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Report on the functioning of the European carbon market

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List of acronyms and abbreviations

AVR	Accreditation and Verification Regulation
CA	Competent Authority
CCS	Carbon Capture and Storage
CCU	Carbon Capture and Utilisation
CDM	Clean Development Mechanism
CERs	Certified Emission Reductions
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
CSCF	Cross-Sectional Correction Factor
EA	European Cooperation for Accreditation
EEA	European Economic Area
EEA	European Environment Agency
EEX	European Energy Exchange
EIB	European Investment Bank
ERUs	Emission Reduction Units
ESMA	European Securities and Markets Authority
EU ETS	European Union Emissions Trading System
EUTL	European Union Transaction Log
GHG	Greenhouse Gas
ICAO	International Civil Aviation Organization
ICE	InterContinental Exchange Futures Europe
InnovFin EDP	InnovFin Energy Demonstration Projects
JI	Joint Implementation
MAR	Market Abuse Regulation
MiFID2	Directive on Markets in Financial Instruments
MiFIR	Regulation on Markets in Financial Instruments
MRR	Monitoring and Reporting Regulation
MRVA	Monitoring, Reporting, Verification and Accreditation
MSR	Market Stability Reserve
NAB	National Accreditation Body
NER	New Entrants Reserve

OTC	Over-the-counter
PFCs	Perfluorocarbons
RES	Renewable Energy Sources
SARPs	CORSIA Standards and Recommended Practices
TNAC	Total Number of Allowances in Circulation

SUMMARY

In 2018, emissions from installations covered by the European Emissions Trading System (EU ETS) decreased by 4.1% compared to 2017. The decrease was mainly driven by electricity and heat production, whereas emissions from industry decreased only slightly (see Table 7 in section 3.2). Verified emissions from aviation continued to grow, marking an increase of 3.9% compared to 2017 (see Table 8 in section 4).

Following the adoption of the revised EU ETS Directive, the focus has shifted towards implementing the new provisions ahead of the start of phase 4. Implementation work is in full swing, with new implementing legislation on the carbon leakage list, free allocation rules, the Innovation Fund, auctioning, MRVA, and on the Union Registry having been adopted over the past year (see chapters 2.2, 3.1.2 and 6.1).

The Market Stability Reserve surplus indicator was published for the third time, corresponding to 1 654 909 824 allowances. Its publication will continue to lead to the placement of allowances in the reserve, reducing the auction volume by nearly 40%, or close to 397 million allowances in 2019 (see chapter 3.3).

In 2018, a strengthened carbon price signal in the European carbon market led to a record amount of revenues of some EUR 14 billion from the auctioning of allowances for Member States. Member States spent or planned to spend close to 70% of these revenues for specified climate and energy related purposes over the course of the year (see chapter 3.1.2.4)

1. INTRODUCTION

The EU Emissions Trading System (EU ETS) has been the cornerstone of the EU's strategy for reducing greenhouse gas (GHG) emissions from industry and electricity and heat production since 2005. It contributes significantly to achieving the overall EU target of cutting GHG emissions by 20% from 1990 levels by 2020. While the EU is on track to surpass this target, cutting GHG emissions by at least 40% (as part of the EU's current 2030 climate and energy policy framework) and at least 50%, going towards 55% in a responsible way (taking into account the Political Guidelines[1] for the incoming Commission), would require continued progress.

Following the entering into force of the EU ETS revision[2] for phase 4 in April 2018, the adoption of the implementing legislation for the fourth trading period is progressing at a fast pace. Over the past year, implementing legislation on the new carbon leakage list and free allocation rules has been adopted, and the legal framework for the Union Registry system has been revised to accommodate the required adjustments for phase 4. Moreover, the rules for the operationalisation of the Innovation Fund – the ETS's main instrument for the funding of low-carbon innovative technologies and breakthrough innovation in phase 4 - have been established. At the same time, the Auctioning Regulation has been revised to enable the auctioning of the first 50 million allowances for the Innovation Fund in 2020. A second revision to create the institutional framework for the auctioning of allowances for the Innovation and the Modernisation Funds in phase 4 was adopted by the Commission in August 2019. Last, but not least, the monitoring, reporting, verification and accreditation (MRVA) framework of the EU ETS has been updated to improve and clarify existing rules based on the implementation experience from phase 3. The Commission is swiftly finalising the remaining implementing provisions, with the aim of having them adopted before January 2021, when the new trading period will start.

The legislative changes agreed in recent years to address the surplus of allowances in the carbon market have started to bear fruit. Since the publication of the last carbon market report, the Market Stability Reserve surplus indicator has been published for the third time. Based on the indicator and the revised EU ETS legislation, auction volumes in 2019 will be reduced by almost 400 million allowances, corresponding to 24% of the surplus.

The past year was also marked by the increased confidence of market participants, which was reflected in a reinforced carbon price signal. The higher price of emission allowances led to a substantial increase in the total revenues from auctioning generated by Member States - in 2018, the generated total revenues were EUR 14 billion, more than two times higher than the revenues generated in 2017. Based on data submitted by Member States, over the course of 2018, close to 70% of these revenues were spent (or were planned for spending) on specified climate and energy related purposes.

[1] https://ec.europa.eu/commission/sites/beta-political/files/political-guidelines-next-commission_en.pdf

[2] 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 L 76, 19.03.2018, p.3

This Report on the functioning of the European carbon market is presented in accordance with the requirements of Articles 10(5) and 21(2) of Directive 2003/87/EC[3] (EU ETS Directive). As stipulated by the Directive, the objective of the report is to provide a regular snapshot of developments in the European carbon market on an annual basis.

The report covers the year 2018, but also presents initiatives proposed or agreed in the first half of 2019.

Unless otherwise indicated, data used for this report were the ones publicly available and at the disposal of the Commission by end June 2019[4]. General and descriptive information on the EU ETS is included in boxes throughout the report.

[3] 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 L 275, 25.10.2003, p. 32.

[4] The cut-off date used is 28 June 2019.

2. EU ETS INFRASRUCTURE

2.1 Coverage of activities, installations and aircraft operators

The EU ETS operates in the 31 countries of the European Economic Area (EEA). It limits emissions from nearly 11,000 power plants and manufacturing installations as well as over 500 aircraft operators flying between EEA's airports. It covers around 39% of the EU's GHG emissions.

In phase 3 (2013-2020)*, the sectors with stationary installations regulated by the EU ETS are energy intensive industries, including power stations and other combustion plants with >20MW thermal rated input (except hazardous or municipal waste installations), oil refineries, coke ovens, iron and steel, cement clinker, glass, lime, bricks, ceramics, pulp, paper and board, aluminium, petrochemicals, ammonia, nitric, adipic, glyoxal and glyoxylic acid production, CO_2 capture, transport in pipelines and geological storage of CO_2.

The aviation scope of the EU ETS was limited to flights within the EEA in the period 2013-2016, pending the adoption of a global approach by the International Civil Aviation Organization (ICAO). To support the development of the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), in 2017 the limitation to intra-EEA flights was prolonged until 2023 (see chapter 4).

The EU ETS covers carbon dioxide (CO_2) emissions, but also nitrous oxide (N_2O) emissions from all nitric, adipic, glyoxylic acid and glyoxal production, and perfluorocarbons (PFC) emissions from aluminium production. Even though participation in the EU ETS is mandatory, in some sectors only installations above a certain size are included. Moreover, participating countries can exclude small installations (emitting less than 25 000 tonnes of CO_{2e}) from the system if alternative and equivalent measures are in place. In phase 4 very small emitters (with reported emissions of less than 2 500 tonnes of CO_{2e} in the last three years) can be excluded from the EU ETS subject to the existence of simplified monitoring arrangements to assess the quantity of their emissions. Participating countries may also add more sectors and GHGs to the EU ETS so called "opt-in").

* Information on phases 1 and 2 of the EU ETS can be found here: https://ec.europa.eu/clima/policies/ets/pre2013_en

According to the Article 21 reports submitted by participating countries[5] in 2019, there were a total of 10 744 permitted installations in 2018.

As was the case in previous years, the fuels combusted within the EU ETS in 2018 remained overwhelmingly fossil. However, 29 countries also reported biomass use in connection with 2 181 installations (20.3% of all installations). Two countries (LI and MT) did not report any

[5] For the reference to Article 21 reports, "participating countries" or simply "countries" include the 28 EU Member States plus EEA countries (Iceland, Norway and Liechtenstein).

use of biomass. Total emissions from biomass in 2018 amounted to approximately 151 million tonnes CO_2 (9% of ETS reported emissions), a slight increase from the 145 million tonnes CO_2 in 2017 (8% of ETS reported emissions). Out of these, 99.2% were zero-rated[6]. For 2018, no country reported use of biofuel for aircraft operators, while for 2017 only Sweden had reported such use for two aircraft operators.

Within the installation categories based on annual emissions[7], the data for 2018 shows that, as in previous years, 72% of installations are category A, 21% are category B and 7% are category C. 6 113 installations were reported as "installations with low emissions"[8] (57% of the total).

Regarding EU ETS activities additionally listed for non-CO_2 emissions, permits are reported as issued in 12 countries for primary aluminium and perfluorocarbons (PFCs) (DE, FR, EL, IS, IT, NL, NO, RO, SE, SI, SK, UK), while for nitric acid production and N_2O permits are reported as issued in 20 countries (all except CY, DK, EE, ES, IE, IS, LI, LU, LV, MT, and SI). The other N_2O sectors – adipic acid production and glyoxal and glyoxylic acid production are reported in three (DE, FR, IT) and two (DE, FR) countries, respectively. Only Norway and Austria declared CO_2 capture and storage activities.

As last year, seven countries (ES, FR, HR, IS, IT, SI, UK) have made use of the possibility to exclude small emitters from the EU ETS in line with Article 27 of the EU ETS Directive. Emissions excluded for 2018 amounted to 2.92 million tonnes CO_2 (some 0.17% of total verified emissions, compared to 0.16% the year before).

According to Article 21 submissions in 2019, so far eight countries (BE, DK, FR, HR, HU, LI, LT, NL) have taken advantage of the provision offered by Article 13 of the Monitoring and Reporting Regulation (MRR)[9] to allow use of simplified monitoring plans in low risk cases for stationary installations. In the case of aircraft operators with low emissions, three countries reported use of this provision for 2018 (BE, IS and PL).

In 2018, 655 aircraft operators were reported to have a monitoring plan (compared to 541 for 2017, and 503 for 2016). 50% (328) of the reported operators were commercial, while the

[6] In the EU ETS, the emission factor of biomass is set to zero if the definition of the term "biomass" is fulfilled and where– if biofuels or bio-liquids are concerned – the sustainability criteria pursuant to Article 17(1) of Directive 2009/28/EC (the Renewable Energy Directive) are met. No allowances have to be surrendered for zero-rated emissions. In the 2019 Article 21 submissions, three participating countries (LV, LT, and DK) only reported the energy content of zero-rated biomass, and not the actual emissions. Their emissions are therefore not taken into account in the total provided.

[7] Category C installations emit more than 500 000 tonnes CO_2e per year, category B installations emit between 500000 and 50000 tonnes CO_2e per year, and category A installations emit less than 50000 tonnes CO_2e per year. See Commission Regulation (EU) No 601/2012 of 21 June 2012 on the monitoring and reporting of GHG emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council, OJ L 181, 12.7.2012, p. 30

[8] Installations with low emissions are a sub-set within category A installations, which emit less than 25 000 tonnes CO_2e per year (see Article 47(2) of Regulation (EU) No 601/2012).

[9] Commission Regulation (EU) No 601/2012 of 21 June 2012 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council, OJ L 181, 12.7.2012, p. 30.

other 50% (327) were non-commercial.[10] A total of 287 (44%) qualified as small emitters (compared to 280 (52%) in 2017 and 249 (50%) in 2016).

2.2 Union Registry and the European Union Transaction Log (EUTL)

The Union Registry and the European Union Transaction Log (EUTL) track the ownership of general and aviation allowances by recording the amounts owned in the accounts and the transactions between accounts. They are operated and maintained by the Commission, whereas the national registry administrators in the participating countries remain the point of contact for the representatives of the accounts (companies or natural persons). While the Union Registry holds accounts for stationary installations and for aircraft operators, the EUTL automatically checks, records and authorises all transactions between accounts, thus ensuring that all transfers comply with EU ETS rules.

The data recorded in the Union Registry and the EUTL is an important source of information for various types of ETS reporting, such as the calculation of the Market Stability Reserve surplus indicator (see chapter 3.3) and the reporting done by the European Environment Agency (EEA). The EUTL also provides transparency in the EU ETS, publishing* information on the compliance of stationary installations and aircraft operators with ETS provisions.

* The information published by the EUTL can be found at: https://ec.europa.eu/clima/ets/

The Union Registry and the EUTL were fully operational for 365 days around the clock throughout 2018, with only minor interruptions adding up to a total of approximately 26 hours due to technical upgrades.

From 1 January 2019, the Commission suspended[11] all processes for the UK relating to free allocation, auctioning and the exchange of international credits, in accordance with the safeguard measures[12] to protect the environmental integrity of the EU ETS in cases where EU law ceases to apply to a Member State withdrawing from the EU.

In March 2019, Commission Delegated Regulation (EU) 2019/1122[13] was adopted, setting the rules for the functioning of the Union Registry in the next EU ETS trading period (2021-2030). The Regulation enables the Union Registry to comply with the requirements for phase 4 set by the revised EU ETS Directive, for example by adjusting the functionalities so that allowances are valid indefinitely and can only be used to cover emissions as of the first year of the ten-year period in which they were issued, as well as to ensure that international credits

[10] An example of a commercial aircraft operator would be a passenger airline providing services to the general public. An example of a non-commercial aircraft operator would be a privately owned aircraft.

[11] Commission Decision C(2018) 8707 of 17.12.2018 on instructing the central administrator to temporarily suspend the acceptance by the European Union Transaction Log of relevant processes for the United Kingdom relating to free allocation, auctioning and the exchange of international credits

[12] Commission Regulation (EU) 2018/208 of 12 February 2018 amending Regulation (EU) No 389/2013 establishing a Union Registry, OJ L 39/3, 13.02.2018, p.3.

[13] Commission Delegated Regulation (EU) 2019/1122 of 12 March 2019 supplementing Directive 2003/87/EC of the European Parliament and of the Council as regards the functioning of the Union Registry, OJ L 177, 2.7.2019, p. 3.

cannot be used to cover emissions as of 2021. Moreover, the new Regulation adapts the rules regulating the Union Registry to align them with the requirements of financial market legislation, following the classification of emission allowances as 'financial instruments' under Directive 2014/65/EU[14] as of 3 January 2018 and with the requirements of the revised data protection rules.

3. FUNCTIONING OF THE CARBON MARKET IN 2018

This chapter provides information on aspects relating to the supply and demand of allowances in the EU ETS. The supply side section includes information on the cap, free allocation, the NER300 programme (including preparations for the forthcoming Innovation Fund), auctioning, the derogation from full auctioning for electricity and heat production (Article 10c), the use of international credits, and a chapter on indirect carbon cost compensation schemes.

On the demand side, information is provided on the number of verified emissions and on the balancing of the supply and demand of allowances in the carbon market via the Market Stability Reserve (MSR).

[14] Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU

3.1. Supply: allowances put in circulation

3.1.1. Cap

The cap is the absolute quantity of GHGs, which may be emitted by covered entities to ensure the emission reduction target is met and that it corresponds to the number of allowances put in circulation over a trading period. In phase 3 a common EU-wide cap applies, replacing the previous system of national caps.

The 2013 cap for emissions from stationary installations was set at 2 084 301 856 allowances. This cap decreases each year by a linear reduction factor of 1.74% of the average total quantity of allowances issued annually in 2008-2012, thus ensuring that the number of allowances that can be used by stationary installations will be 21% lower in 2020 than in 2005.

The aviation sector cap was originally set at 210 349 264 aviation allowances per year, which is 5% below the average annual level of aviation emissions in 2004-2006. It increased by 116 524 aviation allowances on 1 January 2014 to accommodate Croatia joining the EU ETS. This cap was meant to reflect the 2008 legislation* which stated that all flights from, to and within the EEA would be included in the EU ETS. However, the scope of the EU ETS was temporarily limited to flights within the EEA between 2013 and 2016 to support the development of a global measure by the ICAO to stabilise emissions from international aviation at 2020 levels. Therefore, the number of aviation allowances put into circulation in 2013-2016 was significantly lower than the original cap. In 2017, to support the development of the ICAO global measure, the limitation to intra-EEA flights was prolonged until 2023 (see chapter 4).

* 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

Table 1 shows the figures for the cap for stationary installations and the number of aviation allowances put annually into circulation[15] for each year during phase 3 of the EU ETS.

[15] The number of aviation allowances put into circulation since 2013 is the result of a bottom-up approach starting from free allocation (determined on the basis of activity-based benchmarks for operators' activity within the EEA). The number of allowances auctioned is then derived based on the fact that free allocation (including a special reserve for later distribution to fast-growing aircraft operators and new entrants) should be 85% of the total and auctioning should be 15%.

Table 1: EU ETS cap 2013-2020

Year	Annual cap (installations)	Annual aviation allowances put into circulation[16]
2013	2 084 301 856	32 455 296
2014	2 046 037 610	41 866 834
2015	2 007 773 364	50 669 024
2016	1 969 509 118	38 879 316
2017	1 931 244 873	38 711 651
2018	1 892 980 627	38.909.625
2019	1 854 716 381	35.172.897[17]
2020	1 816 452 135	

[16] The updated figures include exchanges of international credits besides the free allocation and auctioned amounts.

[17] Includes information from the 2019 aviation auction calendar. UK data for 2019 is not included due to the safeguard measures adopted by the Commission to protect the environmental integrity of the EU ETS in cases where EU law ceases to apply to a Member State withdrawing from the EU (see chapter 2.2).

3.1.2. Issued allowances

3.1.2.1.Free allocation

Although in phase 3 of the EU ETS auctioning is the default allocation method, a significant amount of allowances is allocated for free. The following principles apply:

- Electricity production does not receive free allowances;
- Free allowances to manufacturing industry are distributed according to EU-wide harmonised rules;
- Free allocation is based on performance benchmarks to strengthen the incentives for GHG emission reductions and innovation and reward the most efficient installations;
- An EU-wide New Entrants' Reserve (NER) for new industrial installations and installations significantly increasing capacity has been established, equivalent to 5% of the total amount of allowances for phase 3.

Free allocation is provided to industrial installations to address the risk of carbon leakage (a situation where companies transfer production to third countries with laxer constraints on GHG emissions, which may lead to an increase in their total emissions). The sectors and sub-sectors deemed to be exposed to a significant risk of carbon leakage are placed on a carbon leakage list*. While originally the list covered the period 2015-2019, the revised EU ETS Directive prolonged its validity until 31 December 2020.

* The current carbon leakage list can be found here: http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32014D0746

In the course of phase 3, about 43% of the total quantity of available allowances will be allocated for free, while the share of allowances to be auctioned by Member States amounts to some 57%.

The initial New Entrants Reserve, after deducting 300 million allowances for the NER300 programme, held 480.2 million allowances. Until June 2019, 167.9 million allowances have been reserved for 937 installations for the entirety of phase 3. The remaining NER amounts to 312.3 million allowances. It is expected that a significant number of these allowances will remain unallocated. These will be placed at the end of phase 3 in the Market Stability Reserve (MSR), out of which 200 million will be used to establish a NER for phase 4.

Until end June 2019, free allocation has been reduced by around 457 million allowances due to installations that have closed or reduced their production or production capacity compared to the one initially used to calculate phase 3 allocation.

Table 2: The number of allowances (in millions) allocated to industry for free from 2013 to 2019[18]

	2013	2014	2015	2016	2017	2018	2019
Free allocation[19] (EU28+EEA EFTA states)	903.0	874.8	847.6	821.3	796.2	771.9	748.1[20]
Allocation from the new entrants reserve (greenfield investments and capacity increases)	11.7	15.3	18.6	21.8	23.4	23.6	22.9
Free allowances remaining unallocated due to closures or changes in production or production capacity	40.1	58.9	70.8	67.5	71.6	75.9	71.9

As the demand for free allocation exceeded the amount available, the allocation for all installations under the EU ETS was reduced by the same percentage through the application of a "cross-sectoral correction factor (CSCF)"[21]. In 2017, the original CSFC values were revised[22].

To prevent the risk of carbon leakage, free allocation will continue after 2020, based on updated benchmark values derived with reference to the performance of the 10% most efficient installations in the EU. The level of carbon leakage exposure of sectors has been assessed on the basis of a combined indicator multiplying the sector's intensity of trade with third countries by the sector's emission intensity. Based on this asessment, in February 2019 the Commission adopted the carbon leakage list for the next trading period[23], which will be valid for the entirety of phase 4.

To reflect progress in technology and innovation, the benchmark values will be updated twice in phase 4, on the basis of real data. The installations applying for free allocation for the first allocation period (2021-2025) had to submit the required data by 30 May 2019 to the competent authorities. This data will be used by the Commission to calculate each installation's allocation and for updating the benchmark values for 2021-2025. The delegated

[18] The figures include notifications by Member States received until June 2019 and may be subject to changes due to later notifications.
[19] Initial amount, before application of the reductions mentioned below.
[20] Allocation concerning the UK (48.0 million allowances of the total for 2019) was suspended due to the safeguard measures adopted by the Commission to protect the environmental integrity of the EU ETS in cases where EU law ceases to apply to a Member State withdrawing from the EU (see chapter 2.2).
[21] Commission Decision 2013/448/EU, OJ L 240, 7.9.2013, p.27.
[22] Commission Decision 2017/126/EU, OJ L 19, 25.1.2017, p. 93.
[23] Commission Delegated Decision (EU) 2019/708, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2019:120:FULL&from=EN

act on revising the free allocation rules for 2021-2030 was adopted in December 2018[24], while work on updating the benchmark values for 2021-2025 has started (see Appendix 7 to the Annex).

In phase 4, allocations to individual installations will be adjusted in a timely manner to reflect significant increases and decreases in operation. To prevent manipulation and abuse of the allocation adjustment system and to avoid any undue administrative burden, the Commission will adopt an implementing act to define further arrangements for the adjustments (see Appendix 7 to the Annex).

[24] Commission Delegated Regulation (EU) 2019/331, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2019:059:FULL&from=EN

3.1.2.2. NER 300 programme and the Innovation Fund

The NER300 is a large-scale funding programme for innovative low-carbon energy demonstration projects. It is aimed at demonstrating environmentally safe carbon capture and storage (CCS) and innovative renewable energy (RES) technologies on a commercial scale within the EU. The NER 300 was funded from the monetisation of 300 million emission allowances from the NER. The funds were awarded to projects selected through two rounds of calls for proposals in December 2012 and July 2014.

The Innovation Fund is one of the two low-carbon mechanisms created by the revised EU ETS Directive for phase 4. It will support, on a competitive basis, first-time market development and commercial scale demonstration of innovative technologies and breakthrough innovation in sectors covered by the EU ETS, including innovative renewables, energy intensive industries, carbon capture and utilisation (CCU), and energy storage. It will be funded by the auctioning of at least 450 million allowances and any undisbursed budget from the NER 300 Programme. A first call for proposals is in preparation for 2020.

As a result of the two calls for proposals of the NER 300, 38 RES projects and 1 CCS project were awarded in total in 20 EU Member States, amounting to EUR 2.1 billion. Of these, 7 are operational: bionergy projects BEST in Italy and Verbiostraw in Germany, on-shore wind projects Windpark Blaiken in Sweden and Windpark Handalm in Austria, offshore wind projects Veja Mate and Nordsee One in Germany, and smart grid project Puglia Active Network in Italy.

Five projects from the first call are expected to enter in operation by the end of 2019, while 4 projects from the second call are advancing in their preparation to enter into operation by 30 June 2021. Given the challenging economic and policy context since the NER 300 programme was established, 19 projects have not been able to raise sufficient additional financial support and have been withdrawn, releasing a total of EUR 1.358 billion. Four more projects are under various stages of development.

The amended NER 300 Decision[25] allowed for the re-investment of the released funds from the cancelled projects of the first call (EUR 623 million so far) in existing financial instruments - the InnovFin Energy Demonstration Projects (EDP) and the Connecting Europe Facility Debt Instrument, both managed by the European Investment Bank. This will allow maximising the benefits of the NER 300 programme and leveraging additional private investments in low-carbon innovation.

So far, 3 projects have been selected to benefit from the unspent funds of the NER 300 under the InnovFin EDP, with the support amounting to some EUR 73 million (see Appendix 9 to the Annex).

[25] Commission Decision (EU) 2017/2172 of 20 November 2017 amending Decision 2010/670/EU as regards the deployment of non-disbursed revenues from the first round of calls for proposals.

The released funds from the cancelled projects of the second call (EUR 735,5 million so far) will be added to the resources avaible for the Innovation Fund.

Table 3: NER 300 projects awarded under the first and second calls for proposals[26]

	1st Call for proposals	**2nd Call for proposals**
Projects in preparation	6	7
Projects in operation	6	1
Projects withdrawn	8	11
Total	*20*	*19*

In phase 4, the total value of resources available for the demonstration of innovative technologies and breakthrough innovation under the Innovation Fund are likely to significantly exceed the EUR 2.1 billion for the NER300[27]. In February 2019, the Delegated Regulation[28] on the operation of the Innovation Fund was adopted. Projects in all Member States, including small scale projects, will be eligible for support from the fund.

To raise awareness about the Innovation Fund, in 2019 and the first half of 2020 the Commission is actively engaging in outreach activities with industry and Member States to discuss the key issues for each sector related to the selection implementation of projects. The first call for proposals under the Innovation Fund is planned for 2020, followed by regular calls until 2030.

[26] In line with Commission Decision 2010/670/EU, projects awarded under the first call had to reach final investment decision by end 2016, while projects awarded under the second call had to do so by end June 2018.
[27] The value of 450 million allowances available for the fund will depend on the carbon price. With an average price of EUR 25 per allowance, resources for the fund would amount to EUR 11.3 billion.
[28] Commission Delegated Regulation (EU) 2019/856 of 26 February 2019 supplementing Directive 2003/87/EC of the European Parliament and of the Council with regard to the operation of the Innovation Fund, OJ L 140, 28.5.2019, p. 6–17

3.1.2.3. Compensation of indirect carbon costs

In addition to free allocation to cover direct carbon costs, EU Member States may grant State aid to compensate some electro-intensive industries for indirect carbon costs, i.e. costs resulting from increased electricity prices due to electricity generators passing on the costs of purchasing allowances to consumers.

To ensure harmonized application of indirect carbon cost compensation across Member States and minimize competition distortions in the internal market, the Commission has adopted the EU ETS State Aid Guidelines*, which are valid until end of 2020. The Guidelines determine, inter alia, eligible sectors and maximum amounts for compensation of indirect carbon costs.

The revised ETS Directive allows Member States to continue providing indirect carbon cost compensation in phase 4, and complements it with enhanced transparency and reporting provisions. In view of this, the Commission has initiated a revision of the EU ETS State Aid Guidelines for the next trading period (see Appendix 7 to the Annex). As part of this process, the Commission, based on consultations with stakeholders and Member States held in early 2019, will review both the list of eligible sectors and the factors determining the maximum aid amounts.

* Guidelines on certain State aid measures in the context of the greenhouse gas emission allowances trading scheme post 2012, OJ C158, 05.06.2012, p.4

To date, the Commission has approved 13[29] indirect carbon cost compensation schemes in 12 Member States. In 2018, the Walloon scheme and the Luxembourg scheme paid out compensation for the first time. The Spanish government notified a revision of its scheme to the Commission with a view to increase its budget. In 2019, Poland notified a draft measure to the Commission and received State aid approval for a scheme that will start paying out support in 2020 for indirect costs incurred in 2019.

The EU ETS Directive determines that within three months after the end of each year, Member States that have an indirect cost compensation scheme in place should make available to the public, in an easily accessible form, the total amount of compensation provided and a breakdown per benefitting sector and subsector.

A summary of the data published by the Member States for compensation paid out in 2018 is set out in Table 4.

[29] In addition, modifications have been adopted to the French and Spanish schemes.

Table 4: Indirect carbon cost compensation paid out by Member States in 2018[30]

Member State	Duration of the scheme	Compensation disbursed in 2018 for indirect costs incurred in 2017 (in million euros)	Number of beneficiaries (installations)	Auction revenue 2017 (excluding aviation allowances, in million euros)	Percentage of auction revenues spent on indirect cost compensation
UK	2013 - 2020	22,36[31]	60[32]	1607[33]	3,7%
DE	2013 - 2020	202	891	1141.7	17,6%
BE (FL)	2013 - 2020	31.7	106	143.5	27,3%
BE (WL)	2017 - 2020	7.5	30		
NL	2013 - 2020	36.9	96	189	19,5%
EL	2013 - 2020	16,8	50	196.6	8,5%
LT	2014 - 2020	0,24	1	31.4	0,8%
SK	2014 - 2020	10	7	87	11,4%
FR	2015 - 2020	98.7	296	309.8	31,8%
FI	2016 - 2020	26.7	58	94.6	28,2%
ES	2013 - 2015	6	151	488.8	12,2%
LU	2018-2020	3.4	2	6.8	50%

The total indirect cost compensation paid out by the 11 Member States[34] in 2018 amounted to about EUR 462 million which represents close to 11% of the auction revenue of these Member States. The Member States in which compensation schemes are in place together account for some 70% of EU GDP. The largest recipients of compensation were the chemical sector, the non-ferrous metals sector, and the iron and steel sector.

One of the transparency provisions in the revised EU ETS Directive determines that Member States that have spent more than 25% of their auction revenues on indirect cost compensation in any year have to publish a report setting out the reasons why this amount was exceeded. Based on the auction revenues for calendar year 2017, four countries exceeded the 25% threshold in 2018.[35]

[30] Information on the disbursed compensation and the number of beneficiaries is based on the reporting obligation under Article 10a(6) of Directive (EU) 2018/410.
[31] GBP 19.7 million (for IC incurred in 2018), based on an average exchange rate GBP/EUR 1.1355.
[32] The UK has not reported installations, but businesses.
[33] Please note that the United Kingdom has paid out 2019 support for indirect costs incurred in 2018. That is why auction revenues from 2018 are shown for the UK.
[34] Poland is not included here, as it will start paying out support in 2020 for indirect costs incurred in 2019.
[35] The reason for comparing 2018 pay-outs with 2017 auction revenues is that 2018 pay-outs generally constitute compensation for indirect costs incurred by consumers in calendar year 2017.

3.1.2.4. Auctioning of allowances

In phase 3, auctioning is the default mode for allocating allowances. Primary auctions are governed by the Auctioning Regulation* which specifies the timing, administration and other aspects of how auctions should take place to ensure an open, transparent, harmonised and non-discriminatory process.

* 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, OJ L 302, 18.11.2010, p.1.

In 2018, the Auctioning Regulation was amended[36] to reappoint the European Energy Exchange ('EEX') as Germany's opt-out auction platform and to enable the monetisation of a first batch of 50 million allowances from the Market Stability Reserve for the financing of the Innovation Fund in 2020.

A further amendment of the Auctioning Regulation was adopted by the Commission in August 2019, in order to establish the framework for the auctioning of allowances and the management of projects under the Innovation Fund and the Modernisation Fund in phase 4. The amendment also reflects the classification of EU ETS allowances as financial instruments under Directive 2014/65/EU on markets in financial instruments (MiFID2).

In accordance with the safeguard measures adopted to protect the environmental integrity of the EU ETS (see chapter 2.2), allowances issued by the United Kingdom for 2018 were accepted for surrender, but no allowances have been auctioned in 2019 on behalf of the United Kingdom.

The auctions in 2018 took place through the following auction platforms:

- EEX, auctioning as the common auction platform for 25 Member States participating in a joint procurement procedure, and for Poland, which opted-out from the joint procurement procedure but has not appointed a separate auction platform. As of 5 September 2016, EEX has been conducting auctions as the second common auction platform appointed on 13 July 2016;
- EEX, auctioning for Germany as an 'opt-out' auction platform;
- ICE, auctioning for the UK as an 'opt-out' auction platform.

Iceland, Liechtenstein and Norway have started to auction allowances in June 2019, after the EEA Agreement was amended to allow them to participate in the Joint Procurement Agreement for the common auction platform. In agreement with the three countries, the auction volumes for 2013-2018 have been spread over the years 2019 and 2020 to ensure a stable and predictable supply of allowances to the market and to avoid any adverse effects on

[36] Commission Delegated Regulation (EU) 2019/7 of 30 October 2018 amending Regulation (EU) No 1031/2010 as regards the auctioning of 50 million unallocated allowances from the market stability reserve for the innovation fund and to list an auction platform to be appointed by Germany, OJ L 2, 04.01.2019, p.1-5.

the carbon market due to this additional supply. The revised 2019 and 2020 auction calendars thus include part of the previous volumes which were withheld from the auctions.

In 2018, EEX, auctioning on behalf of its 27 Member States, auctioned 89% of the total auctioned amount, while ICE auctioned 11% of the total amount on behalf of the UK. More than 1480 auctions were held by 30 June 2019.

Table 5 provides an overview of the volumes of allowances[37] auctioned by EEX and ICE up to 30 June 2019, including early auctions[38] of general allowances.

Table 5: Total volume of phase 3 allowances auctioned in 2012-2019

Year	General allowances	Aviation allowances
2012	89 701 500	2 500 000
2013	808 146 500	0
2014	528 399 500	9 278 000
2015	632 725 500	16 390 500
2016	715 289 500	5 997 500
2017	951 195 500	4 730 500
2018	915 750 000	5 601 500
2019 (until 30 June 2019)[39]	292 975 500	2 032 500

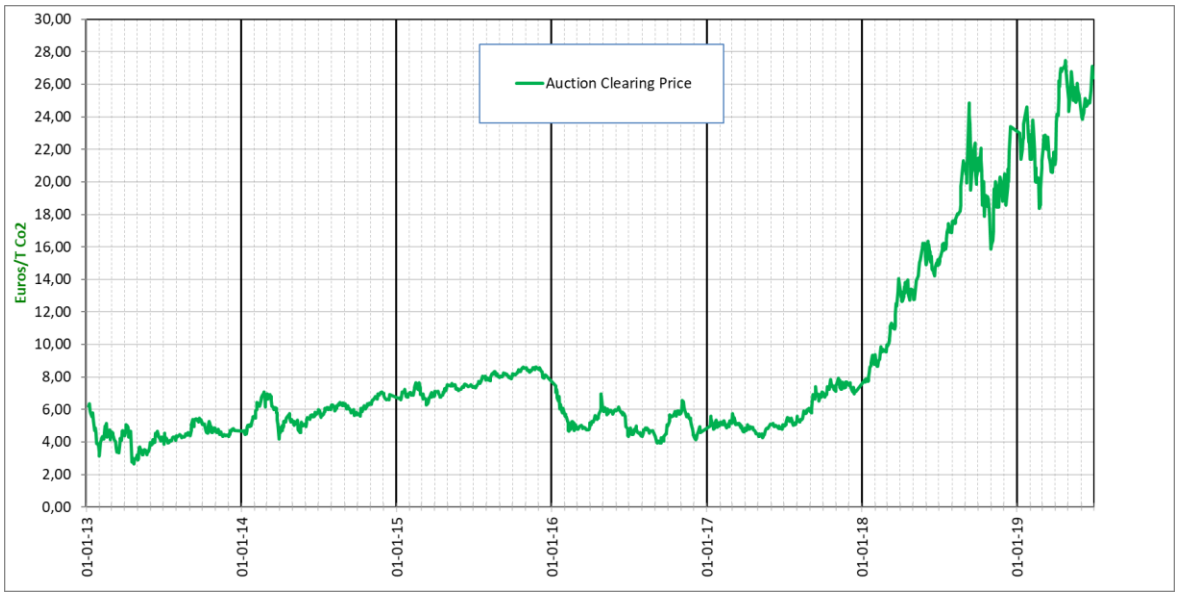
Source: EEX

The figures for 2019 reflect the effect of the entering into force of the Market Stability Reserve in January 2019, which substantially lowered the auction supply in 2019 (see chapter 3.3). The auctions were generally conducted smoothly and the auction clearing prices were generally closely aligned with secondary market prices.

Between January 2018 and June 2019, five auctions were cancelled due either to the reserve price not being met or due to the total bid volume falling short of the auctioned volume. With these five, a total of twelve auctions have been cancelled out of the more than 1480 auctions held since late 2012. An overview of the auction clearing prices from 2013 to 30 June 2019 is provided in Figure 1:

[37] The volumes of general allowances have been determined taking into account Decision 1359/2013/EU. The volumes of aviation allowances have been determined taking into account Decision No 377/2013/EU and Regulation (EU) No 421/2014.
[38] Early auctions of allowances in phase 3 were performed in 2012 in view of the widespread commercial practice in the electricity sector of selling electricity on a forward basis and purchasing the required inputs (including allowances) when they sell their output.
[39] UK data for 2019 is not included due to the safeguard measures adopted by the Commission to protect the environmental integrity of the EU ETS in cases where EU law ceases to apply to a Member State withdrawing from the EU (see chapter 2.2).

Figure 1: Clearing price for general allowances auctions from 2013 to 30 June 2019



Source: EEX

___ Auction Clearing Price

The number of participants in the auctions of general allowances from 2013 to 30 June 2019 is provided in Appendix 2. The auction platforms publish detailed results of each auction in a timely manner on dedicated websites. Further information on the performance of the auctions, including on the participation, cover ratios and prices, can be found in the Member States' reports published on the Commission's website[40].

The total revenues generated by Member States from the auctions between 2012 and 30 June 2019 exceeded EUR 42 billion (see Table 2.1 in Appendix 2). In 2018 alone, the generated total revenues were EUR 14 billion. The EU ETS Directive provides that at least 50% of auction revenues, including all revenues generated from allowances distributed for the purposes of solidarity and growth, should be used by Member States for climate and energy related purposes. According to the information submitted to the Commission by Member States, Member States spent or planned to spend close to 70% of these revenues for specified climate and energy related purposes in 2018. In the period 2013-2018, about 80% of auction revenues were spent for such purposes.

[40] http://ec.europa.eu/clima/policies/ets/auctioning/documentation_en.htm

3.1.2.5. Derogation from full auctioning for electricity and heat production

Article 10c of the EU ETS Directive provides a derogation from the general rule of auctioning to support investments in the modernisation of the electricity sector in certain lower income EU Member States. Eight out of ten eligible Member States* make use of this derogation in phase 3 and allocate to electricity generators a number of allowances for free provided corresponding investments are carried out.

The free allowances under Article 10c are deducted from the quantity that the respective Member State would otherwise auction. Depending on the national rules for the implementation of the derogation, electricity generators can receive free allowances of an equivalent value to the investments they carry out from their National Investment Plans, or to payments made into a national fund through which such investments are financed. As the free allocation of allowances to electricity generators under Article 10c of the ETS Directive would in principle involve State aid, the national schemes for the implementation of the Article 10c derogation have been cleared under state aid rules and are subject to the requirements of the State Aid Guidelines.**

Transitional free allocation under Article 10c will continue to be available in phase 4 but with enhanced transparency provisions and with the option for eligible Member States to use all or part of their Article 10c allocation to support investments within the framework of the Modernisation Fund. Based on information submitted to the Commission by Member States, the use of Article 10c derogation will be very limited in the next trading period. Seven out of the ten eligible Member States, including Poland and the Czech Republic, which had the highest volumes of transitional free allocation in phase 3, opted not to use the derogation any longer.

*Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland and Romania are eligible for the derogation. Malta and Latvia decided not to make use of it in phase 3.

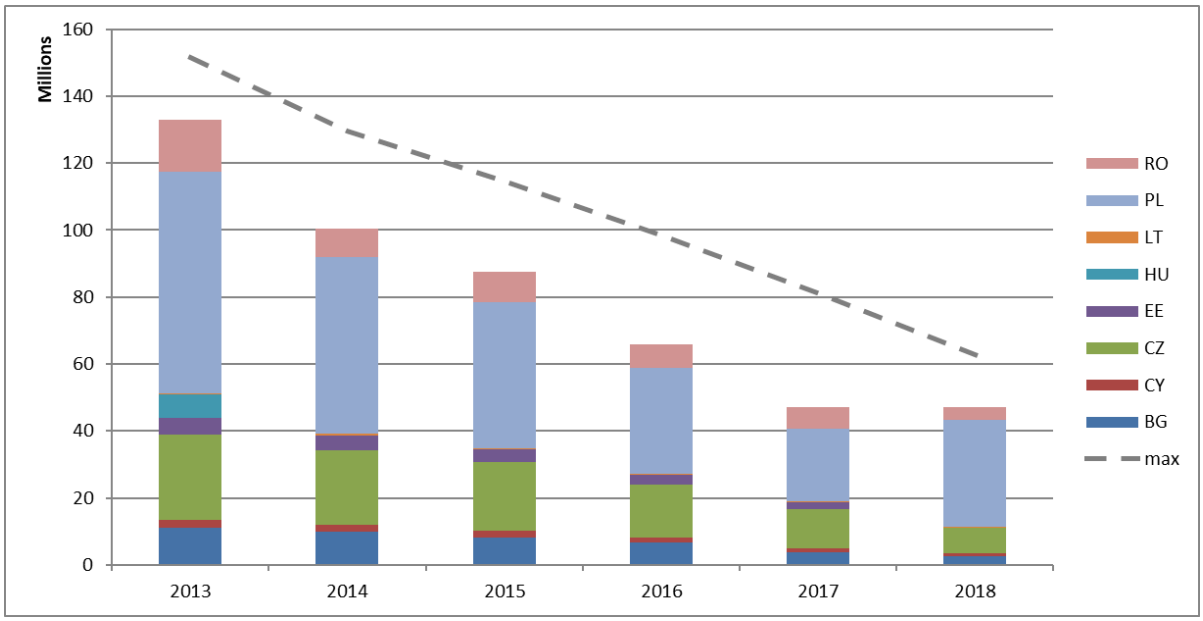
** Guidelines on certain State aid measures in the context of the greenhouse gas emission allowances trading scheme post 2012, OJ C158, 05.06.2012, p.4.

The total value of reported investment support during the years 2009 to 2018 is around EUR 12.4 billion. About 82% of this amount was dedicated to upgrading and retrofitting infrastructure, while the rest of the investments were in clean technologies or diversification of supply.

The number of allowances allocated for free to electricity generators in 2018 is indicated in Table 1.1, Appendix 1 to the Annex, while the maximum number of allowances per year is indicated in Table 1.2 of Appendix 1.

Unallocated allowances may either be auctioned or, following the provisions of the revised EU ETS Directive, may be allocated in 2021-2030 to Article 10c investments selected through competitive bidding. Figure 2 shows the number of allowances that have been allocated during the years 2013-2018.

Figure 2: Allowances allocated for free pursuant to Article 10c

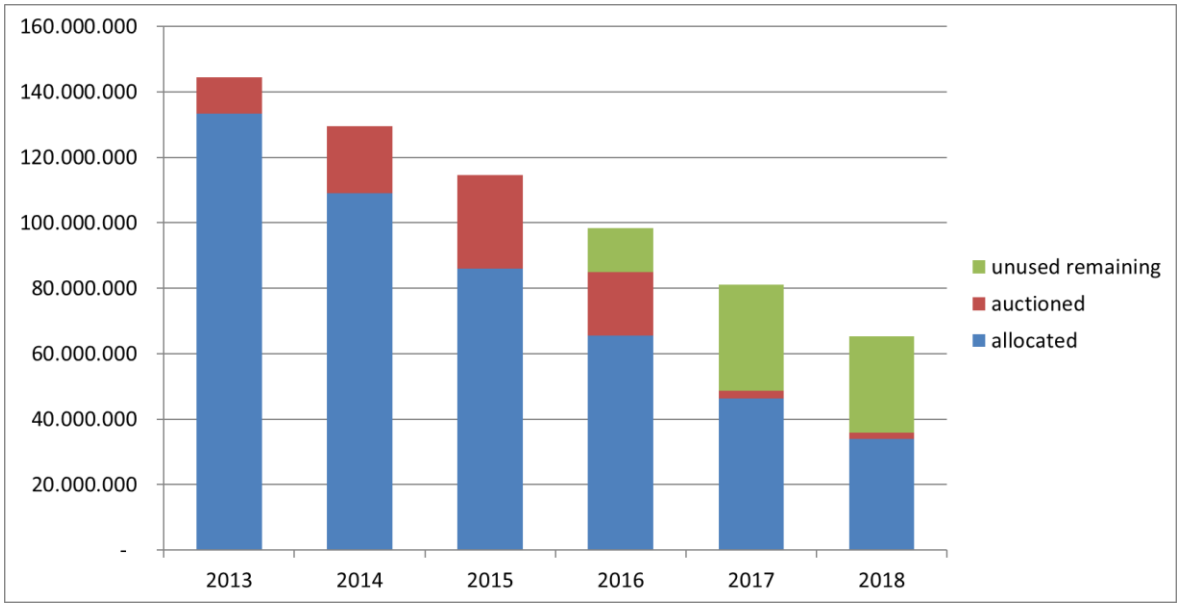


Source: DG CLIMA

In December 2018, Poland informed the Commission that it intends to auction 55.8 million of its unallocated allowances under the Article 10c derogation in 2019. In May 2019, Poland further notified the Commission of its intention to add 49.52 million unallocated Article 10c allowances to the amount to be auctioned by Poland in 2020.

Figure 3 shows, for 10c allowances, the extent to which they have been allocated, added to the auctions, or remain unused (neither allocated nor added to the auctions yet).

Figure 3: Distribution of allowances (allocated, auctioned, unused remaining)[41]



Source: DG CLIMA

	Allocated allowances
	Auctioned allowances
	Unused remaining allowances

Table 6 shows the number of 10c allowances which have been auctioned in the period 2013-2018, as well as the number of remaining unused allowances.

Table 6: Treatment of unused 10c allowances 2013-2018[42]

Member State	Number of 10c allowances which have been auctioned (in million)	Number of remaining unused allowances (in million)
BG	**9,5**	**0,8**
CY	**0,0**	**0,0**
CZ	**0,3**	**0,1**
EE	**2,1**	**0,0**
LT	**1,1**	**0,1**
PL	**55,8**	**68,9**
RO	**15,4**	**2,8**
HU	**0**	**0,9**
Total	**84,2**	**73,5**

Source: DG CLIMA

[41] The figures include amounts to auction from the 2019 auctioning calendar, so the 55.8 million unallocated allowances that Poland requested to auction in 2019 are reflected.
[42] The figues include amounts to auction from the 2019 auction calendar (from allocation years 2013-2018).

The number of unallocated allowances that have been auctioned (or planned for auctioning) by Member States under the Article 10c derogation for each year of phase 3 is indicated in Table 1.3 in Appendix 1 to the Annex.

3.1.3. International credits

Participants in the EU ETS can still use international credits from the Kyoto Protocol's Clean Development Mechanism (CDM) and Joint Implementation (JI) towards fulfilling part of their EU ETS obligations until 2020*, subject to qualitative and quantitative restrictions. These credits are financial instruments that represent a tonne of CO_2 removed or reduced from the atmosphere as a result of an emissions reduction project. In phase 3 credits are no longer surrendered directly, but instead may be exchanged for allowances at any time during the calendar year.

According to the provisions of the revised EU ETS Directive, international credits will no longer be used for EU ETS compliance in the next trading period.

* CDM and JI projects generate Kyoto carbon credits: Certified Emission Reductions (CERs) and Emission Reduction Units (ERUs) respectively.

Although the exact quantity of international credit entitlements over phases 2 and 3 (2008-2020) will partially depend on the quantity of future verified emissions, market analysts estimate that it will amount to approximately 1.6 billion credits. As of end June 2019, the total number of international credits used or exchanged amounts to around 1.51 billion, accounting for over 90% of the estimate for the allowed maximum.

For a full overview of the international credits exchange, see Appendix 3 to the Annex.

3.2. Demand: allowances taken out of circulation

In 2018, emissions from installations participating in the EU ETS are estimated to have decreased by 4.1% compared to 2017 based on the information recorded in the Union Registry. As table 7 demonstrates, the decrease in emissions was mainly driven by electricity and heat production , whereas emissions from industry decreased only very slightly.

Table 7: Verified emissions (in million tonnes CO_2 equivalents)[43]

Year	2011	2012	2013	2014	2015	2016	2017	2018
Verified total emissions	1904	1867	1908	1814	1803	1750	1755	1682
Change to year x-1	-1.8%	-2%	2.2%	-4.9%	-0.6%	-2.9%	0.2%	-4.1%
Verified emissions from electricity and heat production	1190	1184	1125	1037	1032	992	985	913
Change to year x-1		-0,5%	-5,0%	-7,8%	-0,5%	-3,8%	-0,7%	-7,3%
Verified emissions from industrial installations	715	683	783	777	771	758	769	769
Change to year x-1		-4,5%	14,7%	-0,9%	-0,7%	-1,7%	1,4%	-0,1%
Real GDPgrowth rate EU28	1.8%	-0.4%	0.3%	1.8%	2.3%	2.0%	2.5%	2.0%

Source: EUTL, GDP data as reported onhttp://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tec00115 (accessed in July 2019). Verified aviation emissions are reported separately in chapter 4.

A breakdown of ETS verified emissions from installations by type of greenhouse gas (CO_2, N_2O and PFCs) is provided in table 5.1, Appendix 5 to the Annex.

The number of allowances cancelled on a voluntary basis amounts to 36 559 allowances in 2018. In total, voluntary cancellations of 345 893 allowances have been recorded until end June 2019.

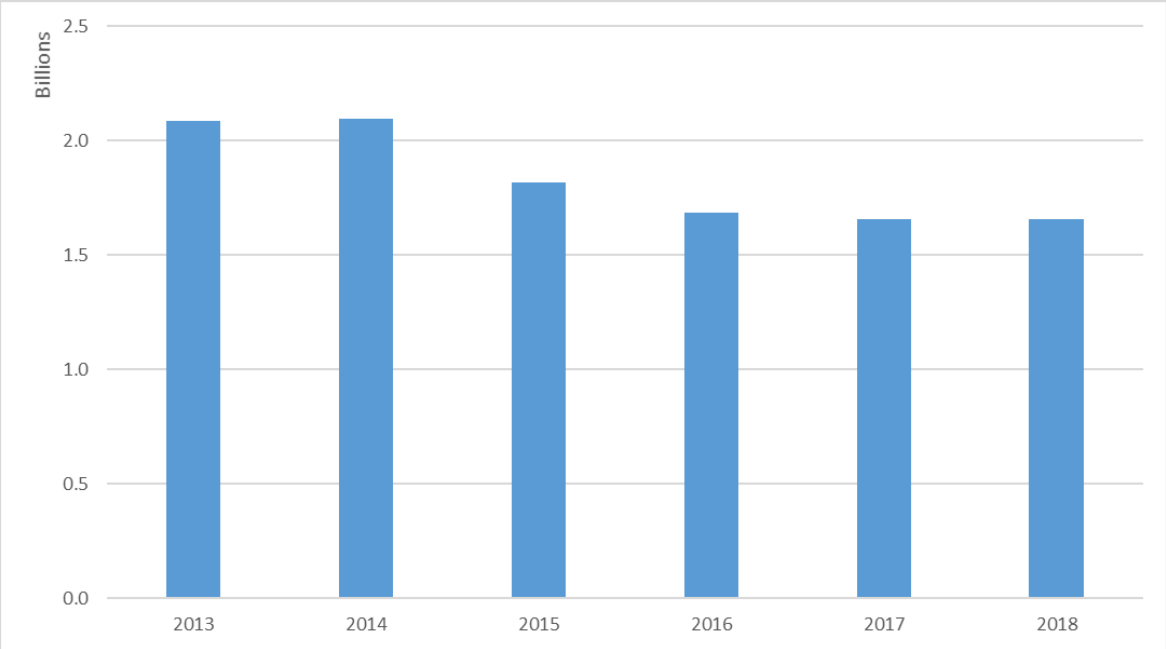
[43] The classification into electricity and heat production and industry categories used in Table 7 is consistent with the phase 4 NACE classification used for the establishment of the Carbon Leakage List for the next trading period.

3.3. Balancing supply and demand

At the start of phase 3 in 2013, the EU ETS was characterised by a large structural imbalance between the supply and demand of allowances, equaling 2.1 billion allowances. The surplus has been decreasing over the course of the current trading period, remaining stable in 2014 and falling significantly to 1.78 billion allowances in 2015, 1.69 billion allowances in 2016, and 1.65 billion allowances in 2017. In 2018, the surplus remained at 1.65 billion allowances.

Figure 4 presents the development of the surplus in the European carbon market by end 2018.

Figure 4: Development of the surplus in the European carbon market in 2013-2018



Source: DG CLIMA

To address the structural imbalance between the supply and demand of allowances, a Market Stability Reserve (MSR) was created in 2015[44] to render the auction supply of emission allowances more flexible. In the context of the revision of the EU ETS[45], important changes were made to the functioning of the MSR, as shown in the text box below. The MSR began operating at the start of 2019.

[44] 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, OJ L 264, 9.10.2015, p. 1.

[45] 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 L 76, 19 March 2018, p. 3); available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2018.076.01.0003.01.ENG&toc=OJ:L:2018:076:TOC

A key notion for the functioning of the MSR is the total number of allowances in circulation (TNAC). Allowances will be added to the reserve, if the TNAC is above a predefined upper threshold (833 million allowances) and will be released from the reserve, if the number is below a predefined lower threshold (below 400 million allowances)*. Thus, the MSR absorbs or releases allowances, if the TNAC indicator is outside of a predefined range. Back-loaded allowances from the period 2014-2016**, as well as so-called unallocated*** allowances will also be put in the reserve.

The total number of allowances in circulation relevant for determining the MSR feeds and releases is calculated on the basis of the following formula:

TNAC = Supply – (Demand + allowances in the MSR)

The components of supply and demand used in the formula are described in detail in Table 4.1, Appendix 4 to the Annex.

The revised EU ETS Directive makes two notable changes to the functioning of the MSR. First, the percentage of the TNAC to be placed in the reserve from 2019 to 2023 is doubled from 12% to 24%. This substantially increases the pace of reducing the surplus. Second, from 2023, allowances held in the MSR exceeding the previous year's auction volume will no longer be valid.

*Or where measures are adopted under Article 29a of the EU ETS Directive

** 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, 19.12.2013, p. 1.

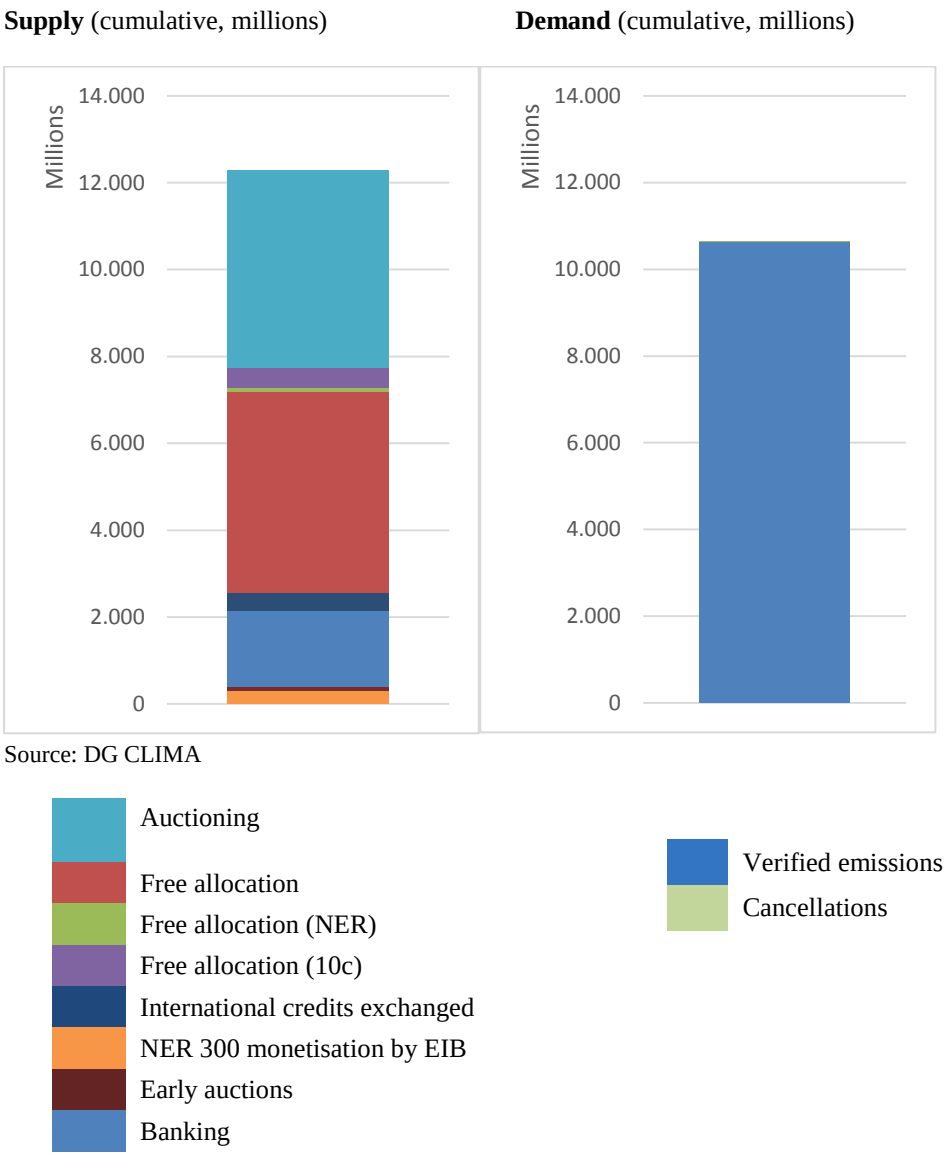
***Unallocated allowances are allowances not allocated pursuant to Article 10a(7) of the EU ETS Directive, i.e. allowances remaining in the new entrants' reserve, and resulting from the application of Article 10a(19) and (20), i.e. allowances foreseen for free allocation to installations but remaining unallocated because of (partial) cessation of operations or significant capacity reductions. De facto "unallocated" allowances stemming from the application of the relevant carbon leakage factor to sectors not included in the carbon leakage list during the current period, as well as any allowances that are not allocated under Article 10c of the ETS Directive, are not foreseen to be placed in the Market Stability Reserve under Article 1(3) of Decision (EU) 2015/1814. Such allowances are therefore not covered (please refer to p. 225 of the Impact Assessment (SWD(2015) 135 final) accompanying the proposal for a revision the EU ETS Directive in phase 4.

The carbon market report allows for the consolidation of supply and demand figures which are published according to the timeline of reporting obligations stemming from the EU ETS Directive and its implementing provisions.

Figure 5 shows the composition of supply and demand in 2018. The relevant data have also been published as part of the third communication on the total number of allowances in circulation (TNAC) for MSR purposes[46].

[46] C(2019) 3288 final, https://ec.europa.eu/clima/sites/clima/files/ets/reform/docs/c_2019_3288_en.pdf

Figure 5: Composition of cumulative supply and demand until the end of 2018



Source: DG CLIMA

In preparation for the MSR becoming operational in 2019, the Commission has regularly published as from mid-May 2017[47] the TNAC for the preceding year. In May 2019, the TNAC was published for the third time, corresponding to 1 654 909 824 allowances[48]. The 2019 publication leads to the continued placement of allowances in the MSR, reducing the auction volumes in 2019 and 2020.

Thus, on the basis of the 2017 and 2018 TNAC and the revised legislation, the auction volumes in 2019 were reduced by nearly 40%, or close to 397 million allowances. Auction volumes in 2020 will also be reduced in a corresponding manner.[49] As a result, some 30%[50]

[47] C(2017) 3228 final, https://ec.europa.eu/clima/sites/clima/files/ets/reform/docs/c_2017_3228_en.pdf
[48] C(2019) 3288 final, https://ec.europa.eu/clima/sites/clima/files/ets/reform/docs/c_2019_3288_en.pdf
[49] The volume to be added to the MSR for the period between 1 January and 31 August 2020 was determined by the 2019 publication of the surplus indicator, and amounted to nearly 265 million allowances. The rest of the volumes to be added to the MSR in 2020 will be determined by the 2020 publication of the surplus indicator.

fewer allowances[51] will be auctioned in 2019 than in 2018. Appendix 8 provides information on the contributions by Member State to the MSR for the whole of 2019, and from January to August 2020.

4. AVIATION

The aviation sector has been part of the EU ETS since 2012. The original legislation covered all flights in and out of the European Economic Area (EEA). However, the EU limited the obligations for 2012-2016 to flights within the EEA, in order to support the development of a global measure by the International Civil Aviation Organisation (ICAO) for reducing aviation emissions.

In October 2016, the ICAO Assembly agreed on a resolution on the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). CORSIA is conceived as a carbon offsetting scheme with the objective of stabilising emissions from international aviation at 2020 levels. In light of this outcome, the EU ETS Directive was amended in 2017 to prolong the limitation to intra-EEA flights until 31 December 2023. After that, in the absence of a review, the original full scope would be restored.

The revised EU ETS Directive foresees that the European Commission should report to the European Parliament and the Council on ways to implement CORSIA in EU law through a revision of the Directive. It also provides for the application of the linear reduction factor to aviation as from 2021.

In 2018, allowances were issued in line with the intra-EEA scope. Free allocation amounted to slightly over 32.3 million allowances. This number comprises both free allocation (slightly over 31.2 million allowances) for incumbent operators and nearly 1.1 million allowances allocated from the special reserve for new entrants and fast growing operators. Allocations from this reserve are doubled in 2017-2020 as they relate to the full period 2013-2020. The volume auctioned in 2018 was approximately 5.6 million allowances.

Verified aviation emissions continued to grow and amounted to 67 million tonnes of carbon dioxide in 2018, an increase of 4% compared to 2017.

Table 8 shows a summary of verified emissions, free allocation, and auction volumes for the aviation sector since the start of phase 3.

[50] Noting that the actual auctioned volumes depend also on other factors, such as the auctioning of leftovers from the Article 10(c) derogation and the participation of EEA/EFTA states in the EU ETS.
[51] Taking into account that auction volumes from January to August 2019 were already reduced by the MSR based on the 2017 surplus figure.

Table 8: Verified emissions and allocation to the aviation sector

Year	2013	2014	2015	2016	2017	2018	2019
Verified emissions (in million tonnes CO_2 equivalents)	53,5	54,8	57,1	61,5	64,4	67,0	
Change of verified emissions to year x-1		+2,5%	+4,1%	+7,6%	+4,7%	+4%	
Free allocation (EU28+EEA EFTA states)[52]	32,4	32,4	32,1	32,0	33,1	31,2	31,2[53]
Free allocation from special reserve for new entrants and fast growing operators	0	0	0	0	1,1	1,1	1,1
Volumes of allowances auctioned	0	9,3	16,4	5,9	4,7	5,6	2,0[54]

Sources: EUTL, DG CLIMA, EEX

In 2013, the decision[55] to limit climate obligations only to flights within the EEA was adopted. Compliance for the aviation sector was postponed for 2012 and 2013. The postponed 2012 volumes of allowances were thus auctioned in 2014, while compliance took place between January and April 2015 for aviation emissions from 2013 and 2014.

In June 2018, the ICAO adopted the CORSIA Standards and Recommended Practices (SARPs)[56]. These, together with the Implementation Elements, detail the functioning of CORSIA. Important implementation elements, such as the Eligible Units and the Framework for Alternative Fuels, have not been adopted yet. While acknowledging and supporting the formal adoption of the SARPs by ICAO, the EU and its Member States followed ICAO procedures to notify the existing differences[57] between relevant EU legislation and CORSIA.

[52] These numbers do not take into account all closures of aircraft operators.
[53] Allocation concerning the UK (4.31 million allowances of the total for 2019) was suspended due to the safeguard measures adopted by the Commission to protect the environmental integrity of the EU ETS in cases where EU law ceases to apply to a Member State withdrawing from the EU (see chapter 2.2).
[54] Until end June 2019
[55] Decision No 377/2013/EU of the European Parliament and of the Council of 24 April 2013 derogating temporarily from Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community Text with EEA relevance, OJ L 113, 25.4.2013, p. 1.
[56] https://www.icao.int/environmental-protection/CORSIA/Pages/SARPs-Annex-16-Volume-IV.aspx
[57] Council Decision (EU) 2018/2027 of 29 November 2018 on the position to be taken on behalf of the European Union within the International Civil Aviation Organization in respect of the First Edition of the International Standards and

As of 1 January 2019, aircraft operators are required to monitor and report their emissions also for CORSIA. The monitoring, reporting and verification (MRV) framework under the EU ETS was revised to introduce a legally binding obligation to this effect (see chapter 6.1). Such an integrated approach for both instruments ensures minimising the administrative burden.

5. MARKET OVERSIGHT

Under the revised Directive on Markets in Financial Instruments* (MiFID2) emission allowances are classified as financial instruments as of 3 January 2018. This means that rules applicable to traditional financial markets (those including carbon derivatives trade on leading platforms or over-the-counter (OTC)) also apply to the spot segment of the secondary carbon market (transactions in emission allowances for immediate delivery in the secondary market). This segment is thus put on equal footing with the derivatives market in terms of transparency, investor protection and integrity. Oversight in the primary market continues to be covered by the Auctioning Regulation, other than issues related to market abuse.

By virtue of cross-references to MiFID2 definitions of financial instruments, other pieces of financial market legislation apply. This is in particular the case for the Market Abuse Regulation (MAR)**, which covers transactions and conduct involving emission allowances, on both primary and secondary markets. Similarly, a cross-reference to MiFID2 in the Anti-Money Laundering Directive*** will trigger a mandatory application of customer due diligence checks by MiFID-licensed carbon traders to their clients in the secondary spot market in emission allowances. ****

* Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU

** Regulation (EU) No 596/2014 of the European Parliament and of the Council of 16 April 2014 on market abuse (market abuse regulation) and repealing Directive 2003/6/EC of the European Parliament and of the Council and Commission Directives 2003/124/EC, 2003/125/EC and 2004/72/EC

*** Directive (EU) 2015/849 of the European Parliament and of the Council of 20 May 2015 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing, amending Regulation (EU) No 648/2012 of the European Parliament and of the Council, and repealing Directive 2005/60/EC of the European Parliament and of the Council and Commission Directive 2006/70/EC

****Due diligence checks are already mandatory in the primary market and in the secondary market in emission allowances' derivatives.

Following the reform of the EU ETS for phase 4, a number of market participants such as major financial players and brokers have re-joined the market. The number of participants eligible to bid in the auctions at the common auction platform increased from 73 (January 2018) to 79 (December 2018). The vast majority of participants were operators (73%), while

Recommended Practices on Environmental Protection — Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), OJ L 325, 20.12.2018, p. 25–28

the remainder consisted of investment firms and credit institutions (19%), as well as persons exempt from MiFID requirements (8%).[58] In comparison, when auctions started in late 2012, there were 42 participants eligible to bid in the auctions, out of which 67% were operators, 26% investment firms and credit institutions, and 7% non-financial intermediaries[59].

Under the existing market abuse rules, the national competent authorities[60] are responsible for monitoring the market, both with respect to the auctions and the secondary market. At European level, their actions are coordinated by the European Securities and Markets Authority (ESMA), as is the case for other financial instruments.

The national competent authorities have the power to impose remedial action or sanctions when they decide that certain behaviours give rise to market abuse. In order for them to carry out their market monitoring task, the financial markets legislation establishes a number of reporting and transparency requirements applicable to trading venues and investment firms. As part of the reporting requirements, trading venues and investment firms have to communicate to the competent authorities detailed data on transactions in emission allowances or derivatives thereof, carried out on the trading venues and over-the-counter (OTC)[61]. The reporting requirements also include an obligation for trading venues and investment firms to provide the competent authorities with position data as regards emission allowances[62]. As part of the transparency requirements, trade data[63] and weekly aggregated position data[64] are made public by trading venues and investment firms.

[58] All data is taken from the Common Auction Platform (CAP2) monthly reports to the Commission.
[59] According to Article 18 (2) Auctioning Regulation.
[60] The list of national competent authorities is available at: https://ec.europa.eu/info/system/files/mar-2014-596-art-22-list_en.pdf
[61] Under Article 26 of Regulation (EU) No 600/2014 of the European Parliament and of the Council of 14 May 2014 on markets in financial instruments (MiFIR), trading venues and investment firms are to report detailed data concerning transactions in allowances and derivatives thereof to competent authorities.
[62] The purpose of the position reporting obligation under Article 58 of MiFID2 is to allow the monitoring of positions held by different categories of persons with regards to emission allowances.
[63] The pre-/post-trade transparency regime established by articles 8, 10 and 21 of MiFIR aims to ensure that market participants have more reliable and accessible information on trading opportunities and prices.
[64] Publicly available weekly reports on positions provide transparency about the view of the market that certain categories of traders may be taking.

5.1. The legal nature and fiscal treatment of emission allowances

The legal nature and fiscal treatment of emission allowances vary across countries, since these two aspects are not defined in the ETS Directive. Countries are obliged to report annually on their national regimes related to the legal nature and fiscal treatment of allowances as part of their Article 21 reports. Despite the absence of harmonisation in this respect the current regulatory framework provides the necessary legal underpinnings for a mature, transparent, and liquid carbon market, whilst ensuring the market's stability and integrity.

Following a recommendation of the European Court of Auditors, in July 2019 the Commission published a study[65] on the legal nature of allowances. The study, conducted by an independent consultant, did not identify practical problems linked to the lack of definition of the legal nature of allowances. It concluded that a harmonised definition would not provide more legal certainty, nor would it necessarily have an impact on the liquidity of the carbon market. While no legislative initiatives were recommended, the study suggested that information, advice, training and capacity-building should be provided to operators following the classification of allowances as financial instruments by MiFID2[66].

As regards the fiscal treatment of allowances, three countries report that value added tax (VAT) applies to the issuance of emission allowances. In contrast, VAT is due on transaction of emission allowances on the secondary market in 27 participating countries. The majority of countries report that they apply the reverse-charge mechanism on domestic transactions involving emission allowances. The reverse charge derogation shifts the responsibility for the payment of the VAT transaction from the seller to the buyer of a good or service and constitutes an effective safeguard against VAT fraud. In November 2018, the possibility for Member States to apply the derogation was extended until 30 June 2022[67]. Member States are encouraged to keep applying the reverse charge mechanism in order to provide continued adequate protection to the carbon market.

[65] The study can be accessed here: https://publications.europa.eu/en/publication-detail/-/publication/9d985256-a6a9-11e9-9d01-01aa75ed71a1/language-en

[66] Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU, OJ L 173 12.6.2014, p.349. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1536584176375&uri=CELEX:02014L0065-20160701

[67] Council Directive (EU) 2018/1695 of 6 November 2018 amending Directive 2006/112/EC on the common system of value added tax as regards the period of application of the optional reverse charge mechanism in relation to supplies of certain goods and services susceptible to fraud and of the Quick Reaction Mechanism against VAT fraud, OJ L 282, 12.11.2018, p. 5–7

6. MONITORING, REPORTING AND VERIFICATION OF EMISSIONS

The monitoring, reporting, verification and accreditation (MRVA) requirements of the EU ETS are harmonised in the Monitoring and Reporting Regulation (MRR)* and the Accreditation and Verification Regulation (AVR)**.

The monitoring system in the EU ETS is designed as a 'building block' approach which allows a high degree of flexibility for operators to ensure cost-efficiency, while at the same time achieving high reliability of the monitored emissions data. For this purpose, several monitoring methods ('calculation-based' or 'measurement-based', as well as by exception 'fall-back approaches') are allowed. Methods may be combined for individual parts of an installation. For aircraft operators, only calculation-based approaches are feasible, with fuel consumption being the central parameter to be determined for the flights covered by the EU ETS. The requirement for installations and aircraft operators to have a monitoring plan approved by the competent authority on the basis of the MRR prevents arbitrary selection of monitoring methods and temporal variations.

With the AVR for phase 3 and beyond an EU-wide harmonised approach towards the accreditation of verifiers has been introduced. Verifiers who are a legal person or a legal entity must be accredited by a National Accreditation Body (NAB) in order to carry out verifications in compliance with the AVR. This uniform accreditation system allows verifiers to operate with mutual recognition across all participating countries, thereby taking full advantage of the internal market and helping to ensure sufficient availability overall.

* Commission Regulation (EU) No 601/2012 of 21 June 2012 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council, OJ L 181, 12.7.2012, p. 30.

** Commission Regulation (EU) No 600/2012 of 21 June 2012 on the verification of greenhouse gas emission reports and tonne-kilometre reports and the accreditation of verifiers pursuant to Directive 2003/87/EC of the European Parliament and of the Council, OJ L 181, 12.7.2012, p. 1.

6.1. General Developments

Experience with the implementation of the MRR and the AVR has shown the need for further improvement, clarification and simplification of rules to further promote harmonisation, reduce administrative burden for the operators and participating countries, and to further enhance the efficiency of the system.

Starting in February 2017, participating countries have been consulted with a view to updating these two Regulations so as to prepare for phase 4 of the EU ETS, and to improve and simplify the MRVA processes. The first such update took place in 2018. In order to have a verification system in place for the free allocation data collection in 2019 and an updated MRVA system before the start of the data collection for CORSIA (see chapter 4), revised

versions of the MRR[68] and AVR[69] started to be applicable on 1 January 2019. Further work and consultations are ongoing to conclude the MRVA revision process sufficiently in advance of the beginning of phase 4.

The efficiency of the compliance system has improved since the MRR allowed countries to make electronic reporting mandatory. In 2019, 17 participating countries reported the use of electronic templates or specific file formats for monitoring plans, emissions reports, verification reports and / or improvement reports based on the minimum requirements set by the Commission. 13 participating countries reported that they use some form of automated IT system for EU ETS reporting.

6.2. Monitoring applied

According to the Article 21 reports submitted in 2019, most installations use the calculation-based methodology[70]. Only 182 installations (1.7%) in 23 countries were reported to use continuous emissions measurement systems, most frequently in Germany, France, and the Czech Republic. While the number of countries is the same as last year, there are three more installations overall using this approach.

Only 11 countries reported the use of the fall-back approach by 38 installations, covering approximately 2.6 million tonnes CO_{2e} (compared to 3.4 million tonnes CO_{2e} the year before). One installation in the Netherlands is responsible for 31% of the overall emissions reported in relation to fall-back methodology.

The minimum tier defaults[71] of the MRR are met by the vast majority of installations. Only 97 category C installations (compared to 106 last year), that is 13.4%, were reported to deviate for at least one parameter from the requirement to apply the highest tiers for the major source streams. These deviations are only allowed where the operator demonstrates that the highest tier is technically not feasible or incurs unreasonable costs. Once these conditions no longer apply, the operator has to improve their monitoring system accordingly. In 2013, 16% of category C installations were reported as not meeting highest tiers in one way or another. Therefore, an improvement in category C installation highest tier compliance can be seen since the beginning of phase 3.

Similarly, reports from 22 participating countries indicate that overall 19% of category B installations are permitted with some form of deviation from the MRR default requirements,

[68] Commission Implementing Regulation (EU) 2018/2066 of 19 December 2018 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council and amending Commission Regulation (EU) No 601/2012, OJ L 334, 31.12.2018, p. 1–93

[69] Commission Implementing Regulation (EU) 2018/2067 of 19 December 2018 on the verification of data and on the accreditation of verifiers pursuant to Directive 2003/87/EC of the European Parliament and of the Council, OJ L 334, 31.12.2018, p. 94–134

[70] The main reason for this is that the measurement-based methodology involves the deployment of significant resources and know-how for the continuous measurement of the concentration of relevant GHGs, which a lot of smaller operators do not have.

[71] Commission Regulation (EU) No 601/2012 requires all operators to meet certain minimum tiers, with larger emission sources required to meet higher tiers (involving more reliable data quality), while for cost-efficiency reasons less strict requirements apply for smaller sources.

compared to 21% last year and 22% the year before, demonstrating a steady improvement in highest tier compliance.

6.3. Accredited verification

The total number of verifiers is not reported in Article 21 reports. However, the European cooperation for Accreditation (EA) provides a central link to relevant National Accreditation Bodies (NABs) and their lists of EU ETS accredited verifiers[72].

The mutual recognition of verifiers among participating countries is working successfully: 24 countries reported that at least one foreign verifier is active in their territory.

Compliance of verifiers with the AVR is found to be high. Poland reported a suspension of one verifier, while no country reported withdrawals of accreditation in 2018. This compares to one suspension and three withdrawals for 2017. Germany, France and Poland reported a reduction made in the scope of respectively two, one and three verifiers' accreditation for 2018, compared to reductions for two verifiers from Poland in 2017.

Ten countries reported complaints received about verifiers this year (one more than last year). The overall number of complaints (71) is however 14% lower. 93% of the complaints received are reported as resolved (last year this rate was 95%). Ten countries reported identification of verifier non-conformities as part of the information exchange process between NABs and competent authorities (compared to twelve last year).

7. OVERVIEW OF ADMINISTRATIVE ARRANGEMENTS

Countries participating in the EU ETS use different approaches regarding the competent authorities in charge of its implementation. In some countries several local authorities are involved, while in others the approach is much more centralised.

According to Article 21 submissions in 2019, there were, on average, five competent authorities involved in EU ETS implementation per country.[73] With regard to the coordination between authorities, different tools were reported, such as legislative instruments for central management of monitoring plans (in 14 countries), binding instructions and guidance by a central competent authority to local authorities (in 10 countries), and regular working groups or meetings between authorities (in 15 countries), among others. Seven countries indicated that no such tools are in place.

On administrative fees charged in relation to permitting and approved monitoring plans, 13 countries reported in 2019 that they do not charge any fees to installation operators (CY, DE, EE, EL, IE, LI, LT, LU, LV, MT, NL, SE, SK), one less than last year. With no difference to last year, aircraft operators in 15 countries do not pay fees (BE, CY, CZ, DE, EE, ES, EL, LI,

[72] EA list of access points to NABs accrediting verifiers for EU ETS: https://european-accreditation.org/national-accreditation-bodies-having-successfully-undergone-peer-evaluation-by-ea/

[73] In some cases, countries may be reporting a multiple number of regional/local authorities as one competent authority.

LT, LU, LV, MT, NL, SE, SK). Charges vary significantly across countries and types of services, ranging from EUR 5 to EUR 6913.31 for permit and monitoring plan approval for installations and from EUR 5 to EUR 2400 for the same service for aviation operators.

Overall, participating countries' ETS administrative organisation is largely effective. Communication and the sharing of best practices, including via the activities of the EU ETS Compliance Forum and the annual EU ETS Compliance Conference, should continue to be reinforced and encouraged.

8. COMPLIANCE AND ENFORCEMENT

The EU ETS Directive provides for an excess emissions penalty in the form of EUR 100 (indexed) for each tonne of CO_2 emitted for which no allowance has been surrendered in due time. Other penalties applicable to infringements in implementation of EU ETS are according to the national provisions set by the concerned country.

The EU ETS has a very high compliance rate: each year around 99% of the emissions are covered by the required number of allowances on time. In 2018, less than 0.5% of the installations reporting emissions did not surrender allowances covering all their emissions by the deadline of 30 April 2019. In the aviation sector, aircraft operators responsible for 99.1% of EU ETS aviation emissions complied. Non-compliant operators were typically small or ceased operating in 2018.

The competent authorities continue to carry out different compliance checks on the annual emissions reports. Based on Article 21 submissions in 2019, all participating countries check annual emission reports for completeness (100% of reports except BE 31%, ES 95%, FR 99%, and SE 1%). The reports further indicate that on average countries check close to 80% of reports for consistency against monitoring plans (all except HR) and close to 75% against allocation data (all countries except FI, HR, MT, NO, and SE). Twenty-four countries reported that they also carry out cross-checks against other data.

Competent authorities in 12 countries carried out conservative estimates regarding missing data in the case of 57 installations (approximately 0.5% of installations overall), similar to 52 installations (0.5%) for 2017 and 57 (0.5%) for 2016. The reported quantity of affected 2018 emissions was 11.2 million tonnes CO_2 (compared to 2.8 million tonnes CO_2 in 2017), approximately 0.7% of overall emissions (compared to 0.2% in 2017). The most common reasons given for making conservative estimates were the absence of an emission report by 31 March or emission reports that were not fully in line with MRR/AVR requirements.

Conservative estimates regarding missing data for aviation were reported by seven countries concerning 31 aircraft operators (4.7% of the total), and 4.7% of aviation emissions.

Competent authorities' checks also remain important to supplement the verifier’s work. For 2018, all countries confirmed that they carry out further checks in the case of installations. Most countries reported a similar approach regarding aircraft operators (all except CY, EE,

EL, IT, and LI). Most countries (all except EL, IT, LU and MT) reported that they carried out spot checks at installations in 2018.

For 2018, the application of excess emissions penalty was reported for 36 installations by ten countries (BG 1, CZ 2, FR 1, IE 2, IT 5, NL 1, PL 2, PT 7, RO 4, UK 11). For aviation, excess emission penalties were reported for 26 aircraft operators (DE 2, FR 1, IT 9, LT 1, NL 1, PT 8, SI 1, and UK 3).

Twelve countries confirmed issue of penalties (other than excess emissions penalties) in 2018. No imprisonments were reported, but fines, formal notices, and final warning letters concerning 36 installations and 26 aircraft operators were noted amounting to a total financial value of EUR 5,4 million.[74]

The most common violations reported for 2018 were failure to hold a duly approved monitoring plan (9), operation without a permit (8), failure to comply with the conditions of the permit (6), and failure to submit verified annual emission reports by the due deadline (5 cases).

As reported last year, a fifth EU ETS compliance cycle evaluation has started at the beginning of 2018, with the aim to identify EU ETS compliance issues at the level of participating countries and support them in improving their implementation of the EU ETS. The evaluation will be concluded in late 2019.

9. CONCLUSIONS AND OUTLOOK

2018 was marked by significant progress in the adoption of the implementing provisions for phase 4 of the EU ETS. Provisions on carbon leakage, free allocation, auctioning, the establishment of the Innovation Fund, and monitoring, reporting and verification were adopted over the course of the past year. The remaining implementing rules are being swiftly finalised and are envisaged to be adopted before the start of the new trading period in January 2021.

The year was also marked by a substantial fall in emissions from EU ETS-covered installations. The decrease of 4.1% compared to 2017 was mainly driven by electricity and heat production, with emissions from industry falling only slightly. However, verified aviation emissions continued to grow in 2018, increasing by 3.9% compared to 2017.

The legislative changes agreed in recent years to address the surplus of allowances continue to show marked results. The Market Stability Reserve surplus indicator was published for the third time in 2019, and together with the 2017 indicator, led to a reduction in auction volumes by nearly 40%, or close to 397 million allowances in 2019. As a result, some 30% fewer allowances will be auctioned in 2019 than in 2018.

[74] This total excludes fines imposed to the aviation sector in Portugal as the fine values were not yet determined due to ongoing sanctioning processes.

Positive developments on these fronts have translated into increased confidence by market participants and continued to reinforce the carbon price signal. The higher price of emission allowances led to a substantial increase in the total auction revenues generated by Member States - in 2018, the total revenues were more than two times higher than the revenues generated in 2017.

In 2018, EU ETS compliance has remained very high - the compliance rate exceeded 99% for both stationary installations and aircraft operators. The EU ETS architecture has remained robust and the administrative organisation across Member States has proven to be effective.

The Commission will continue to monitor the European carbon market and provide the next report in late 2020.

ANNEX

Appendix 1

Table 1.1: Number of free allowances allocated for modernising the electricity sector

	Number of free allowances requested by Member State pursuant to Article 10c					
Member State	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
BG	11 009 416	9 779 243	8 259 680	6 593 238	3 812 436	2 471 297
CY	2 519 077	2 195 195	1 907 302	1 583 420	1 259 538	935 657
CZ	25 285 353	22 383 398	20 623 005	15 831 329	11 681 994	7 661 840
EE	5 135 166	4 401 568	3 667 975	2 934 380	2 055 614	38 939
HU	7 047 255[75]	n.a.	n.a.	n.a.	n.a.	n.a.
LT	322 449	297 113	269 475	237 230	200 379	158 922
PL	65 992 703	52 920 889	43 594 320	31 621 148	21 752 908	31 942 281
RO	15 748 011	8 591 461	9 210 797	7 189 961	6 222 255	3 778 439
Total	133 059 430	100 568 867	87 532 554	65 990 706	46 985 124	46 987 375

Source: DG CLIMA

Table 1.2: Maximum number of free allowances per year under the derogation from full auctioning for electricity and heat production

Member State	**Maximum number of allowances per year**							
	2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**Total**
BG	13 542 000	11 607 428	9 672 857	7 738 286	5 803 714	3 869 143	1 934 571	54 167 999
CY	2 519 077	2 195 195	1 907 302	1 583 420	1 259 538	935 657	575 789	10 975 978
CZ	26 916 667	23 071 429	19 226 191	15 380 953	11 535 714	7 690 476	3 845 238	107 666 668
EE	5 288 827	4 533 280	3 777 733	3 022 187	2 266 640	1 511 093	755 547	21 155 307
HU	7 047 255	0	0	0	0	0	0	7 047 255
LT	582 373	536 615	486 698	428 460	361 903	287 027	170 552	2 853 628
PL	77 816 756	72 258 416	66 700 076	60 030 069	52 248 393	43 355 049	32 238 370	404 647 129
RO	17 852 479	15 302 125	12 751 771	10 201 417	7 651 063	5 100 708	2 550 354	71 409 917
Total	151 565 434	129 504 488	114 522 628	98 384 792	81 126 965	62 749 153	42 070 421	679 923 881

Source: DG CLIMA

[75] HU made use of the Article 10c derogation only in 2013.

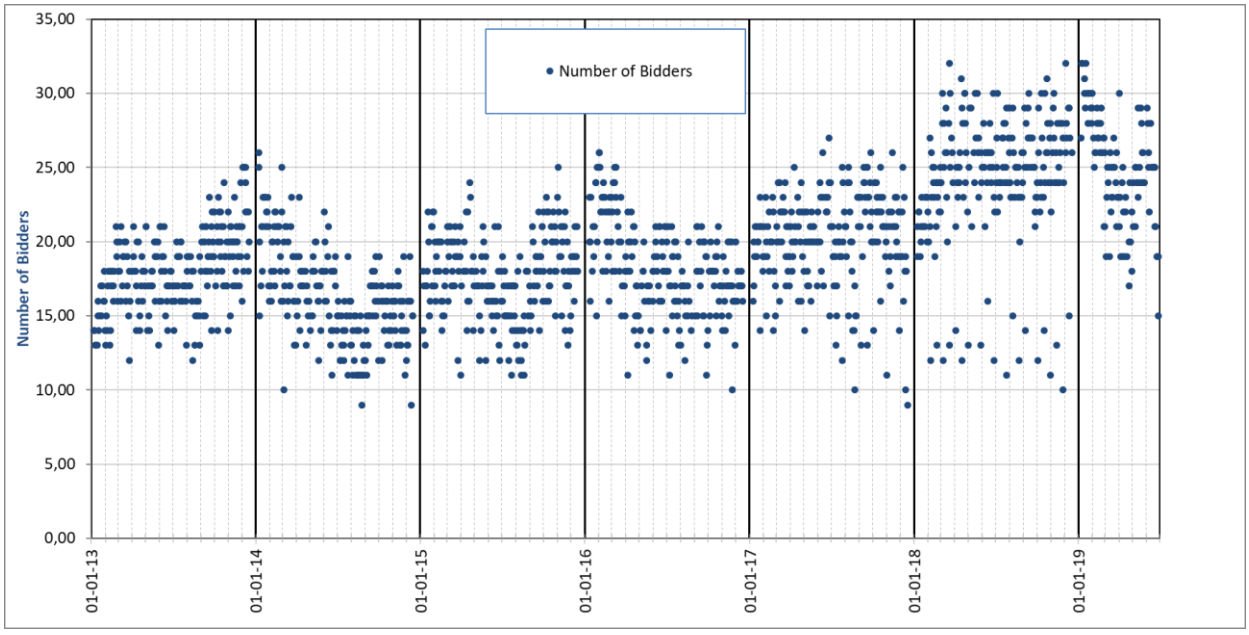
Table 1.3: Number of unused free allowances under the derogation from full auctioning for electricity and heat production which have been auctioned or are planned for auctioning in 2013-2020[76]

Unused Article 10c allowances auctioned						
Member State	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
BG	5 444 169	1 461 360	920 823	604 908	1 386 372	0
CY	0	0	0	0	0	0
CZ	0	90 694	77 741	66 740	54 550	80 295
EE	0	188 682	134 897	1 767 499	761 088	50 026
LT	259 924	0	456 725	191 229	161 522	128 105
PL	1 196	0	7 491	0	55 800 000	49 520 000
RO	2 104 468	6 710 664	3 540 974	3 011 456	0	0
HU	0	0	0	0	0	0

Source: DG CLIMA

Appendix 2

Figure 2.1: Number of bidders in general allowances auctions from 2013 to 30 June 2019



Source: EEX

- Number of bidders

[76] No unused Article 10c allowances were auctioned in 2013 and 2014.

Table 2.1: Revenues generated from auctioning by Member States in the period 2012-2018[77]

Revenues from the auctioning of emission allowances 2012-2018 (in millions EUR)														
	2012		**2013**		**2014**		**2015**		**2016**		**2017**		**2018**	
	General (early auctions)	Aviation (early auctions)	General	Aviation	General	Aviation	General	Aviation	General	Aviation	General	Aviation	General	Aviation
AT	11,05	0,00	55,75	0,00	52,17	1,18	76,24	2,36	58,81	0,65	78,74	0,69	208,20	2,16
BE	0,00	0,00	114,99	0,00	95,03	2,05	138,96	2,69	107,14	0,74	143,52	0,79	379,00	2,47
BG	22,14	0,00	52,63	0,00	36,19	0,22	120,91	0,91	85,08	0,25	130,15	0,27	367,34	0,83
CY	1,58	0,00	0,35	0,00	0,43	0,30	0,00	1,42	0,00	0,39	6,15	0,41	24,66	1,30
HR	0,00	0,00	0,00	0,00	0,00	0,00	86,40	0,49	20,09	0,16	26,97	0,18	70,96	0,55
CZ	0,00	0,00	0,00	0,00	55,24	0,47	110,30	1,20	117,63	0,33	199,43	0,35	583,33	1,10
DE	166,18	17,52	791,25	0,00	749,97	0,00	1093,31	16,87	845,74	4,65	1141,74	5,07	2565,34	16,31
DK	1,07	0,00	56,06	0,00	46,93	1,16	68,64	2,71	52,93	0,74	70,93	0,79	187,32	2,48
EE	0,00	0,00	18,07	0,00	7,41	0,04	21,13	0,15	23,57	0,04	39,31	0,05	139,89	0,14
EL	14,84	0,00	147,64	0,00	129,97	1,10	190,17	4,99	146,68	1,37	196,57	1,46	518,96	4,57
ES	68,53	0,00	346,11	0,00	323,53	6,56	473,20	16,32	364,97	4,48	488,78	4,77	1291,07	14,97
FI	13,28	0,00	66,97	0,00	62,68	0,81	91,64	2,13	70,63	0,58	94,64	0,62	249,84	1,96
FR	43,46	0,00	219,25	0,00	205,29	10,05	299,94	12,18	231,34	3,35	309,85	3,55	818,40	11,16
HU	3,99	0,00	34,59	0,00	56,21	0,29	82,28	0,99	63,43	0,27	84,94	0,29	224,48	0,91
IE	0,00	0,00	41,68	0,00	35,11	0,87	51,32	2,15	39,54	0,59	52,93	0,63	140,10	1,97
IT	76,50	0,00	385,98	0,00	361,25	5,24	528,00	14,41	407,23	3,96	545,44	4,21	1440,10	13,22

[77] Source: EEX

LT	3,29	0,00	19,98	0,00	17,28	0,06	28,13	0,29	20,76	0,08	31,43	0,09	80,11	0,25
LU	0,74	0,00	4,97	0,00	4,52	0,63	6,62	0,22	5,08	0,06	6,81	0,07	18,09	**0,20**
LV	2,13	0,00	10,79	0,00	10,08	0,14	14,76	0,53	11,36	0,15	15,24	0,15	40,20	0,49
MT	0,27	0,00	4,47	0,00	3,81	0,10	5,62	0,57	4,30	0,16	5,78	0,17	15,19	0,52
NE	25,61	0,00	134,24	0,00	125,63	5,47	183,57	3,68	141,59	1,01	189,63	1,07	500,84	3,37
PL	0,00	0,00	244,02	0,00	78,01	0,00	129,84	2,98	135,57	0,58	505,31	0,69	1209,98	1,59
PT	10,65	0,00	72,78	0,00	65,82	1,27	96,32	2,89	74,29	0,79	99,50	0,85	262,96	2,65
RO	39,71	0,00	122,74	0,00	97,57	0,32	193,62	1,60	193,56	0,44	260,29	0,47	717,64	1,45
SE	7,07	0,00	35,67	0,00	33,34	1,02	48,79	3,63	37,61	1,00	50,45	1,06	132,98	3,34
SI	3,51	0,00	17,74	0,00	16,59	0,05	24,28	0,14	18,70	0,04	25,05	0,04	66,19	0,12
SK	12,19	0,00	61,70	0,00	57,59	0,04	84,31	0,20	64,99	0,06	87,01	0,06	229,74	0,18
UK	75,74	0,00	409,63	0,00	387,42	14,08	567,72	18,54	418,96	5,37	604,02	5,30	1607,32	0,00
TOTAL	**603,52**	**17,53**	**3550,73**	**0,00**	**3115,11**	**53,53**	**4815,97**	**117,26**	**3761,57**	**32,28**	**5490,60**	**34,14**	**14090,23**	**90,27**

Appendix 3

Table 3.1: Summary of international credits exchange until end June 2019[78]

International credits exchanged by end June 2019	million	percentages	International credits exchanged by end June 2019	million	percentages
CERs	**261,42**	**57,65%**	**ERUs**	**192,07**	**42,35%**
China	195,20	74,67	Ukraine	147,69	76,89%
India	17,27	6,61	Russia	32,06	16,69%
Uzbekistan	9,89	3,79	Poland	2,82	1,46%
Brazil	5,43	2,08	Germany	1,65	0,85%
Chile	3,16	1,21	France	1,24	0,64%
Korea	2,93	1,12	Bulgaria	0,50	0,26%
Mexico	2,89	1,10	Others	6,11	3,21%
Others	24,65	9,43			
TOTAL CERs and ERUs	**453,49**	**100%**			

Source: EUTL

Table 3.2: Summary of international credits exchange until end June 2019 by type of installations

International credits exchanged by end June 2019 by:	CERs in million	ERUs in million
Stationary installations	256,46	191,25
Aviation operators	4,96	0,82
TOTAL	**261,42**	**192,07**

Source: EUTL

Appendix 4

Table 4.1: ETS supply and demand elements

Element	Supply or demand?	Publication	Update and uncertainties
Banking total phase 2	Supply	Carbon market report	No update is foreseen as phase 2 ended. Final figure.

[78] For Tables 3.1 and 3.2, UK data for 2019 is not included due to the safeguard measures adopted by the Commission to protect the environmental integrity of the EU ETS in cases where EU law ceases to apply to a Member State withdrawing from the EU (see chapter 2.2).

Early phase 3 auctions	Supply	DG Climate website, EEX and ICE websites	Not part of phase 2 banking total. Final figures.
Allowances for NER 300	Supply	EIB website	300 million allowances were monetised in 2012-2014. Final figures.
Aviation auctions	Supply	DG Climate website, EEX and ICE websites	No – adjustments are reflected in the volumes for the following year. 2013 and 2014 auctions took place in 2015.
Phase 3 auctions	Supply	DG Climate website, EEX and ICE websites	No - the figure is not subject to revision. However, allowances (e.g. due to delays to start of auctioning for certain Member States, e.g. those for EEA-EFTA) withheld from auctions can be auctioned in subsequent years.
Free allocation (NIMs)	Supply	EUTL, tables	These figures are updated throughout the year. - Member State may provide late submissions for previous years or actual allocation can be lower than the amount initially foreseen. The EUTL provides an accurate state of play of actual allocation.
Free allocation (NER)	Supply	EUTL, tables	
Free allocation (aviation)	Supply	EUTL, MS publication of allocation tables	
Free allocation (Article 10c)	Supply	EUTL, status table	
Emissions (stationary installations)	Demand	EUTL, compliance data	Compliance data made public on 1 May shows emissions and surrendered allowances for installations that are in compliance (i.e. those installations reporting for all years concerned).[79]
Emissions (aviation)	Demand		Compliance for aviation operators for both 2013 and 2014 took place in 2015.
Allowances cancelled	Demand		Carbon market report

Table 4.2: Timeline for data publication

Timing	Data	Scope
1 January – 30 April year x	Updates to free allocation to electricity and heat production (Article 10c)	Year x-1
1 April year x	Verified emissions Free allocation (Article 10a(5) – NIMs)	Year x-1

[79] Compliance data for previous years can be retroactively corrected due to e.g. late submissions.

1 May year x	Compliance deadline: verified emissions and surrendered allowances	Year x-1
May/October year x	International credits exchanged	
Last quarter of year x	Carbon Market report	Year x-1
January/July year x	Status of new entrants' reserve - NER table	
Not published at EU level	Free allocation to aviation published at Member States level	

Appendix 5

Table 5.1 ETS verified non-CO_2 emissions from installations by type of greenhouse gas 2013-2018 (in million tonnes)[80]

	2013	2014	2015	2016	2017	2018
PFCs	0,40	0,74	0,58	0,64	0,47	0,60
N_2O	2,47	5,49	5,32	4,62	4,96	4,11

Source: EUTL

Appendix 6

Table 6.1: Rulings of the Court of Justice of the EU relevant to the functioning of the EU ETS in the period July 2018 to June 2019

Case reference	Legislation Concerned	Parties	Context of the case	Date	Finding by the Court
Case C-682/17	Directive 2003/87/EC, Decision 2011/278/EU	ExxonMobil Production Deutschland GmbH/ DE	Shall an installation be considered an electricity generator if there is no other Annex I activity carried out there, on top of the generation of electricity, and if yes, is it entitled to free allocation?	20.06. 2019	The Court confirmed the literal interpretation of the definition of electricity generator in Directive 2003/87/EC.

[80] For some installations, emissions from N_2O or PFCs might not have been reported separately in the Union Registry, with the total emissions reported in tonnes of CO_2 equivalent instead. The data in the table reflects the breakdown of emissions by GHG as available in the Union Registry. Emissions of N_2O were included in the EU ETS as of phase 2 (from 2008) as a voluntary opt-in by some Member States, and together with PFCs on a mandatory basis– as of phase 3 (from 2013).

Case T-330/18	Directive (EU) 2018/410, Regulation (EU) 2018/842, Regulation (EU) 2018/841	Carvalho and Others/ Parliament and Council	37 private persons requested the annulment of Directive 2018/410, Regulation (EU) 2018/842, and Regulation (EU) 2018/841, claiming that the planned greenhouse gas reductionsns are insufficient. The European Parliament and the Council of the EU requested non-admissibility.	08.05. 2019	The Court dismissed the action as inadmissible in its entirety.
Case C-561/18	Commission Regulation (EU) No 601/2012	Solvay Chemicals GmbH/ DE	- Is Regulation (EU) 601/2012 invalid and does it infringe the aims of Directive 2003/87 by providing that CO_2that is not transferred within the meaning of the first subparagraph of Article 49(1) is to be considered emitted by the installation producing the CO_2, regardless of whether it was released into the atmosphere? - Is Regulation (EU) 601/2012 invalid and does it infringe the aims of Directive 2003/87 by providing that the CO_2that is transferred from a soda ash production installation to another installation for the purpose of PCC production must systematically be included in that installation's emissions?	06.02. 2019	The Court declared the second subparagraph of Article 49(1) and point 20(B) of Annex IV of Regulation No 601/2012 invalid in so far as they systematically include the CO_2 transferred to another installation for the production of precipitated calcium carbonate (PCC) in the emissions of the installation for production of soda ash, regardless of whether that CO_2 is released into the atmosphere.

Appendix 7

Table 7.1: State of play of EU ETS phase 4 implementation

Measure	Purpose	Type of legislative act	Foreseen adoption
Carbon Leakage List for 2021-2030	Establishing the new Carbon Leakage List for phase 4 of the EU ETS based on the criteria for determining sectors significantly exposed to the risk of carbon leakage	Commission Delegated Decision	Adopted on 15 February 2019 and published in the Official Journal on 8 May 2019[81]
Revision of the free allocation rules for 2021-2030	Revising Commission Decision 2011/278/EU on determining transitional union-wide rules for harmonised free allocation so as adapt it to the new legal context set for phase 4	Commission Delegated Regulation	Adopted on 19 December 2018 and published in the Official Journal on 27 February 2019[82]
Adjustment to free allocation due to production changes	Defining the arrangements for the adjustment of the level of free allocation to installations on the basis of changing levels of operation of more than 15% upwards or	Commission Implementing Regulation	2019

[81]https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2019:120:FULL&from=EN
[82]https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R0331&from=EN

	downwards on average over a period of two years		
Update of the benchmark values for free allocation for 2021-2025	Determining updated benchmarks for 2021-2025 on the basis of data submitted by Member States by 30 September 2019 for the years 2016 and 2017.	Implementing act	2020
Establishment of the Innovation Fund	Determining the rules on the operation of the Innovation Fund, including the selection procedure and criteria	Commission Delegated Regulation	Adopted on 26 February 2019 and published in the Official Journal on 28 May 2019[83]
Establishment of the Modernisation Fund	Determining the rules for the operation of the Modernisation Fund	Implementing act	2020
Revision of Regulation (EU) No 389/2013 (the Registry Regulation)	Laying down the requirements for the Union Registry for phase 4 in the form of standardised electronic databases containing common data elements to track the issue, holding, transfer and cancellation of allowances, and to provide for public access and confidentiality	Commission Delegated Regulation	Adopted on 12 March 2019 and published in the Official Journal on 2 July 2019[84]
Amendment of Regulation (EU) No 1031/2010 (the Auctioning Regulation)	Enabling the auctioning of the first 50 million allowances for the Innovation Fund taken from the Market Stability Reserve (MSR) in 2020	Commission Delegated Regulation	Adopted on 30 October 2018 and publsihed in the Official Journal on 4 January 2019[85]
Revision of Regulation (EU) No 1031/2010 (the Auctioning Regulation)	Revising some aspects of the auctioning process to implement requirements for phase 4, in particular to enable the auctioning of allowances for the Innovation Fund and the Modernisation Fund, as well as to reflect the classification of EU ETS allowances as financial instruments under Directive 2014/65/EU on markets in financial instruments (MiFID2).	Delegated act	2019
Revision of Regulation N° 601/2012 on Monitoring and Reporting	Simplifying, improving and clarifying the monitoring and reporting rules and reducing administrative burden, based on implementation experience from phase 3	Commission Implementing Regulation	Adopted on 19 December 2018 and published in the Offical Journal on 31 December 2018[86]
Revision of Regulation N° 600/2012 on Verification and Accreditation	Simplifying, improving and clarifying the accreditation and verification rules and reducing administrative burden to the extent possible, based on implementation experience from phase 3	Commission Implementing Regulation	Adopted on 19 December 2018 and publsihed in the Official Journal on 31 December 2018[87]
Regulation supplementing Directive 2003/87/EC as regards CORSIA	Supplementing the EU ETS Directive as regards measures adopted by the International Civil Aviation Organisation for the monitoring, reporting and verification of aviation emissions for the purpose of implementing CORSIA	Commission Delegated Regulation	2019
EU ETS State Aid	Revising the EU ETS State Aid Guidelines	Communication	2020

[83] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R0856&from=EN
[84] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R1122&from=EN
[85] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R0007
[86] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R2066
[87] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R2067&from=EN

Guidelines 2021-2030	for phase 4 to accommodate the new provisions introduced by the revised EU ETS Directive for indirect carbon cost compensation schemes	from the Commission	

State of play
Planned
Ongoing
Done

Appendix 8

Table 8.1: Member State contributions to the Market Stability Reserve in 2019[88] and 2020[89]

Member State/ EEA EFTA State	MSR contributions in 2019	MSR known contributions in 2020[90]
Austria	5 935 748	3 957 699
Belgium	9 846 994	6 565 549
Bulgaria	8 292 720	5 529 227
Croatia	1 614 984	1 076 801
Cyprus	932 844	621 980
Czech Republic	15 406 858	10 272 626
Denmark	5 340 750	3 560 981
Estonia	2 904 319	1 936 474
Finland	7 130 025	4 753 992
France	23 346 791	15 566 629
Germany	85 389 770	56 934 202
Greece	12 684 492	8 457 470
Hungary	5 115 708	3 410 933
Iceland	166 450	110 982
Ireland	3 991 393	2 661 288
Italy	40 304 729	26 873 449
Latvia	865 501	577 079
Liechtenstein	3 725	2 484
Lithuania	1 792 324	1 195 044
Luxembourg	467 394	311 638
Malta	354 798	236 564

[88] For the period January to August 2019, the figures are based on the Communication from the Commission C(2018) 2801 final of 15.5.2018, available at https://ec.europa.eu/clima/sites/clima/files/ets/reform/docs/c_2018_2801_en.pdf

[89] For the periods September to December 2019 and January to August 2020, the figures are based on the Communication from the Commission C(2019) 3288 final, available at https://ec.europa.eu/clima/sites/clima/files/ets/reform/docs/c_2019_3288_en.pdf

[90] Part of the Member States contributions to the MSR in 2020 will be determined after the 2020 publication of the surplus indicator.

Netherlands	14 291 411	9 528 894
Norway	3 314 570	2 210 012
Poland	39 282 170	26 191 650
Portugal	6 478 775	4 319 767
Romania	14 941 290	9 962 205
Slovakia	4 752 513	3 168 770
Slovenia	1 577 714	1 051 951
Spain	32 660 234	21 776 430
Sweden	3 457 106	2 305 049
United Kingdom	44 480 623	29 657 753
Total	**397 124 723**	**264 785 572**

Appendix 9

Table 9.1: NER300 unspent funds under the InnovFin EDP: supported projects

Project title	Description	Picture
WAVE ROLLER	Wave Roller aims to demonstrate the feasibility of wave energy technology at commercial scale, bybridging the gap between the demonstration installation and the commercial deployment of a near-shore Oscillating Wave Surge Converter (OWSC) that converts wave energy into electric power. The NER300 contribution will amount to EUR 10 million.	
WINDFLOAT	The Windfloat project is an innovative offshore windfarm employing a floating semi-submersible platform around 20 km off the coast of Portugal. The project intends to advance the state-of-the-art of floating support structures by demonstrating the scalability of the WindFloat concept for hosting larger turbines. It will then foster the deployment of wind farms deep offshore. The NER300 contribution under InnovFin EDP will amount to EUR 60 million. WindFloat also benefits from a grant of almost EUR 30 million under the original NER300 programme.	

GREENWAY EV CHARGING NETWORK	The project will support accelerated deployment of electric vehicle infrastructure. Itdemonstrates the feasibility of the commercial-scale deployment of ultra-fast charging stations for electric vehicles and the pilot of an integrated battery energy storage system. Demonstration will be located in Slovakia, Poland, the Czech Republic and the Baltic countries. Financing under the InnovFin EDP amounts to EUR 17 million, of which almost EUR 3 million are backed by the NER 300 unspent funds.