

STUDY ON THE CO₂ EMISSION RIGHTS MARKET

Executive Summary

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EXECUTIVE SUMMARY

The creation of the EU Emission Trading System (EU ETS) is, today, one of the European Union's strategic elements to combat climate change, and had as its predominant and unique precedent the commitment assumed in the Kyoto Protocol (KP), aiming to limit greenhouse gas (GHG) emissions from developed countries.

The European Union (EU) is a signatory of the KP, through its Member States, having defined a series of objectives for the reduction of CO₂ emissions, distributed among the various Member States, within the framework of the Agreement between the Parties (Burden Sharing Agreement).

At the European level, the system for verifying the commitments assumed by the subscribing countries regarding GHG emissions is implemented in the EU ETS through a market mechanism based on the use of emission rights (European Union Allowance - EUA) by the emitting economic activities.

The EU ETS is a market mechanism based on a cap and a trading scheme, in which a maximum volume of emission is established, and an economic value is attributed to CO₂ emission rights. It is a system based on emission rights transaction mechanisms in which emitting economic activities with low emission reduction potential will have an incentive to sell such rights to other emitting economic activities with greater difficulty in reducing their emissions due to their high cost. This commercial interaction between issuing agents of the most diverse economic activities, results in an emission allowance market or "carbon market".

The regime for the creation of GHG emissions allowance trading was established by Directive 2003/87/EC of the Parliament and of the Council of 13 October 2003. The EU ETS is divided into three phases:

- **Phase I:** covering the period between 2005 and 2007;
- **Phase II:** covering the period between 2008 and 2012; and,
- **Phase III:** comprising the period between 2013 and 2020.

Spain and Portugal, as EU Member States, are integrated parties in the KP of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC - United Nations Framework Convention on Climate Change¹), with

¹ United Nations Framework Convention, adopted in May 1992, entered into force in March 1994 and ratified by Spain in 1993 (Instrument of ratification of the United Nations Framework Convention on Climate Change,

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these countries having set goals for reducing CO₂ emissions during each phase of EU ETS implementation under the Agreement between the parties. The Iberian countries, in 2018, exceeded the defined reduction targets and a similar result is expected in 2020.

It should also be noted that, within the EU ETS, the allocation of CO₂ emission rights is carried out through two different mechanisms:

- **Free allocation** of CO₂ emission rights regulated through the Commission Decision of 27 April 2011² (Decision 2011/278/EU). In Phase I (2005-2007) and Phase II (2008-2012) of EU ETS most of the CO₂ emission rights were awarded free of charge. In Phase III (2013-2020) CO₂ emission rights were awarded through an auction mechanism;
- **CO₂ emission allocation auctions** regulated through the Commission Regulation (EU) No 1031/2010 of 12 November 2010³. During Phase I (2005-2007) Member States were allowed to conduct an auction of 5% of the total volume of allowances, increasing in Phase II (2008-2012) to 10%. In Phase III (2013-2020), all CO₂ emission rights were already allocated to the market through auctions.

The EU ETS made it possible to obtain a “visible” price for the emission of carbon dioxide, whose behavior is explained by the evolution of a set of economic and financial variables (carbon price drivers). Figure 1 shows the evolution of the price of CO₂ emission licenses in the different stages of implementation of the EU ETS, between 1 July 2007 and 30 September 2019.

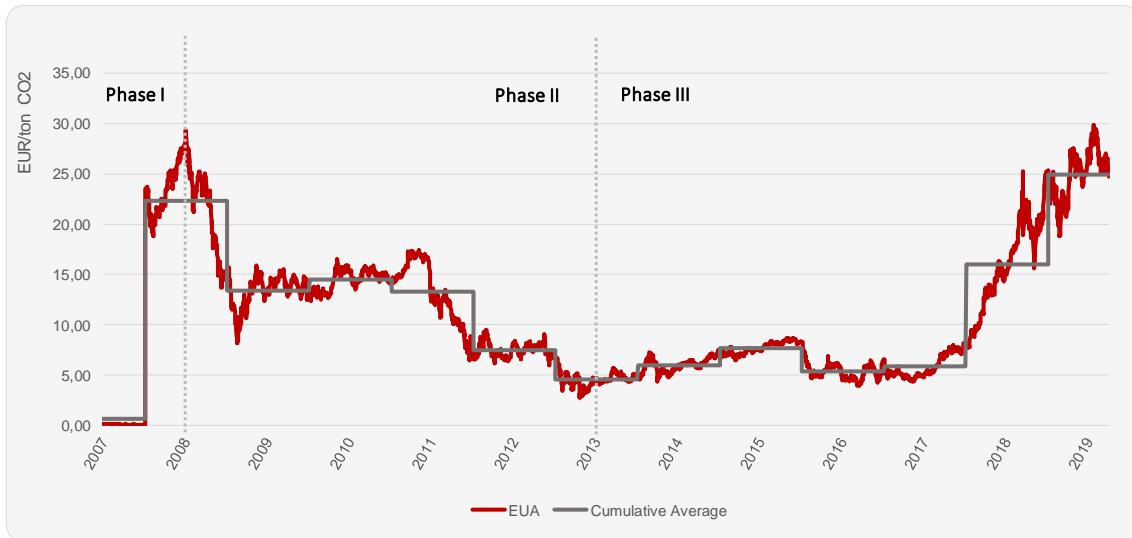
prepared in New York on 9 May 1992, 16 November 1993) and by Portugal (Decree-Law no. 20/93, 21 June).

² 2011/278/EU: Commission Decision of 27 April 2011 determining the transitional Union-wide rules for harmonised free allocation of emission allowances pursuant to Article 10a of Directive 2003/87/EC of the European Parliament and of the Council

³ Commission Regulation (EU) No 1031/2010 of 12 November 2010, on the timing, administration and other aspects of auctioning of greenhouse gas emission allowances pursuant to Directive 2003/87/EC of the European Parliament and of the Council establishing a scheme for greenhouse gas emission allowances trading within the Community.

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Figure 1 - Macro evolution of the EUA's price.



Source: Thomson Reuters data, own calculations

During Phase I, the price of the EUAs reached its maximum value of around 29 €/tonCO₂ at the end of 2008, accompanied by the upward movement of the energy markets, specifically by that of the price of oil. Phase II was initially marked by the externality of the international financial crisis, which had a notable effect on the financial markets and repercussions in the energy commodities market, namely, in the fall of carbon prices. From the end of 2010, after the momentary rise in the price of the carbon markets associated with the accident at the Fukushima nuclear power plant, there was a sharp and continuous decline in the EUA's prices until the end of Phase II, which is probably related to the economic recession felt in Europe. Finally, in the period between the end of Phase II and the beginning of Phase III, there is a fall in the carbon price to around 3 €/tonCO₂ due to the excess of allowances observed in the market, motivated by the decrease in demand, fostered by the economic recession, the increasing penetration of renewable energies in the electricity sector and the reinforcement of investments in terms of energy efficiency. Although future forecasts point to an upward trend in the EUA's price, the political uncertainty in the UK associated with BREXIT is one of the main factors explaining the price fluctuations that have occurred since the beginning of 2019, due to the EUA dumping by British companies.

Assuming that the price of electricity is set in order to reflect the marginal cost associated with its production, the use of CO₂ emission licenses by thermal producers of electricity – although allocated free of charge – takes the form of an opportunity cost, that shall integrate the marginal cost. Thus, the impact of CO₂ prices on the electricity prices is inevitable, which is necessary to encourage investment in clean and more efficient production technologies.

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In this sense, the present study presents a regressive model that allows predicting the dependent variable PRECO_ES (daily electricity market price in Spain) as a function of the independent variables presented in Table 1. The model also allows the estimation of how the price of CO₂ licenses is passed on to the price of electricity.

Table 1 - Independent variables used in the regressive model

Variable	Variable description
TTF	Title Transfer Facility (TTF) price in the Dutch market in €/MWhgas.
API2	Price of API2 coal (Imported coal delivered to North-west Europe and calorific value of 6000 kcal/kg) in €/ton.
BRENT	Price of Brent Oil, based on North Sea crude oil, used as an international benchmarking in €/bbl.
EUA	Price of EU allowances carbon trading licenses - spot price for CO ₂ emission licenses in €/ton
PESO_PRE	Percentage value of the Iberian contribution to the production proven by the PRE to satisfy the demand in the daily market..

The estimated model reinforces the positive repercussion of the carbon price on the electricity price, throughout the various stages of implementation of the EU ETS, and is given by the following equations:

$PRECO_ES = 24.76 + 1.32*TTF + 0.08*API2 + 0.27*BRENT + 0.29*EUA - 39.89*PESO_PRE$,
for the period between 2007 and 2012, and

$PRECO_ES = 53.88 + 0.42*TTF + 0.33*API2 - 0.07*BRENT + 0.49*EUA - 62.68*PESO_PRE$,
for the period between 2013 and 2019.

Assessing the unitary cost of CO₂ emissions generated by the thermal production in MIBEL supported by Demand (relationship between cost considering CO₂ emissions and total demand in MIBEL), over the various stages of implementation of the EU ETS, it appears that the observed values of 2.96 €/MWh for Phases I and II and 1.75 €/MWh for Phase III are a complementary result to the regressive model, which shows the evidence to the importance of the electricity demand coverage by renewable technologies, clean of CO₂ emissions. The cost associated with such emissions is, in fact, a cost component in the process of the electricity price formation at MIBEL, which reinforces the importance of the decarbonisation policies followed by Portugal and Spain.

In order to strengthen the integrity and to ensure the efficient functioning of the CO₂ emission allowance market, including the global supervision of the trading activity, it was considered appropriate to complement the measures taken under Directive 2003/87/EC of the European Parliament and of the Council, fully integrating allowances within the scope of Directive 2014/65/EU of the European Parliament and of the Council of 15 May

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2014, on markets in financial instruments (MiFID II) and Regulation (EU) No 600/2014 of the European Parliament and the Council (MiFIR), classifying them as financial instruments⁴. In addition, regarding to the framework for derivatives on allowances in European Union Regulation No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC⁵ derivatives, central counterparties and transaction repositories (EMIR), it should be noted that they are covered by this Regulation, since they fall within the concept of derivative contract for the purposes of applying the referred Regulation.

⁴ According to recital 11 of MiFID II, the integration of the emission allowances market within the scope of MiFID II was considered necessary following several fraudulent practices identified in the secondary markets in emission allowances.

⁵ According to paragraph 7 of Article 2 of EMIR, 'OTC derivative' or 'OTC derivative contract' corresponds to " a derivative contract the execution of which does not take place on a regulated market within the meaning of Article 4(1)(14) of Directive 2004/39/EC or on a third-country market considered to be equivalent to a regulated market in accordance with Article 2a of this Regulation."