

February 2015
N°99 A newsletter of CDC Climat Research

EU ETS and competitiveness: the tricky equation of free allocation through to 2030

In October 2014, the European Council approved a new target to reduce CO₂ emissions by 43% in EU ETS sectors by 2030 in addition to the implementation of a market instrument for stability. These two measures are likely to induce the emergence of a more robust carbon price signal, and the Council committed to the continuation of free allocation for industry after 2020.

From 2005 to 2012, all installations were eligible for free allowances which were allocated using installations' historical CO₂ emissions data. Since 2013, free allowances have been allocated according to EU harmonized rules on the basis of benchmarks (carbon intensity target) and historical production levels. These have been adjusted by a coefficient of exposure to the risk of carbon leakage and finally adjusted to the free allocation cap by a Cross Sectorial Correction Factor (CSCF). Can the continuation of this mechanism through to 2030 mitigate carbon leakage risks efficiently and sustainably? How can this be achieved while minimizing sectorial distortions and maintaining the schemes environmental and economic efficiency?

The experience of Phase III can provide useful insight into the necessary considerations for Phase IV of the EU ETS.

1. The current free allocation mechanism managed to mitigate the net cost of carbon in 2013 ranging between 1% and -1% of the value added in all industrial sectors.
2. The current free allocation mechanism has reduced over allocation and distortion between sectors and countries. This can be observed in the number of allowances handed out to industrial sectors which fell more than 20% in 2013 compared to their average allocation in phase II.
3. The rigidity of the current mechanism, however, is reducing the efficiency of the EU ETS. The reference production level is adjusted only when the actual production level reaches less than 50% of its value. Some installations which have reduced their activity since the pre-crisis level still receive free allowances surpluses and adopt strategic production levels to minimize the cost of carbon but potentially affecting environmental outcome¹. Moreover, the net cost of carbon increases *in fine* with the actual production level and is thus higher for the most efficient plant. It therefore appears necessary to increase the flexibility of the mechanism in Phase IV, to allow for increased responsiveness to changes in activity levels, as widely proposed in the framework of a *dynamic* allocation.

By extending the current mechanism, the amount of free allowances remains higher than the free allowance cap, which should mechanically decrease from roughly 800 million in 2013 to 500 million by 2030. It would thus be necessary to gradually reduce the amount of freely allocated allowances using a Cross Sectorial Correction Factor (CSCF) from 94% in 2013 to 82% by 2020 and 66% by 2030.

The implementation of the proposed dynamic allocation, using up to date benchmarks in line with technological progress, would induce an annual correction coefficient of 71% in 2030. However, depending on the annual aggregate activity level a new uncertainty would arise concerning the value of the CSCF coefficient. According to our estimates, this coefficient would be comprised between 62% and 82% in 2030, which would imply an uncertainty on the net carbon cost of the magnitude of 10% of the added value in the cement sector and 6% for in the steel sector, under the assumption of a 30€/tCO₂ price.

There are three potential avenues which can be explored to mitigate this uncertainty and facilitate investment in low carbon technologies. Firstly, a reserve of free allowances could be established to offset yearly deficit / surplus between free allowances cap and the quantity of freely allocated allowances. Secondly, by removing the free allowances cap, the need to apply the correction factor is eliminated. However, this may reduce the amount of auctioned allowances, which was already decreased by the market stability reserve (MSR). Finally, the definition of a more targeted list of sectors at risk of carbon leakages could reduce the number of free allowances by identifying and gradually allocating allowances according to sectors exposure. This would deem it unnecessary to apply the correction factor, and therefore eliminate all associated uncertainty. The method of dynamic allocation combined with a more targeted list would thus be an adequate solution to the tricky equation of free allocation through to 2030.

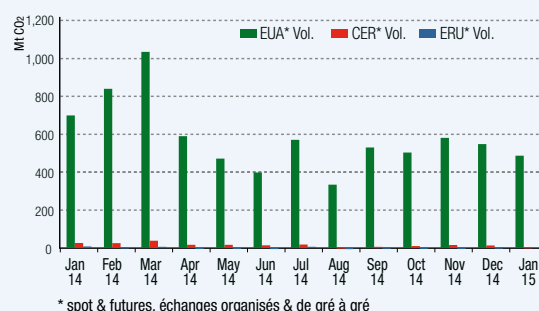
Matthieu Jalard and Émilie Alberola - CDC Climat Research
research@cdcclimat.com

1. Branger, F, Ponssard J.P, Sartor O. and Sato, M. "Distortions from Activity Level Thresholds in the EU-ETS: Evidence from the Cement Sector". Centre for Climate Change Economics and Policy Working Paper n°190 (2014).

Key points

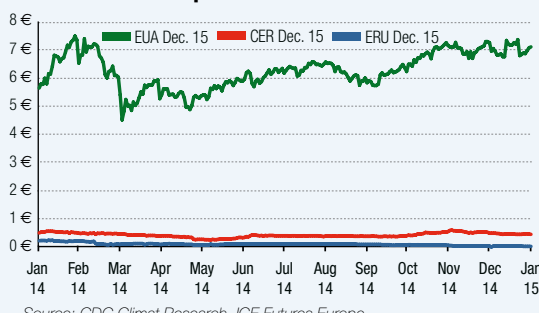
- **EU ETS – MSR debate:** on 21st January, the ITRE committee of the European Parliament voted and rejected amendments to the MSR reform, and therefore will not provide any opinion concerning the mechanism to the ENVI committee.
- **EU ETS – MSR timetable:** the ENVI committee voted on 23rd and 24th February 2015 about possible amendments to the MSR.
- **New Entrants Reserve (NER):** 18.6 million allowances were allocated in 2013 and 2014, 51 million will be earmarked for the period 2015-2020.

Trading volumes: EUA –11.17%, CER –66.09% ERU –100%



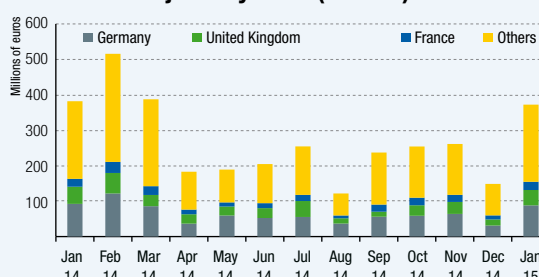
Source: CDC Climat Research calculation, based on data from EEX, ICE Futures Europe, NYMEX, Nasdaq OMX, and LCH Clearnet

Dec 15 contract price: EUA –1.23%



Source: CDC Climat Research, ICE Futures Europe

Monthly proceeds from Phase 3 auctions: 372.27 M€ in January 2015 (+151%)



Source: CDC Climat Research based on data from ICE Futures Europe, EEX

Energy

Primary energy prices and electricity prices

| | | | Jan. 2015 | |
|-------------|--|-------------|-----------|---|
| Coal | API # 2 CIF ARA (First month in USD/t) | | 59.9 | ▼ |
| Natural gas | NBP (spot in €/MWh) | | 20.6 | ▼ |
| | TTF (spot in €/MWh) | | 19.8 | ▼ |
| Crude oil | Brent (First month in USD/b) | | 50.1 | ▼ |
| Electricity | Germany (€/MWh) | Spot | 30.9 | ▼ |
| | | Calendar | 31.9 | ▼ |
| | United Kingdom (€/MWh) | Spot | 51.7 | ▼ |
| | | Next summer | 55.9 | ▼ |
| | | Next winter | 60.5 | ▼ |
| | | | | |

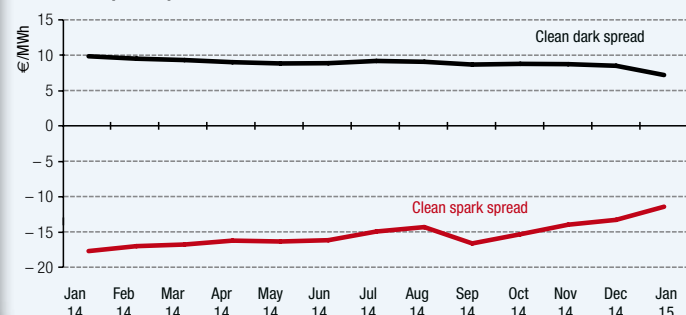
Sources: CDC Climat Research, Thomson Reuters

Clean dark, clean spark spreads and switching price

| | Clean spark (€/MWh) | | Clean dark (€/MWh) | | Switching Price (€/tCO ₂) | |
|-----------------|---------------------|---------|--------------------|---------|---------------------------------------|---------|
| | spot | futures | spot | futures | spot | futures |
| Germany* | -11.2 | -11.4 | 6.6 | 7.2 | 37.2 | 38.8 |
| United Kingdom* | 7.2 | 13.4 | 26.8 | 30.6 | 39.7 | 35.9 |

* Germany, 2015 calendar contract, United Kingdom, summer 2015 contract.

German baseload – monthly average of Cal. 2015 clean dark and clean spark spreads



Sources: CDC Climat Research, Thomson Reuters

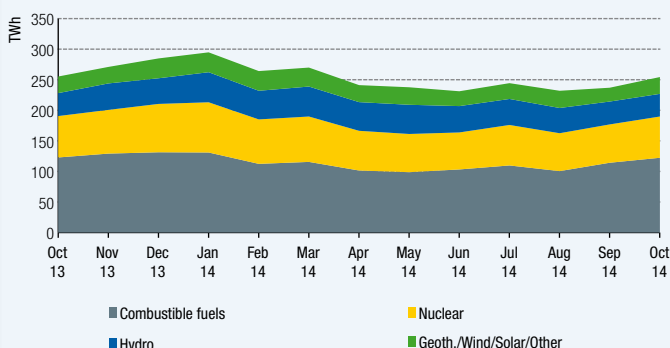
Primary energy prices dropped substantially in January: the average monthly price of Brent decreased by more than 20% to 50.1 \$/bbl, down 50% in less than five months. Coal prices fell by 15% to 59.9 \$/t, following a good supply from the United States and Colombia. NBP and TTF spot gas prices fell respectively by 11.3% and 12.2% to 20.6 €/MWh and 19.8 €/MWh. Despite relatively low temperatures, good supply of European gas markets and the fall in the oil price provided strong downward pressures. Electricity prices have naturally followed this downward trend in fuel prices despite low temperatures recorded. German short maturities have thus decreased by 7.6% to 30.9 €/MWh while the contract for delivery in December 2016 was traded at 31.9 €/MWh on average. Finally, the German Clean Dark Spread fell slightly in spot markets to 6.6 €/MWh as well as in futures markets to 7.2 €/MWh, while the Clean Spark Spread increased in the spot and future markets. The theoretical CO₂ "switch" price was calculated to 37.2 €/tCO₂ in the German spot power market and 39.7 €/tCO₂ in the British spot power market.

Production

Electricity generation (TWh)

| EU 20 (in TWh) | Oct. 14 | Cumulative from Jan. 14 | Year-on-Year (% change) |
|------------------------------|---------|-------------------------|-------------------------|
| Production | 254.4 | 2,506.3 | -2.3% |
| of which - Combustible fuels | 122.3 | 1,109.2 | -8.0% |
| - Nuclear | 67.5 | 675.5 | -0.1% |
| - Hydro | 37.0 | 441.0 | 1.4% |
| - Geoth./Wind/Solar/Other | 27.5 | 280.6 | 12.6% |

* Gas, coal, oil.

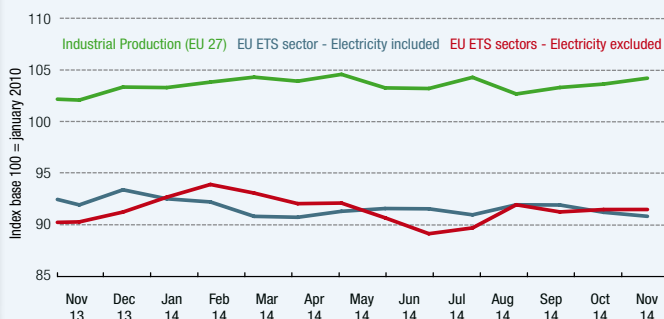


Sources: CDC Climat Research, from IEA data

Production indices (Index base year 2010)

| EU 27 | Nov. 14 | Last month (pts) | Year-on-Year (pts) |
|--|---------|------------------|--------------------|
| Indust. Prod (excl. construction) | 104.2 | 0.6 | 0.9 |
| EU ETS sectors production* (incl. electricity) | 90.9 | -0.4 | -2.6 |
| EU ETS sectors production* (excl. electricity) | 91.5 | 0.0 | 0.2 |
| Electricity, gas and heating | 90.5 | -0.6 | -4.0 |
| Cement | 79.7 | 1.7 | 2.3 |
| Metallurgy | 101.9 | -4.4 | -12.8 |
| Oil refinery | 93.6 | -0.1 | 1.6 |

* Index weighted by EU ETS sectors's weight in average total allocation over 2008-2012

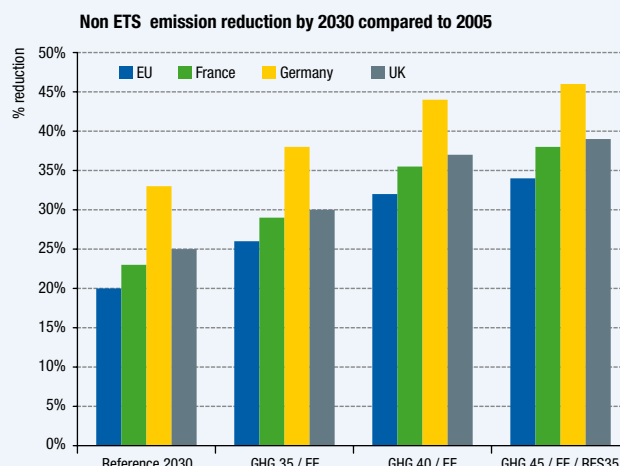
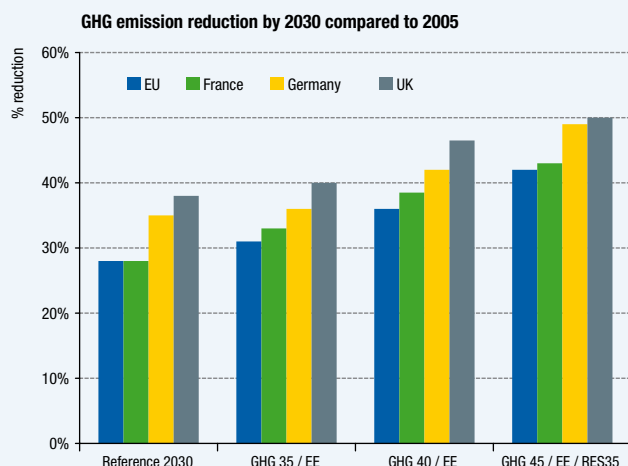


Sources: CDC Climat Research from Eurostat data

Industrial production in the EU-27 countries rose by 0.6% in November 2014 compared to the previous month and by 0.9% compared to November 2013. The 0.6% increase in monthly industrial production is due to a 0.5% increase in production for non-durable consumer goods, and 1.7% for durable consumer goods. The highest increases in industrial production were registered in Ireland (+4.6%), Hungary (+3.3%) and Croatia (+2.7%), and the largest declines in Lithuania (-2.0%), Latvia (-1.7%) and Malta (-1.4%). Our production index for EU ETS sectors (including electricity) slightly decreased to 90.9 pt, while the index excluding electricity remained at 91.5 pt. Power generation in the 20 EU countries amounted to 254.4 TWh in October 2014, increasing 2.51% compared to September 2014 and down 2.3% compared to October 2013. Compared to the year 2013, an increase in the cumulative hydraulic generation was observed (1.4%), and in the cumulative generation of renewable energy (12.6%). Cumulative fossil fuel generation decreased by 8.0%.

Coordination of CO₂, EE and RES policies

The EU 2030 emission reduction target: impact on country targets



Note: Reference refers to the scenario with no additional climate and energy policies on the trajectory of the 2020 objectives; GHG 35, 40 et 45 refer to the scenario with a 35%, 40% and 45%, GHG target, RES 35 refers to the scenario with a 35% EU level renewable energy target in the final consumption.

Source: European Commission, Impact Assessment, A policy framework for climate and energy in the period from 2020 up to 2030, 2014.

On 26th January, Maros Selfkovic, the Commission Vice President of the energy Union delivered a speech to the Parliament's ITRE and ENVI committees stating that the Energy Union Strategy should be proposed by the Commission by the end of February. He highlighted the need to find an early agreement to the MSR proposal. Further efforts are needed to foster RES developments in EU economy decarbonisation in addition to accelerated development in low carbon transport. This was also stressed by a speech by the Energy Commissioner Miguel Arias Canete on 27th January regarding the need to intensify efforts in transport emission reductions after 2020: whereby all modes of transport would be included, such as road transport, aviation, and global shipping. The most cost effective way to reduce emissions remains by improving the efficiency of vehicles. On 1st January, new energy efficiency measures came into force, including energy labels for online sales and cooking appliances. Networked equipment as well as coffee machines will be adapted to provide a function that switches equipment into a low-power standby mode. These measures as a whole are estimated to reduce European CO₂ emissions by 15 Mt CO₂ per year.

Institutional environment

Phase 3 supply balance table

| | 2013 | 2014 | 2015* | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|-------|-------|-------|-------|-------|-------|-------|-------|
| Auctions (MtCO₂) | 804 | 532 | 675 | 779 | 985 | 992 | 1,302 | 1,633 |
| Free allocation (MtCO₂) | 843 | 767 | 813 | 789 | 765 | 741 | 717 | 693 |
| Total | 1,647 | 1,299 | 1,488 | 1,568 | 1,750 | 1,733 | 2,019 | 2,326 |

* Projections from 2015

Free allocation status table

| EU Member State | 2013 | 2014 |
|-----------------|------------|------------|
| France | 82 | 81 |
| Germany | 169 | 163 |
| United Kingdom | 66 | 64 |
| Others | 526 | 459 |
| TOTAL | 843 | 767 |

CER and ERU supply

| | Jan. 15 | Last month change |
|---|---------------|-------------------|
| Number of CDM projects | 12,269 | +4.0 |
| <i>of which - registered</i> | 7,597 | +8.0 |
| <i>with - CER issued</i> | 2,724 | +9.0 |
| Cumulative volume of CER issued (Mt) | 1,526 | +5.0 |
| Number of JI projects | 788 | 0.0 |
| <i>of which - registered</i> | 604 | 0.0 |
| Cumulative volume of ERU issued (Mt) | 863.5 | +13.6 |
| <i>via - Track 1</i> | 838.1 | +13.6 |
| <i>via - Track 2</i> | 25.4 | 0.0 |

On 19th January, The European Parliament Committee on Industry, Research and Energy (ITRE) voted and rejected its rapporteur's opinion on Market Stability Reserve (MSR), meaning that the Committee on the Environment, Public Health and Food Safety (ENVI) is free to take the position it chooses, without having to take into account the ITRE opinion. On 21st January, the ENVI discussion seemed to be more unified: the rapporteurs from all political groups supported an introduction of the MSR earlier than 2021, finding a solution to avoid the backloaded allowances to come back to the market, and the idea of an innovation fund. Furthermore, the EU council's Latvia presidency made a proposal to move the backloaded allowances straight into the reserve, and to reduce the time-lag between the date of publishing the verified emissions and making changes to the auction volumes. On 22nd January, the EU Commission shared information about the amount of allocation handed out for free from the New Entrants' Reserve for 2013–2020, either for new installations or for installations with increased capacity. 18.6 million allowances were allocated in 2013 and 2014, and an extra 51 million allowances are reserved for a possible allocation between 2015 and 2020, meaning that only 14% of the total NER have already been reserved so far.

Sources: CDC Climat Research, European Commission, ICE Futures Europe, EEX

Sources: CDC Climat, UNEP-DTU

Carbon markets dashboard

Primary market - EUA auctions in Phase 3

| | | Jan-14 | Feb-14 | Mar-14 | Apr-14 | May-14 | Jun-14 | Jul-14 | Aug-14 | Sep-14 | Oct-14 | Nov-14 | Dec-14 | Jan-15 |
|---|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Common Auction Platform + United Kingdom & Germany | Price (€/t) | 5.00 | 6.45 | 6.35 | 7.35 | 5.03 | 5.54 | 5.91 | 6.23 | 5.96 | 5.99 | 6.78 | 6.74 | 6.89 |
| | Volume (Mt) | 76.31 | 80.33 | 60.98 | 35.22 | 37.72 | 37.02 | 43.28 | 19.52 | 39.79 | 42.05 | 38.56 | 22.04 | 54.06 |
| Auction Revenues (M€) | Germany | 92.28 | 121.62 | 85.73 | 36.53 | 59.46 | 52.45 | 55.37 | 36.75 | 56.07 | 58.71 | 63.97 | 31.17 | 88.04 |
| | United Kingdom | 48.43 | 57.88 | 31.69 | 26.48 | 25.35 | 27.82 | 44.97 | 14.93 | 14.13 | 29.65 | 33.78 | 17.15 | 43.38 |
| | France | 22.21 | 31.21 | 24.78 | 13.13 | 11.65 | 14.01 | 17.35 | 7.90 | 20.14 | 21.35 | 20.03 | 11.51 | 23.14 |
| | Others | 218.98 | 304.96 | 245.15 | 106.82 | 92.56 | 110.32 | 136.70 | 62.03 | 146.78 | 144.45 | 143.52 | 88.78 | 217.71 |
| | Total | 381.89 | 515.66 | 387.35 | 182.96 | 189.02 | 204.60 | 254.39 | 121.61 | 237.13 | 254.15 | 261.30 | 148.61 | 372.27 |

Sources: EEX, ICE Futures Europe

Primary market - CER and ERU issued (MtCO₂)

| | | Jan-14 | Feb-14 | Mar-14 | Apr-14 | May-14 | Jun-14 | Jul-14 | Aug-14 | Sep-14 | Oct-14 | Nov-14 | Dec-14 | Jan-15 |
|--|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| Cumulative volume of CER issued UNEP-DTU (Mt) | | 1,428 | 1,433 | 1,440 | 1,451 | 1,457 | 1,466 | 1,472 | 1,480 | 1,491 | 1,504 | 1,512 | 1,512 | 1,525.7 |
| Cumulative volume of ERU issued (Mt) | Track 1 (Mt) | 803.8 | 809.6 | 816.1 | 824 | 824.1 | 824 | 824.1 | 824.4 | 824.4 | 824.4 | 824.5 | 824.5 | 838.1 |
| | Track 2 (Mt) | 25.4 | 25.4 | 25.4 | 25 | 25.4 | 25.4 | 25.4 | 25.4 | 25.4 | 25.4 | 25.4 | 25.4 | 25.4 |

Sources: UNEP-DTU, CDC Climat Research

Secondary market - Prices (€/t) and volumes: EUA, CER (ktCO₂)

| | | Jan-14 | Feb-14 | Mar-14 | Apr-14 | May-14 | Jun-14 | Jul-14 | Aug-14 | Sep-14 | Oct-14 | Nov-14 | Dec-14 | Jan-15 |
|-----------------------|---------------|--------------------|---------|---------|---------|--------|---------|--------|---------|--------|--------|---------|---------|---------|
| ICE Futures Europe | Daily spot | Price EUA phase 3 | 4.98 | 6.51 | 6.11 | 5.22 | 5.11 | 5.52 | 5.96 | 6.26 | 6.01 | 6.09 | 6.91 | 6.97 |
| | | Volume EUA phase 3 | 14,405 | 21,075 | 35,324 | 49,429 | 19,271 | 20,937 | 11,897 | 5,173 | 17,953 | 5,530 | 7,793 | 10,180 |
| | | Price CER | 0.39 | 0.36 | 0.19 | 0.17 | 0.12 | 0.14 | 0.16 | 0.17 | 0.15 | 0.13 | 0.08 | 0.04 |
| | | Volume CER | 80 | 375 | 1,028 | 2,998 | 745 | 167 | 1,530 | 1 | 242 | 255 | 319 | 8,622 |
| | Dec.15 | Price EUA | 5.26 | 6.91 | 6.41 | 5.46 | 5.50 | 5.80 | 6.16 | 6.44 | 6.16 | 6.21 | 7.03 | 7.15 |
| | | Volume EUA | 102,312 | 116,329 | 120,993 | 60,524 | 467,135 | 56,911 | 114,684 | 64,504 | 94,922 | 119,746 | 140,392 | 180,590 |
| | | Price CER | 0.48 | 0.52 | 0.48 | 0.41 | 0.23 | 0.29 | 0.40 | 0.40 | 0.39 | 0.38 | 0.52 | 0.54 |
| | | Volume CER | 8,766 | 7,711 | 11,991 | 2,012 | 15,510 | 3,454 | 3,951 | 1,636 | 1,535 | 3,644 | 3,724 | 2,654 |
| | Dec.16 | Price EUA | 5.49 | 7.26 | 6.76 | 5.7 | 5.50 | 6.02 | 6.35 | 6.62 | 6.30 | 6.34 | 7.17 | 7.35 |
| | | Volume EUA | 36,721 | 62,380 | 101,196 | 45,597 | 466,631 | 33,286 | 61,189 | 28,171 | 47,533 | 40,921 | 40,926 | 39,009 |
| | | Price CER | 0.50 | 0.55 | 0.49 | 0.42 | 0.33 | 0.29 | 0.40 | 0.41 | 0.39 | 0.38 | 0.52 | 0.54 |
| | | Volume CER | 689 | 245 | 982 | 164 | 800 | 0 | 0 | 10 | 50 | 850 | 500 | 550 |
| | Dec.17 | Price EUA | 5.49 | 7.26 | 6.76 | 5.7 | 5.50 | 6.02 | 6.35 | 6.62 | 6.30 | 6.34 | 7.17 | 7.35 |
| | | Volume EUA | 36,721 | 62,380 | 101,196 | 45,597 | 466,631 | 33,286 | 61,189 | 28,171 | 47,533 | 40,921 | 40,926 | 39,009 |
| | | Price CER | 0.50 | 0.55 | 0.49 | 0.42 | 0.33 | 0.29 | 0.40 | 0.41 | 0.39 | 0.38 | 0.52 | 0.54 |
| | | Volume CER | 689 | 245 | 982 | 164 | 800 | 0 | 0 | 10 | 50 | 850 | 500 | 550 |

Sources: ICE Futures Europe

Emission-to-cap by EU ETS sector and country: difference between distributed allocations of allowances and verified emissions

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|------------------|--------|--------|--------|-------|-------|--------|
| Combustion | -253.1 | -113.5 | -125.8 | -76.9 | -42.4 | -137.8 |
| Oil refining | -1.4 | 7.6 | 14.3 | 16.0 | 20.2 | -36.7 |
| Coking plants | 1.5 | 6.8 | 2.9 | 3.1 | 5.7 | -1.5 |
| Metal ores | 4.3 | 11.0 | 8.8 | 8.9 | 9.7 | -0.2 |
| Steel production | 51.6 | 89.3 | 71.4 | 72.8 | 73.9 | 38.5 |
| Cement | 20.9 | 61.4 | 61.0 | 62.8 | 70.3 | 26.7 |
| Glass | 2.5 | 6.1 | 5.5 | 5.4 | 5.0 | -1.2 |
| Ceramic products | 5.3 | 10.0 | 10.2 | 9.6 | 9.2 | 2.0 |
| Paper | 6.9 | 11.3 | 10.0 | 11.1 | 11.6 | 4.1 |
| Other activities | 0.2 | 4.3 | 1.3 | -0.7 | 1.4 | -1.0 |
| Total (Mt) | -161.3 | 94.2 | 59.8 | 112.1 | 164.5 | -107.1 |

Source: CTL

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|-----------------|--------|-------|-------|-------|-------|--------|
| Germany | -84.0 | -36.6 | -54.4 | -49.5 | -28.6 | -106.3 |
| United Kingdom | -50.8 | -15.0 | -16.8 | 2.5 | -2.5 | -52.0 |
| Italy | -8.5 | 24.1 | 8.5 | 5.3 | 12.2 | 21.5 |
| Poland | -3.1 | 10.8 | 5.9 | 4.2 | 15.6 | -76.4 |
| Spain | -9.6 | 13.7 | 29.5 | 18.4 | 17.0 | 31.7 |
| France | 5.5 | 17.5 | 23.4 | 33.9 | 25.2 | 24.8 |
| Czech Republic | 5.2 | 12.2 | 10.6 | 12.2 | 17.1 | -18.3 |
| The Netherlands | -6.8 | 2.8 | 0.1 | 8.9 | 10.5 | -3.0 |
| Romania | 7.7 | 24.9 | 27.7 | 23.6 | 25.8 | 15.1 |
| Others | -17.0 | 39.8 | 25.3 | 52.7 | 72.3 | 55.7 |
| Total (Mt) | -161.3 | 94.2 | 59.8 | 112.1 | 164.5 | -107.1 |

Source: CTL