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**The inclusion of the maritime transport sector in the EU ETS, a
comparison with the aviation sector**

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Abstract.

The inclusion of the maritime transport sector in the recent reform of the EU ETS is a major step forward in its decarbonisation process. At the same time, there is the example of the aviation sector, whose experience in the EU ETS has been troubled and has not been able to function as planned from the beginning, largely due to strong opposition from the international community. This scenario brings us to a crucial historical moment for the future of the goals of the Paris Agreement on Climate Change, in which the decarbonisation of each sector has become essential.

This study analyses the main elements surrounding the implementation of the maritime transport sector in the EU ETS, taking into account the experience of the aviation sector. Moreover, this study aims to analyse extraterritoriality, which is the main characteristic shared by both sectors, and which raises doubts about the legality of such a measure. Likewise, in the application of extraterritorial measures, we analyse how the EU unilaterally pushes for international advances in the field of emissions reduction. In order to conduct such an analysis, the international framework for the reduction of greenhouse gas emissions will be studied, all of which is promoted by IMO and ICAO, whose authority may be called into question if they do not adopt more stringent measures.

Keywords: aviation, EU ETS, emissions reductions, extraterritoriality, shipping.

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Abbreviations.

CBAM--Carbon Border Adjustment Mechanism

CDM--Clean Development Mechanism

CJEU--Court of Justice of the European Union

CORSIA--Carbon Offsetting and Reduction Scheme for International Aviation

DCS--Data Collection System

EASA--European Union Aviation Safety Agency

ECJ--European Union Court of Justice

EEA--European Economic Area

EFTA--European Free Trade Association

EMSA--European Maritime Safety Agency

EU ETS--European Union Emission Trading System

ICAO--International Civil Aviation Organization

ICJ--International Court of Justice

IMO--International Maritime Organization

IPCC--Intergovernmental Panel on Climate Change

LDCs--Least Developed Countries

LLDCs--Landlocked Developing Countries

LRF--Linear Reduction Factor

LULUCF--Land Use, Land-Use Change, and Forestry

MLR--Multi-Level Reinforcement

MSR--Market Stability Reserve

NAPs--National Allocation Plans

NDCs--Nationally Determined Contributions

RTK--Revenue Tonne Kilometres

SEEMP--Ship Efficiency Management Plan

SIDS--Small Islands Developing States

TFEU--Treaty on the Functioning of the European Union

TNAC--Total Number of Allowances in Circulation

UNCLOS--United Nations Convention on the Law of the Sea

UNFCCC--United Nations Framework Convention on Climate Change

1. Introduction.

1.1. Background.

The Intergovernmental Panel on Climate Change (hereinafter IPCC) in its most recent report published in 2023 warns warned that in line with the Nationally Determined Contributions (NDCs) submitted by the parties in 2021, we will not be able to contain global temperature rise to below 1.5°C and that it will be a difficult task to limit it to below 2°C during the 21st century.¹ From this statement we can conclude that it is more than likely that the main objective of the Paris Agreement can no longer be achieved in the course of this century. Moreover, the IPCC also warns about the continuous increase of anthropogenic greenhouse gas emissions, in the time period from 1850 to 2019, prior to the Coronavirus pandemic.² In this regard, we must be particularly cautious about the interpretation of data produced from 2020 onwards, as the shutdown of the main economic sectors as a result of the Coronavirus pandemic may lead to a distortion of the reality regarding the increase in greenhouse gases, hence the trend up to 2019 can be considered more reliable.

Moreover, the IPCC highlights the increase in most greenhouse gas emissions, the most notable being in CO₂, with almost half of the total historical CO₂ accumulation occurring in the time period between 1990 and 2019.³ However, thanks to the implementation of goals and targets, such as those set out in the 2015 Paris Agreement, some improvements and reductions have been seen in the percentage increase in the accumulation of greenhouse gases in the decade between 2010 and 2019 compared to the higher percentage in 2000 and 2009.⁴

Furthermore, we consider it necessary to mention the UNFCCC COP27 that took place in Sharm El-Sheikh (Egypt) in November 2022. Here a series of statements were adopted on the basis of the need to comply with the provisions of the Paris Agreement, among which we highlight article 2 which establishes the objective of "increasing the ability to adapt to the adverse impacts of climate change and foster

¹ IPCC 2023, p. 10.

² IPCC 2022, p.10.

³ Ibid.

⁴ Ibid.

climate resilience and low greenhouse gas emissions development [...]".⁵ Due to the concern generated by climate change as it is considered an unprecedented crisis, one of the urgent measures to be adopted by the parties is the immediate reduction of global greenhouse gas emissions in all sectors.⁶ Likewise, in terms of mitigation, it is highlighted that in order to meet the 1.5 °C objective, a 43% reduction in global greenhouse gas emissions will be necessary by 2030 compared to 2019 levels.⁷ This will require collective action by all parties and the implementation of mitigation measures.

According to the IPCC, the transport sector accounts for 15% of total net anthropogenic greenhouse gas emissions, almost half the emissions of the energy sector, which is the largest contributor with approximately 34%.⁸ Furthermore, although there has been an increase and expansion of policies and laws dealing with mitigation, these are not adequate and ambitious enough to meet the targets set by the Paris Agreement. In this regard, the IPCC report extols the role of carbon pricing instruments as having the potential to achieve significant emissions reductions while promoting innovation and technological advances, one of the most obvious examples being carbon taxes and emission trading systems.⁹ However, the IPCC criticises that the prices and sectors covered by instruments have been insufficient to achieve significant progress in emission reductions so far.¹⁰

The transport sector has emerged as one of the sectors facing the most difficulties in decarbonisation, largely because the transport sector relies mainly on fossil fuels, mainly from oil 95%.¹¹ This, together with the forecast that the transport sector will experience a high increase in demand over the coming years due to population and income growth, means that the sector is set to increase its emissions and their consequences for human health and the environment.¹² We can conclude with a fair degree of certainty that it seems quite clear that the demand for fossil fuels by the transport sector will continue and even increase in the coming years and that measures

⁵ Paris Agreement to the United Nations Framework Convention on Climate Change, (adopted Dec. 12 December 2015, in force 4 November 2016). Article 2(1)(b)

⁶ UNFCCC COP 27 Decision -/CMA.4 Sharm el-Sheikh Implementation Plan. p. 3.

⁷ Ibid.

⁸ IPCC 2022, p. 12.

⁹ Ibid., p. 50.

¹⁰ Ibid., p. 17.

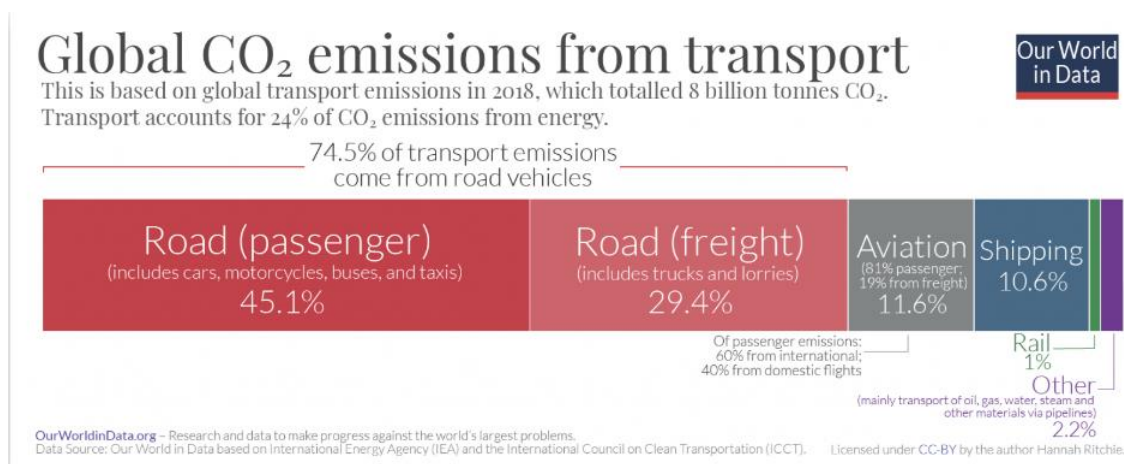
¹¹ de Blas et al. 2020, p. 1.

¹² Khalili et al. 2019, p. 2.

to reduce this demand cannot be implemented in the medium to long term. In this regard, some of these measures would be the electrification of the stock of vehicles, airplanes and ships, as well as the use of cleaner and less polluting fuels such as sustainable biofuels.¹³

Within the transport sector, the aviation and maritime transport sectors contribute a similar share of CO₂ emissions with 11.6% and 10.6% respectively, a far cry from the main CO₂ emitter in the transport sector, the road vehicle sector with 74.5%.¹⁴ One of the most striking characteristics of both sectors is that part of their emissions are produced outside the jurisdiction of States, be it the shipping sector in international waters or the aviation sector in international airspace. This is why the role of international organisations such as the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) is of vital importance in the field of emissions reduction in both sectors, as they are able to control those areas over which States have no jurisdiction. It should be noted that although this study focuses on the field of greenhouse gas emissions, both sectors produce various effects that go beyond the field of climate change and affect the health of people and the environment in the same way, here we must mention the risk that both pose for the loss of biodiversity, worsening air quality and noise pollution.

Figure 1. Global CO₂ emissions from transportation.



Source: Our World in Data based on International Energy Agency (IEA) and the International Council on Clean Transportation (ICCT). <https://ourworldindata.org/co2-emissions-from-transport> [last accessed 15 February 2023]

¹³ Khalili et al. 2019, p. 1.

¹⁴ Our World in Data. Ritchie, Hannah. “Cars, planes, trains: where do CO₂ emissions from transport come from?”. Our World in Data (2020). Available at: <https://ourworldindata.org/co2-emissions-from-transport> [last accessed 14 February 2023]

1.2. Purpose and research question.

The main research question in this thesis would be defined as: What lessons could be drawn from the experience of the aviation sector under the EU ETS to contribute to a more effective inclusion of the maritime transport sector?

In order to answer this question, the main purpose of this thesis is to carry out an analysis on how the shipping will be integrated into the EU ETS, using the aviation sector as a comparative object of study due to its similarities. Furthermore, the rationale for the aviation sector to appear in the present study is due to the numerous problems that have arisen since its implementation, and the criticism that is involved about the numerous concessions it has received in comparison to other sectors in the EU ETS. This is why we want to analyse whether the maritime transport sector may be in a position to follow a similar pattern during its implementation.

One of the main similarities lies in the extraterritorial intention of both sectors, which can lead to conflicts with other States that claim not to have given their consent to be subject to such a mechanism. International Organisations such as ICAO or IMO, which are the entities that hold the competence to regulate such situations at the international level. Moreover, one of the questions we will address in this study, which arises from EU policies such as the ETS, is whether a regional organisation such as the EU can regulate emissions that are generated outside its territory.

Furthermore, this study also deals with the analysis of the role of International Organisations. More specifically, we aim to contribute to a better understanding of the role of International Organisations such as ICAO and IMO in the reduction of global greenhouse gas emissions, and whether the measures adopted by these entities are ambitious enough to not create a detriment to EU operators.

1.3. Methodology.

The methodology used in this research is doctrinal legal research, mainly analytical and descriptive in that it will review the existing regulations on the EU ETS and the two sectors under study, the aviation sector and the maritime transport sector.¹⁵

¹⁵ Smits 2017, p. 217.

All this will be done in an objective and neutral manner in order to provide the reader with a true picture of the regulations in question. Moreover, a prescriptive methodology is also applied, because with this research we do not only want just to describe the current regulations, but we also, aim to provide with a clear picture with the best possible practical solutions for the implementation of the EU ETS in the maritime transport sector.¹⁶ Further, a problem-orientated analysis is adopted in the comparative analysis between both sectors. In this regard, we will give the same weight for both sectors, the previous experience with aviation will provide us with a better understanding for how the inclusion of shipping is conducted. Likewise, in the present research we will also focus on the extra-territorial dimension of EU environmental policies and how it conflicts with other international organisations such as IMO or ICAO.

With regard to the use of other disciplines, an auxiliary approach is adopted by using other disciplines, both when defining the research problem and in the analysis of supporting legal arguments.¹⁷ Firstly, natural science is relevant to my research in that it will allow us to justify how emissions in the maritime transport sector have increased and contribute to the aggravation of climate change when defining the research problem (this will be adopted within the introduction chapter). Secondly, geopolitics is relevant to my research as one of the main themes of my research is the extraterritoriality of EU environmental law. In this respect, it will be important to understand how certain international actors deal with this practice.

Further, the legal scope in which we conduct the research is mainly EU law and International law. EU law in that we will focus on the Directive 2003/87 that gave birth to the EU ETS and the various amendments that led, firstly, to the introduction of the aviation sector, and, secondly, to the more recent developments with the EU Green Deal and the "Fit for 55" package that have led to the most recent reform of the EU ETS and the inclusion of the maritime transport sector. Moreover, the international legal scope is used in order to assess the relationship between the EU ETS legislative framework and its validity with respect to the principles and rules of international law and the greenhouse gas emission reduction policies developed by IMO and ICAO.

¹⁶ Smits 2017, p. 217.

¹⁷ van Klink and Taekema 2011, p. 10.

Both primary and secondary sources have been used in this paper. The primary sources correspond essentially to the regulations of the European Union, but also to those of the United Nations and its specialised agencies, IMO and ICAO. As for the secondary sources, we have relied on academic publications by authors specialised in the field, mainly books and academic articles, but also electronic publications from websites have been used.

1.4. Limitations.

It should be noted that this study is carried out from a legal perspective, although it is true that in order to assess the impact of the EU ETS on the sectors under study, it will be necessary to mention aspects of other disciplines. However, a detailed assessment of the impacts of the EU ETS on other disciplines, mainly socio-economic and geopolitical, is not carried out.

Moreover, the EU ETS and its most recent reform are the main focus of this study. However, we focus on the inclusion of the maritime transport sector, as well as the experience in the aviation sector, affects this measure. Therefore, although the EU ETS affects other sectors, and although the most recent reform incorporates many new developments, these will not be the subject of this research.

1.5. Structure.

In terms of the structure of this paper, we have decided to divide the theme into several chapters, which are all interconnected, and which are necessary in order to be able to elaborate a broad and clear picture of the problem presented here.

Firstly, the first chapter is dedicated to the EU ETS, and the historical process leading to its creation, up to the most recent reforms. To do so, we will review the different phases of implementation, with emphasis on the aspects that have most influenced both sectors.

Secondly, the second chapter is dedicated to the aviation sector within the EU ETS, following a chronological order is more coherent to start with it, as it was first

implemented. In this chapter we will look at the historical process that led to the inclusion of the aviation sector, what are its main characteristics, and how it was unsuccessfully attempted in the extraterritorial application.

Thirdly, the third chapter is devoted to the maritime transport sector within the EU ETS. Following a similar structure to the chapter on the aviation sector, we will detail the regulatory process leading up to the final inclusion of the shipping sector, addressing its main characteristics once it enters into force.

Fourthly, the fourth chapter carries out a comparative study between the two sectors within the context of the EU ETS. In this sense, our analysis focuses on the similarities and differences between the two sectors, focusing on those areas that are most relevant to the success of both sectors in reducing greenhouse gas emissions.

Fifthly, in the fifth chapter we will explain the issue of extraterritoriality that dominates both sectors in their implementation. Likewise, we will also analyse the role of the EU as a global leader in the arena of climate change objectives and its dynamism with other international organisations such as IMO or ICAO.

2. The EU ETS.

The aim of this chapter is to establish the main basis on which this work is based, the so-called European Trading System (ETS), which is considered to be the EU's main tool for achieving emissions reductions and meeting climate targets. To this end, we consider it necessary to understand the EU ETS as a market-based instrument. In this regard, we will analyse its historical process of adoption, as well as the latest reforms, which are the ones that most affect the subject of this study, the inclusion of the maritime sector and the latest developments in the aviation sector.

2.1. Background.

To go back to the origin of the EU ETS we have to go back to the 1970s and move away from the geographical scope of Europe, more precisely, to the USA, being the liberal character of this country ideal for the implementation of a policy tool such as a cap and trade instrument.¹⁸ This was developed after the approval of the Clean Air Act, whose main objective was to put an end to acid rain and regulate hazardous air pollutants, and whose main instrument was the first emission trading scheme. Following the success of the US emission trading scheme, other countries decided to apply similar measures.

On the other hand, at EU level, the introduction of the EU ETS took almost 30 years to be implemented. Initially, the EU opted for the introduction of a carbon tax, which did not succeed due to weak support from Member States and pressure from affected industries.¹⁹ Finally, it was not until the 2000s that we saw the birth of the EU ETS with the adoption of Directive 2003/87.

Furthermore, Directive 2003/87 has its basis in the European Climate Programme, more specifically, in the Green Paper on greenhouse gas emissions trading, which highlights climate change as a priority and postulates the need to create a

¹⁸ Borghesi et al. 2016, p. 72.

¹⁹ Ibid.

Community-wide emissions trading scheme to reduce emissions.²⁰ Likewise, although the Treaty on the Functioning of the European Union (TFEU) had not been approved at the time the Directive was adopted, we can affirm that the Directive correspond with article 192 TFEU.²¹ Moreover, as this is a shared competence between the EU and the Member States, as indicated in article 193 TFEU, the measures adopted through article 192 do not deprive the Member States from adopting more stringent measures, subject to notification to, and subsequent approval by, the Commission.²²

From the international law sphere, the Directive links its objectives mainly with the United Nations Framework Convention on Climate Change (UNFCCC), whose main objective is to achieve an "stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system".²³ Likewise, it also joins the Kyoto Protocol to the United Nations Framework Convention on Climate Change, which ended up being approved after Directive 2003/87, and as we will see below, it would lead to a modification of the Directive's emission reduction targets.

With regard to the Kyoto Protocol, the EU and its Member States decided to meet their emission targets jointly through Council Decision 2002/358. This would eventually materialise with the adoption of Directive 2004/101, amending Directive 2003/87. In this way, linking the clean development mechanism of the Kyoto Protocol to the EU ETS allowed EU ETS actors to use emission credits generated through the projects included in the Kyoto Protocol.²⁴ Thus, it was easier for the operators to comply with the obligations of the EU ETS and the Kyoto Protocol by reducing costs and facilitating the sustainable development of developing countries.

The EU ETS is a cap-and-trade system, in which "cap" functions as a limit on allowable emissions and also consists of emissions allowances that are granted to the operators that make up the system and that a priori are going to emit greenhouse

²⁰ Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC OJ L275/32. Recital 2().

²¹ Langlet and Mahmoudi 2016, p. 258.

²² Ibid.

²³ UN General Assembly, *United Nations Framework Convention on Climate Change* (adopted 09 May 1992, in force 21 March 1994). Article 2.

²⁴ Directive 2004/101 of the European Parliament and of the Council of 27 October 2004 amending Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community, in respect of the Kyoto Protocol's project mechanisms OJ L 338/18. Recital 3.

gases.²⁵ The concept is to gradually reduce the cap, to create a scarcity of emissions and to give operators an incentive to reduce their emissions. It is a trade system because operators have the possibility to trade their emissions allowances with other operators. Moreover, if the operator has produced more emissions than the number of allowances it has been allocated, it has the possibility to buy the allowances it needs from the other operators in the market. On the other hand, operators that have implemented emission reduction technologies and emitted less can generate an economic benefit from the allowances that they will not use.

As regards the main objective of Directive 2003/87, article 1 stated that the establishment of a greenhouse gas emission allowance trading is necessary "in order to promote reductions of greenhouse gas emissions in a cost-effective and economically efficient manner".²⁶ As we can see, the objective of the EU ETS is not to economically penalise the sectors that produce the most emissions, but rather to promote the development of these industrial sectors towards the use of greener and less polluting technologies. Moreover, for those actors who manage to implement these targets more effectively, they could accumulate economic benefits due to the characteristics provided by an emissions market.

Initially, the EU ETS only applied to a few sectors: energy activities (combustion installations, mineral oil refineries and coke ovens); production and processing of ferrous metals; the mineral industry (installations for the production of cement, installations for the manufacture of glass, installations for the manufacture of ceramic products; and other activities, mainly by including the pulp and paper industry, the energy industry, the energy sector, the energy sector, the energy sector, the energy sector and the energy sector).²⁷ Moreover, in the field of greenhouse gas emissions, initially only CO₂ was covered.

Furthermore, all the aforementioned operators were required to acquire greenhouse gas emissions permits which they had to submit to the competent authority in charge of issuing these permits. After the auctioning of such permits, the operators

²⁵ Vlachou 2014, p. 129.

²⁶ Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC OJ L275/32. Article 1.

²⁷ Ibid., Annex I

were allowed to emit greenhouse gases, but had the obligation to monitor and report their emissions.

With regard to the method of allocation, in its original version Regulation 2003/87 establishes in article 10 that in the period from 2005 to 2008 95% of the allowances will be free allocated, and in the period between 2008 and 2012 it will be reduced by 90%.²⁸ In this respect, emission allowances are distributed among operators through two methods: firstly, through the grandfathering method, in which free allocation takes place according to the operators' past emissions; and, secondly, through auctioning, in which each operator buys allowances according to its needs, this model respects the "polluter pays" principle by causing operators to have an economic disadvantage after their emissions.

With regard to the establishment of the cap and the allocation and issue of allowances, the whole process was decentralised and the Member States are in charge, but it was supervised and approved by the Commission.²⁹ In this respect, article 11 of the Directive established that "each Member State shall decide upon the total quantity of allowances it will allocate for that period and initiate the process for the allocation of those allowances to the operator of each installation".³⁰ The document in which the Member States draw up the cap and allocation for the operators is known as National Allocation Plans (NAPs), which are drawn up annually and had to be finalised prior to the start of the period.

Moreover, with regard to the revenues generated by the purchase of allowances, Directive 2003/87 granted the task of administering them to the Member States, which determine how they are to be used.³¹ However, this concession is limited and conditional on at least 50% being allocated to climate change mitigation and adaptation tasks, including: funding for research and development projects to reduce emissions and adapt to climate change; for the development of renewable energy and other technologies to increase energy efficiency; for the development of carbon capture and

²⁸ Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC OJ L275/32. Article 10.

²⁹ Vlachou 2014, p. 129.

³⁰ Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC OJ L275/32. Article 11(2).

³¹ Borghesi et al. 2016, p. 15.

storage technologies; to advance the transition to low-emission means of transport; to develop the LULUCF sector as a method of carbon sequestration; to promote the use of renewable energy and other technologies that increase energy efficiency; to promote the development of carbon capture and storage technologies; to advance the transition to low-emission means of transport; and to develop the LULUCF sector as a method of carbon sequestration.³²

Furthermore, the free allocation of allowances method was applied to safeguard the economic interests of operators and to ensure that there is no economic disadvantage with respect to industries that do not operate within EU territory and are not subject to the EU ETS. This was done to avoid a phenomenon known as "carbon leakage" in which operators, due to the economic disadvantage of being subject to the EU ETS, decide to move to other countries where this obligation does not exist, or where the emission reduction regulations are more flexible. Moreover, as we will see in the following chapter on the aviation sector, the free allocation of allowances method has predominated during practically the entire period in which the aviation sector has been part of the EU ETS, being a sector that is particularly vulnerable to carbon leakage.

2.2. Analysis of the EU ETS implementation phases.

The EU ETS model that we follow today has proven to be an effective instrument for reducing greenhouse gas emissions and has managed to position itself as a model to be followed by the rest of the countries on the international scene that want to implement their own ETS.³³ However, the strength and effectiveness demonstrated by the EU ETS has not always proved to be so. From the beginning, the implementation of the EU ETS has followed a process of "learning by doing" in which mistakes have been made and there have been moments of doubt and weaknesses. Therefore, we consider it necessary to take a historical look at the different phases of implementation, or trading periods, that the EU ETS has followed from the first moment of its approval to the most recent reforms. Moreover, so far there have been three trading periods, and we are currently in the fourth trading period that will run until 2030.

³² Borghesi et al. 2016, p. 15.

³³ Borghesi and Montini 2016, p. 1.

First trading period

With respect to the first trading period (2005-2007) we refer mainly to what has been discussed previously in this chapter and to the adoption of Directive 2003/87 that gave birth to the EU ETS. However, there are some issues that have not been covered and deserve to be mentioned.

The first trading period is also known as the "pilot programme" as it served to lay the foundations for the second period in which more stringent measures were expected to be implemented.³⁴ As for the price of allowances, this is an issue that deserves our full attention since, depending on the price, operators will have a greater incentive to reduce their emissions in order to avoid a financial penalty. In this regard, the trial period was characterised by high volatility, until at the end of the first period the allowance price practically collapsed to 0€/tonne.³⁵ In this respect, due to the lack of data on the total amount of allowances produced by the operators, there was an excess of allowances in relation to the amount of emissions, which caused prices to fall dramatically.

Moreover, during this period there was a high demand for allowances because almost all of them were acquired by free allocation. However, a positive aspect of this period is that no "banking" was allowed to take place, which on the one hand caused the price collapse at the end of the first period in 2007 but allowed the second period to start with more stable prices.³⁶

Second trading period.

With regard to the second trading period (2008-2012), it runs concurrently with the incorporation of the Kyoto Protocol targets into the EU ETS and with the first commitment period, which was translated into emission reduction targets for the Member States. In this regard, the first commitment period of the Kyoto Protocol established an emissions reduction target of 5% of 1990 levels, however, the EU

³⁴ European Commission. "Development of EU ETS (2005-2020)". Available at: https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/development-eu-ets-2005-2020_en#phase-1-2005-2007 [last accessed 02 April 2023]

³⁵ Borghesi et al. 2016, p. 17.

³⁶ Ibid.

decided on a more ambitious target and increased it to 8%.³⁷ In this regard, operators could buy international credits thanks to the Clean Development Mechanism (CDM) of the Kyoto Protocol.

In a nutshell, the CDM was born thanks to a logical reasoning, in which climate change being a global problem that affects the whole international community and whose solution must be global, it seems right to reason that emission reduction measures should be carried out in any part of the world.³⁸ The CDM offered a high degree of flexibility for EU ETS operators, as they were allowed to meet their emission reduction obligations through investment in emission reduction projects in developing countries.³⁹ In this respect, EU ETS operators participating in the CDM earned credits equivalent to one allowance, or one ton of CO₂, which they could use to account for their emissions, or to sell them on the market for a profit.⁴⁰ Moreover, this was a very attractive economic incentive for operators, as they could meet their obligations more cost-effectively, but it also meant that Member States' domestic emissions reductions would be undermined by prioritising action in other countries.⁴¹

Moreover, the cap that had been imposed during the first trading period was reduced by 6.5% which led to a reduction in the number of allowances and an increase in their price (compared to the low prices at the end of the first period) although, as we will see below, the price of allowances did not remain stable throughout the phase due to the economic crisis.⁴² It was along these lines that the EU intended to operate during this second period, creating a shortage of allowances through the revision of the cap and the NAPs. Likewise, the Member States proposed a cap of 2325 million tCO₂ per year, which did not seem ambitious enough for the EU, which decided to reduce it by 10.4% to 2083 million tCO₂ per year.⁴³

Furthermore, the free allocation of allowances remained at a high percentage throughout the second period (90%), but it was noticeably lower than in the first period,

³⁷ European Commission. “Kyoto 1st commitment period (2008-12)”. Available at: https://climate.ec.europa.eu/eu-action/climate-strategies-targets/progress-made-cutting-emissions/kyoto-1st-commitment-period-2008-12_en [last accessed 02 April 2023]

³⁸ Rauffer et al. 2016, p. 270.

³⁹ Ibid.

⁴⁰ Ibid.

⁴¹ Vlachou 2014, p. 134.

⁴² European Commission. “Development of EU ETS (2005-2020)”. Available at: https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/development-eu-ets-2005-2020_en#phase-1-2005-2007 [last accessed 02 April 2023]

⁴³ Vlachou 2014, p. 133.

when it was almost 100%, as its purchase was not compulsory.⁴⁴ In this respect, it should be added that in the second period, unlike in the first, the banking of allowances was permitted, which, together with the high number of allowances allocated for free, provided a good economic opportunity for operators to create liquidity through their sale.

As regards the price of allowances, despite the rise in prices generated after the radical fall in prices in the first period. From 2008 onwards, with the arrival of the economic recession, we find ourselves with a scenario in which, due to the decline in economic activity, issuance was also reduced, which led to an excess of allowances and a drop in their price.⁴⁵ Hence, in this context of low production and economic crisis, many operators decided to sell part of their allowances in order to obtain economic benefits without costs. Thus, once again causing an excess of allowances and a fall in their price, a situation that caused numerous problems for the EU during the first two periods, but which, as we will see below, it was able to tackle in the third trading period.

Furthermore, during the second period, the EU ETS opened its scope to new sectors, one of the most relevant being the transport sector, and more specifically the aviation sector, whose entry occurred with the approval of Directive 2008/101, although its entry did not take place until the end of the period in 2012. However, a more in-depth development of this issue is developed in the following chapter.

Lastly, it is worth mentioning that the number of participants increased with the inclusion of Norway, Iceland, and Liechtenstein, as well as the number of greenhouse gases, with the inclusion of nitrous oxide NO₂, a gas that is particularly relevant in the shipping sector.⁴⁶

Third trading period.

With regard to the third trading period (2013-2020) it was extended over a longer timespan compared to the previous two trading periods. Although it started with

⁴⁴ Vlachou 2014, p. 129.

⁴⁵ Ibid., p. 135.

⁴⁶ European Commission. "Development of EU ETS (2005-2020)". Available at: https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/development-eu-ets-2005-2020_en#phase-1-2005-2007 [last accessed 02 April 2023]

certain problems, especially in relation to the surplus of allowances and their low price, inherited from the second trading period and caused by the economic crisis, it must be said that the right measures were taken that improved the functioning of the EU ETS and strengthened it to face the following periods.

In order to solve the allowance surplus, the EU adopted a measure that was described as exceptional but proved to be effective. In this regard, Decision 1359/2013 was adopted to amend Directive 2003/87 with regard to the timing of auctions of allowances, this measure is also known as "backloading". The Decision justifies its adoption "in order to ensure the orderly functioning of the market, the Commission is able in exceptional circumstances to adapt the auction timetable".⁴⁷ In practice, backloading was implemented to reduce the number of allowances that were in circulation. To this end, it was decided to carry out a rescheduling of part of the allowances that would be auctioned during three consecutive years (2014-2016) until withdrawing a total of 900 million the allowances less than those foreseen for those years.⁴⁸ In this way, reducing the number of allowances caused the price to increase and solved the surplus problem.

As for the 900 allowances that were rescheduled, it was initially decided that 300 would be auctioned in 2019, and the remaining 600 in 2020, however, as we will see below, this was not the way forward, as a new measure was adopted to ensure that the same problems would not happen again. In this regard, with the adoption of Decision 2015/1814, it created what is known as the Market Stability Reserve (MSR), an allowance reserve mechanism, whose purpose is to make auctioning more flexible according to needs, and therefore, allowing the EU ETS to be more resilient to possible disruptions.

Moreover, the MSR entered into force in 2019 taking a large number of allowances out of the market to raise the price of the allowances that were in circulation in the market. Likewise, in the event of a shortage of allowances in circulation, the MSR provided the necessary flexibility to have leeway and to add the necessary number to the market so that it would function correctly and avoid disruptions.⁴⁹ For instance, if

⁴⁷ Decision No 1359/2013/EU of the European Parliament and of the Council of 17 December 2013 amending Directive 2003/87/EC clarifying provisions on the timing of auctions of greenhouse gas allowances OJ L 343/1. Recital (2).

⁴⁸ Richstein et al. 2015, p. 2.

⁴⁹ Bergantino and Loiacono 2020, p. 130.

the number of allowances in circulation is higher than the limit, the MSR will gradually withdraw the surplus each year until equilibrium is reached; on the other hand, if the number of allowances in circulation is lower than the limit, the MSR will have to supply more allowances in order to satisfy the excess demand.⁵⁰ The Commission is in charge of setting the Total Number of Allowances in Circulation (TNAC) every year but essentially if the TNAC exceeds 833 million allowances then 24% is withdrawn and set aside in the MSR to be put on the market again in a gradual and controlled manner. On the other hand, if the TNAC is less than 400 million allowances, the MSR will add a total of 100 million allowances so that they can be auctioned.

Furthermore, another of the most significant changes compared to the other periods has to do with the establishment of auctioning as the default method for allocation and gradually reducing also the method of free allocation of allowances.⁵¹ However, for those sectors at risk of carbon leakage, the free allocation of allowances method would be maintained to ensure their permanence in the system. In this respect, it should be mentioned that some of the operators were taking advantage of the free allocation of allowances method and then passing the prices on to consumers, when they were never suffering any economic prejudice as the allowances were free.

Furthermore, in a similar context to the previous one, a preliminary ruling on Article 10 of Directive 2003/87 was brought before the Court of Justice by a group of Spanish electricity producers. The appellants claimed that a measure adopted by the Spanish Government which sought to avoid the "windfall profits" generated by electricity producers who included in the final price of electricity the price of allowances that had been allocated for free, was contrary to Article 10.⁵² In this regard, the Court found that "Article 10 of Directive 2003/87 must be interpreted as not precluding application of national legislative measures, such as those at issue in the main proceedings, the purpose and effect of which are to reduce remuneration for electricity production by an amount equal to the increase in such remuneration brought

⁵⁰ Bergantino and Loiacono 2020, p.141.

⁵¹ European Commission. "Development of EU ETS (2005-2020)". Available at: https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/development-eu-ets-2005-2020_en#phase-1-2005-2007 [last accessed 02 April 2023]

⁵² Langlet and Mahmoudi 2016, p. 263.

about through the incorporation, in the selling prices offered on the wholesale electricity market, of the value of the emission allowances allocated free of charge”.⁵³

Fourth trading period.

Finally, with regard to the fourth trading period (2021-2030), in which we are currently immersed, this is a phase in which a significant increase in ambition with respect to climate objectives predominates, which has led the EU ETS to implement more stringent measures and has opened up its scope of application to new sectors.

Furthermore, in a communication in 2019, the Commission launches what is known as "The European Green Deal", a strategy whose main aim is to achieve no net emissions of greenhouse gases by 2050, but without renouncing a prosperous and competitive society in economic terms.⁵⁴ Given this new scenario, the EU is mobilising its legislative machinery to create a framework to promote such progress, as well as reforming existing instruments such as the EU ETS to be more ambitious.

Moreover, with regard to these new targets, we should mention the approval of Regulation 2021/1119, also known as the "European Climate Law", whose article 1 establishes that “This Regulation sets out a binding objective of climate neutrality in the Union by 2050 in pursuit of the long-term temperature goal set out in point (a) of Article 2(1) of the Paris Agreement, and provides a framework for achieving progress in pursuit of the global adaptation goal established in Article 7 of the Paris Agreement. This Regulation also sets out a binding target of a net domestic reduction in greenhouse gas emissions for 2030”.⁵⁵ Likewise, with respect to the target established due to 2030, article 4 states that “In order to reach the climate-neutrality objective set out in Article 2(1), the binding Union 2030 climate target shall be a domestic reduction of net greenhouse gas emissions [...] by at least 55% compared to 1990 levels by 2030”.⁵⁶

⁵³ Joined Cases C-566/11, C-567/11, C-580/11, C-591/11, C-620/11, and C-640/11, Iberdrola SA and Others. Para. 59

⁵⁴ COM(2019) 640 final. Communication from the Commission to the European Parliament, the European Council, the Council, The European Economic and Social Committee and the Committee of the Regions. “The European Green Deal”. p. 2.

⁵⁵ Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations No 401/2009 and (EU) 2018/1999 (‘European Climate Law’) OJ L243/1. Article 1

⁵⁶ Ibid., Article 4(1)

Furthermore, in line with the aforementioned targets, a broad legislative package was approved that aims to encompass the EU's main emission reduction mechanisms, the so-called "Fit for 55" package. This initiative encompasses a series of reforms, among which is the EU ETS, in which some proposals to increase its level of ambition have been approved. In the following, we will proceed to develop some of the most relevant reforms.

Firstly, as regards the scope of the EU ETS, it is open to the maritime transport sector; however, as it is one of the main issues to be discussed on this paper, it will be reviewed in the chapter dedicated to the maritime transport sector and its inclusion in the EU ETS. Likewise, with regard to the aviation sector, important reforms were adopted, but as with the maritime transport sector, these will be developed in the following chapter dedicated to the aviation sector.

Secondly, in line with the idea of widening the scope to new sectors, it has been decided to create a separate market for the building and road transport sectors.⁵⁷ Although this will be phased in gradually from 2026, its entry into force may be postponed depending on energy prices. In addition, to protect consumers, a Social Climate Fund will be created, to which part of the benefits will go and which will be co-financed with the help of the Member States, to ensure that the most vulnerable households and micro-enterprises are not affected.⁵⁸

Thirdly, with respect to the cap, there is an increase in the Linear Reduction Factor (LRF) from the 1.7% reduction in the third period to 2.2% in the fourth period. However, the EU has proposed a more ambitious emission reduction target for the EU ETS sectors of 61% by 2030, a substantial increase over the 43% currently approved, which would mean that the LRF would rise to 4.2%, an equivalent of 82 million allowances less each year to meet the targets.⁵⁹

⁵⁷ European Commission. "Increasing the ambition of EU emission trading". Available at: https://climate.ec.europa.eu/eu-action/european-green-deal/delivering-european-green-deal/increasing-ambition-eu-emissions-trading_en [last accessed 07 April 2023]

⁵⁸ International Carbon Action Partnership. "EU Emissions Trading System for buildings and road transport ("EU ETS 2")". Available at: <https://icapcarbonaction.com/en/ets/eu-emissions-trading-system-buildings-and-road-transport-eu-ets-2> [last accessed 07 April 2023]

⁵⁹ European Commission. "Increasing the ambition of EU emission trading". Available at: https://climate.ec.europa.eu/eu-action/european-green-deal/delivering-european-green-deal/increasing-ambition-eu-emissions-trading_en [last accessed 07 April 2023]

Fourthly, with regard to auctioning, in principle, if the aim is to promote the technological development of operators, 100% of the allowances should be auctioned, however, for the new sectors that are incorporated and those that continue to be at risk of suffering carbon leakage, they will continue to receive a high percentage of allowances for free.⁶⁰ As we have seen throughout this paper, carbon leakage is an issue that has been treated with great care and caution at EU level, so it seems coherent that the same reasoning should be maintained. For the rest of the sectors, which are already in a good position and there is no risk of carbon leakage, it is expected that free allocation will be phased out before 2030.⁶¹ Likewise, with regard to the revenues generated after the auctioning of allowances, it is proposed that the funding provided through the Innovation Fund and the Modernisation Fund will be increased.⁶²

In conclusion, we can say that the EU ETS has been implemented over a long period of time, with both mistakes and successes, but progress has been made towards the final goal, which after the latest reforms seems to be closer.

⁶⁰ European Commission. “Revision for phase 4 (2021-2030)”. Available at: https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/revision-phase-4-2021-2030_en [last accessed 07 April 2023]

⁶¹ Ibid.

⁶² European Commission. “Increasing the ambition of EU emission trading”. Available at: https://climate.ec.europa.eu/eu-action/european-green-deal/delivering-european-green-deal/increasing-ambition-eu-emissions-trading_en [last accessed 07 April 2023]

3. The Aviation Sector.

3.1. Background.

The latest European Aviation Environmental Report 2022 of the European Union Aviation Safety Agency (EASA) indicates that the aviation sector reached its highest ever full-flight CO₂ emissions in 2019 with a total of 147 million tonnes.⁶³ Furthermore, within the overall CO₂ emissions from the aviation sector, 16% is accounted for by flights from EU Member States + EFTA countries.⁶⁴ Likewise, the aviation sector is the second largest emitter after road transport with 18.3% and a total of 5.2% of the overall greenhouse gas emissions of the EU Member States + EFTA countries.⁶⁵

The aviation sector in the EU is one of the sectors that has experienced the greatest increase in demand, peaking in 2019 with a total of 9.25 million flights.⁶⁶ In 2020 due to COVID-19 these figures were radically reduced to 12% of the daily flights in comparison with the 2019 peak.⁶⁷ However, it should not be forgotten that these figures are an exceptional reality due to the restrictive policies implemented during the pandemic, and do not show the true scenario in which the aviation sector will develop, not only in the EU but globally. With the arrival of the COVID-19 vaccine and the relaxation of restrictions, a rapid recovery in the aviation sector to pre-pandemic levels has been observed.

If no action is taken, emissions from the aviation sector are expected to continue to increase dramatically beyond 2050, by which time the sector should be decarbonised in order to meet the Paris Agreement targets. Moreover, the effects of climate change should not be ignored by the airlines and companies that make up the aviation sector. ICAO indicates that the effects of climate change can have serious impacts and consequences for aviation, one of the most obvious of which is related to the increase in temperatures and the reduction in air density, which would mean a worsening of aircraft

⁶³ European Union Aviation Safety Agency (2022). European Aviation Environmental Report 2022. p. 31.

⁶⁴ Ibid.

⁶⁵ Ibid.

⁶⁶ Ibid., p. 24.

⁶⁷ Ibid., Pp. 24 & 31

take-off manoeuvres.⁶⁸ Therefore, the EU's leadership role and ambitious policies on emissions reduction in the aviation sector are essential to achieve and comply with the climate change goals.

3.2. Historical development of aviation within the EU ETS.

From a historical point of view, the aspirations and leadership model that the EU intends to pursue in the field of greenhouse gas emissions reduction from the aviation sector dates back to the 1990s.⁶⁹ A Commission Communication from 2000 already highlights the need to reduce these greenhouse gas emissions, highlighting the role of market based instruments such as emission trading markets as a tool that would encourage the sector to reduce emissions by providing incentives for modernisation and the implementation of cleaner technologies.⁷⁰ In this context, it should be noted that in the period between 1990 and 2003 (when the EU ETS Directive was adopted) CO₂ emissions from aviation within the EU increased by 73% during that short period of approximately 10 years.⁷¹ Hence, we can conclude that such a large increase has led the EU to consider the need for a reform of the EU ETS Directive in order to tackle this problem. Moreover, with the approval of Directive 2003/87/EC, it is mentioned that the measure should not only be applied within the industry and energy sectors in order to have a real impact on the reduction of emissions, and that it should be extended to the transport sector in order to improve the contribution of the Member States to the climate commitments.⁷² More specifically article 30 devoted to revisions and future developments to include new activities in Annex I, stated that "how and whether Annex I should be amended to include other relevant sectors, inter alia the chemicals, aluminium and transport sectors, activities and emissions of other greenhouse gases listed in Annex II, with a view to further improving the economic efficiency of the

⁶⁸ ICAO (2016). Environmental report 2016. Aviation and Climate Change. p. 205.

⁶⁹ Lindenthal 2014, p. 1064.

⁷⁰ COM (2000) 821: Communication from the Commission to the Council - Community objectives for the 33rd Assembly of the International Civil Aviation Organisation (ICAO) and ICAO Council decisions prior to this Assembly in the field of environmental protection.

⁷¹ Efthymiou and Papatheodorou 2019, p. 1.

⁷² Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC OJ L275/32. Recital (25).

scheme".⁷³ We can therefore conclude that the introduction of the aviation sector in the EU ETS should not be taken as an unexpected development, as it has been a long time coming.

However, it was not until 2008 that the EU Commission considered it necessary to tackle the problem and formally propose the inclusion of the aviation sector under the EU ETS.⁷⁴ Finally, in November 2008 the European Parliament and the Council amended Directive 2003/87/EC by Directive 2008/101/EC and Directive 2009/29/EC, adding the aviation sector and coinciding with the second phase (2008/2012) of the EU ETS. Its preamble justifies the inclusion of the aviation sector by stating that "emissions trading has the potential to play a role as part of a comprehensive package of measures to address the climate impact of aviation, provided that it is appropriately designed".⁷⁵ Finally, the inclusion of the aviation sector in the ETS effectively took place in 2012 when it entered into force.

With regard to the scope of application of the EU ETS, it applied to all types of flights (both private and commercial) operated by EU and non-EU aircraft, flights taking off from or landing at Euro ports within EFTA, which includes countries such as Iceland, Liechtenstein, Norway and Switzerland.⁷⁶ Likewise, it was decided to include airlines based outside the EU-EFTA to avoid the risk of carbon leakage so that airlines would not change their business location to try to circumvent the application of the EU ETS. This provoked a lot of criticism from the international community as air operators had to surrender allowances calculated on the entire journey, even if most of the journey took place in airspace outside the EU-EFTA.⁷⁷ To get a sense of the magnitude, a flight from Wellington (New Zealand) to Helsinki (Finland) where almost the entire duration of the flight takes place in airspace outside EU EFTA airspace would have to calculate allowances for the entire journey. This led to the EU being accused of extraterritorial

⁷³ Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC OJ L275/32. Article 30(2)(a).

⁷⁴ Schade 2014, p. 1.

⁷⁵ Directive 2008/101/EC of the European Parliament and of the Council of 19 November 2008 amending Directive 2003/87/EC so as to include aviation activities in the scheme for greenhouse gas emission allowance trading within the Community. OJ L8/3. Recital 12.

⁷⁶ Valdes 2015, p. 124.

⁷⁷ Langlet and Mahmoudi 2016, p. 264.

application of its rules, forcing airlines from non-EU Member States to comply with them.⁷⁸

Even though the measure was controversial and criticised, the sector had numerous advantages in terms of its inclusion in the EU ETS. In this regard, the total number of allowances allocated to airlines (the cap) was set at 97% of their average emissions between 2004 and 2006⁷⁹, data prior to the economic crisis in 2008 when the volume of flights decreased. Moreover, 85% of the allowances were allocated free of charge and the remaining 15% were auctioned, however, airlines were not obliged to purchase allowances by this method.⁸⁰ Of the total percentage of the cap, 3% of allowances were reserved for new entrants. One of the most notable advantages of the trading system applied to the aviation sector is related to the purchase and sale of allowances, as airlines could buy allowances from the other sectors covered by the EU ETS, while the other sectors could not buy allowances from the aviation sector.⁸¹

On the other hand, with respect to the revenues generated from the auctioning, the Directive in Article 3(d)(4) establishes that the Member States are responsible for managing these revenues. However, the Directive only uses recommendations to indicate what the revenues should be used for, stating that “Those revenues should be used to tackle climate change in the EU and third countries, *inter alia*, to reduce greenhouse gas emissions, to adapt to the impacts of climate change in the EU and third countries. Especially developing countries, to fund research and development for mitigation and adaptation, including in particular in the fields of aeronautics and air transport, to reduce emissions through low-emission transport and to cover the cost of administering the Community scheme. The proceeds of auctioning should also be used to fund contributions to the Global Energy Efficiency and Renewable Energy Fund, and measures to avoid deforestation”.⁸² Hence, such wording does not create any legal obligation for Member States on how to spend the revenues generated by auctioning.

⁷⁸ Langlet and Mahmoudi 2016, p. 264.

⁷⁹ Valdes 2015, p. 124 & 125.

⁸⁰ *Ibid.*

⁸¹ Anger and Köhler 2010, p. 39.

⁸² Directive 2008/101/EC of the European Parliament and of the Council of 19 November 2008 amending Directive 2003/87/EC so as to include aviation activities in the scheme for greenhouse gas emission allowance trading within the Community. OJ L8/3. Article 3(d)(4)

3.4. Aviation sector crisis and international opposition.

Furthermore, the EU ETS was justified by the Chicago Convention, which governs civil aviation at the international level, as it is not a discriminatory measure. In this regard, article 11 of the Chicago Convention states that “the laws and regulations of a contracting State relating to the admission to or departure from its territory of aircraft engaged in international air navigation, or to the operation and navigation of such aircraft while within its territory, shall be applied to the aircraft of all contracting States without distinction as to nationality [...]”.⁸³

Despite the fact of the above mentioned and the low costs involved in its inclusion in the market, important trading partners were against the measure and therefore expressed their disagreement through a Joint Declaration within the ICAO Council, supported by Argentina, Brazil, Chile, China, Colombia, Cuba, Egypt, India, Japan, Republic of Korea, Malaysia, Mexico, Nigeria, Paraguay, Qatar, Russian Federation, Saudi Arabia, Singapore, South Africa, the United States of America and the United Arab Emirates.

In this context of confrontation, the Air Transport Association of America and American Continental and United Airlines (ATA and others) a lobby group formed by US Airlines decided to appeal the legality of Directive 2008/101 before the High Court of Justice of England and Wales which made a reference for a preliminary ruling to the Court of Justice of the European Union (CJEU).⁸⁴ It is worth mentioning that in that case the CJEU upheld Directive 2008/101 as none of the alleged factors could affect its validity. However, the study of that case is reserved for the last chapter on the analysis of extraterritoriality in the EU ETS.

After the judgment, the reaction of some commercial powers such as the United States, China or Russia was not long in coming, and they all showed strong opposition, reaching a high level of tension in which airlines were directly banned from participating in the EU Emission Trading System as was the case with United States or Russia even threatened to restrict the airspace of EU airlines.⁸⁵ Faced with the magnitude of such pressures and threats, the EU was forced to back down and adopted

⁸³ Convention on International Civil Aviation (adopted the 7 December 1944, in force 4 April 1947). Article 11.

⁸⁴ Mayer 2012, p. 1113.

⁸⁵ Ibid., p. 1114.

Decision 377/2013, also known as "stop the clock" decision, leaving out of the EU ETS airlines operating flights from airports outside the EU or vice versa.⁸⁶ From then on the EU ETS only applied to aircraft's operators whose flights arrived and departed within the territory of the Member States and EFTA Countries, although some airlines decided to continue to participate in the emissions market due to the economic advantages of free allowances.⁸⁷

Moreover, it should be noted that the EU gave up on the inclusion of international flights in the EU ETS not only because of pressure from trading partners, but also because the ICAO promised to create a market-based instrument aimed at reducing emissions from the aviation sector. Thus, the EU ended up giving in and excluding most of the emissions caused by the aviation sector from its claims by approving Regulation 421/2014, which amended the content of Directive 2003/87.⁸⁸ Likewise, Article 28 (a) of Regulation 421/2014 states that it will follow closely and attentively the progress made by ICAO and actively participate in the negotiations to promote the implementation of a market-based mechanism among all countries.

It could be argued that after the "stop the clock" phase the implementation of the EU ETS in the aviation sector was weakened. From that moment on, aircraft operators operating flights within the EU/EFTA countries were at a clear disadvantage compared to aircraft operators with a different geographical scope. Therefore, due to the risk of carbon leakage, the auctioning system was stopped, which led to a further distortion of the market.⁸⁹

Moreover, in order to solve the problem of the loss of value of allowances and the over-allocation of allowances that occurred, a series of exceptional measures were adopted within the EU. In this respect, it was decided to stop issuing allowances for a specific period of time 2014-2016, this was known as the backloading initiative, this measure was part of the third trading period, and I therefore refer to what has already been discussed in the previous chapter.⁹⁰

⁸⁶ Efthymiou and Papatheodorou 2019, p. 3.

⁸⁷ Ibid.

⁸⁸ Bergantino and Loiacono 2020, p. 132.

⁸⁹ Ibid

⁹⁰ Ibid., p. 130.

3.5. Latest developments.

With regard to the following reforms, mention should be made of Regulation 2017/2392 which extended the moratorium on not including aircraft operators operating flights from outside the European Economic Area (EEA) in the EU ETS until 31 December 2023. This derogation is in favour of the ICAO Market Based Mechanism (CORSA) which was to come into force for all international air traffic routes.

Moreover, and following the train of previous reforms, Directive 2018/410 continues the line of the previous amendments in order to make the EU ETS more stable and to promote an increase in the price of allowances. In this respect, it can be said that the 2018 reform in addition to the previous ones achieved its purpose as until then the price of allowances in the aviation sector had remained very low until the implementation of the improvements.⁹¹ In the aviation sector, we must understand that airlines are eligible for two types of allowances, general allowances that are available to all sectors that make up the EU ETS (EUAs) and aviation sector specific allowances (EUAs) whose purchase is limited only to aircraft operators and restricted to other sectors. Although this measure gives flexibility to aircraft operators and avoids the risk of carbon leakage, and they remain economically competitive with the rest of the worldwide aircraft operators, it is also true that this benefits make the Cap more difficult to comply with.⁹² Thus, the entry into force of the MSR together with the removal of the allowance surplus caused the price of allowances for the aviation sector to increase and there was greater stability and certainty in the market, which in turn caused aircraft operators to start implementing more serious reduction measures.⁹³

With respect to the most recent reforms, the aviation sector and its relationship with the EU ETS has been strongly influenced by the latest EU rules and policies regarding climate change and emission reduction targets. In this regard, with the advent of the EU Green Deal, a package of measures was adopted that focuses on transforming society and economic sectors to meet climate targets. The Green Deal supports the reduction of emissions from the aviation sector and calls for the EU ETS to be more ambitious in line with the new climate targets. To this end, it proposes ending the free allocation of allowances for airlines operating intra-EU flights, while also strengthening

⁹¹ Bergantino and Loiacono 2020, p. 138.

⁹² Ibid., p. 140.

⁹³ Ibid., p. 141.

the ICAO's Carbon Offsetting and Reduction Scheme for International Aviation (CORSA). Likewise, from the point of view of the EU and airlines operating intra-EU flights, making the CORSIA scheme effective is beneficial not only for global climate change objectives, but also for balancing the economic situation of all aircraft operators.

Furthermore, within the framework of the EU Green Deal we find the "Fit for 55" package which seeks to transform the ambitious climate goals to which the EU has committed itself into new legislative initiatives, among which the aviation sector has been affected. Before going into the details about the amendment of the EU ETS and its effects on the aviation sector, it is worth mentioning the adoption of the "ReFuelEU Aviation", a Regulation aiming at setting binding targets for the use of sustainable and synthetic fuels in the aviation sector.⁹⁴ More specifically, the use of sustainable fuel shall increase to 63% by 2050, while the use of synthetic fuel shall increase to 28% by 2050.⁹⁵

With respect to the EU ETS, the "Fit for 55" package sets out a major overhaul of the rules affecting the climate ambition and emission reduction ambition of all major sectors, including the aviation sector, as its design is conditional on that of the other legislative initiatives. As a main measure, in 2021 the proposal from the Commission for the adoption of a Directive aimed at amending "Directive 2003/87 as regards aviation's contribution to the Union's economy-wide emission reduction target and appropriately implementing a global market-based measure" was carried out.

Furthermore, among the changes that this proposal will bring for the aviation sector, we must highlight some that would truly represent a considerable advance in the reduction of emissions.

Firstly, it is proposed to end one of the privileges that the aviation sector has enjoyed since it joined the EU ETS, namely the free allocation of allowances. In this regard, it is proposed that from 2024 onwards, the amount of allowances that aircraft operators acquire for free will be reduced annually by a quarter, until full auctioning is finally achieved in 2027.⁹⁶ Until then, the proportion of free allocation of allowances will be awarded on the basis of their share of verified emissions that have been produced in the previous year, so that in order to allocate free allowances in 2024, the

⁹⁴ de las Heras 2022, p. 73.

⁹⁵ Ibid.

⁹⁶ Jensen 2023, p. 5.

emissions produced during 2023 will have to be taken into account. Furthermore, we must remember that the original method of allocation of allowances is auctioning, while free allocation is an exception that has been applied, but that went against the "polluter pays" principle. Within ICAO, certain advances and reforms have been carried out which have led to the adoption of instruments aimed at reducing greenhouse gas emissions in the aviation sector at a global level, the most obvious example being the CORSIA scheme. However, the analysis of ICAO's regulatory activity and the effectiveness of CORSIA will be carried out later in the chapter dedicated to the analysis of extraterritoriality. Hence, with the entry into force of the CORSIA scheme we can deduce that the risk of carbon leakage will be reduced as all aircraft operators will play with the same conditions.

Secondly, regarding the application of the ICAO's CORSIA scheme to extra-EEA flights, in 2026 the Commission will evaluate its implementation, as well as its effectiveness in terms of meeting the Paris Agreement targets. If progress is deemed insufficient, the Commission will propose an extension of the EU ETS to include extra-EEA flights from 2027.⁹⁷

Thirdly, a temporary derogation until 2030 from the EU ETS is proposed to enter into force for flights between outermost regions and aerodromes in the same Member State.⁹⁸ As for the revenues generated by trading and allowance purchases, it has been agreed that part of the revenues will go to the EU's general Budget.⁹⁹ Moreover, it is required that at least 50% of the revenues generated are earmarked for measures related to climate action.

To conclude with, despite the numerous challenges that the aviation sector has had to face throughout its implementation period in the EU ETS, it has proven to be an effective measure in the process of decarbonisation in the sector.¹⁰⁰ Hence, we can confirm that the EU ETS has been able to stimulate the process of modernisation and innovation towards cleaner technologies in the sector.

⁹⁷ Jensen 2023, p. 11

⁹⁸ *Ibid.*, p. 5

⁹⁹ *Ibid.*

¹⁰⁰ Lykotrafiti 2013, p. 354.

4. The Inclusion of the maritime transport sector within the EU ETS.

In this chapter we address one of the central themes of this study, the inclusion of the maritime transport sector within the framework of the EU ETS. To do so, we will analyse the impact of the sector in terms of the accumulation of greenhouse gas emissions in the geographical scope of the EU, detailing the most common greenhouse gas emissions and their environmental impact in the EU. We will then analyse the historical context in which it has been decided to include the maritime transport sector to contribute to the achievement of the climate targets set by the EU ETS. Finally, we will review the main characteristics of the shipping sector within the EU ETS, its challenges and its projection for future reforms.

4.1. Background.

The latest European maritime transport environmental report by the European Maritime Safety Agency (EMSA) and the European Environment Agency (EEA) warns that the maritime transport sector is one of the most important elements in EU trade, accounting for 35% of internal trade and up to 77% of external trade.¹⁰¹ However, despite the substantial economic benefits that the sector provides to the EU Member States as a whole, it also poses a major threat to the environment and human health.

Moreover, in terms of the magnitude of the fleet of ships that are registered under the flag of the EU Member States, it accounts for one fifth of the total world fleet, of which the most frequent vessels are container ships, bulk carriers and oil tankers, which account for 80% of the total EU Member States fleet.¹⁰² All of them are considered large ships, above 5000 gross tonnage, and due to their magnitude they are vessels with a high environmental impact, so they will be the main focus of this chapter. Likewise, the age of the vessels also influences their environmental impact, the more modern vessels are equipped with new technologies and newer engines which are more energy efficient. In this respect, practically 50% of the large ships registered in the EU are less than 15 years old, while approximately 15% of the large ships are more than 30

¹⁰¹ EMSA & EEA 2021. p. 11.

¹⁰² Ibid.

years old, the latter having a higher environmental impact.¹⁰³ Likewise, most of the regulations concerning the improvement of ship safety, such as the mandatory double hulls for some types of ships, or the regulations on the improvement of cleaner fuels or more efficient engines, were approved in a period of time of approximately 20 years.

With regard to environmental impact, although the maritime transport sector is one of the main means of transport with one of the lowest CO₂ emission rates compared to the distance it can travel and the cargo capacity it can carry, it still has a strong impact on climate change and on marine biodiversity and ecosystems.¹⁰⁴ In this sense, there are several greenhouse gas emissions caused by the shipping sector that contribute to climate change in addition to CO₂, as well as the enormous impacts on biodiversity caused by shipping accidents and pollution from dumping.

With regard to the historical CO₂ emissions produced by the maritime transport sector in the EU, it should be noted that these reached their peak in 2008, when the economic crisis began in Europe, and that these emissions were reduced until 2015.¹⁰⁵ From 2015 to the most recent data indicate a trend of increasing CO₂ emissions, but without reaching the 2008 peaks. Moreover, projection models indicate that CO₂ emissions will increase by 18% by 2030, and by 39% by 2050 compared to 2015 data.¹⁰⁶

Furthermore, data from 2018 indicate that the fleet of ships calling at ports within the EEA territory emitted the equivalent of 18% of the total emissions from international shipping, accumulating 140 million tonnes of CO₂.¹⁰⁷ In this respect, of the total CO₂ emissions 33% relate to voyages that start outside the EEA area but dock in EEA ports. On the contrary, 29% of the total CO₂ emissions correspond to voyages starting in ports within the EEA area. Likewise, 32% of the total CO₂ emissions correspond to intra EEA voyages.

¹⁰³ EMSA & EEA 2021. p. 28.

¹⁰⁴ Ibid., P. 37.

¹⁰⁵ Ibid., P. 40.

¹⁰⁶ Ibid., P. 41.

¹⁰⁷ Ibid., P. 38.

4.2. Historical development of the maritime transport sector within the EU ETS.

From a global point of view, the debate on the need to reduce greenhouse gas emissions from shipping dates back to 1995 in the framework of the UNFCCC. In this regard, given the impossibility of reaching agreements between the States on the allocation of shipping emissions, it was decided to transfer the responsibility for resolving this issue and to centralise the decision-making power in the IMO.¹⁰⁸ However, the development of this issue will be analysed in more depth in the following chapter dedicated to the EU's extraterritoriality and the need to foster progress at the international level.

Furthermore, at the EU level, the inclusion of greenhouse gas emissions from shipping as part of its emissions reduction policies has a precedent of not very long standing, as it is one of the few means of transport for which no measures have been implemented in this respect. In this regard, a 2013 Commission Communication on the integration of maritime transport emissions in the EU's greenhouse gas emissions reduction policies establishes the need to include this sector in order to contribute to the achievement of its emissions reduction targets, while its economic competitiveness remains intact.¹⁰⁹ Likewise, this document already indicates the suitability of market-based measures as cost-effective instruments for the reduction of emissions from shipping, among which the incorporation of the shipping sector in the framework of the EU ETS stands out.¹¹⁰

Moreover, within the process of incorporating the shipping sector into the EU ETS, it is necessary to take into account the adoption of Regulation 2015/757 on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport (MRV Regulation). In this regard, as a prior step to its inclusion in the EU ETS, it was considered necessary to implement an emissions verification mechanism that would make it possible to control data on vessel emissions in order to know how much each vessel emits and, therefore, how many allowances will be required once they are included in the system.

¹⁰⁸ Wettestad 2022, p. 248.

¹⁰⁹ COM(2013) 479 final. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Integrating maritime transport emissions in the EU's greenhouse gas reduction policies. p. 2.

¹¹⁰ *Ibid.*, p. 8.

Furthermore, as regards the scope of the MRV Regulation, article 2 establishes that it applies only to large ships that exceed the threshold of 5000 gross tonnage, and on “CO₂ emissions released during their voyages from their last port of call under the jurisdiction of a Member State and from a port of call under the jurisdiction of a Member State to their next port of call, as well as within ports of call under the jurisdiction of a Member State”.¹¹¹ In this respect, it was decided to include large ships in the system because, in addition to being the largest emitters, they do not require as much administrative work as if it were decided to include ships of smaller tonnage. Hence, as fewer ships are in the system, a more effective control can be employed, ensuring a better environmental outcome.¹¹²

In addition, the MRV Regulation was adopted in 2015, but a transition period was established to allow companies to implement the necessary monitoring mechanisms. In this regard, the obligations to monitor their CO₂ emissions did not start until 2018, so we cannot expect the incorporation of the maritime transport sector into the EU ETS before that date, and therefore, with a view to the fourth trading period.

Furthermore, from a political point of view, the debate on the inclusion of the maritime transport sector in the EU ETS was introduced by the Parliament Environment Committee, which since 2016 considered that its inclusion should be made effective.¹¹³ Following this, work began on a proposal to reform the EU ETS, which, among other measures, included the issue of shipping. However, there were disagreements within the Council and they did not decide to approve the proposal drafted by the Parliament.¹¹⁴ Finally, in November 2017, the reform proposal was finally adopted between Parliament and the Council.

A year later, the reform was approved with Directive 2018/410, whose preamble indicates that all the main economic sectors must contribute to reducing emissions, and in the case of emissions from the international shipping sector it is the IMO that is

¹¹¹ Regulation (EU) 2015/757 of the European Parliament and of the Council of 29 April 2015 on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport, and amending Directive 2009/16/EC OJ L123/55. Article 2(1)

¹¹² *Ibid.*, Recital 19.

¹¹³ Wettestad 2022, p. 249.

¹¹⁴ *Ibid.*

responsible for carrying out this task.¹¹⁵ In this regard, it gives the Commission the task of reviewing the progress made by the IMO in adopting ambitious emission reduction measures, and sets a deadline of 2023 to see such measures implemented by the IMO or the Union.¹¹⁶

Moreover, a greenhouse gas reduction strategy was approved by the IMO in 2018, which represented a great step forward in terms of the regulation of international shipping emissions, but was not sufficiently ambitious in relation to the emission reduction targets that the EU intended to achieve.¹¹⁷ However, more on the relationship between the IMO and the EU will be discussed in the next chapter on extraterritoriality. In this respect, given the urgency to reduce emissions, the EU was forced to take unilateral action on the emissions generated by the shipping sector in the EU.

Furthermore, moving forward chronologically, we reach 2019, a key year for the future of climate change mitigation policies in the EU, which, with a significant increase in Parliament's support for more ambitious mitigation measures, the aforementioned "European Green Deal" is approved at the end of 2019.¹¹⁸ The Green Deal emphasises that reaching the new climate targets will require the extension of the EU ETS to new sectors. In this respect, a direct mention is made of the shipping sector by highlighting that the European Commission will launch a proposal for the maritime sector to be included under the scope of the EU ETS, but under the supervision of the IMO.¹¹⁹

Moreover, as we have seen previously, the ambitious statements of the Green Deal materialised after the approval of the European Climate Law, which, being a Regulation that establishes binding emission reduction targets, led to the shipping sector's inclusion being speeded up. It is worth noting that with the arrival of the COVID-19 pandemic, the IMO took a relaxed position and left decision-making on greenhouse gas emissions reduction targets for 2050 at a standstill, which led to a

¹¹⁵ Directive (EU) 2018/410 of the European Parliament and of the Council of 14 March 2018 amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments, and Decision (EU) 2015/1814 OJ L76/3. Recital (4).

¹¹⁶ Directive (EU) 2018/410 of the European Parliament and of the Council of 14 March 2018 amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments, and Decision (EU) 2015/1814 OJ L76/3. Recital (4).

¹¹⁷ Wettestad 2022, p. 250.

¹¹⁸ *Ibid.*

¹¹⁹ COM(2019) 640 final. Communication from the Commission to the European Parliament, the European Council, the Council, The European Economic and Social Committee and the Committee of the Regions. "The European Green Deal". p. 11.

mobilisation by the European Parliament, which wanted the shipping sector to be included immediately in the EU ETS.¹²⁰ This proposal established a 40% reduction target to be met by 2030 compared to the greenhouse gas emissions data of operators in 2018, when the MRV Regulation was implemented and there was already accurate data on how much the main vessels emitted. Likewise, the European Parliament's proposal also included the creation of a fund to mitigate the effects of climate change in the oceans, financed with half of the profits generated by the purchase of allowances.¹²¹

In addition, a few days before the approval of the European Climate Law, as a support measure for the achievement of its objectives, the "Fit for 55" was approved, which includes a broad legislative package that will be decisive for the final inclusion of the shipping sector in the EU ETS. Among the amendments included in the "Fit for 55", as in the aviation sector chapter with the approval of the "ReFuelEU Aviation", another regulation with the same purpose was also approved for the maritime sector, the "Fuel EU Maritime", which establishes binding targets to ensure the transition towards the use of more sustainable fuels. In this regard, unlike the aviation sector where specific targets were set for the consumption of sustainable and synthetic fuels by aircraft operators, the "Fuel EU Maritime" uses a different approach by setting greenhouse gas emission reduction targets with a long-term objective of a 75% reduction by 2050.¹²²

Further, the one that concerns us most is the reform of the EU ETS Directive aimed at increasing its emission reduction target and extending its scope to include new sectors.¹²³ As far as the maritime transport sector is concerned, the proposal aims to cover 100% of all intra-EEA shipping emissions and 50% of extra-EEA shipping emissions.¹²⁴

4.3. Latest developments.

In July 2021, the European Commission launched a legislative proposal with the aim of amending the EU ETS Directive to accommodate all the new proposals discussed above. Moreover, one year later in December 2022, the European Parliament

¹²⁰ Wettestad 2022, p. 250.

¹²¹ Wettestad 2022, p. 250.

¹²² de las Heras 2022, p. 73.

¹²³ Ibid., p. 68.

¹²⁴ Ibid., p. 69.

and the Council adopted a provisional agreement on the approval of a series of policy proposals adopted in the framework of the "Fit for 55", including the Commission's landmark proposal on the reform of the EU ETS.¹²⁵ In this regard, the agreement is expected to be finalised in 2023, thus, in the absence of a consolidated text available yet, the analysis will be carried out on the basis of the Commission Proposal of 2021.

Furthermore, the text of the Commission proposal makes public the adoption process in which, in order to accommodate public participation, evaluations, impact assessments and stakeholder consultations were carried out, involving representatives of the private sector, Member States, NGOs, academic institutions and citizens, among others. With regard to the consultation on the inclusion of the maritime transport sector, stakeholders were broadly in favour of such a measure and consider this market-based measure as the best measure among the possible options.¹²⁶

To continue, in its preamble the reform of the EU ETS Directive highlights the need to include the maritime transport sector, as one of the few modes of transport that had not been included in the EU's emission reduction policies, and also as a sector whose emissions are projected to increase significantly by mid-century. Likewise, it is recalled that following the measures adopted by the EU for the progressive integration of the maritime sector, such as Regulation 2015/757 on monitoring and reporting emissions, they have proved to be successful and allow their inclusion in the EU ETS to be carried out in a controlled manner.

With respect to the reform of the articles of the Directive, significant changes can be found. Already in the article dedicated to definitions, we can find some dedicated to the maritime transport sector, e.g., "shipping company", "administering authority in respect of a shipping company", "port of call" and "cruise passenger ship".

Moreover, with regard to the scope of application, it opens up to maritime transport activities, among which it is established that the allocation of allowances and the obligation to surrender requirements will be applicable to "100% of emissions from

¹²⁵ European Commission. "EU Emissions Trading System (EU ETS)". Available at: https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets_en#legislative-framework [last accessed 16 April 2023]

¹²⁶ COM(2021) 551 final. Commission proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union, Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and Regulation (EU) 2015/757. Part 3.

ships performing voyages departing from a port under the jurisdiction of a Member State and arriving at a port under the jurisdiction of a Member State" and emissions from "ships at berth in a port under the jurisdiction of a Member State".¹²⁷ Likewise, this will also be applicable for "50% of emissions from ships performing voyages departing from a port under the jurisdiction of a Member State and arriving at a port outside the jurisdiction of a Member State [...] 50% of the emissions from ships performing voyage from a port outside the jurisdiction of a Member State and arriving at a port under the jurisdiction of a Member State".¹²⁸ This means that ships operating outside-EEA voyages will be obliged to surrender allowances corresponding to 50% of the total emissions produced during the voyage. In this respect, we consider that this may create some controversy and rejection by operators, since most of the voyages will be made in international waters where the jurisdiction of the Member States does not exist.

Further, with regard to the date on which shipping operators will be obliged to surrender allowances, this will occur gradually. Assuming that the final text is adopted in 2023, this means that the first year in which the obligations come into force will be 2024, in which operators will have to pay 40% of the emissions generated in that year; by 2025 the percentage increases to 70% of the emissions generated during that year; and finally by 2026 they will have to pay 100% of the total reported emissions, as the surrender of the allowances does not occur until the following year, meaning that they will not have to be paid until 2027.¹²⁹

In addition, the administering authorities will be in charge of ensuring compliance from the shipping operators, which will vary depending on several factors. Firstly, for shipping operators who are registered in a Member State, that will be their administering authority; secondly, for shipping operators who are not registered in any Member State, but who have called at ports of a Member State, the administering authority will be the Member State in which the shipping operator has called most often

¹²⁷ COM(2021) 551 final. Commission proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union, Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and Regulation (EU) 2015/757. Article 3(g)

¹²⁸ Ibid.

¹²⁹ European Commission. "Reducing emissions from the shipping sector". Available at: https://climate.ec.europa.eu/eu-action/transport-emissions/reducing-emissions-shipping-sector_en#inclusion-of-maritime-emissions-in-eu-emissions-trading-system-ets [last accessed 16 April 2023]

during the previous two years; thirdly, in the event that the shipping operator does not fall into the above two categories, the administering authority will be the Member State in which its first voyage in the respective reporting year took place.¹³⁰

4.4. Challenges.

The implementation of the maritime transport sector in the EU ETS, in addition to improving the obvious environmental impact of emission reductions, may also be accompanied by a number of social and economic impacts. From now on, ship operators will have an economic impact as they will either have to invest in low-emission technologies or submit the corresponding allowances each year according to the emissions they have emitted. All of this, together with an increase in administrative costs, will lead to an increase in compliance costs for the sector within the scope of the EU ETS.¹³¹ In addition, due to these new additional costs generated by their participation in the EU ETS, there is a risk of market distortions, as this is a measure applied in the European context, but which may have impacts at global level due to the global characteristics of the sector.

Moreover, ship operators will see an increase in their costs, which will lead to a pass-through of costs to the final prices of products. This usually results in a price increase for the consumer, who is ultimately responsible for paying for the emission reductions. Further, suppliers of products and actors relying on maritime trade within the EEA zone will be most affected.

Furthermore, in this context of rising costs, large shipping companies could contemplate to shift their operations to other modes of transport. However, as we have already mentioned, the shipping sector is one of the last to join the EU ETS, so there are not many other options left that offer a less stringent environmental regulatory framework.¹³² In this connection, the biggest challenge that all sectors face when implementing the EU ETS is to prevent operators in the sector from dodging their

¹³⁰ COM(2021) 551 final. Commission proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union, Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and Regulation (EU) 2015/757. Article 3(g)(c)

¹³¹ CE Delft & DLR 2021, p. 25.

¹³² Ibid.

obligations. In this context, the challenge of carbon leakage and how ship operators could seek to take measures to try to avoid their obligations is again raised.

The carbon leakage analysis will be discussed in more detail in the next chapter, where we will compare this risk with the experience in the aviation sector during the time it has been implemented. However, it is worth mentioning in this chapter what the main challenge of carbon leakage in the maritime transport sector is. In this respect, the most repeated option in the academic literature is that shipping companies operating routes between ports outside the EEA area and a port within the EEA area decide to include a port call for a non-EEA port that is close to the EEA area.¹³³

For instance, a ship operator performing a voyage between Panama (outside-EEA) and Spain (inside-EEA) would have to pay for 50% of the emissions generated during the entire voyage. However, if instead of making the entire journey, the ship operator decides to include a port call in Morocco which is located just outside-EEA, and very close to the Spanish coast, it could considerably reduce its costs by having to surrender only the allowances generated on the journey between Morocco and Spain.

Further, if the scenario described here was to become common practice for some shipping companies, it would lead, firstly, to a low effectiveness in terms of emissions reduction, as operators would have no incentive to implement measures as they would not suffer any economic damage. In this regard, the EU is promoting the possibility of amending the definition of the term "voyage" in order to prevent shipping companies from taking advantage of the possibility of making additional port calls.¹³⁴

Lastly, the issue of carbon leakage is directly related to the approach taken with respect to the free allocation of allowances, which is the main mechanism to prevent a competitive mismatch between operators. However, a more focused analysis of this scenario will be carried out in the next chapter, as the main carbon leakage risks faced by the shipping sector will be discussed in more detail.

¹³³ Lagouvardou and Psaraftis 2022, p. 3.

¹³⁴ CE Delft & DLR 2021, p. 29.

5. The aviation and maritime transport sector: a comparison in the context of the EU ETS.

Even though we have already covered two chapters each focusing on the respective sectors concerned by this study, we consider it necessary and relevant to dedicate a chapter to an overview comparing the two sectors in the context of the EU ETS. In this sense, our analysis focuses on the similarities and differences between the two sectors but concentrating on the findings of the maritime transport sector, as it is more novel and there is less information available. For this purpose, we will use the aviation sector as an example, which, having been implemented for a period of 10 years, allows us to have a broad perspective of what may be the most relevant aspects in the implementation period of the maritime transport sector. Likewise, as we have already verified in this study, the aviation sector has been surrounded by controversy since its inception in the EU ETS, as well as being criticised for its benefits compared to other sectors, which is why we consider it necessary to determine whether these aspects can be reproduced in the maritime transport sector. Lastly, it is worth mentioning that this comparison is made taking into account a broad context and not only considering the latest reform of the EU ETS, in order not to overlook any detail and thus carry out a more complete analysis.

5.1. Geographical scope.

Both the aviation sector and the maritime transport sector share the element of extraterritoriality as they can generate emissions outside the geographical scope of the EEA Member States. Moreover, when determining the geographical scope of both sectors within the EU ETS, it should be considered that the larger the geographical scope, the greater the environmental effect as more greenhouse gas emissions can be covered.¹³⁵ In this respect, in both sectors the aim has been to cover the widest possible geographic scope, however, as we will see below, in some cases this has not been possible and has had to be rectified.

¹³⁵ CE Delft & DLR 2021, p. 24.

Firstly, with regard to the aviation sector, as we have mentioned previously, the initial idea was to include all flights within the system, both intra-EEA and extra-EEA flights, in order to include all airlines operating flights with the EEA Member States. However, due to strong opposition from trading partners, this measure was suspended and only applied to intra-EEA flights. Further, at present everything has remained stable, respecting this suspension and awaiting the entry into force of CORSIA in 2026, which, if considered insufficiently ambitious, will mean that extra-EEA flights will again be included in the EU ETS.¹³⁶ Lastly, with regard to the outermost regions and Member States' overseas territories, it should be mentioned that the implementation of the EU ETS has been suspended until 2030.¹³⁷

Secondly, with respect to the shipping sector, as we have recently seen in the previous chapter, it shares the same aim as the aviation sector by including 100% of intra-EEA and extra-EEA voyages. Moreover, a new aspect that we can appreciate within the shipping sector is that for extra-EEA voyages only 50% of the allowances are accounted for, offering greater flexibility than the aviation sector in its beginnings. Likewise, with regard to the outermost regions and overseas territories of the Member States, the EU ETS is expected to be applied in nine ports (Azores, Canary Islands, French Guiana, Guadeloupe, Madeira, Martinique, Mayotte, Saint Martin and Reunion), showing a higher level of ambition than in the aviation sector.¹³⁸

Furthermore, it is necessary to hear the opinion of the rest of the international community on this measure, to know whether they agree with it, or whether they will oppose it, as in the case of the aviation sector. However, before we begin to analyse whether the measure will be opposed or not, we must point out that unlike when the inclusion of the aviation sector was approved, we are currently at a different historical moment. After the approval of the Paris Agreement, there seems to be greater international acceptance of the need to reduce greenhouse gas emissions in order to meet the objectives set out in the agreement. Moreover, when the aviation sector was incorporated into the EU ETS there was no instrument approved by the ICAO, however, since 2018 the IMO has approved a strategy for the reduction of emissions in

¹³⁶ Jensen 2023, p. 11.

¹³⁷ Ibid., P. 5.

¹³⁸ CE Delft & DLR 2021, p. 24.

international shipping.¹³⁹ Hence, all this invites us to believe that the shipping industry has now matured and is ready to take the necessary measures.

Despite all this, there are still some opposing views to the measure coming from some important trading partners for the EU. In this regard, opinions against the EU ETS have appeared from the Asian Shipowners' Association, which expressed its disagreement with the measure, considering that the creation of an emission trading system for international shipping should be agreed within the IMO.¹⁴⁰ Likewise, more concrete examples such as Japan or South Korea have expressed their dissatisfaction and concern about the effects of the measure on international trade.¹⁴¹ Hence, we can conclude that the level of opposition to the measure was greater and more decisive in the aviation sector, where some countries even adopted policies prohibiting companies from participating in the EU ETS.

5.2. Carbon Leakage.

Carbon leakage is one of the main concerns when it comes to the inclusion of certain sectors in the EU ETS, and to ensure that carbon leakage does not occur, it is necessary to design the system correctly. Moreover, the existence of carbon leakage in a sector poses a serious threat to the effectiveness and survival of that sector in the EU ETS, as there are better options outside the system with more favourable economic conditions.

Specifically, both the aviation sector and the maritime transport sector are sectors with a broad international vocation. Likewise, all this means that in the absence of international legally binding instruments to reduce emissions, if only operators involved in the EU ETS have an obligation to purchase allowances, this will lead to a situation of inequality in which some companies will suffer an economic disadvantage

¹³⁹ International Maritime Organisation. “Initial IMO GHG Strategy”. Available at: <https://www.imo.org/en/MediaCentre/HotTopics/Pages/Reducing-greenhouse-gas-emissions-from-ships.aspx> [last accessed 25 April 2023]

¹⁴⁰ Safety4Sea. “Asian shipowners express their strong opposition to EU-ETS” (9 November 2021). Available at: <https://safety4sea.com/asian-shipowners-expresses-its-strong-opposition-to-eu-ets/> [last accessed 26 April 2023]

¹⁴¹ Reuters. “Japan, South Korea, industry oppose EU plan to cut shipping emissions” (27 November 2020). Available at: <https://www.reuters.com/article/climate-change-eu-shipping-idUSKBN2871M5> [last accessed 28 April 2023]

simply because they operate in Europe.¹⁴² All of this means that in those sectors where the risk of carbon leakage is higher, certain measures must be applied to prevent operators from being economically affected and from being able to compete with companies that are not subject to this measure.

With regard to the aviation sector, as we have seen in previous chapters, carbon leakage has been one of the main factors that has marked the implementation of this sector in the EU ETS. Due to the particular characteristics of the aviation industry, this sector has been particularly exposed to the risks of carbon leakage, which is why it has been protected by giving it preferential treatment within the EU ETS. All of this, despite the possible criticisms that have arisen from not following the same measures as the rest of the sectors.

To continue, we will detail some of the most common examples of carbon leakage in the aviation sector. Firstly, airlines operating long-haul flights usually require a stopover at a hub that serves as a connection point between smaller airports. In this regard, for airlines operating long-haul flights between an airport within the EEA and an airport outside the EEA, instead of using a hub that is located within the EEA area such as Frankfurt, they will prefer to use a hub that is located outside the EEA area such as Dubai.¹⁴³

Further, this situation would worsen in the hypothetical case where ICAO's CORSIA comes into force and is less stringent than the EU ETS. In that case, direct flights between airports in the EEA area and those outside the EEA area would almost certainly be greatly reduced, as it would be convenient for them to stop at a hub outside the EEA area and from there make the rest of the journey to the final destination, complying with the softer CORSIA regime.¹⁴⁴

Secondly, another possibility of carbon leakage in the aviation sector arises as a result of an increase in the price of fares for airlines within the EU ETS. Due to the economic damage that operators suffer from having to purchase allowances, they would pass on their cost in the final price of the tickets purchased by consumers. Likewise, this would mainly affect consumers who are located outside the EEA area, as they will

¹⁴² Lagouvardou and Psaraftis 2022, p. 2.

¹⁴³ Earl and Dardenne 2022, p. 7.

¹⁴⁴ CE Delft & DLR 2021, p. 30.

prefer to travel to other places where fares are cheaper.¹⁴⁵ However, the same reasoning could also apply for consumers located within the EEA area who prefer to travel to nearby locations but are nevertheless outside the EEA to avoid the price increase.¹⁴⁶

With regard to the maritime transport sector, although emissions from journeys outside the EU ETS have been included from the very beginning, this does not exclude the possibility of carbon leakage. Some studies already show potential practices that could be used by operators to avoid the effects of the EU ETS, and although it has not yet been demonstrated that these practices will be used by operators, it is worthwhile to go ahead and reflect them in this study. Moreover, as we know, the EU ETS works in a learning by doing process, therefore, depending on the practices of the operators, a review including the corresponding amendments can be carried out.

In the following, we will proceed to analyse the different options that shipping companies use to avoid the effects of the EU ETS. Firstly, one of the options that could be most detrimental to the effectiveness of the EU ETS would be through the inclusion of port calls just outside the EEA. In this regard, shipping companies making voyages between ports in the EEA and ports outside the EEA could achieve a much lower cost by establishing a port call in a country close to the EEA, such as the UK.¹⁴⁷

Secondly, the next possibility is related to the size of vessels to which the EU ETS is subject (above 5000 gross tonnage). In this regard, if smaller vessels (below 5000 gross tonnage) start to be used, then their obligation to surrender allowances could be circumvented. Moreover, for large container ships, it would be possible that the voyages, instead of being made to an EEA port, would be made to a nearby port outside the EEA, and from there use smaller vessels (below 5000 gross tonnage) to distribute the goods to other EEA ports.¹⁴⁸ In view of the possibility of such a practice taking place, it is planned that by 2026 the Commission will carry out a review in which the size of vessels covered by the EU ETS will be reduced to 400 gross tonnage, increasing the scope of application.¹⁴⁹

¹⁴⁵ Earl and Dardenne 2022, p. 7.

¹⁴⁶ Ibid.

¹⁴⁷ Faber et al. 2022, p. 5.

¹⁴⁸ CE Delft & DLR 2021, p. 25.

¹⁴⁹ DNV. "EU ETS: Preliminary agreement to include shipping in the EU's Emission Trading System from 2024" (23 January 2023). Available at: <https://www.dnv.com/news/eu-ets-preliminary-agreement-to-include-shipping-in-the-eu-s-emission-trading-system-from-2024-238068> [last accessed 29 April 2023]

Thirdly, a possibility that would be ruled out at the moment, but could occur in the future, is a shift to other modes of transport. However, such a possibility is not entirely realistic since practically all modes of transport are included in the EU ETS or under some kind of regulation, such as for the use of more sustainable fuels.¹⁵⁰

The new Carbon Border Adjustment Mechanism.

Furthermore, the EU has taken the prevention of carbon leakage seriously, which is why important measures have recently been adopted, being the Carbon Border Adjustment Mechanism (CBAM) an instrument that can help both sectors to reduce the carbon leakage. Likewise, Regulation 2023/956, which gives effect to the CBAM, entered into force on 16 May 2023, making it a very recent instrument, almost at the same time as the reform of the EU ETS Directive. In this regard, the adoption of the CBAM is part of the large set of measures accompanying the "Fit for 55" legislative package.¹⁵¹ In relation to the aim of the CBAM, article 1(1) of the Regulation states that in addition to combating the risk of carbon leakage, the present instrument also contributes to the reduction of global carbon emissions in third countries, and thus contributing to the achievement of the objectives of the Paris Agreement.¹⁵²

Moreover, the CBAM is postulated as the best option available to the EU ETS to deal with the risk of carbon leakage and to replace previous mechanisms that dealt with it, but which are due to come to an end, the most obvious case being the free allocation of allowances, which was implemented only temporarily.¹⁵³ With regard to its operation, the CBAM applies to imports of certain goods and from third country producers whose products are carbon intensive and also operate in a sector where the risk of carbon leakage is high.¹⁵⁴ In this respect, third state exporters in these sectors, depending on the quantity of goods they import into the EU, will have to purchase a

¹⁵⁰ Faber et al. 2022, p. 6.

¹⁵¹ Regulation (EU) 2023/956 of the European Parliament and of the Council of 10 May 2023 establishing a carbon border adjustment mechanism OJ L130/152. Recital (10).

¹⁵² Ibid., Article 1(1).

¹⁵³ Ibid., Recital (11).

¹⁵⁴ European Commission, "Carbon Border Adjustment Mechanism". Available at: https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en [last accessed 27 May 2023]

quantity of CBAM certificates whose price will depend on the weekly average price of the EU ETS allowances.¹⁵⁵

To conclude with, the CBAM has appeared at the right time to shield the EU ETS and its operators from the lack of equity with respect to the greenhouse gas emissions reduction policies of third states. Likewise, in the scope of this study, the CBAM is intended to ensure that the transition towards the phase-out of the free allocation of allowances and to discourage the carbon leakage that threatens both sectors.

5.3. Share of free and auctioned allowances.

In relation to the previous comparative point on carbon leakage, it is necessary to evaluate what the share of free and auctioned allowances will be, since the percentage of free allowances a sector receives will depend on the carbon leakage risk it suffers. Likewise, as we have seen previously, the aviation sector has been characterised by the high protectionism received through free allowances, allowing it to maintain a competitive position with respect to its competitors. However, in the current context with the ambitious climate targets to which the EU has committed itself, the free allocation of allowances must end in order to promote technological progress in the EU ETS sectors.

With respect to the aviation sector, the method of free allocation of allowances has turned out to be the default method used while the auctioning of allowances has been the exception during the time the EU ETS has been implemented. However, this unusual situation seems to be coming to an end in the light of the most recent reforms under the “Fit for 55” package. In this regard, a gradual phase-out of free allowances will take place from 2024, with the ultimate aim of eradicating them by 2027.¹⁵⁶ Moreover, in this way, the polluter pays principle, one of the main principles of the EU ETS, can be put into effect, which translates into a greater economic incentive for

¹⁵⁵ European Commission. “Carbon Border Adjustment Mechanism”. Available at: https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en [last accessed 27 May 2023]

¹⁵⁶ Jensen 2023, p. 5.

operators to reduce their emissions.¹⁵⁷ Likewise, all this is partly conditional on how effective and stringent the implementation of CORSIA by ICAO will be, since if it turns out to be a soft measure, the EU would have to reconsider backtracking and continue including free allowances in order to preserve the competitiveness of its operators.

With regard to the maritime transport sector, as we have already noted previously, from the beginning the default method should have been the auctioning of allowances. However, in order to help operators to adapt, a high percentage of free allocation of allowances will be applied at the beginning, and from the first years of implementation it will move towards full auctioning. Moreover, the possibility of using free allocation of allowances cannot be ruled out outright, as it will depend on the degree of carbon leakage risk.¹⁵⁸ Moreover, since the shipping sector also covers the extra-EEA voyages up to 50%, we can assume that the loss of competitiveness of EEA operators will be lower than that of aviation companies, so that the share of free allowances will probably be lower than in aviation.

¹⁵⁷ European Commission. “European Green Deal: new rules agreed on applying the EU emissions trading system in the aviation sector” (9 December 2022). Available at: https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7609 [last accessed 30 April 2023]

¹⁵⁸ CE Delft & DLR 2021, p. 33.

6. The EU ETS and the international law legality of extraterritorial jurisdiction.

In this chapter we will proceed to carry out a legal analysis of the extraterritorial effect of EU policies regulating transport emissions, in the context of this study, on those of the aviation sector and the maritime transport sector. Moreover, given the urgent need to address the effects of climate change and the passivity and the slow pace of action taken by the competent international organisations (ICAO & IMO), the EU has opted for unilateral action to regulate the reduction of greenhouse gas emissions in these sectors.¹⁵⁹ In this context, we must assess how the EU as a supranational legal entity may be exceeding its competences and coming into conflict with such international organisations, of which, by the way, its own Member States are part. Hence, the analysis here must be carried out according to international law, in order to clarify whether the EU has jurisdiction to adopt these extraterritorial measures, without violating international customary law principles and the hierarchy of norms.

6.1. Background.

Before proceeding to assess the legality of the EU's adoption of emission reduction policies and their transboundary impact, it is necessary to understand the special status of the EU as an international organisation and its relationship to the international climate legal framework. As a matter of fact, the EU is considered a *sui generis* international organisation due to its unique peculiarities, enjoying a wider range of competences than other international organisations.¹⁶⁰

In this respect, it is precisely here that we must look for the essence of why the EU claims to lead in the field of climate change at the international level. To explain this phenomenon, Scheurs and Tiberghien introduced the term "Multi-Level Reinforcement" (MLR) at a time when the EU took a leading position in the adoption of the Kyoto Protocol, despite pressure from the US that ended its withdrawal from the Kyoto Protocol.¹⁶¹ Moreover, the MLR is understood as the dynamic process that works through the different levels of decentralised EU governance, in which Member States

¹⁵⁹ Dobson 2017, p. 296.

¹⁶⁰ Klabbers 2016, p. 3.

¹⁶¹ Scheurs and Tiberghien 2007, p. 21.

with greater ambition in the field of climate action are reinforced by the leading role of the Commission and the Parliament.¹⁶² In the context of this study, the MLR is understood with the ambition of the EU in terms of opening up the EU ETS to new sectors whose regulation at the international level has been produced more slowly and with a lower level of ambition.

Furthermore, the EU having legal personality can be part of other international organisations and take agreements on behalf of its Member States. In this particular regard, from an international law point of view the EU is a party to the UNFCCC and the Kyoto Protocol. The latter, states in its article 2(2) that “The Parties included in Annex I shall pursue limitation or reduction of emissions of greenhouse gases not controlled by the Montreal Protocol from aviation and marine bunker fuels, working through the International Civil Aviation Organization and the International Maritime Organization, respectively”.¹⁶³ This provision designates both organisations as authorities in the reduction of emissions in their respective fields, to which the EU is not a party. This leaves us with a complex reality in which the EU unilaterally adopts measures that, from an international perspective, correspond to the ICAO and IMO.

Moreover, as we have seen throughout this study, the EU's interest in regulating emissions from the aviation and maritime sector goes back a long way, but before adopting any measures, it respected the mandate of the Kyoto Protocol by waiting for ICAO and IMO to take specific action.¹⁶⁴ In the absence of action by these entities, the EU warned both that it would unilaterally proceed with the adoption of emission reduction policies in these sectors, first with the aviation sector and then with the maritime transport sector. When these warnings became a concrete reality with the inclusion of the aviation sector in the EU ETS, together with the adoption of important international climate agreements such as the Paris Agreement, both international organisations were forced to take action.¹⁶⁵ In the following, we will proceed to assess what the measures of both international organisations have been, their level of ambition in relation to the 2050 climate goals, and thus be able to analyse how effective the EU's

¹⁶² Wettestad 2022, p. 247.

¹⁶³ Kyoto Protocol to the United Nations Framework Convention on Climate Change (adopted 10 December 1997, in force 16 February 2005) (1998) 37 ILM 22. Article 2(2).

¹⁶⁴ Dobson 2020, p. 188.

¹⁶⁵ *Ibid.*, p. 183.

unilateral action has been in achieving global progress in the fight against climate change.

6.2. ICAO.

Negotiations between the EU and ICAO on the need for action to reduce emissions from the aviation sector date back to the 1990s, by which time the EU was already aware that there was a significant increase in emissions from the aviation sector.¹⁶⁶ Since that time, the EU has aspired to take a leading position in the international arena for the adoption of emission reduction measures with ICAO. In this respect, as previously stated, the EU is not part of ICAO, however, it can participate as an "observer" in the Assembly and in ICAO committees.¹⁶⁷ Likewise, the EU can also act in ICAO through the representation of its Member States as part of the entity.

Furthermore, from the outset, the EU has promoted the idea of the implementation of an emissions trading system for international aviation. In this regard, ICAO reacted positively to this request, already in 2001, the ICAO Assembly started the initiation of a project for an emission trading system for international aviation. However, in 2004, after receiving the support of the ICAO Council, it was decided not to opt for the establishment of a global emissions trading system, but to invite the contracting parties to establish their own emissions trading schemes.¹⁶⁸ All of this reaffirmed the EU's idea of creating an emissions trading system for aviation unilaterally and with a view to applying it to non-EU third States, despite warnings from ICAO and non-EU States that the measure violated the principles of State sovereignty as it did not have their consent.¹⁶⁹ Likewise, as we have seen previously, the EU ETS failed to persuade the ICAO and its Member states, which is why it had to be suspended in its application to third states, a fact that did not limit the EU from continuing to press for the adoption of an ambitious global mechanism.

Further, this static position in which the ICAO somewhat questioned the measures adopted by the EU changed in 2016, when it reached an agreement on the

¹⁶⁶ Lindenthal 2014, p. 1069.

¹⁶⁷ Ibid., p. 1070.

¹⁶⁸ Ibid., p. 1071.

¹⁶⁹ Ibid., p. 1072.

approval of a carbon offsetting scheme for international aviation, the so-called CORSIA.¹⁷⁰

CORSIA.

The CORSIA scheme started operating in 2021 with the pilot phase running until 2023, followed by two further phases, the first between (2024-2026), and the second phase between (2027-2035).¹⁷¹ Further, it was initially agreed that the emissions baseline would be applied during 2019-2020, however, in the end only emissions during 2019 were agreed, due to the drastic reduction of air traffic in 2020 due to the COVID-19 pandemic.¹⁷² This contrasts with the EU ETS whose cap covers 95% of the average historical emissions in the sector during 2004-2006, which is a more ambitious perspective in terms of greenhouse gas emission reductions.¹⁷³

Moreover, during the pilot phase and the first phase participation will be on a voluntary basis, however, as of January 2023 a total of 115 States have confirmed their intention, and four more have confirmed to join from January 2024.¹⁷⁴ Within this list of participants, we can highlight the presence of the United States, which had shown strong opposition to the implementation of the EU ETS, but also some absences such as Brazil, China, India and Russia.

With regard to the second phase, it was agreed that CORSIA would be mandatory for all contracting States. In this regard, ICAO's Assembly in its Resolution A39-3 made a distinction between the States with the highest rate of revenue tonne kilometres (RTK), which are obliged to participate in this phase, with the Least Developed Countries (LDCs), Landlocked Developing Countries (LLDCs), and Small Island Developing States (SIDS) whose participation is not mandatory. Likewise, it should be noted that from this second phase onwards, flights between countries that are

¹⁷⁰ Dobson 2020, p. 190.

¹⁷¹ Scheelhaase et al. 2018, p. 57.

¹⁷² CE Delft & DLR 2021, p. 20.

¹⁷³ Ibid., p. 21.

¹⁷⁴ ICAO ENVIRONMENT. "Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)". Available at: <https://www.icao.int/environmental-protection/CORSIA/Pages/default.aspx> [last accessed 05 May 2023]

part of CORSIA and countries that are not part of CORSIA will not fall under the offsetting obligation, but they will have to monitor their emissions.¹⁷⁵

Furthermore, unlike the EU ETS which is a cap-and-trade system in which operators have to purchase allowances according to their emissions, in CORSIA we have an offset scheme in which there is no cap, but in which operators have to purchase carbon credits or by investing in CO₂ emission reduction projects.¹⁷⁶ In this particular regard, CORSIA operators enjoy greater flexibility compared to EU ETS operators, as they can invest in projects in any sector and in any part of the world where they can be cheaper.¹⁷⁷ However, this mechanism does not appear to be efficient for the long-term, since as other sectors are equipped with new technologies their emissions will be lower, leading to a shortage of such projects.

From a geographical point of view, CORSIA obviously covers a larger territorial area than the EU ETS, as it covers all flights between Member States, including all EU Member States. All this means that CORSIA and the EU ETS overlap except for intra-EEA flights, where only the EU ETS applies. However, it is possible that in the coming years, if the EU considers that CORSIA does not have sufficient ambition, the EU ETS will also apply to extra-EEA flights, causing another overlap at international level.¹⁷⁸

Lastly, from an environmental point of view, we can conclude that CORSIA is far less ambitious compared to the EU ETS, even though from a geographical point of view it covers more territory. Moreover, this means that the EU ETS in the aviation sector continues to suffer from the risk of carbon leakage as its operators suffer from a competitive disadvantage in a more stringent system. Thus, it is only a matter of time before we start to see the weaknesses of the CORSIA scheme in practice, which will lead to the implementation of amendments.

6.3. IMO.

Secondly, as far as the relationship between the EU and IMO in the search for an instrument for the reduction of greenhouse gas emissions is concerned, started

¹⁷⁵ CE Delft & DLR 2021, p. 20.

¹⁷⁶ Scheelhaase et al. 2018, p. 58.

¹⁷⁷ Ibid., p. 57.

¹⁷⁸ CE Delft & DLR 2021, p. 21.

somewhat more recently, so unlike ICAO, we cannot expect the situation to be as advanced at the present time. However, as we will see below, the figure of the EU has promoted great progress within the IMO, although for the moment it is not enough as no international market-based instrument for the shipping sector has been approved. Moreover, it should be noted that, as in the ICAO, the EU is not part of the IMO, but acts indirectly in the entity through the coordination of the position of the EU Member States that are part of the organisation.

IMO instruments to tackle greenhouse gas emissions from maritime transport sector.

Firstly, as already discussed in the chapter on the maritime transport sector within the EU ETS, due to the lack of action and decision-making at IMO level, the EU acted unilaterally by first approving the MRV Regulation in 2015, which initiated the project to include the sector in the EU ETS. Similarly, just one year later, the IMO approved the Data Collection System (DCS), the purpose of which is to monitor the fuel consumption of ships, also with a view to the future development of greenhouse gas emissions reduction instruments.¹⁷⁹ The DCS entered into force in 2019 and, like the MRV, only applies to ships above 5000 gross tonnage.

Secondly, in the field of marine environmental protection, the IMO already had the well-known MARPOL Convention aimed at the prevention of pollution from the shipping sector. Moreover, the MARPOL Convention is composed of six Annexes, each dedicated to different sources of pollution. In this particular regard, for the purposes of this study we are interested in Annex VI, whose purpose is the prevention of air pollution from ships.¹⁸⁰ More specifically, in relation to the reduction of greenhouse gas emissions, Annex VI was amended to include the Ship Efficiency Management Plan (SEEMP) which applies to all ships above 400 gross tonnage to achieve energy efficiency targets, which, unfortunately, are not binding.¹⁸¹

¹⁷⁹ International Maritime Organization. “IMO Data Collection System (DCS)”. Available at: <https://www.imo.org/en/OurWork/Environment/Pages/Data-Collection-System.aspx> [last accessed 06 May 2023]

¹⁸⁰ International Maritime Organization. “Climate action and clean air in shipping”. Available at: <https://www.imo.org/en/OurWork/Environment/Pages/Decarbonization%20and%20Clean%20air%20in%20shipping.aspx> [Last accessed 06 May 2023]

¹⁸¹ CE Delft & DLR 2021, p. 18.

Thirdly, after having established a good basis with the above-mentioned instruments, the IMO approved in 2018 a Strategy on Reduction of GHG Emissions from Ships. In this respect, the Strategy establishes a series of CO₂ emissions reduction targets, among which include achieving an aggregate reduction of at least 40% by 2030 and 70% by 2050, compared to 2008 data.¹⁸² Additionally, it also states the need to reach the peak of greenhouse gas emissions as soon as possible and to reach the 50% reduction target in 2050, compared to 2018 data.¹⁸³ As we can see, these targets are far from those set by the EU, a lower level of ambition that does not suit its ETS. Furthermore, with regard to the measures proposed in the IMO Strategy, it should be noted that there is an allusion to the possibility of including market-based measures to incentivise emissions reductions in the shipping sector.¹⁸⁴

Lastly, we can conclude that the IMO is somewhat behind in comparison to the developments already adopted by the EU, however, it seems to have reacted and is more willing to adopt measures compared to ICAO. Moreover, in the absence of a market-based instrument within IMO, we cannot assess the possible problems of overlapping and carbon leakage. Nevertheless, we can conclude that the level of ambition is not high enough to achieve the objectives of the Paris Agreement.

6.4. Assessing the legality of extraterritoriality.

Next, we proceed to analyse the legality of the actions carried out by the EU, in this case in the field of greenhouse gas emissions reduction, outside its territory. To this end, this part of the study will assess the adequacy of the EU ETS and its extraterritorial vocation in the aviation and maritime transport sectors in the light of the main instruments and principles of customary international law. Moreover, the role of the EU as a climate leader in the international arena should also come to the fore here.

Furthermore, although it may seem that the EU has the autonomy to adopt this type of measures where it appears that it can overstep its competences, in reality, this is not entirely true. Decisions to include within the EU ETS both sectors attempting to

¹⁸² International Maritime Organization 2018, Adoption of the initial IMO Strategy on Reduction of GHG Emissions from ships and existing IMO activity related to reducing GHG emissions in the shipping sector. p. 6.

¹⁸³ Ibid.

¹⁸⁴ Ibid., p. 9.

cover territory outside its jurisdiction may conflict with the framework of action of other international entities. In this respect, according to the principle of territorial sovereignty, states have jurisdiction to regulate conduct occurring within their territory. However, on certain occasions states are allowed to regulate conduct occurring outside their territory, this is mainly the case for crimes which, due to their gravity, the intervention of other states is accepted in order to put an end to such acts.¹⁸⁵ From this we could draw the conclusion that if environmental crimes were recognised, States' actions beyond their territories would probably be easier to justify.

Moreover, the fact that outside the EU many countries have decided not to adopt greenhouse gas emission reduction policies in their main economic sectors, but the EU with its ETS will affect these sectors, raises issues of jurisdiction.¹⁸⁶ The main basis on which such interference could be justified is that states have to demonstrate that such conduct threatens the integrity of the other values of the international community, i.e. demonstrate a genuine connection in order to be able to regulate such conduct.¹⁸⁷ In our case, the EU is regulating such practices in the context of reducing greenhouse gas emissions in the aviation and maritime transport sector, both of which contribute to the overall increase in global emissions and lead to worsening climate change effects.¹⁸⁸ Likewise, the fact that the authorities at the international level, ICAO and IMO, have not developed sufficiently ambitious instruments to achieve the objectives set by UNFCCC and the Paris Agreement, makes their sovereignty to deal with the issue questionable, and opens the possibility for other actors to adopt measures. Nevertheless, we consider it necessary to analyse separately what are the possible conflicts of the measures adopted by the EU in the light of the relevant international law in each case.

Extraterritoriality and the aviation sector.

As we discussed in the chapter on the aviation sector within the EU ETS, the inclusion of the sector was surrounded by controversy from the outset. In this respect, the strong rejection from the international aviation industry caused some operators to start challenging the legality of the measure, accusing it of exceeding their jurisdiction

¹⁸⁵ Dobson 2017, p. 306.

¹⁸⁶ Dobson 2020, p. 202.

¹⁸⁷ Ibid.

¹⁸⁸ Ibid.

and violating rules of international law such as the Chicago Convention.¹⁸⁹ To this end, we consider it appropriate to analyse the case of the Air Transport Association of America in order to assess the legality of the inclusion of the aviation sector in the EU ETS from the point of view of the ECJ

Furthermore, the Air Transport Association of America and American Continental and United Airlines (ATA and others) decided to appeal the legality of Directive 2008/101 before the High Court of Justice of England and Wales which made a reference for a preliminary ruling to the European Court of Justice (ECJ).¹⁹⁰

With regard to the questions referred to the ECJ, the main focus is on whether Directive 2008/101 with the inclusion of the aviation sector within the EU ETS amending Directive 2003/87 was valid and whether it complied with the rules and principles of international law.¹⁹¹ Some of the customary principles of international law that were claimed to have been violated by Directive 2008/101 include the principle that States have exclusive sovereignty over their airspace; the principle that no State may control or claim within its sovereignty any part of the high seas; the principle of freedom to fly over the high seas; and the principle that aircraft that overfly the high seas are subject under the exclusive jurisdiction of the country in which they are registered.¹⁹²

Moreover, the ECJ was also asked whether the contested Directive violated the EU's obligations with respect to the rules of international law, mainly those contained in the Chicago Convention, the Kyoto Protocol and the Open Skies Agreement.¹⁹³ In this regard, it was argued that the EU ETS should not be considered as a market-based mechanism with the purpose of incentivising emission reductions in the sector, but as a tax on fuel consumption that entailed a trade restriction.¹⁹⁴

Furthermore, before assessing the ECJ's ruling, it is necessary to look at the Opinion of Advocate General Kokott on the case. In relation to the doctrine of direct effect, in her opinion the Advocate General reviewed whether the rules of international

¹⁸⁹ Dobson 2020, p. 189.

¹⁹⁰ Mayer 2012, p. 1113.

¹⁹¹ C-366/10 *Air Transport Association of America*. Para. 45

¹⁹² *Ibid.*

¹⁹³ Odermatt 2013, p. 144.

¹⁹⁴ *Ibid.*, p. 146.

law claimed by the party could be used in order to challenge EU law.¹⁹⁵ In this regard, the cases in which the rules of international law can challenge the validity of acts of EU institutions are restrictive and limited to two conditions. Firstly, the EU must be bound by the international agreement, and secondly, "the nature and the broad logic of the agreement concerned must not preclude such a review of validity and, in addition, its provisions must appear, as regards their content, to be unconditional and sufficiently precise".¹⁹⁶

Moreover, as far as international agreements are concerned, the Chicago Convention does not meet the first criterion since, although all 27 Member States are parties to the Convention, the EU is not a contracting party, and therefore creates neither rights nor obligations.¹⁹⁷ Likewise, although the EU is a contracting party to the Open Skies Agreement and the Kyoto Protocol, the Advocate General stated that the provisions that ATA had claimed were not unconditional and sufficiently precise, so that the Direct Effect doctrine should not be applied to the present case.¹⁹⁸

Furthermore, the Advocate General rejected the argument that the provisions affecting the aviation sector in Directive 2008/101 were not extraterritorial in nature as they did not impose any obligation on Airlines.¹⁹⁹ In this regard, the Advocate General clarifies that the application of the EU ETS is subject to the cases of departures and arrivals of aircrafts from aerodromes located in the EU, and that only in these cases will emissions be counted on the basis of the quantities emitted.²⁰⁰

Finally, from the Advocate General's opinion we must highlight her argument in favour of measures dedicated to environmental protection and climate change stating "air pollution knows no boundaries and that greenhouse gases contribute towards climate change worldwide irrespective of where they are emitted".²⁰¹

On the other hand, with regard to the ECJ's judgment, there are a series of points on which the ECJ departed from the Advocate General's reasoning and interpreted it in a different way or in a more nuanced manner. For instance, with regard to the

¹⁹⁵ Mayer 2012, p. 1120.

¹⁹⁶ C-366/10 *Air Transport Association of America*, Opinion of the AG Kokott. Para. 49

¹⁹⁷ *Ibid.*, Para. 52

¹⁹⁸ Mayer 2012, p. 1120.

¹⁹⁹ C-366/10 *Air Transport Association of America*, Opinion of the AG Kokott. Para. 145

²⁰⁰ *Ibid.*, Para. 146

²⁰¹ *Ibid.*, Para. 154

international agreements that could challenge the validity of Directive 2008/101, the ECJ departed from the Advocate General and clarified that some of the provisions of the Open Skies Agreement could be considered as "unconditional and sufficiently precise" and could therefore be relied upon against the parties to the agreement.²⁰²

Likewise, the ECJ shares the reasoning of the Advocate General as regards the validity of the Directive in the jurisdictional dimension, recognising the respect of international law and the principle of territorial sovereignty of the States. However, the ECJ emphasises that in the present case jurisdiction is unlimited for the Member States and the EU as it only applies to territorial cases involving aerodromes located within the borders of the EU.²⁰³

In addition, with regard to the allegations of ATA that the EU ETS was considered to be a levy on the consumption and possession of fuel in favour of the public authorities and therefore more akin to a fee, tax or charge intended to generate interest.²⁰⁴ In this regard, the ECJ held that the EU ETS is a market-based mechanism, whose main purpose in this case is the reduction of emissions and that it is therefore the aircraft's operators who have the power to decide whether to emit more or less, and accordingly to pay more allowances or "even make a profit by allocating its surplus allowances for consideration".²⁰⁵ Finally, after examining all the arguments, the ECJ upheld Directive 2008/101 as none of the alleged factors could affect its validity.

Despite the importance of this judgment, there are some aspects that should not be overlooked. Firstly, the ECJ is not the International Court of Justice (ICJ), it is a court that only has jurisdiction over matters that are of interest to the EU. Secondly, we must bear in mind that in the present case the ECJ ruled on the legality of the Directive in relation to some instruments of international law, but not all of them. Therefore, the assessment of the legality of the measure in the present case can be considered as limited. Furthermore, at present, as we have previously mentioned, CORSIA is not a binding instrument, which means that no limitations can be imposed on the autonomy of

²⁰² Odermatt 2013, p. 150.

²⁰³ Mayer 2012, p. 1122.

²⁰⁴ C-366/10 *Air Transport Association of America*. Para. 143

²⁰⁵ *Ibid.*, Para 142

the EU, which retains a certain degree of regulatory freedom with regard to the aviation sector in the EU ETS.²⁰⁶

Extraterritoriality and the maritime transport sector.

As the inclusion of the maritime transport sector in the EU ETS has not yet entered into force, it is appropriate to assess what rules of international law may affect the measure or whether they may conflict on issues of jurisdiction, since, as we recall, the EU is indeed subject to international law.

Likewise, as the EU ETS for the shipping sector is not yet in place, there has not yet been an opportunity for the ECJ to pronounce itself, as was the case for the aviation sector. However, due to the similarities between the two sectors, we can establish some connection between the judgment of the ATA case and the shipping sector. In this respect, it could be concluded that vessels departing from and calling at ports in the EEA area are under the jurisdiction of one of the Member States, and, therefore, the implementation of an ETS in shipping would not be considered as an unlawful measure.²⁰⁷ However, this statement should be considered with caution as the shipping sector differs from aviation as it is covered by other international law instruments.

With regard to the instruments of international law to which the inclusion of the maritime transport sector in the EU ETS is related, we will focus on the UN Convention on the Law of the Sea (UNCLOS) also considered as the Constitution of the Seas to which, as a matter of fact, the EU is a party.²⁰⁸ In this regard, within UNCLOS Part XII is devoted to environmental matters, whose article 192 establishes the general obligation of States to "protect and preserve the marine environment".²⁰⁹ Likewise, this principle is directly linked to article 194(1) which establishes the obligation of States to take all measures "necessary to prevent, reduce and control pollution of the marine environment from any source".²¹⁰ From this statement we can extract that greenhouse gas emissions are included as a pollution source, which is the *raison d'être* of the EU

²⁰⁶ Dobson 2020, p. 207.

²⁰⁷ Dobson 2017, p. 307.

²⁰⁸ Pérez 2013, p. 25.

²⁰⁹ UN General Assembly, *Convention on the Law of the Sea* (adopted 10 December 1982, in force 14 November 1994). Article 192.

²¹⁰ *Ibid.*, Article 194(1)

ETS. Moreover, article 194(3)(b) indicates that in order to comply with the obligation established in article 194(1) the parties must design measures, in this case, to minimise the pollution of vessels.

Furthermore, within UNCLOS Part XII there is a provision specifically dedicated to air pollution. In this particular regard, article 212(1) states that "States shall adopt laws and regulations to prevent, reduce and control pollution of the marine environment from or through the atmosphere, applicable to the air space under their sovereignty and to vessels flying their flag or vessels or aircraft of their registry [...]".²¹¹ This provision seems to open the possibility for the adoption of an ETS, but in a geographical scope restricted to the airspace under the sovereignty of the EU. Thus, we cannot find a justification for the EU ETS in the maritime transport sector under this provision.

On the other hand, within UNCLOS we can find provisions that would validate the legality of the EU ETS in the extraterritorial exercise when applied outside the geographical scope of the EU. In this respect, article 211(2) establishes that "States shall adopt laws and regulations for the prevention, reduction and control of pollution of the marine environment from vessels flying their flag or of their registry".²¹² From this provision we can extract that there is no limit to the geographical scope that States can cover with their environmental protection measures.²¹³ Likewise, article 211.2 also indicates that the measures need to have "at least" the same effect as those adopted by the competent international organisation, which implies that States are free to adopt more stringent measures.

Further, another perspective from which to interpret the validity of the EU ETS under UNCLOS comes from the principle of flag State jurisdiction of vessels on the High Seas.²¹⁴ For this reason, it could be claimed that the EU ETS does not comply with the principle established by article 92, by regulating the activities of vessels that do not fly the flag of its Member States. However, according to Natalie Dobson, this principle does not limit States from regulating port entry conditions in relation to activities

²¹¹ UN General Assembly, *Convention on the Law of the Sea* (adopted 10 December 1982, in force 14 November 1994). Article 212(1).

²¹² *Ibid.*, Article 211(2).

²¹³ Dobson 2017, p. 314.

²¹⁴ *Ibid.*, p. 312.

carried out by vessels that contribute to climate change, even if such activities occur outside their geographical scope.²¹⁵

Lastly, since the EU ETS has a universal vocation for all vessels departing from or calling at EEA ports, irrespective of the flag they fly, the principle of non-discrimination with respect to foreign vessels established by Article 227 of UNCLOS would not be violated.²¹⁶

To conclude with, as we have seen in this chapter, the EU finds itself in a complex situation in which it has to deal with the authority of IMO and ICAO, whose level of ambition in response to the reduction of greenhouse gas emissions is not high enough and is therefore forced to resort to unilateralism. Such unilateralism means that the measures adopted by the EU lack consensus and are even accused of violating international law and not respecting the jurisdiction and sovereignty of other states.

²¹⁵ Dobson 2017, p. 314.

²¹⁶ Pérez 2013, p. 27.

Conclusions.

The EU is determined and committed to reducing its emissions and meeting climate targets. It is necessary to emphasise that climate change concerns us all as a globalised society, and therefore, in order to comply with the targets set by international agreements, the action of all states is imperative.

In this scenario, the EU has set itself up as a bulwark and a model for the rest of the international community to follow, committing itself to very ambitious greenhouse gas emission reduction targets. Moreover, in order to meet these tight targets, the EU needs to reduce emissions in every major sector. Even though the aviation sector and the maritime transport sector do not form part of the group of major emitters, both share an alarming trajectory of increasing emissions if no action is taken, which is why their role is essential and their contribution is key.

Furthermore, the EU ETS appears as the instrument with which the EU aspires to reach its climate targets, while maintaining the economic competitiveness of its internal market. The latest regulatory developments with the approval of the Green Deal and the "Fit for 55" package make us witness the magnitude of the reform and the importance of the sectors addressed in this paper. In this regard, after the experiences during its twenty years in operation, the EU ETS seems to be equipped with the necessary mechanisms to carry out this new reform.

The experience of the aviation sector, despite not having achieved the results expected at the time of its implementation, shows that progress has been made in the modernisation and decarbonisation of the sector. Likewise, the entry into force of the EU ETS reform means the end of the free allocation of allowances, one of its main privileges to combat the loss of competitiveness with respect to foreign operators. It seems quite obvious that in order to achieve greater effectiveness in the aviation sector, everything depends on the adoption of more stringent measures from within the ICAO, which, despite CORSIA having a broad geographical scope, is still not ambitious enough to ensure that EU operators are not at a disadvantage.

With regard to the maritime transport sector, we can conclude that, thanks to what has happened in the aviation sector, a design has been developed that allows us to believe that it will achieve good results. Moreover, as has already been said, the current

historical moment does not allow for so much scepticism, there is more and more acceptance of policies to reduce greenhouse gas emissions, as evidenced by less opposition from the international community and more pro-activity on the part of the IMO in adopting more stringent measures. However, it is true that we still have to be cautious and wait for the reform of the EU ETS to come into force before we can see what results and challenges the sector will have to face, being the most concerning one the carbon leakage.

With regard to the issue of extraterritoriality in both sectors, here the measure can be justified from two points of view that are complementary to each other. Firstly, the extraterritoriality of these EU measures can be understood from the point of view that the EU pushes for progress at the international level to achieve greater commitment to climate objectives.

Secondly, all of this can also be justified by the argument on the grounds that, for the EU's economic sectors not to be at an economic disadvantage vis-à-vis other global competitors, the EU needs the same measures to be adopted in other Countries. This is why it uses the extraterritorial application for these measures and puts pressure on international organisations so that its measures enjoy legitimacy and validity, with the ultimate aim of ensuring that there is a balance and that similar emission reduction measures are applied to all operators.

Further, attacks on the EU accusing it of violating the sovereignty and authority of international organisations such as ICAO or IMO are unjustified. The EU is not undermining the authority of these entities, it is precisely the inaction of these entities that calls into question their authority to reduce greenhouse gas emissions in both sectors. Much will have to change in the coming years to see the implementation of more stringent measures elaborated in these fora. It is worth noting that both are composed of countries with very important economic interests, which makes the difficulties faced by both international bodies understandable.

As we have seen in this paper, the EU ETS has since its inception operated on the premise of learning by doing, so we can be sure that in the event that, by any chance, the inclusion of the maritime transport sector suffers a setback during its inception, the EU will overcome it and implement the necessary reforms. To conclude with, I would like to refer to EU founding father Robert Schuman, according to whom

"Europe will not be made all at once, or according to a single plan. It will be built through concrete achievements [...]".²¹⁷

²¹⁷ European Union. "Schuman declaration May 1950". Available at: https://european-union.europa.eu/principles-countries-history/history-eu/1945-59/schuman-declaration-may-1950_en [last accessed 22 May 2023]

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