

# EU ETS system

Subjects: Economics  
Contributor: Seong-Min Yoon

To facilitate greenhouse gas reduction, the European Commission (EC) announced its plan to introduce an ETS by 2005. Between 2005 and 2007, Phase I was conducted for 25 EU members. Starting in 2008, Phase II was expanded to 31 member countries, including new members. Phase III is in operation between 2013 and 2020, and Phase IV is scheduled to run from 2021 to 2030.

The changes and development in the EU ETS system increase the informational efficiency of the carbon market and contribute to actual emissions' reductions.

Keywords: Carbon trading ; EU ETS ; Emission trading ; Carbon emission market ; EUA price

## 1. Introduction

An ETS is a system that allows transactions of quotas after allocating the Assigned Count Unit to countries with obligations to reduce greenhouse gas emissions. The allocation of allowances is divided basically into “Cap and Trade” and “Baseline and Credit.” The Cap and Trade method sets emission limits and allocates allowances to trade them. The EU ETS and Chicago Climate Exchange are typical markets for Cap and Trade. The Baseline and Credit method establishes the reference emissions and allows the residuals to be traded with each other if they are released below the baseline. The Clean Development Mechanism and the Joint Implementation on the Kyoto Protocol are typical markets for Baseline and Credit <sup>[1][2]</sup>.

An ETS has advantages in terms of system flexibility, measurement of performance, recycling of resources, and management of overall emissions when compared with a carbon tax, another policy to reduce greenhouse gas emissions. In particular, it is easy to manage overall emissions explicitly with an ETS, and it has the advantage of attracting the development of greenhouse gas reduction technologies while effectively achieving the reduction targets set by society as a whole through the trading of allowances, which is used as a means to reduce greenhouse gas emissions in many advanced countries. On the other hand, there is also the downside movement problem of unstable emission prices and the lack of optimal resource allocation if there is a restriction on the smooth operation of the trading market, which can result in social losses. Therefore, efficient operation of the trading market is important.

Under the Kyoto Protocol, the EU was obliged to reduce greenhouse gas emissions by 8% over Phase I. To facilitate greenhouse gas reduction, the European Commission (EC) announced its plan to introduce an ETS by 2005. Through the discussion process within Europe, the EC agreed to introduce the Cap and Trade-based ETS in 2003 and, in 2004, approved additional guidelines to link the EU ETS with the Kyoto Protocol's international allowances. Between 2005 and 2007, Phase I was conducted for 25 EU members. Starting in 2008, Phase II was expanded to 31 member countries, including new members <sup>[3]</sup>. Phase III is in operation between 2013 and 2020, and Phase IV is scheduled to run from 2021 to 2030. The key features of each phase are summarised in Table 1.

**Table 1.** Key features of the EU Emissions Trading System (EU ETS).

Phase	Period	Key Features
Phase I	2005–2007	<p>A 3-year pilot of learning by doing to prepare for Phase II</p> <p>Covered only CO<sub>2</sub> emissions from power generators and energy-intensive industries</p> <p>Almost all allowances were given to businesses for free—approximately 95%</p> <p>The penalty for non-compliance was €40 per tonne</p> <p>No transfer of allowances</p>

Phase	Period	Key Features
Phase II	2008–2012	Participation of 31 members—Implementing full-scale greenhouse gas reduction Nitrous oxide (N <sub>2</sub> O) emissions from the production of nitric acid included by a number of countries— Some 6.5% lower compared to 2005 The proportion of free allocation fell slightly, to approximately 90% Several countries held auctions The penalty for non-compliance was increased to €100 per tonne Transfer of allowances The aviation sector was brought into the EU ETS on 1 January 2012
Phase III	2013–2020	A single, EU-wide cap on emissions applies in place of the previous system of national caps More sectors and gases included—CO <sub>2</sub> , N <sub>2</sub> O, PFC, etc. Auctioning is the default method for allocating allowances instead of free allocation Transfer of allowances
Phase IV	2021–2030	Strengthening the EU ETS—Reduced emissions by an average of 2.2% annually from 1.74% at present Introducing Market Stability Reserve (MSR)

The EU assessed that it was able to secure accurate data by establishing a process for monitoring, reporting, and verifying emissions of companies subject to the ETS, along with the infrastructure to freely trade emissions across the EU during Phase I–II. Transactions during Phase I rose to 321 million tonnes in 2005, 1.1 billion tonnes in 2006, and 2.1 billion tonnes in 2007, according to the World Bank’s annual carbon market report. The EU ETS established a key position in the international carbon market during Phase II, and EU emissions’ trading accounted for 84% of the global carbon markets in 2010.

## 2. Institutional Changes in the EU ETS

During Phase III, the EU has successfully demonstrated that pricing and trading allowances through the EU ETS have been effective in reducing emissions. In addition, the EU ETS system predicts that greenhouse gas emissions will be reduced by more than 8% compared to the beginning of Phase III and by 21% in 2020 <sup>[2]</sup>.

In 2018, the EU amended the EU ETS to achieve its 2030 emissions’ reduction target before entering Phase IV. The revised Directive ((EU) 2018/410), which took effect in April 2018, focuses on increasing annual emissions reduction rates to 2.2% from 2021 and strengthening the Market Stability Reserve (MSR) that the mechanism established by the EU to reduce the surplus of emission allowances in the carbon market and to improve the EU ETS’s resilience to future shocks. In response, the EU predicts that greenhouse gas emissions will be further reduced by 43% in 2030 when Phase IV, which applies to the revised system, ends <sup>[4]</sup>.

Table 2 shows that, during 2005–2018 (i.e., Phase I–III), the traded volume of allowances in the EU ETS generally increased, and the actual amount of emissions mainly decreased. Based on the above figures, we can expect that changes and development in the EU ETS system would have contributed to actual emissions’ reductions. However, it is also necessary to analyse the impact of these changes on the informational efficiency of the carbon market.

**Table 2.** EU ETS allowances and emissions.

Year	Allowances (Mt CO <sub>2</sub> -Eq)		Emissions (Mt CO <sub>2</sub> -Eq)
	Freely Allocated	Auctioned or Sold	
2005	2096.4	0.0	2014.1
2006	2071.8	6.8	2035.8
2007	2153.2	1.7	2164.7
2008	1957.9	53.1	2119.7
2009	1972.0	79.3	1879.7
2010	1997.9	91.9	1938.8
2011	2016.6	92.9	1904.4
2012	2054.0	125.0	1867.0
2013	1013.3	1108.4	1908.2
2014	939.4	617.8	1813.8

Year	Allowances (Mt CO <sub>2</sub> -Eq)		Emissions (Mt CO <sub>2</sub> -Eq)
	Freely Allocated	Auctioned or Sold	
2015	878.9	632.7	1802.9
2016	838.5	715.3	1750.5
2017	786.7	951.2	1754.6
2018	745.4	915.8	1682.0

## References

1. World Bank. The European Union Emissions Trading System (EU ETS) Up to 2030: Decoding Auctioning Challenges for Romania (English); World Bank Group: Washington, DC, USA, 2015.
2. EU Emissions Trading System (EU ETS). Available online: [https://ec.europa.eu/clima/policies/ets\\_en](https://ec.europa.eu/clima/policies/ets_en) (accessed on 3 March 2020).
3. EU Emissions Trading System (EU ETS)—Phases 1 and 2 (2005–2012). Available online: [https://ec.europa.eu/clima/policies/ets/pre2013\\_en](https://ec.europa.eu/clima/policies/ets/pre2013_en) (accessed on 3 March 2020).
4. EU Emissions Trading System (EU ETS)—Revision for Phase 4 (2021–2030). Available online: [https://ec.europa.eu/clima/policies/ets/revision\\_en](https://ec.europa.eu/clima/policies/ets/revision_en) (accessed on 3 March 2020).

Retrieved from <https://encyclopedia.pub/entry/history/show/7743>