EU ETS and MBMs for ship emissions (https://www.denizticaretodasi.org.tr/ ((08.04.2022)).

The EU Commission continues to study reducing greenhouse gas emissions from maritime transport to achieve the global temperature target, which is accepted in the Paris Climate Agreement.

3.2. ECSA's Approach

ECSA was established in 1965 to provide international competitiveness in European maritime as one of the essential blocks of maritime. ECSA member states consist of "Belgium, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Lithuania, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovenia, Spain, and Sweden." (https://www.ecsa.eu (25.12.2021)).

ECSA, accepted to be one of the biggest economic and environmental challenges facing societies in the global climate crisis, announced that it supports FIT 55 and a special fund to be established under the EU ETS to stabilize carbon pricing in its statement on November 2nd, 2021(Shipowners' Association E-Bulletin, 2021: 6).

ECSA argued that all revenues from the EU-ETS should be used to finance research and development projects and close the price gap between cleaner and standard fuels. In addition, this EU ETS offer referred to the decarbonization of the sector and the financing of different contracts within the scope of the innovation fund. (IMEAK DTO, Circular Nr: 1239, 2021: 1).

ECSA argues that the EU ETS offers efficiency measures to be taken, and the use of clean fuel in the maritime industry is a significant development, and the cost to be incurred by the EU ETS should be paid by the commercial operators. According to European shipowners, the provisions in the EU ETS offer should be legally enforceable ((IMEAK DTO, Circular Nr. 1239, 2021: 1)

3.3. International Chamber of Shipping (ICS) – The Global Carbon Tax Approach for Maritime Transport

ICS, a global trade association of ship owners and operators representing more than 80% of the world's trade fleet, has been operating since 1922. (https://www.ics-shipping.org (25.12.2021)).

ICS has offered a global tax approach in maritime transport by targeting carbon emissions from ships. This offer, submitted to accelerate the use and deployment of zero-carbon fuels to the UN on September 3rd, 2021 by ICS, can be considered an internationally recognized market-based call for action. (IMEAK DTO, Circular Nr. 964, 2021: 1).

ICS that published the PRESS (15)25" circular on September 22nd, 2015, argued relatively to be an effective use of efficient fuel for ships more than the carbon balancing approach related to maritime emissions. ICS expects that it can contribute to reduced carbon emissions through improvement in ship engines and more effective speed management. In addition, ICS put forward that it would cause to %50 fewer emissions of the world fleet in 2050 with the use of cleaner fuels such as mostly LNG in ships (ICS, 2015: 1).

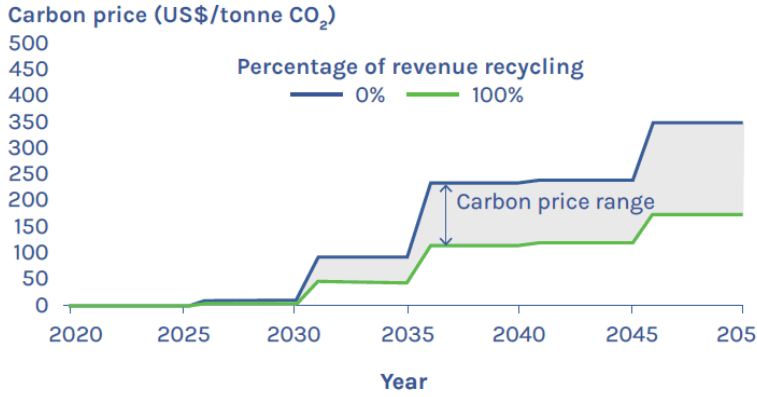
The ICS's recommendation is supported by INTERCARGO and the $5 billion R&D funding proposed by the maritime industry and governments (IMEAK DTO, Circular Nr. 964, 2021: 1 - 2).

The negotiation process regarding the ICS's offer continues at the MEPC sessions organized by the IMO. On the other hand, "Trafigura" one of the largest charter companies in the world, has another proposal for this process. Trafigura offered that " by the IMO must be introduced a carbon tax of between $250 and $300 per metric ton (mt) carbon equivalent on transport fuels." (https://www.offshore-energy.biz(25.12.2021)).

Marshall and Solomon Islands submitted a separate offer for taxation of $100 per tonne for carbon emissions from ships until 2025. According to Lloyd's List, taxation of $100 per tonne is sufficient for the initial step and must be revised every five years. It is thought that may collect the tax at bunkers or emission points. On the other hand, there is a consensus that the best collection method is bunker-based. The offer especially emphasizes that no ship should be privileged. Regardless of the ships' flag, it suggested that the carbon tax is taken equally at the bunker points in this system. This

value is valid for the initial stage only. Also, Marshall and Solomon Islands emphasized that $100 tax to be collected for technical financing needs will not be sufficient, so it should be increased to 250 or 300 $ gradually. The carbon tax has been aimed to accelerate of decarbonization process in the maritime industry. This approach parallels the ICS's offer and the first market-based maritime transport tax offer since the 2018 Greenhouse Gas Strategy announced by the IMO (https://armatorlerbirligi.org.tr (04.01.2022)).

Another approach parallel to ICS has been proposed by the "Getting to Zero Coalition" as a gradual carbon tax. The Coalition is a strong unit established with the participation of governments and more than 150 companies in the maritime, energy, infrastructure, and finance sectors. The Coalition has suggested a final carbon pricing approach of $200 per tonne of carbon emissions by 2050. Claiming to have developed an effective model for the decarbonization process in shipping, the Coalition stated that it would carry out the first application in 2025. It plans to price a carbon tonne at $11 at this date and increase that value to $100 by the 2030s. Carbon price offers between the first year of implementation of the Coalition and 2050 are presented in the graph below (https://www.denizhaber.com (05.03.2022)).



Graph 2. Getting to Zero Coalition – Carbon Tax Tariffs Source: (https://www.denizhaber.com (05.03.2022)).

The prominent ETS and Carbon Tax Offers for pricing the ship-sourced carbon emissions are approaching the nature of MBMs. At IMO, financial proposals related to emissions are evaluated, and the reviews continue in line with the needs of the maritime industry.

Maritime associations and relevant governments to achieve a decarbonization target in maritime transport have also been offered another approach in addition to the ETS or carbon tax. This approach is a new fund formation planned to be managed by IMO to finance green technologies in shipping.

3.3. The IMO Maritime Research Fund (IMRF) and The Global Fuel Tax Approach for Maritime Transport

The IMO Maritime Research Fund (IMRF), managed by the International Maritime Research Board (IMRB) and supervised by the IMO, has been offered for the first time in 2019 to accelerate the R&D studies to have zero emission technologies in the maritime industry. The IMRF is planned to be valued at $5 billion (IMEAK DTO, Circular No: 693, 2021: 1).

Representing the majority of international maritime transport; major maritime countries such as Denmark, Greece, Japan, Panama, Singapore, and the United Kingdom and developing countries such as Liberia, Nigeria, and Palau support the IMRF (IMEAK DTO, Circular No: 1226, 2021: 1).

The maritime associations, which correspond to more than 90% of the world's trade fleet and support the IMRF, consist of "*The Baltic and International Maritime Council, the International Association of Cruise Companies, INTERCARGO, the International Ferry Operators Association, ICS, the International Association of Independent Tanker Owners, the International Association of Partial Cargo Tankers and the World Maritime Council.*" (IMEAK DTO, Circular No: 693, 2021: 1)

According to the latest MEPC 77 report, states are that explained a positive opinion on the IMRB are "Australia, Bangladesh,

Southern Cyprus, Finland, Indonesia, Italy, Jamaica, Malaysia, Mexico, Panama, Poland, South Korea, Trinidad & Tobago, Turkey[3] and Ukraine" In total, approximately 30 countries seem to support the IMRF. "At IMO MEPC 77, it was decided to continue the negotiation process on medium-term measures, including MBMs and the IMRB-IMRF proposal, and to be discussed at the 12th Session of the IMRF Intersessional Working Group on Reduction of GHG Emissions (ISWG-GHG). On the other hand, while its uncertainty of some delegates continues, some states such as; Argentina, Brazil and some Pacific Island States have expressed opposition to the IMRB. It is understood that China, Russia, Norway, Germany and other EU countries are also against the offer. India, the Bahamas and the United Kingdom didn't comment. Although Saudi Arabia didn't express a dissenting opinion to IMRB, it brought to the fore "CARES", which is a joint venture with IMO (IMEAK DTO, Circular No: 1304, 2021: 5).

"At IMO MEPC 77, it decided to continue the negotiation process on medium-term measures by including MBMs and the IMRB-IMRF. Furthermore, IMRF was agreed to discuss at the 12th Session of the IMRF Intersessional Working Group on Reduction of GHG Emissions (ISWG-GHG). (IMEAK DTO, Sirküler No: 1304, 2021: 5).

The IMRB plans to finance the industry for research and development programs and to create a contribution of $2 per tonne of consumed fuel by each ship. It is claimed that the IMRF will collect in 10 years and have a value of approximately 5 billion dollars. The fund will be financed by the shipowners' mandatory research and development contributions (IMEAK DTO, Circular Nr. 693, 2021: 2; IMEAK DTO, Circular Nr. 1197, 2021: 1).

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3 Turkey and some countries stated that this offer contains deficiencies and there are uncertainties regarding some administrative issues. The IMRB-IMRF proposal has been postponed for discussion at the ISWG-GHG 12th Session. (IMEAK DTO, Circular No: 1267, 2021: 1).

IMRB (IMRF) is offered to research and develop low-carbon and zero-carbon fuels, energy sources, propulsion systems, and other new greenhouse gas reduction technologies." The IMRB (IMRF) is a significant development to accelerate the decarbonization process and achieve the IMO 2050 target to the maritime (IMEAK DTO, Circular Nr. 693, 2021: 2).

The "fuel tax application" has been adopted to finance the IMRF. This type of tax to be collected per ton of fuel coincides with the carbon tax of ICS. The two tax models are a "type of base" in accounting. While calculating the tax by targeting carbon emissions in the ICS's offer, the fuel consumption is the determinant of the tax amount in the financing of the IMRF. Therefore, it should state that the two models aren't the same or alternative to each other; they are only designed to contribute to the decarbonization process and financing of green technology investments in maritime.

4. Compare Offers in the Maritime Transport and Examine Potential Approaches

While the EU Commission aims to be the neutral climate first continent by 2050 of the EU, IMO has developed a strategy to zero maritime emissions by the end of the century. Therefore, a maturity mismatch corresponds to half a century between the two approaches. Moreover, this maturity mismatch affects the importance of studies to determine the financing model and speed of the decision to be taken. These recommendations for financing the decarbonization process in the maritime industry are presented in Table 3.

Table 3. Comparison of Offers

The Method	*Scale*	*Financial Instrument*	*Financing*
EU ETS	Regional	Emission Allowances	EU ETS
Carbon Tax	Global Scale	Carbon Tax Per Ton of Carbon Emissions	The Climate Fund
Fuel Tax	Global Scale	Fuel Tax per Ton of Fuel Consumption	IMRF

Greenhouse gas emissions are the most crucial trigger of global warming. Therefore, "zero" greenhouse gas emissions for ecological and economic sustainability is an ultimate goal. However, global awareness requires beyond a continent's environmental interests and a more comprehensive understanding. Therefore, zero emissions in the EU continent with the "polluter pays" principle is insufficient globally, although it is effective for the continent.

Industry participants regarding the negotiation process argue that the EU ETS's offer is more likely to enter into force than the other alternatives, as the EU will exert political pressure and veto non-compliance parties to the EU's decision. In addition, non-EU parties have continued to explain their concerns regarding the management and fair distribution of the funds to be collected. In this context, possible approaches to reducing and zero greenhouse gas emissions should target international market participants. Therefore, a similar approach to priced emissions from international maritime transport should focus on environmental benefits. Except for EU ETS, recommendation models can be based on lean or hybrid principles. At this point, the potential financing models for maritime transport are as follows.

- Global ETS Model: It is based on the adoption of the global ETS approach and the management of the fund by the IMO or the new association, which consists of representatives of participating states or associations.
- Global Tax Model: It is based on adopting the ICS approach and is not included in the basis of maritime emissions to the ETS. Thus, the fund should be managed by an organization similar to the IMRB.
- Regional ETS Model: The establishment of regional ETSs such as the EU ETS is based on the fact that participants are involved in country-based ETS transactions.

- Hybrid Model: It is based on including the EU ETS of ship emissions within borders of the EU continent and the adoption of the tax model to be offered by ICS regarding emissions in ports outside the EU continent and be taxable to this tax of EU ships.

It should do some reviews regarding potential models. These can be expressed as follows.

- **Global ETS Model:** It is recommended to be focused on global benefits with the Global ETS Model targeting ship's carbon emissions and to be transferred to the global union the management of the collected fund. Therefore, it can establish a transparent and auditable fund management union regarding fundraising and fund sharing.
- **Global Tax Model:** It provides global benefits like the Global ETS Model. The proposal to include marine carbon emissions in the ETS will be rejected, and the IMRB or a similar association will jointly control the maritime financing. This model provides a transparent and auditable under
- **Regional ETS Model:** If the continent, region, or country-based ETSs are established, such as the EU ETS, effective development can be recorded in the strategic struggle to reduce greenhouse gas emissions. Variations in the price of carbon certificates can cause carbon leakage. In addition, global income inequality can significantly affect the ETS. In other words, stronger ETSs will be established in developed countries. Ultimately, there will be delays in targets regarding global greenhouse gas emissions due to developing and underdeveloped countries. The purpose of carbon financing is to create a fund to reduce and, if possible, to zeroed global carbon emissions.
- **Hybrid Model:** It is the most challenging model to be formed and managed. ETS and tax can prefer this approach.

Collecting and managing this system is complex and difficult. The possible carbon leakage problem is also valid in this offer.

CONCLUSION

IMO has developed strategies as part of the international struggle to reduce greenhouse gas emissions from ships extensively over the years. The final output of this process, supported by new regulations at various times, is the "Greenhouse Gas Strategy" published by IMO in 2018, targeting international shipping. This first strategic plan to reduce greenhouse gas emissions in shipping aimed to reduce greenhouse gas emissions by at least 50% by 2050 compared to 2008 and zeroed greenhouse gas emissions in the long term. Meanwhile, the EU Commission announced its goal of being the first climate-neutral continent by 2050, with the EU Green Deal announced in 2019. Furthermore, the commission explained that it plans to include emissions from maritime transport to the EU-ETS according to the information shared in the Directive under the FIT 55 Package.

Although the approaches of the two authorities are parallel, they include maturity mismatches. The EU focuses only on regional environmental benefits. IMO and the maritime industry argue that the new financing model targeting maritime transport should price all maritime emissions. Therefore, alternative approaches regarding maritime transport continue to be examined on the scale of international. At this point, regional-based ETS, global-based carbon tax, and fuel tax as three basic approaches have been submitted for pricing ship-sourced emissions.

The main concern of the participants in the maritime industry is that the EU will put political pressure on the decarbonization process and will introduce a financing model that can't finance maritime transport needs.

On the other hand, the parties advocating the tax approach, the EU ETS's policy criticized as that targets the emissions of the EU continent, of the collected funds and the distribution principles aren't clearly defined, the emission credit certificates will constantly change in line with the equilibrium price, and the system carries a risk of carbon leakage. On the other hand, the parties advocating the tax approach, the EU's proposal; criticized for reasons such as targeting the emissions of the EU continent, the fact that the taxpayer and distribution principles of the collected funds are not clearly defined, the emission credit certificates will constantly change in line with the equilibrium price, and the system carries a risk of carbon leakage. However, tax approaches haven't given enough explanation about who will be the taxpayer. Furthermore, the most critical criticism regarding the IMRF is a copyright issue. The tax of $100 per ton of carbon and $2 per ton of fuel to come into effect in these approaches will create huge costs for the maritime industry.

It is considered that all approaches will include carbon costs in the sales prices offered to customers to the extent that competitive conditions allow. In other words, the indirect financial of the decarbonization process in maritime in the new order will be the customer (consumer) group of the maritime transport. However, financially strong companies can finance some of their carbon costs to gain a competitive advantage. Therefore, differences in freight transport prices between rival ships are expected to share some ships in world maritime transport. It can argue that the most significant effect of financing approaches targeting ship emissions will be on "shipowners and taxpayers" relatively and having weak financial strength.

It will benefit from examining Turkey's situation regarding the financing models offered in maritime transport. Therefore, Turkey, a crucial important maritime country in the world, should be completed to prepare for potential approaches in the new order.

For the preparation of the EU ETS, to protect the expedience against new environmental reforms, to establish an MRV System in Turkey's ports, and to monitor all emissions and to be included by establishing the ETS in Turkey may be a practical solution. According to the information obtained from the interviews with the sector, it is foreseen that the collective carbon fund to be collected through the ETS and MRV System will contribute to be neutralized the carbon cost that Turkey will play in the EU ETS. Furthermore, in case the offers of IMO come into force, Turkey as an IMO participant, should initiate the legal process for projects and proposals regarding the decarbonization process and protect its copyrights. Copyrights, which is one of the most discussed issues in IMO meetings, will be able to provide significant economic gains to the inventor participant in the new order.

Decisions on an international scale are more beneficial in eliminating ship-related environmental damage and building an ecological world fleet. In the negotiation process, more emphasis should be placed on consultation with accounting and finance disciplines, where approaches are evaluated from a financial perspective. Thus, the new financing model, which is planned to enter into force, is anticipated to provide significant contributions to the financing of environmental investments.

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