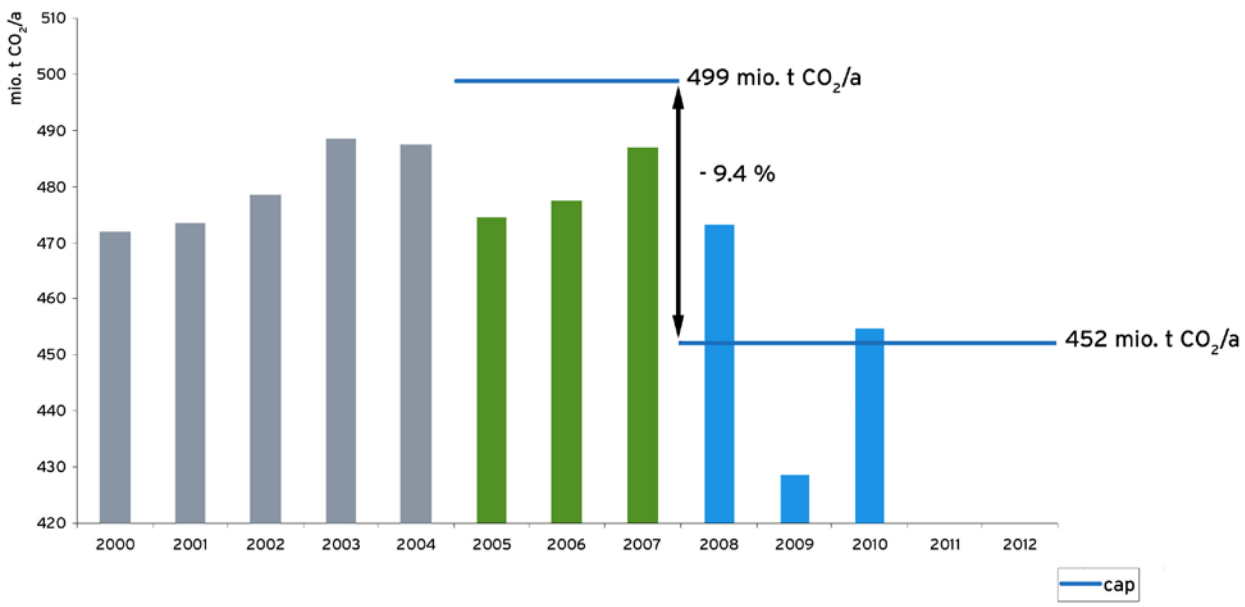
Umwelt Bundes Amt
Für Mensch und Umwelt
D E H S t
Deutsche Emissionshandelsstelle

CARBON DIOXIDE EMISSIONS FROM INSTALLATIONS SUBJECT TO EMISSIONS TRADING IN 2010

Installations subject to emissions trading in Germany emitted approximately 454 million tonnes of climate-damaging carbon dioxide (CO_2). This is six percent more than in 2009 – the year of economic and financial crisis when CO_2 emissions hit an all-time low.

However, emissions from installations subject to emissions trading remained below 2008 levels by 20 million tonnes or four percent. When distributing the reduction over 2009 and 2010, a reduction path of 1.9 percent can be established. Thus, the downward trend in emissions has been continuing during the second trading period.

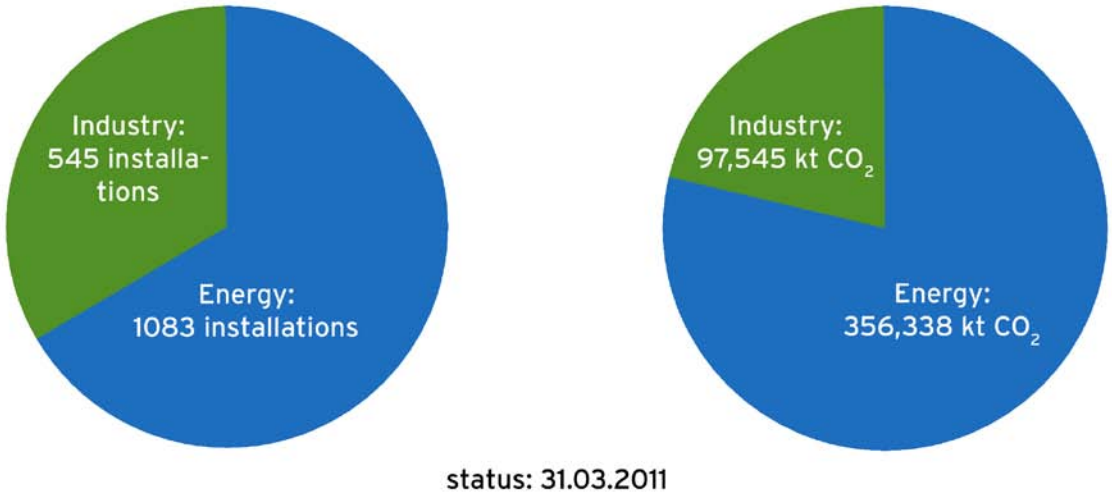


Emissions from installations subject to emissions trading in Germany between 2000 and 2010. Comparison of the first and second trading periods with the relevant national cap and CO_2 emissions of the same installations before the beginning of the European Emissions Trading Scheme.

Installations included

In the second trading period 2008-2012, the number of installations subject to emissions trading decreased by nearly ten percent compared to the first trading period. This is mainly the result of mergers, splitting and decommissioning as well as smaller installations no longer being included because of their low emissions. Thus, approximately 0.1 million tonnes of carbon dioxide emissions are no longer covered by emissions trading. Conversely, the extension of the scope of emissions trading led to the inclusion of approximately 30 installations emitting 10 million tonnes of CO2 in the emissions trading scheme. The second trading period will involve further changes in the existing stock of installations and in allocations.

In 2010, 1645 installations in Germany were subject to emissions trading (as of 28/02/2011) – 20 more installations than in the previous year. Only the emissions of 1628 have been included in this report, as the data for the remaining installations were not available yet at the time of going to press. (31/03/2011, which coincides with the VET entry deadline). The emission volumes from late-submission installations amounted to 90,000 tonnes of carbon dioxide or 0.02 percent of total emissions. Thus, 1083 energy and 545 industrial installations will be included in this presentation.



Ratio Energy and Industrial Sectors: Number of Installations and CO_2 Emissions

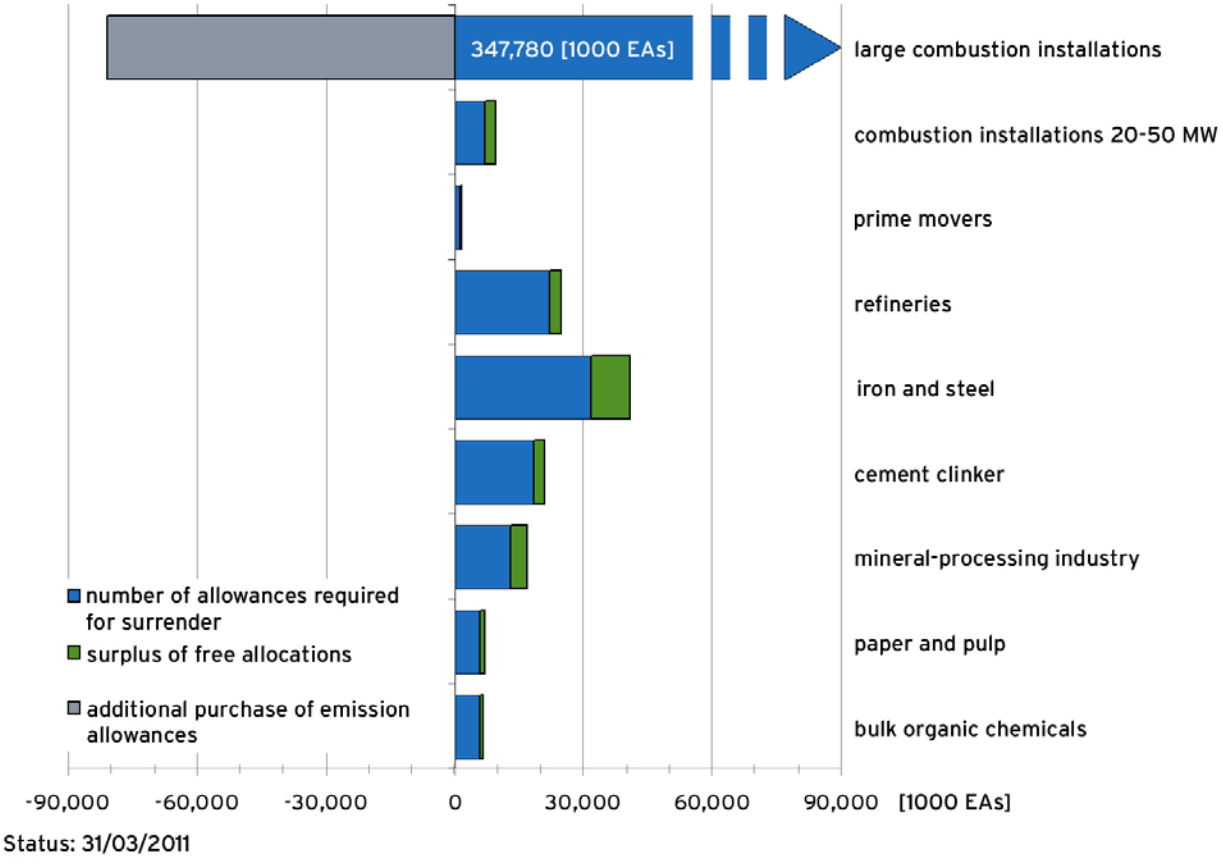
Emissions Trading Budget

The annual German emissions trading budget comprises approximately 451.86 million emission allowances. In 2010, at 453.9 million tonnes, emissions exceeded the budget by around 2 million tonnes. Installations were allocated approximately 396 million emission allowances from the budget free of charge, in line with the 2012 Allocation Act. A further 41 million allowances were

auctioned at the Leipzig energy exchange. Out of the German budget, a total of 437 million emission allowances were available on the market.

As in 2010, annual emissions exceeded the national market volume by approximately four percent, so companies had to buy a small proportion of certificates. The market situation may vary, depending on the individual installation or industry sector. Generally, operators of large energy companies must purchase additional emission allowances, while, according to our calculations, all other sectors had a partial surplus, which they could either keep or sell.

In total, activities in the industrial sector had a surplus of over 66 million allocated emission allowances between 2008 and 2010. Their current market value is approximately 1.1 billion Euros.



Allocation of Emission Allowances in German Emissions Trading in 2010, sorted by individual Activities

Operators were given until April 30th to offset their emissions by surrendering the appropriate number of emission certificates. All installations subject to emissions trading met the deadline.

Installation operators used not only emission allowances, but also certifcates from international climate projects to offset their emissions. These are CERs (certified emission reduction) certificates from Clean Development projects and ERUs (emission reduction units) from Joint Implementation-projects. According to legislation for the entire second trading period, German companies are allowed to use those certificates for up to 22 percent of their individual emission allowance allocation. So far, they have only used up 4.46 percent

Energy Installations

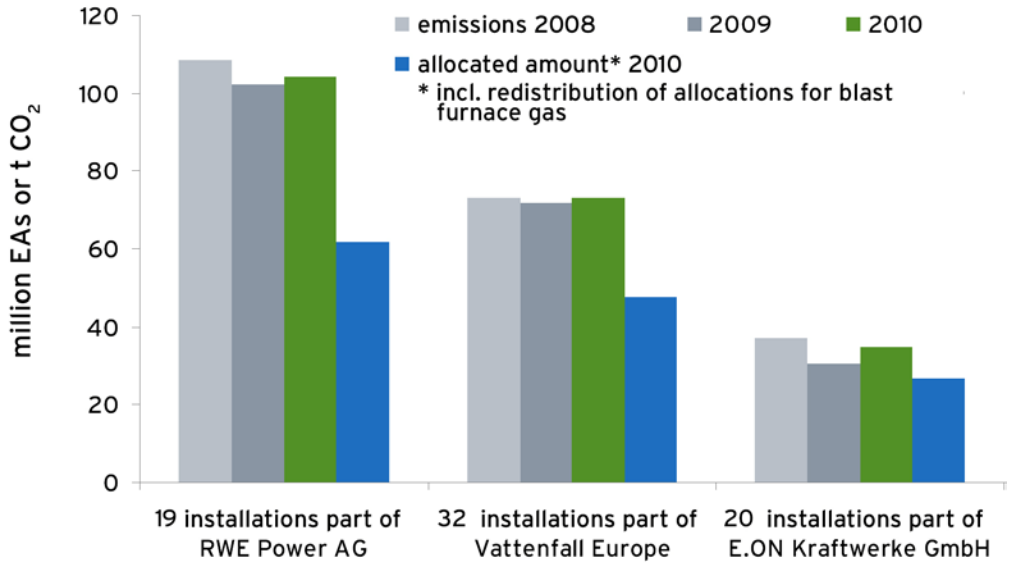
In 2010, the 1083 installations in the energy sector emitted 356.3 million tonnes of carbon dioxide. This is approximately five percent more than in the previous year. In 2009, emissions had fallen by nine percent compared to 2008. Emissions in 2010 are still 12 million tonnes of carbon dioxide below the emissions of 2008. With a linear distribution from 2008 to 2010 this amounts to an average annual reduction of 1.6 percent.

Overall, the energy sector is responsible for 79 percent of emissions in German emissions trading. Of all installations subject to emissions trading, 67 percent are energy installations (activities I to V in TEHG, Appendix 1). Average emissions per installation in the energy sector are 306,000 tonnes per annum, which is nearly twice as much as emissions for industrial installations (162.000 tonnes per year and installation).

The largest proportion of emissions in the energy sector are caused by large combined heat production installations (Activity I in Appendix 1 of the TEHG). The development of emissions is closely linked to demand and thus affected by economic performance and weather conditions. The existing 516 large combustion installations emitted 347.8 million tonnes of carbon dioxide. These installations make up 32 percent of all installations and are responsible for 77 percent of all emissions in German emissions trading. However, their emissions, too, have remained below 2008 levels. The highest emissions came from energy providers running large lignite and black coal power stations.

In order to offset these emissions, installation operators require 80.7 million emission allowances beyond their free allocation.

The Big Three



Emissions from the three largest energy providers in Germany in 2010

With emissions of 104 million tonnes, RWE was the largest CO2 emitter among all companies in Germany. Nearly two thirds of these emissions are covered by free emission allowances. The largest proportion of emissions comes from lignite power stations in the Rhineland.

Vattenfall is the operator of several large lignite power stations and the second largest emitter with emissions of 73 million tonnes of carbon dioxide. Vattenfall had to buy in additional emission allowances for nearly one third of its emissions.

E.ON occupies rank 3 among installations subject to emissions trading in Germany. Thirty-four million tonnes of carbon dioxide were emitted by installations belonging to E.ON Kraftwerke GmbH in 2010. Free allocation covers over three quarters of its emissions.

Small Energy Installations

Activity according to Appendix 1 of the TEHG	Emissions – Previous Year – Allocation
I and III: Combustion installations 20 to 50 Megawatts	- In 2010, 502 installations in Activity II and nine installations in Activity III were subject to emissions trading. - Their total emissions of 7.16 million tonnes of CO_2 exceed 2009 levels by eight percent. The increase is slightly higher than that of large combustion installations, and in comparison to 2008, too, emissions have noticeably increased in 2010. - This group of installations could retain a total of 2.6 million allocated emission allowances as a reserve or sell them - which is 27 percent of their allocation. However, 162 installations had to purchase an additional half a million allowances.
IV and V: Prime movers beyond 20 Megawatts	- The prime movers group comprises 56 installations operating pipelines and storage in natural gas grids. - These compressor stations emitted approximately 1.4 million tonnes of CO_2. Emissions in 2010 fell in total by 192,000 tonnes of carbon dioxide or twelve percent compared to 2009. - The decrease of carbon dioxide emissions bucks the trends set by the financial and economic crisis and by the cold weather with increasing natural gas sales. - The free allocation of emission allowances exceeded demand by 290,000 tonnes of carbon dioxide.

Industrial Installations

In 2010, industrial installations submitted to emissions trading in Germany emitted 97.5 million tonnes of carbon dioxide - an increase of 7.7 million tonnes or 8.6 percent compared to the previous year. Emissions, however, remained below the levels of 2008. Hence, the companies were able to sell a surplus of allocated emission allowances or retain them as a reserve for more emission-intensive years.

Activity according to Appendix 1 of the TEHG	Emissions – Previous Year – Allocation
VI: Refineries	- The emissions of the 26 refineries fell by three percent from 22.9 million to 22.3 million tonnes of carbon dioxide. - The downward trend has been continuing since the beginning of the first trading period. The industry bucks the general trend of rising emissions. Overall, emission levels of refineries are the lowest since the beginning of emissions trading in 2005 - The number of surplus emission allowances rose by twelve percent to 2.8 million.
VII to IXb: Iron and Steel	- The 44 iron and steel installations emitted 31.8 million tonnes of CO_2. - Emissions amounted to 6.5 million tonnes of carbon dioxide or 26 percent above emission levels in the previous year. However, emissions remained below allocation levels, resulting in a surplus of 9.1 million emission allowances. - As in 2010, allowances had to be transferred to Activity I installations using blast furnace gas, 20.2 million emission allowances have already been subtracted from the free allocation.
X: Cement Clinker	- The 39 installations of the cement industry emitted 18.6 million tonnes of CO_2. Emissions for 2009 and 2010 remained roughly the same. They also remained below the levels of 2005 - the lowest level since the beginning of emissions trading. - This led to a surplus of freely allocated emission allowances. The industry has thus been able to retain a reserve of 2.4 million emission allowances (13%) in 2010. The loss of profits due to decreased production of cement clinker was mitigated through the sale of emission allowances.

Activity according to Appendix 1 of the TEHG	Emissions – Previous Year – Allocation
XI: Lime and Dolomite	- Emissions of the 69 installations increased by 16 percent compared to 2009, to 7.7 million tonnes, but did not reach 2008 levels. - Overall, the installations received 2.4 million emission allowances more than needed for offsetting their carbon dioxide emissions. One quarter of the installations, however, had to purchase approximately 31,000 emission allowances or certificates to supplement their allocation.
XII und XIIa: Glass and Mineral Fibre	- Overall emissions of the 85 installations in glass and mineral fibre production were 4 million tonnes of CO_2 - four percent above previous year levels. - In spite of the increase, the free allocation was not entirely used up. A total of 589,000 emission allowances or 13 percent of the allocation were either sold or retained as a reserve by the industry. Only one third of installations had to buy in additional allowances or certificates..
XIII: Ceramics	- The 134 installations emitted 1.3 million tonnes or ten percent more carbon dioxide in total. However, 48 installations emitted 67,000 tonnes less carbon dioxide, or 22 percent less compared to the levels of the previous year. - In 2010, free allocations exceeded emissions by twelve percent on average.
XIV and XV: Pulp and Paper	- The emissions of the five pulp and 122 paper installations increased by five percent to 5.9 million tonnes of carbon dioxide. The paper industry is entirely responsible for the increase, while the emissions volume of the five pulp installations remained constant. - An average 16 percent of emission allowances was retained as a reserve or sold – no less than 1.1 million.
XVI: Propylene, Ethylene and Carbon Black	- The eight installations for the production of proplylen and ethylene and the five carbon black installations emitted 5.9 million tonnes of CO_2. - Emissions in propylene/ethylene production increased by seven percent, while those of carbon black production increased even by 23 percent compared to the slow previous year. - In spite of the increase, free allocations are sufficient. Operators have a surplus of 793,000 certificates at their disposal.