

# EU EMISSIONS TRADING SCHEME: RECENT DEVELOPMENTS

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## ABSTRACT

In 2005 the EU has developed the world's first multi-country cap-and-trade scheme for greenhouse gases. Today, 31 countries participate in the Scheme (the 28 EU Member States, Iceland, Liechtenstein and Norway), totalling population of half billion people. ETS includes more than 12 000 industrial plants and aircraft operators and entails half of European CO<sub>2</sub> emissions. Under the Scheme, a quantitative limit on CO<sub>2</sub> emissions was imposed and a market price has been paid for CO<sub>2</sub> emissions by virtually all industrial and electricity-generating installations within the European Union.

Legally binding caps have strict timetable: the cap decreases by 1.74% per year from 2010 based on the average cap for 2008-12, the second phase of the EU ETS. This annual reduction factor of 1.74% has been fixed in order to reach an annual amount of carbon allowances 21% below 2005 levels by 2020. In 2014 the European Council decided the rate to be increased 2.2% a year from 2021, in order that a 43% reduction be attained by the ETS sectors by 2030 compared to 2005. These respective shares are determined by what is estimated to be a cost-effective contribution by the sectors covered to meet a 40% economy-wide target by 2030. The EU ETS became a effective key instrument of European climate change policy and the primary vehicle for meeting the obligations under the Kyoto Protocol and now the Paris Agreement. These particular article aims to give overview of the recent developments of this key EU instrument and offer insight in the future developments.



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## **INTRODUCTION**

Although a bit of a laggard in the field of climate change, after President Bush pulled the USA out of the Kyoto Protocol in 2001, the EU became the pivotal actor for advocating entry into force of the Protocol and take over global climate policy leadership (Birger et al, 2016). The EU ETS was the first large experiment for trading carbon dioxide (CO<sub>2</sub>), in order to reduce the harmful greenhouse gases both on EU and global level (Ellerman, D.&Buchner, 2007). In 2001 the European Commission proposed the Directive on ETS, which was formally adopted in 2003. During 2004 national allocation plans for allocation of emission permits for CO<sub>2</sub> were executed. Since January 1, 2005 the ETS become fully operational, and was mainly focused on large industrial emitters of CO<sub>2</sub>. For the Phase II of the ETS, the Directive allowed the governments of the Member States to auction up to 10 % of the issued allowances, without any constraints attached (Hepburn, et al, 2006).

In its Communication (CEC, 2006), the Commission has indicated its intention to move away from the more qualitative guidelines in Annex 3 of the EU ETS Directive to a more rigorous quantitative process. As a consequence in 2008 verified emissions exceeded allocation for the EU total. As a result of the global financial crisis and the drop of economic activity and emissions the cap was only stringent in 2008, but in the following years there were again a surplus of allowances. 2009 saw the outline reform of the Phase III, and 2018 the reformed Phase IV of the ETS for the period 2021-2030. In the evening of world climate change in Katowice (Poland) UN Secretary General Guterres called climate change “the most systemic threat to humankind” and urged world leaders to curb their countries’ greenhouse gas emissions (Sengupta, 2018). He warned that if world countries do not change direction by 2020 the humankind and natural systems will face horrific consequences (HRT, 2018).

## **PHASES OF EU ETS**

The EU ETS so far has undergone fully Phase I (2005-2007) and Phase II (2008-2012). Phase III is currently underway (2013-2020), and the next Phase IV will begin in 2021 through 2030.

It is estimated that Phase I of ETS brought significant efficiency gains from trading in comparison with the status *ex ante* with no existing

inter-sectoral or inter-regional trade. In consequence net welfare gains emerged in most EU Member States, the Netherlands and Italy being the exception. Efficiency benefits from inter-sectoral emissions trading are greater compared to inter-regional emissions trading (Betz & Sato, 2006). But, the total number of allowances at the end of Phase I were too excessive. The result of that was the drop of the price of first-period allowances to zero.

For Phase II the European Commission peddled more influence on the NAPs. So in 2008, total allocation was reduced by 233 Mt (11%) compared to Phase I. On the other hand, emissions decreased by 2% between 2007 and Phase II (Kettner et al, 2013). On 1.1.2008 Iceland, Norway and Lichtenstein joined the ETS. Approximately, 45% of total EU greenhouse gas emissions are part of the system. Aviation industry become part of ETS on 1.1.2012 (European Commission, n.d).

What sectors are covered by EU ETS? First and foremost, CO<sub>2</sub> emissions from: 1) power and heat generation; 2) Energy-intensive industry sectors including oil refineries, steel works and production of iron, aluminium, metals, cement, lime, glass, ceramics, pulp, paper, cardboard, acids and bulk organic chemicals; 3) Civil aviation. Second, nitrous oxide (N<sub>2</sub>O) from production of nitric, adipic and glyoxylic acids and glyoxal. Third: Perfluorocarbons (PFCs) from aluminium production.

A 'cap' is an absolute quantity of greenhouse gases which can be emitted by the factories, power plants and other installations in the system, in order to ensure the emission reduction target is met. The cap corresponds to number of allowances put in circulation over a trading phase. Emission allowances are the 'currency' of the EU ETS. Each allowance allows the company to: 1) emit one tonne of CO<sub>2</sub>, or 2) the equivalent amount of two other powerful greenhouse gases, nitrous oxide (N<sub>2</sub>O) and perfluorocarbons (PFCs). Each allowance can be used only once. Companies must surrender allowances for every tonne of CO<sub>2</sub> (or the equivalent amount of N<sub>2</sub>O or PFCs) they emitted in the previous year. If this obligation is not met, then strict fines are imposed if the surrendered allowances do not match their emissions (Ibid). In phase 3 of the EU ETS, participants who fail to comply with their obligation to surrender allowances under the EU ETS are fined €100 per tCO<sub>2</sub>, adjusted with the EU inflation rate from 2013 onwards, for which they fail to submit an allowance. This fine is imposed by the relevant Member State authority. Furthermore, the shortfall in compliance is then added to the compliance

target for the following year. In other words, any failure to comply is not written off, but must be addressed in addition to the next year's obligation. In addition to this penalty there is also "name-and-shame" sanction (Article 16(2) of the EU ETS Directive) consisting of publicly naming the operators (including air carriers) that are in breach of their obligations (usually only in the official language(s) of the Member State imposing the sanction) (Peeters&Chen, 2016). Except for these two provisions, the ETS Directive leaves to the Member States discretion with respect to the detailed design of the rules on enforcement measures (European Commission, 2015).

Companies are allowed to be granted some allowances from governments free of charge. In order to cover the rest of their emissions, the companies can: 1) buy additional allowances or 2) draw on any surplus allowances they have saved from previous years. Also, a combination of these procedures is possible.

Within the cap, companies [receive](#) or [buy](#) emission allowances that are subject to trade between the companies. Companies can buy limited amounts of [international credits](#) concerning emission-saving projects both in and outside the European Union. The set limit on the total number of allowances that are available at any given time ensures that they have a value (European Commission, EU Emissions Trading System, n.d.).

The idea behind the scheme is to incentivize companies continuously to reduce their emissions by investing in more efficient technology or at least to use less carbon-intensive energy sources. In this way companies can choose the most cost-effective options to address their emissions (European Commission, EU Emissions Trading System Factsheet, n.d.).

For the period 2005-2012 (Phases 1 and 2 of ETS) the EU-wide cap represented aggregated total quantity of allowances established by the National Allocation Plans of each Member State. For instance the 2013 cap was set at 2 084 301 856 allowances. This cap decreases each year by a linear reduction factor of 1.74%, so that the level of allowances that can be used by stationary installations in 2021 to be 21% lower in comparison with 2005.

In 2009 major reform of the EU ETS was agreed for the period 2013-2020:

- A single, EU-wide cap has been imposed on the allowances' volume;
- Open, transparent, harmonised and non-discriminatory auctioning has been put in place by ETS Auctioning Regulation;
- Harmonized procedures for the free allocation of emission allowances have established across the EU and benchmarks have been introduced by the [Benchmarking Decision](#);
- New cogent rules on [monitoring and reporting, verification of emission reports and accreditation and supervision of verifiers](#) were set by separate Regulations;
- New stricter rules and conditions were introduced for the use of international carbon credits;
- A Central electronic Union Registry was established and the previous system of national emissions allowances registries was abandoned.

Also, in this Phase the emission allowances were transformed into financial instruments and subject them to financial market supervisory system.

Subsequently, in January 2014 a proposal to establish a Market Stability Reserve was presented (the legislative process has been finalised with the adoption of the [Decision \(EU\) 2015/1814 of the European Parliament and of the Council of 6 October 2015 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and amending Directive 2003/87/EC](#)). On 15 July 2015 the Commission presented a legislative proposal to revise the EU Emissions Trading System in line with the 2030 framework (European Union Emissions Trading Scheme, n.d.). European Parliament agreed the reform the EU's carbon market after 2020 in February, and to raise up the prices for CO<sub>2</sub> in order to curb the greenhouse gas emissions. European carbon prices rose up to 15% in comparison with the situation ex ante at a level of €8.90 per tonne. Some staunch critics of the previous level of prices again argue that the new level is also very low.

After 2009 a surplus of emission allowances occurred in the ETS. The European Commission reacted with short-term and long-term measures. The main reason for this was the economic crisis and the high imports of international credits. In consequence, this lowered carbon prices and there interest for lowering emissions dropped.

As a result this could distort the functioning of the ETS. Also, in perspective the ETS would be not able to achieve more ambitious emission reduction targets cost-effectively.

At the beginning of the phase 3, around 2 billion allowances were superfluous, which number increased over 2.1 billion in 2013. But two years later, this number dropped to 1.78 billion due to back-loading.

First **short-term measure** taken by the Commission was the delay of auctioning of 900 million allowances until for the period 2019-2020.

This 'back-loading' only means, that different distribution of auctions will apply: 1) 400 million allowances in 2014 2) 300 million in 2015 3) 200 million in 2016. The crucial goals of the Mechanism are: 1) Address the current oversupply of allowances; 2) Address future supply-demand imbalances that arise from macroeconomic changes and/or complementary policies; 3) Ensure inter-temporal efficiency of the system; and 4) Increase credibility *vis-à-vis* functioning of the European carbon market 5) Address the current oversupply of allowances; 6) Address future supply-demand imbalances that arise from macroeconomic changes and/or complementary policies; 7) Ensure inter-temporal efficiency of the system; and 8) Increase credibility *vis-à-vis* functioning of the European carbon market (Zetterberg, et al, 2014).

On the longer run, from 1 January 2019 a Market stability reserve will be established. The purpose of this new mechanism is to: 1) tackle the problem of the existing surplus of allowances 2) strengthen the ETS **resilience** to major shocks. But the abovementioned 900 million allowances kept as reserve since 2019-2020 (there will be no auction).

Unallocated allowances will also be transferred to the reserve. This reserve will operate under **pre-defined cogent set of rules** leaving no leeway for the Commission or Member States.

At the latest by 15 May every year the total number of [allowances in circulation](#) will be published by the European Commission. According to this report, the subjects can assess whether the allowances will become part of the reserve, and if so how many, or whether allowances will be released from the reserve.

From 2018, the EU Commission will calculate the surplus which equals all allowances (auctioned and freely allocated), plus all Kyoto credits minus the total covered verified emissions from 2008. There are two quantity and price thresholds. The lower quantity threshold is a trigger for the Commission to reintroduce more allowances when the number of

allowances in circulation fall below the limit. The upper quantity threshold triggers a removal of the allowances in circulation if they go beyond the limit. On the other hand the price threshold is activated if and when there is an extremely volatile rise in prices (Jallard et al, 2016).

As things stand, the ETS reform has only one more hurdle to clear but a recent plan floated by EU Budget Commissioner Günther Oettinger on how to plug a €13 billion hole left by the UK after Brexit suggests the tinkering might not be over (Morgan, 2018).

## **2018 REFORM OF THE ETS**

With the adoption of the new ETS Directive in 2018, the emissions trading system is reformed by introducing the following elements:

- In line with the European Council conclusions of October 2014 the reformed ETS will be the main European instrument to achieve the reduction target of at least 40 %, with an annual reduction factor of 2,2 % from 2021 onwards (linear reduction factor) (European Parliament and Council of EU: 2018). So, in 2030 the CO<sub>2</sub> levels should drop at least 40 % in comparison with the 2005 levels. But, recently EU Commissioner for climate action and energy Cañete has been pushing for an increase to 45 percent (DPA, 2018). But the German Chancellor Angela Merkel criticized these new ambitious goals, on the grounds that many EU Member States do not comply with the already agreed reduction targets. So, all Member States should first reach these set targets, before setting new more ambitious ones (Appunn, 2018). Unlike most EU Member States, Germany has already succeeded to make renewable energy central factor of its power supply, and intensifying the efforts to boost e-mobility (electric cars) on German roads) (Ibid).
- By amending the Decision (EU) 2015/1814 until 31 December 2023, the percentages and the 100 million allowances to be placed in the market stability reserve will be doubled temporarily until the end of 2023 (feeding rate) (European Parliament and Council, 2018). Unless otherwise decided in the first review carried out in accordance with Article 3, from 2023 allowances held in the

reserve above the total number of allowances auctioned during the previous year shall no longer be valid.

- A new mechanism to **limit the validity of allowances** in the Market Stability Reserve above a certain level will become operational in 2023. Namely, in accordance with the new Art.13 “allowances issued from 1 January 2013 onwards shall be valid indefinitely. Allowances issued from 1 January 2021 onwards shall include an indication showing in which ten-year period beginning from 1 January 2021 they were issued, and be valid for emissions from the first year of that period onwards.’.

The revised ETS directive also contains a number of new provisions to protect industry against the risk of carbon leakage and the risk of application of a cross-sectoral correction factor:

- 1) The share of allowances to be **auctioned will continue be 57%**, but in the event that demand for free allowances triggers the need to apply a uniform cross-sectoral correction factor before 2030, the share of allowances to be auctioned over the ten year period beginning on 1 January 2021 should be reduced by up to 3 % of the total quantity of allowances (European Parliament and Council, 2018).
- 2) Revised free allocation rules will enable better alignment with the actual production levels of companies. Benchmark values between 2021 to 2025 will be adjusted in respect of each year between 2008 and the middle of 2021 - 2025 with either 0,2 % or 1,6 %, leading to an improvement of 3 % or 24 % respectively compared to the value applicable in the years 2013 - 2020. Between 2026 to 2030, the benchmark values will be applicable in the same way, resulting with improvement of 4 % or 32 % respectively in comparison with the value applicable for the years 2013 - 2020. In order to ensure fair terms, the benchmark values for aromatics, hydrogen and syngas should continue in line with the refineries benchmarks (European Parliament and Council, 2018).
- 3) The sectors at highest risk of relocating their production outside the EU will receive **full free allocation**. The free allocation rate for sectors less exposed to carbon leakage will amount to 30%. Sectors and subsectors in relation to which the product resulting from multiplying their intensity of trade with third countries,



defined as the ratio between the total value of exports to third countries plus the value of imports from third countries and the total market size for the European Economic Area (annual turnover plus total imports from third countries), by their emission intensity, measured in kgCO<sub>2</sub>, divided by their gross value added (in euros), exceeds 0,2, shall be deemed to be at risk of carbon leakage. Such sectors and subsectors shall be allocated allowances free of charge for the period until 2030 at 100 % of the quantity determined pursuant to Article 10a (European Parliament and Council, 2018). A gradual phase-out of that free allocation for the less exposed sectors will start after 2026, should decrease by equal amounts after 2026 so as to reach a level of no free allocation in 2030. Exception will be the district heating sector (European Parliament and Council, 2018).

- 4) By way of derogation from Article 10a(1) to (5), Member States which had in 2013 a GDP per capita at market prices (in euros) below 60 % of the Union average may give a transitional free allocation to installations for electricity generation for the modernisation, diversification and sustainable transformation of the energy sector. The investments supported shall be consistent with the transition to a safe and sustainable low-carbon economy, the objectives of the Union's 2030 climate and energy policy framework, and reaching the long-term objectives expressed in the Paris Agreement. The derogation provided for in this paragraph shall end on 31 December 2030 (European Parliament and Council, 2018).
- 5) The **new entrants' reserve** will initially contain unused allowances from the current 2013-2020 period and 200 million allowances from the market stability reserve. Up to 200 million allowances will be returned to the market stability reserve if not used during the period 2021-2030. Allowances from the maximum amount which were not allocated for free by the year 2020 will be preserved for the new entrants, plus the 200 million allowances put in the market stability reserve pursuant to Article 1(3) of Decision (EU) 2015/1814. Of these allowances, up to 200 million shall be returned to the market stability reserve at the end of the in 2030 if not allocated for that period (European Parliament and Council, 2018).

- 6) Member States can continue to provide **compensation for indirect carbon costs** in line with state aid rules. Reporting and transparency provisions are also enhanced. The measures to support certain energy-intensive industries that may be subject to carbon leakage referred to in Articles 10a and 10b shall also be kept under review in the light of climate policy measures in other major economies. In this context, the Commission shall also consider whether measures in relation to the compensation of indirect costs should be further harmonized (European Parliament and Council, 2018).

The new Directive envisages an establishment of a Modernization Fund in order to support the investments proposed by the beneficiary Member States. Such investments can include financing of small-scale investment projects, modernization of energy systems and improvement of energy efficiency, in the Member States where GDP per capita at market prices is below 60 % of the Union average in 2013. The timeframe for the Fund is from 2021 to 2030. The financing of the Fund will be provided via auctioning of allowances determined by Article 10. The projects financed by the Fund must be in line with the aims of this Directive from one side, but also with the 2030 climate and energy policy framework and the aims advocated by the Paris Agreement. The Fund shall not finance any energy generation facilities that use solid fossil fuels. By way of exception, funding may be available for efficient and sustainable district heating in those Member States where GDP per capita is below 30 % of the Union average in 2013, with an attached condition that the amount of allowances of at least an equivalent value is used for investments under Article 10c that do not involve solid fossil fuels.

A programmatic goal is at least 70 % of the total funds to be directed to support investments regarding: 1) use of electricity from renewable sources; 2) the improvement of energy efficiency, (with an exception to energy generated using solid fossil fuels); 3) energy storage and the modernisation of energy networks, including district heating pipelines, grids for electricity transmission and the increase of interconnections between Member States; 4) for support a just transition in carbon-dependent regions in the beneficiary Member States, so as to support the redeployment, re-skilling and up-skilling of workers, education, job-seeking initiatives and start-ups, in dialogue with the social

partners and 5) Projects for increasing energy efficiency in sectors like transport, buildings, agriculture and waste shall also be eligible.

The beneficiary Member States will be responsible for the operation of the Fund. On the other hand, the European Investment Bank checks whether the allowances are auctioned in accordance with the principles and modalities laid down in Article 10(4). Also, EIB should be responsible for managing the revenues (European Parliament and Council, 2018).

In order to achieve the goals of Phase 4 of EU ETS (2021-2030), also a new Innovation Fund will be in operation in order to use innovative technologies and breakthrough innovation in the industry. The amount of funding will be at least commensurate to a market value of 450 million allowances. This Fund will complement the NER 300 programme, and will fund projects aimed at decarbonising industrial production (ETS Innovation Fund, n.d.). It is estimated that approximately €10.7 billion for clean technology projects will be awarded by the end of 2030 (Garside, 2015).

Interestingly, in May 2018 the first climate change court case was filed against the European Union. Namely, the plaintiffs are targeting all current 28 EU Member-States. [‘The People’s Climate Case’](#) – is the latest of strategic court cases designed to put pressure on the governments in order to take more ambitious steps to tackle climate change.

The plaintiffs are 10 families from Portugal, Germany, France, Italy, Romania, Kenya, Fiji, and the Saami Youth Association Sáminuorra. They argue that EU has failed, and continues to fail, to meet its urgent responsibilities to limit the emission of greenhouse gases (GHGs). Moreover, the current domestic GHG reduction target, the levels of greenhouse gases to be reduced by 40% by 2030 in comparison with 1990 do not correspond to the requirements of higher ranking EU and international laws.

Such EU failure represents an infringement of the *principle of equality* (Articles 20 and 21, [EU Charter](#)); the *principle of sustainable development* (Article 3 [TEU](#), Article 11 [TFEU](#), Article 37 EU Charter, Article 3 UNFCCC); the *no harm principle* in international law; and *EU’s environmental policy* (Article 191 TFEU) (Setzer, 2018).

## CONCLUSION

The 13 - year long operation of EU ETS showed that the system has many benefits, but also series of shortcomings. Critics of EU ETS often stress that the EU's cap-and-trade system is overloaded by a plethora of procedures and permits, thus suffering from inefficiency. However, many surveys show that for the period 2005-2012, EU ETS contributed emission savings in the range 40 – 80 MtCO<sub>2</sub>/yr. This totals 2-4% of the overall capped emissions. It can be concluded that the benefits of EU ETS is greater than other existing individual energy-environmental instruments (Laing, 2013). Also, on the investment scale it is estimated that ETS contributed to incentivize companies to make only small (rather than large) investment decisions in energy efficient projects. But on the other hand, probably it deterred the financing of many carbon-intensive projects (Ibid).

The new goal is to strike a (careful) balance between setting too ambitious reducing targets from one hand, and on the other to avoid the danger that such steps do not trigger energy-intensive industries setting up shops outside EU countries where the regulation is not so strict (the phenomenon of so called “carbon leakage). Recently, even the German Chancellor Angela Merkel pointed out that there should be no setting more ambitious goals for CO<sub>2</sub> reduction when most of EU countries lag behind the already agreed reduction targets.

Key measure to enable rising of prices per tone will be doubling the rate at which the Market Stability Reserve (MSR) soaks up excess allowances. In 2023, a new mechanism to limit the validity of allowances in the MSR will be put in place. The overall cap on the total volume of emissions, known as the linear reduction factor (LRF), will be reduced annually by 2.2%.

The new Directive contains tools that are tailored to enable the Union to successfully pursue and achieve the set emission targets as well as the long-term objectives set by the Paris Agreement. For example, the new Modernization Fund should ensure sufficient financing for projects like electrification of transport, the new Innovation Fund will support projects aimed at decarbonising industrial production, the Market Stability Reserve (2019) should stabilize the ETS and make it more resilient to shocks, the transitional measures to support certain energy intensive industries should prevent carbon leakage etc.

However, while trying to keep the balance between the danger of “carbon leakage”, keep the jobs in EU from one hand, and the setting a relatively ambitious goals on curbing CO<sub>2</sub> emissions by 2030, from another, the new case lodged with the EU General Court (dubbed People’s Climate Case) shows that the citizens, scientists and broad range of NGOs, are of the opinion that EU is not doing enough to tackle climate change. Namely, plaintiffs seek the annulment of emission targets set by GHG Emission Acts and injunction against the Union to set deeper emission targets at a level required by law. Applicants argue that EU has set the 40 % reduction target for the year 2030 without seeking or inquiring whether a higher target is feasible, i.e. without taking into account the overwhelming scientific, engineering and economic evidence that the target could be set somewhere between 50 to 60 % of the 1990 levels (General Court of EU, 2018). Since the case is in a early phase, and one can not foresee the judgment of the General Court and its legal ramifications for the ETS, it is early to comment whether there will be changes in this regard. However, that possibility can not be excluded, particularly having in mind the recent statements by EU Commissioner Cañete for “gearing up” the reduction targets.

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