



**State Aid for Indirect CO₂ Costs
of Emissions Trading
(Electricity Price Compensation)
in Germany for 2021
(EPC Report 2021)**

Editorial information

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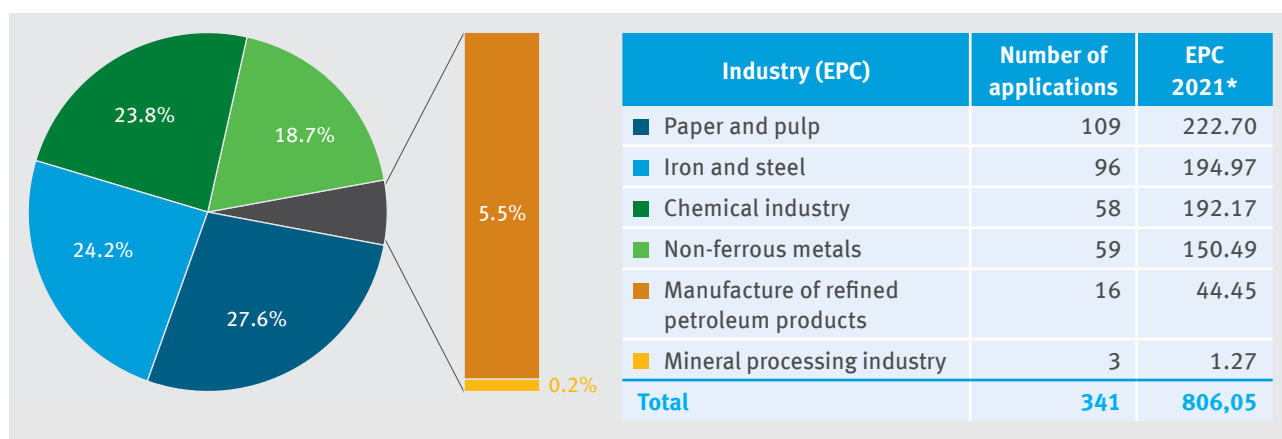
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Summary

351 companies submitted applications for State aid for indirect CO₂ costs of emissions trading for the 2021 accounting year at the start of the fourth trading period of EU emissions trading. Following verification of the applications by the German Emissions Trading Authority (DEHSt) at the German Environment Agency, 341¹ companies with 676 installations received around €806 million in State aid. The EUA price used to calculate State aid (see explanations in Section 1, from page 6) was €25.09. This means that the approved aid amount for 2021 of around €806 million is at a similar level to the State aid of €832 million paid out for the 2020 accounting year.

As an increase in the individual aid amount (per applicant), 59 companies received a supplementary State aid for the 2021 accounting year (see Chapter 1, page 10). This amounted to a total of around €25 million. Due to the change in scope (see Chapters 3 and 7), companies in the pulp and paper industry received the largest proportion of the total aid for 2021 at 27.6%, followed by companies in the iron and steel industry and the chemical industry, each with around 24%, and those in the non-ferrous metals industry with around 19% of the compensation. The proportion of total offsetting of companies in the industry manufacturing refined petroleum products was 5.5%. The mineral processing industry has a very small proportion of the total offset with 0.2% and only three applications.



* in million euros
As of 16/12/2022

Figure 1: Distribution of State aid for the 2020 electricity price compensation for individual industries

Of the 676 installations for which State aid was approved, 348 installations are covered by the European Emissions Trading Scheme (EU ETS). Their proportion of the total aid amounts is 71% (see Table 6). Many beneficiary installations do not fall within the scope of the European Emissions Trading Scheme especially in the chemical industry and the non-ferrous metals industry. In contrast, installations in the pulp and paper industry as well as installations in the manufacture of refined petroleum products and mineral processing industry are largely covered by the EU ETS.

As a basis for calculating the 2021 State aid, product-specific electricity consumption efficiency benchmarks (hereinafter referred to as ‘product benchmarks’) are far more important than the fallback factor: approximately 78% of the total aid results from the manufacture of products for which a product benchmark exists; only 22% results from the manufacture of products where the fallback factor has been applied to their electricity consumption (see explanations in Section 7).

The largest share of aid for the 2021 accounting year was held by the product benchmarks for chlorine (14%) and primary aluminium (13%), as well as the fallback calculation element of the sector ‘2410 – Manufacture of basic iron and steel and of ferro-alloys’ (11%).

A budget of €944 million was available in the Climate and Transformation Fund (formerly: Energy and Climate Fund) for electricity price compensation for the 2021 accounting year and around 85% of this budget was used. Thus, no budget-related reductions in the aid amounts were necessary.

¹ All information given in the report is data that was available on 16/12/2022. In addition, adjustments may be made at any time, even retrospectively.

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1 State Aid for Indirect CO₂ Costs of the EU Emissions Trading Scheme

State aid for indirect CO₂ costs due to emissions trading is intended to prevent the risk of ‘carbon leakage’ to locations outside the geographical scope of the EU Emissions Trading Directive (ETD)². Indirect CO₂ costs are caused because electricity producers are passing on the cost of emission allowances to their customers via the price of electricity.

State aid is intended to compensate companies for some of these costs in certain high electricity usage sectors and subsectors mentioned in Annex II of the EU State Aid Guidelines³ applicable for the fourth trading period.

The European Commission has identified the sectors and subsectors in which it has detected a risk of indirect carbon leakage. These sectors include production processes with particularly high electricity usage and are subject to strong international competition (see Table 1)⁴. Thus, the approval of the application depends on the products manufactured by a company. If these products are eligible for State aid, the assignment of a company to a particular industry is not critical for granting State aid. Since State aid is linked to the installations’ electricity consumption, it does not matter whether the installations are covered by EU ETS or not. The granting of aid is based on the State Aid Directive⁵ adopted by the Federal Ministry for Economic Affairs and Climate Action in 2022.

Since the aid is intended to offset part of the indirect CO₂ costs of the previous year, applications can be made in the following year. Therefore, applications for the 2021 accounting year could have been submitted after the publication of the State Aid Directive between 01/09/2022 and 30/09/2022. This deadline was then used as the final cut-off point.

Annex II of the EU State Aid Guidelines sets out product-specific benchmarks for some of the products eligible for aid. They specify the amount of electricity consumption in megawatt-hours per tonne of product produced in order to calculate State aid. The aid calculation is therefore based on the tonnes of product produced (see Number 5.2.1 of the State Aid Directive). For products eligible for aid without a benchmark, the aid is based on the electricity consumption for the manufacture of these products (see Number 5.2.2 of the State Aid Directive). However, the electricity consumption is multiplied by a uniform fallback electricity efficiency benchmark factor (hereinafter called ‘fallback factor’) which is 0.8.

Products with an identical benchmark manufactured within an installation are grouped together into ‘calculation elements’ for further calculation. Affiliation to the same sector is crucial for the aggregation of fallback products into calculation elements.

According to the EU State Aid Guidelines applicable for the fourth trading period and the German State Aid Directive, a total aid amount per applicant is calculated by using these quantities, the emission allowance price to be applied (EUA price)⁶, the CO₂ emission factor⁷ and the State aid intensity⁸.

The German State Aid Directive for electricity price compensation stipulates that the CO₂ costs for the purchase of one gigawatt-hour of electricity per year per installation are subtracted from the company’s total aid amount. This retention was calculated based on the EUA price for 2021 (€25.09) and the CO₂ emission factor of 0.72 tonnes of carbon dioxide per megawatt-hour. This resulted in a CO₂ retention cost of €18,064 per installation for the purchase of one gigawatt-hour of electricity.

2 Article 10a(6), Directive 2009/29/EC of 23/04/2009 amending Directive 2003/87/EC of 13/10/2003 (EC Emissions Trading Directive).

3 Communication from the Commission Guidelines on certain State aid measures in the context of the system for greenhouse gas emission allowance trading post-2021 C/2020/6400, OJ 2020/C 317/04 of 25/09/2020; Communication from the Commission supplementing the Guidelines on certain State aid measures in the context of the system for greenhouse gas emission allowance trading post-2021 2021/C 528/01, OJ C/2021/8413 of 30/12/2021.

4 Annex I of the EU State Aid Guidelines

5 Directive on aid for companies in sectors or subsectors deemed to be exposed to a significant risk of carbon leakage due to EU ETS allowance costs passed on in electricity price (State aid for indirect CO₂ costs) of 24/08/2013, official part of the Bundesanzeiger (Federal Gazette AT) of 01/09/2022 B1.

6 The EUA price to be applied for an accounting year is determined from the previous year’s average of the closing offer price of the reference contract on each trading day. For the 2021 accounting year, this was the ICE futures Europe with delivery in December of 2021 (see Section 5.1 k) of the State Aid Guidelines) (see Table 9).

7 The CO₂ emission factor to be applied according to the EU State Aid Guidelines Annex III for the geographical area Central Western Europe (Ca) applies: 0.72 tonnes carbon dioxide per megawatt-hour.

8 The following aid intensity (Ai) set out in the EU State Aid Guidelines under margin No. 27 applies: 0.75.

Changes in Comparison from the Third to the Fourth Emissions Trading Period

Some regulations for electricity price compensation in Germany had changed at the start of the fourth trading period as a result of the adjustments to the EU Aid Guidelines of the European Commission and the new German Aid Directive. The most important changes are briefly described here; further information can be found in the relevant chapters of this report.

The European Commission has adapted the list of sectors and subsectors eligible for aid (see Table 1).

Table 1: List of sectors and subsectors eligible for aid as per NACE Revision 1.1 for 2013 to 2021 and NACE Revision 2.0 from 2021 in accordance with the EU State Aid Guidelines⁹

Eligible sectors/subsectors			
2013–2020		From 2021	
Sectors as per NACE Revision 1.1	Description	Sectors as per NACE Revision 2.0	Description
1310	Mining of iron ores	0710	
1430	Mining of chemical and fertiliser minerals	0891	
1711	Preparation and spinning of textile fibres	1310	
1810	Manufacture of leather clothes	1411	Manufacture of leather clothes
2111 (Parts)	Parts of the sector Manufacture of pulp: ▶ 211114 Mechanical pulp	1711	Manufacture of pulp
2112	Herstellung von Papier, Karton und Pappe	1712	Manufacture of paper and paperboard
		1920	Manufacture of refined petroleum products
		2011 (Parts)	Parts of the sector Manufacture of industrial gases: ▶ 20111150 Hydrogen ▶ 20111290 Inorganic oxygen compounds of non-metals
2413	Manufacture of other inorganic basic chemicals	2013	Manufacture of other inorganic basic chemicals
2414	Manufacture of other organic basic chemicals	2014	
2415	Manufacture of fertilisers and nitrogen compounds	2015	
2416 (Parts)	Parts of the sector Manufacture of plastics in primary forms: ▶ 24161039 Low-density poly-ethylene (LDPE) ▶ 24161035 Linear low-density poly-ethylene (LLDPE) ▶ 24161050 High-density polyethylene (HDPE) ▶ 24165130 Polypropylene (PP) ▶ 24163010 Polyvinylchloride (PVC) ▶ 24164040 Polycarbonate (PC)	2016 (Parts)	Parts of the sector Manufacture of plastics in primary forms: ▶ 20164015 Polyethylene in primary forms
2470	Manufacture of man-made fibres	2060	

⁹ The revisions of the statistical classification of economic activities of NACE Rev 1.1 to NACE Rev. 2.0 has also caused systematic changes, some of which mean that sectors are not comparable with each other. Explanations can be found at: <https://ec.europa.eu/eurostat/documents/3859598/5902521/KS-RA-07-015-EN.PDF>

Eligible sectors/subsectors			
2013–2020		From 2021	
Sectors as per NACE Revision 1.1	Description	Sectors as per NACE Revision 2.0	Description
		2314 (Parts)	Parts of the sector Manufacture of glass fibre: <ul style="list-style-type: none"> ▶ 23141210 Glass fibre mats ▶ 23141230 Glass fibre voiles
2710	Manufacture of basic iron and steel and of ferro-alloys	2410	Manufacture of basic iron and steel and of ferro-alloys
2722 (Teile)	Parts of the sector Manufacture of tubes, pipes, hollow profiles and related fittings of steel: <ul style="list-style-type: none"> ▶ 272210 Seamless steel tubes 	2420	
2742	Aluminium production	2442	Aluminium production
2743	Lead, zinc and tin production	2443	Lead, zinc and tin production
2744	Copper production	2444	Copper production
		2445	Other non-ferrous metal production
		2451	Casting of iron

Italic = not eligible for aid from 2021

As a result, the manufacture of some products (such as ammonia) is no longer eligible for aid: however, the production of other products (such as refinery products) has been included in the list of eligible products (see Table 2). In addition, the product-specific benchmarks have been adjusted. Furthermore, annual reduction factors were set for the benchmark values (see EU State Aid Guidelines Annex II).

Table 2: Benchmark products

Products with electricity consumption efficiency benchmarks / product benchmarks with established interchangeability of fuel and electricity	
2013–2020	From 2021
	Chemical wood pulp, for dissolution
	Chemical wood pulp (soda or sulfate pulp)
	Chemical wood pulp (sulfite pulp)
	Semi-chemical wood pulp
	Recovered paper
	Deinked recovered paper
	Newsprint
	Uncoated fine paper
	Coated fine paper
	Tissue
	Testliner and fluting
	Uncoated carton board
	Coated carton board
	Sulphuric acid
Chlorine (Cl ₂)	Chlorine (Cl ₂)
Silicon metal (Si metal)	Silicon metal (Si metal)
Hyperpure polysilicon	Hyperpure polysilicon
Silicon carbide (SiC)	Silicon carbide (SiC)
Carbon black	Carbon black
Highly refined chemicals	
Aromatics	
Styrene	
Ethylene oxide (EO)/ ethylene glycols (EG)	
Ammonia	
	Refinery products
	Hydrogen
	Synthesis gas
Oxygen steel	Oxygen steel
EAF (electrical arc furnace) carbon steel	EAF (electrical arc furnace) carbon steel
EAF (electrical arc furnace) high-alloy steel	EAF (electrical arc furnace) high-alloy steel
High-carbon ferromanganese (FeMn HC)	High-carbon ferromanganese (FeMn HC)
	Ferromanganese

Products with electricity consumption efficiency benchmarks / product benchmarks with established interchangeability of fuel and electricity	
2013–2020	From 2021
Silico manganese (SiMn)	
Ferrosilicon (FeSi)	Ferrosilicon (FeSi)
	Ferronickel
	Ferrosilicon manganese
	Iron casting
Primary aluminium	Primary aluminium
Aluminium oxide (refining)	Aluminium oxide (refining)
Zinc electrolysis	Zinc electrolysis
	Unwrought refined copper
	Mineral wool

The basic calculation of State aid has remained unchanged except for one thing. As of the 2021 accounting year, only the relevant production quantity or the relevant electricity consumption of the corresponding accounting year is pertinent for the aid calculation. Information regarding a baseline period is no longer recorded and is no longer compared with the accounting year. This also means that the regulations regarding capacity expansion and reduction due to lower capacity utilisation as well as the difference carried forward (see DEHSt 2022a) will no longer apply.

The maximum aid intensity which determines the maximum permissible total amount of aid, will be fixed at 75% of the indirect CO₂ costs from the start of the fourth trading period and will thus no longer decrease compared to the years 2013 to 2020. It was already 75% in 2019 and 2020.

The CO₂ emission factor for Germany that was applied in the third trading period was 0.76 tonnes of carbon dioxide per megawatt-hour. From 2021, a lower CO₂ emission factor of 0.72 tonnes of carbon dioxide per megawatt-hour (see EU State Aid Guidelines Annex III) has been applied.

Furthermore, the requirement for environmental services in return was introduced as a prerequisite for the granting of State aid: a declaration of commitment regarding these services had to be submitted for 2021; certified energy management systems or environmental management systems must also be operated from 2023, at the latest (see DEHSt 2022c).

The ‘supplementary aid’ for companies using particularly large amounts of electricity was also introduced in 2021. Applying the aid intensity as specified by the EU State Aid Guidelines sometimes fails to provide adequate protection against carbon leakage for these companies. This supplementary State aid is limited and depends on the gross value added of the applicant company for the relevant accounting year (see 5.2.4 of the Aid Directive).

2 Evaluation Methods

2.1 Summary of Sectors

For a more transparent analysis and presentation, this report combines sectors and subsectors eligible for aid into industries (see Table 3). This enables an unambiguous assignment to industries at a calculation element level (see Section 6). Each calculation element belongs to just one of the sectors and subsectors eligible for aid. At the company level (see Section 3), the assignment usually depends on which sectors have the largest share of the aid amount. The assignment at the company level will subsequently be transferred to that company's installations.

Table 3: List of sectors and subsectors eligible for aid according to NACE Revision 2.0 in accordance with the EU State Aid Guidelines (Annex I)

Sector as per NACE Revision 2.0	Description	Industry
1411	Manufacture of leather clothes	Clothes
1711	Manufacture of pulp	Paper and pulp
1712	Manufacture of paper and paperboard	
1920	Manufacture of refined petroleum products	Manufacture of refined petroleum products
2011 (Parts)	Parts of the sector Manufacture of industrial gases: ▶ 20111150 Hydrogen ▶ 20111290 Inorganic oxygen compounds of non-metals	Chemical industry
2013	Manufacture of other inorganic basic chemicals	
2016 (Parts)	Parts of the sector Manufacture of plastics in primary forms: ▶ 20164015 Polyethylene in primary forms	
2314 (Parts)	Parts of the sector Manufacture of glass fibre: ▶ 23141210 Glass fibre mats ▶ 23141230 Glass fibre voiles	Mineral processing industry
2410	Manufacture of basic iron and steel and of ferro-alloys	Iron and steel
2451	Casting of iron	
2442	Aluminium production	Non-ferrous metals
2443	Lead, zinc and tin production	
2444	Copper production	
2445	Other non-ferrous metal production	

In Section 4, the installations are apportioned according to whether they are subject to the European Emissions Trading System or not. The assignment to industries will continue to be based on the method mentioned above and not on assignments that may have originated from emissions trading evaluations.

2.2 Allocation of the State Aid Amount at the Calculation Element Level

Due to the retention per installation (see Section 1), the State aid amount could not be allocated to the individual calculation elements without conversion. The retention per installation was therefore divided proportionally among an installation's calculation elements.

3 Evaluations at Application or Company Level

In total, applications from 341 companies with 676 installations were approved in 2021. The amount of aid granted was around €806 million (see Table 4). Several applications were rejected because the products manufactured were not eligible. Another reason for rejection was that companies were not eligible for aid because the applicants were companies in difficulty (see No. 3a of the Aid Directive).

Table 4: Number of approved applications and number of installations by industries and total aid paid for the 2021 accounting year

Industry (EPC)	Number of applications	Number of installations	EPC 2021*
Paper and pulp	109	146	222,701,109.16
Iron and steel	96	199	194,968,400.52
Chemical industry	58	151	192,173,716.19
Non-ferrous metals	59	126	150,485,252.16
Manufacture of refined petroleum products	16	49	44,447,764.33
Mineral processing industry	3	5	1,270,681.52
Total	341	676	806,046,923.88

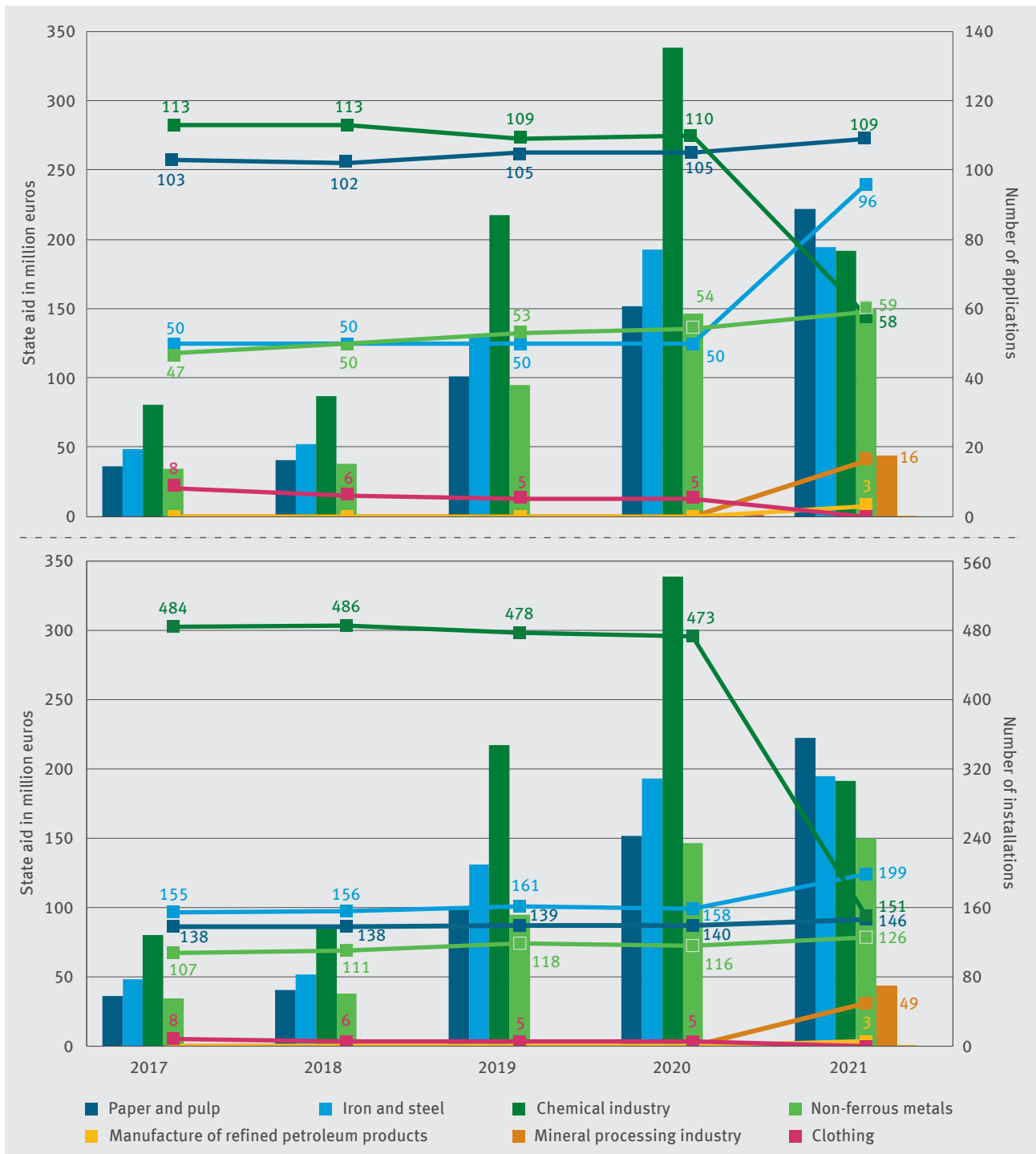
* in euros
As of 16/12/2022

Table 4 shows the distribution of the total aid amount among the individual industries. The paper and pulp industry has the largest proportion of the total aid with around €223 million and 27.6%.

This is followed by the iron and steel industry with around €195 million, which amounts to a proportion of 24%. The chemical industry accounted for about €192 million in 2021. It continues to have a large proportion of the total aid with about 24%. The non-ferrous metals industry received about €150 million for 2021 and thus just under 19% of the total 2021 aid. Companies manufacturing refined petroleum products, which were eligible for aid for the first time in 2021, will receive around €44 million or 5.5% of the total compensation. The mineral processing industry has a very small proportion of the 2021 electricity price compensation with approximately €1.3 million or 0.2%.

It is not reasonable to make a direct comparison of the last accounting year of the third trading period 2020 with the first accounting year of the fourth trading period 2021. It is true that the EUA price used for the aid calculation was roughly at the price level of the previous year (€25.09 for 2021 compared to €25.20 for 2020) and the aid intensity was also 75% in both years. However, 2021 was the first year of the EU ETS fourth trading period which brought some changes to the electricity price compensation rulebook (see Chapter 1), in particular, changes to the sectors and subsectors eligible for electricity price compensation, and a lower CO₂ emission factor was also applied.

Figure 2 shows the annual aid amount since 2017, distributed across the individual industries, and the number of applications and the number of installations per industry. The increase in total aid with rising EUA price is clearly visible.



As of 16/12/2022

Figure 2: Number of applications and installations and total aid per industry since 2017

The number of companies and installations remained largely constant in the pulp and paper industry from 2017 to 2020, with an average of 104 applications and 139 installations. The sector ‘1711 – Manufacture of pulp’, which had previously been only partially eligible for aid, was completely classified as eligible for aid for the fourth trading period. Nevertheless, only four applications with six installations were added in the whole sector of the pulp and paper industry. However, the total aid for this industry increased significantly by around 46% compared to the 2020 accounting year.

In the period from 2017 to 2020, the number of applications and installations in the iron and steel industry hardly changed too: on average, there were 50 applications and 158 installations. 96 companies with 199 installations received State aid across the industry for the first year in the fourth trading period. This increase was due to changes in the composition of the sectors and subsectors of the industry, eligible for aid. Firstly, the sectors '0710 – Mining of iron ores' and parts of the sector '2420 – Manufacture of tubes, pipes, hollow profiles and related fittings, of steel' were no longer eligible for aid. However, it has been possible for iron foundries to apply for electricity price compensation from 2021 onwards. The number of applications and installations has increased significantly. This was due, among other things, to the new 'casting of iron' iron casting sector, which resulted in significantly more new applications being submitted than applications being discontinued. This was because certain companies had ceased to be eligible to apply due to the change in the definition of eligible sectors and subsectors. The total amount of State aid, however, remained almost unchanged.

In the third trading period, most applications were found in the chemical industry (114 applications on average). This has changed significantly since 2021: a large part of the products manufactured in the chemical industry were no longer eligible for aid from 2021. As a result, the number of companies and installations has fallen significantly from 110 companies with 473 installations in 2020 to 59 companies with 151 installations in 2021. Overall, companies in the chemical industry received around 43% less State aid than in 2020.

In the non-ferrous metals industry, the sector '2445 – Other non-ferrous metal production' has been added as a new sector eligible for aid as of the fourth trading period. Nevertheless, only minor changes are visible compared to 2020. The number of applications and installations in this industry has increased only slightly by five applications and ten installations respectively, and the total amount of aid paid out to companies in the non-ferrous metal industry was roughly at the same level in 2021 as in 2020.

For the fourth trading period, the European Commission has also identified manufacture of refined petroleum products as being at risk of indirect carbon leakage. Sixteen companies had applied for electricity price compensation for these products for the first time in 2021 and received a total State aid amount of around €44 million.

In the mineral processing industry, only two subsectors – Mats and voiles made of glass fibres¹⁰ – are eligible. Accordingly, only a few companies applied for compensation of emissions trading related indirect CO₂ costs in the accounting year 2021. Three companies with five installations received State aid of around €1.3 million.

With only an average of six companies and six associated installations, the clothing industry has had the smallest proportion of the total number of applications and total installations since the introduction of the electricity price compensation. These applications were submitted in the '1310 – Preparation and spinning of textile fibres' sector. This sector is no longer eligible for aid as of 2021, and only sector '1411 – Manufacture of leather clothes' remains classified as eligible for aid in the clothing industry. However, leather clothing companies have not so far submitted an application for electricity price compensation in any of the past years, so that no applications were received in the clothing industry at all in 2021.

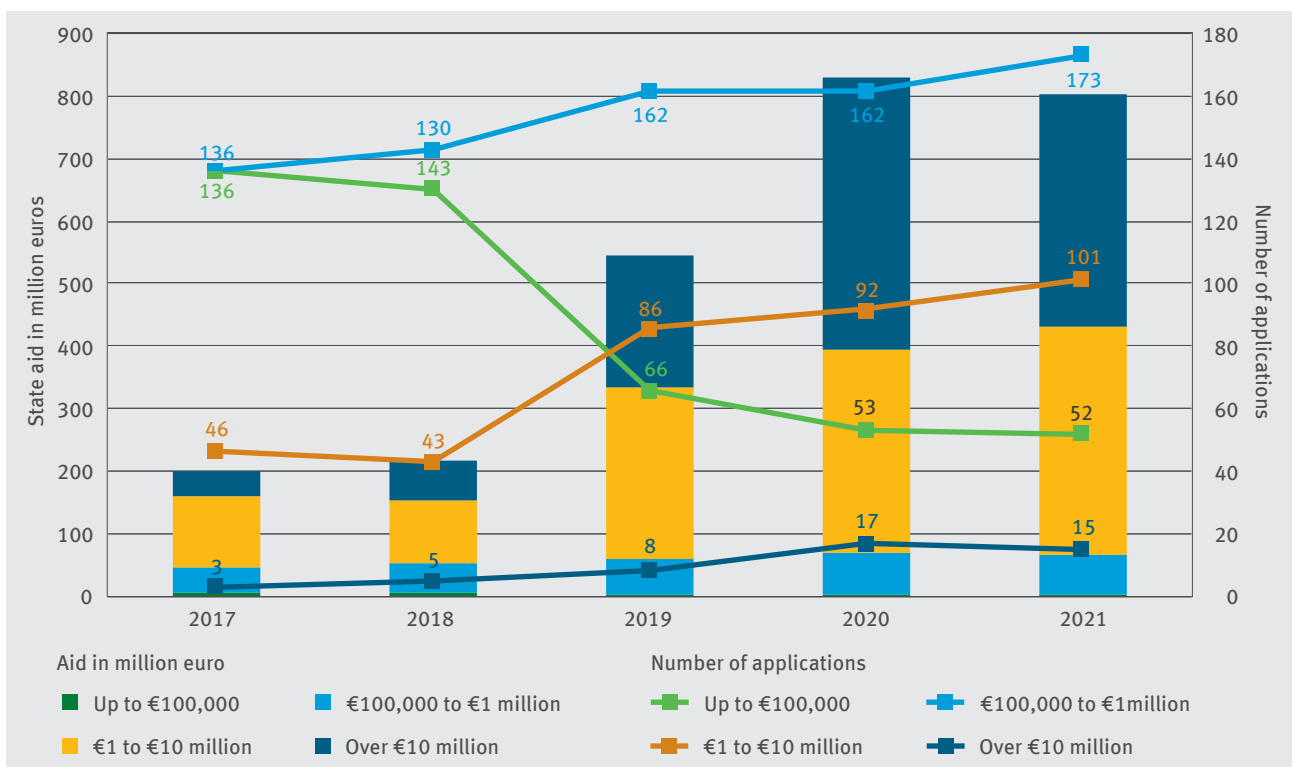
¹⁰ 23141210 Glass fibre mats and 23141230 Glass fibre voiles according to NACE Rev. 1.1 and Prodcom list 2010

3.1 Annual Total Aid and Compensated Amounts

Figure 3 shows the amount of annual State aid since 2017 and divides it into categories (columns). The State aid category up to €100,000 per application has the smallest proportion of the total State aid.

The category of €1 million to €10 million per application has the largest proportion from 2017 to 2019 and the category above €10 million in 2020 and 2021. The figure also shows the number of applications in each of the State aid categories since 2017 (lines). The highest number of applications (155 applications on average) is found in the €100,000 to €1 million per application State aid category.

However, the proportion of State aid in this category is only around 11% on average over all years. The fewest number of applications (an average of 10 applications) is found in the over €10 million category – with a rising trend as the EUA price increases. The figure clearly shows the trend in total State aid as a function of the EUA price that is applied. In the accounting years 2017 (€5.40) and 2018 (€5.88), the EUA price was at a similar level. Compared to 2018, the EUA price for 2019 almost tripled and was €16.15. In 2020, the EUA price was again significantly higher than the previous year at €25.20, and subsequently remained roughly the same in 2021, at €25.09.



As of 16/12/2022

Figure 3: Number of applications and total State aid in relation to the amount of State aid per application

Even though the scopes of the third and fourth trading periods are not directly comparable, it is nevertheless clear that the distribution across the individual aid categories changes with the fluctuations in the EUA price over the years. The higher the EUA price, the more companies can be found in the €1 million to €10 million aid category and in the highest aid category (over €10 million). With only a 0.3% proportion of total aid, companies in the smallest aid category of up to €100,000 still have a 15% proportion of applications – but with rising EUA prices, the trend is falling.

Size of the applicant companies

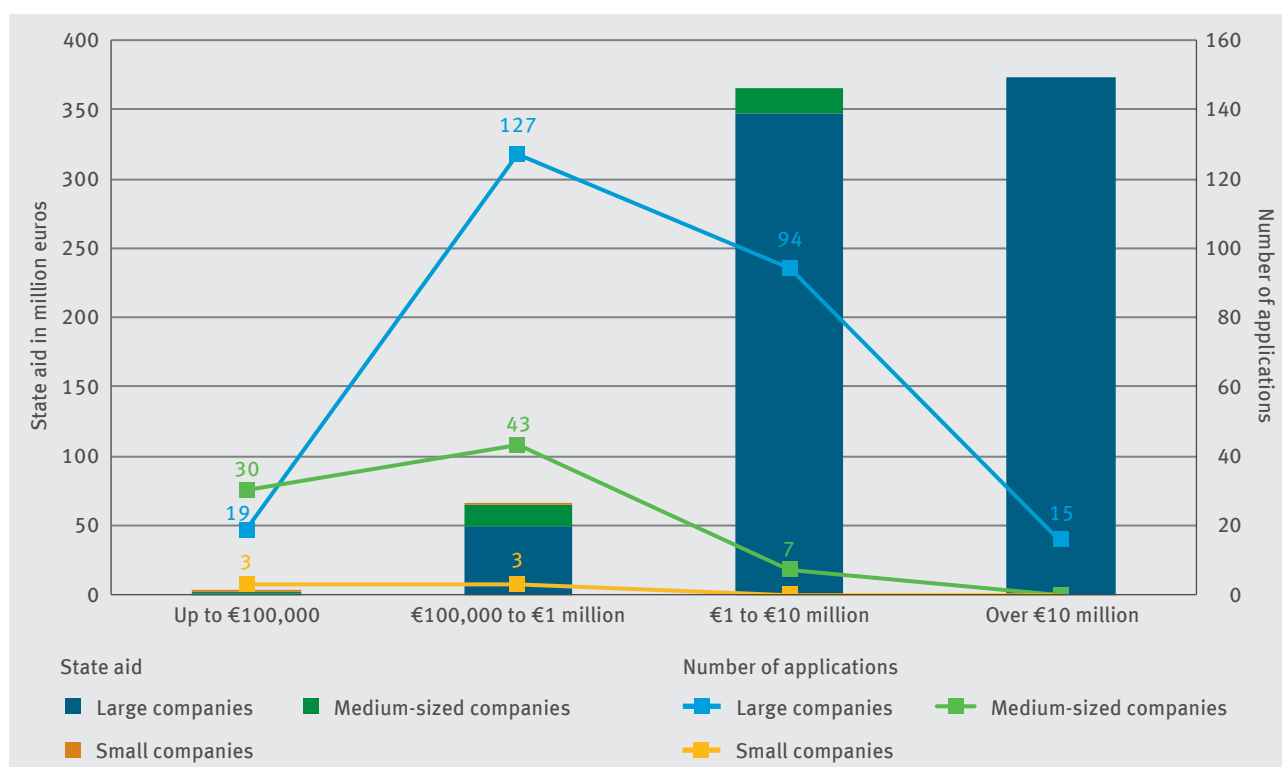
In the 2021 accounting year, for the first time, companies had to indicate the type of their company due to European legal requirements¹¹. According to the EU recommendation (2003/361/EG)¹², a distinction is made between small, medium-sized and large companies.

Table 5: Number of applications and total State aid in relation to company size

Type of company	Number of applications	EPC 2021*
Large companies	255	771,454,037.23
Medium-sized companies	80	33,936,937.46
Small companies	6	655,949.19
Total	341	806,046,924

* in euros
As of 16/12/2022

Most companies that submitted an application for electricity price compensation classified themselves as large companies. They received around 96% of the total State aid in 2021. Only six small companies submitted an application for the 2021 accounting year and had a proportion of less than one percent of the total State aid for that year. For small companies, the effort required to submit an application compared to the amount of aid paid out, as well as the retention per installation (CO₂ costs for one gigawatt-hour of electricity), played a decisive role in the fact that very few applications were submitted.



As of 16/12/2022

Figure 4: Number of applications and total State aid broken down by company size per aid category

11 See Guidelines on particular State aid measures related to the greenhouse gas Emission Allowance Trading Scheme after 2021 (2020/C 317/04), Point 6(56)(f), (g) and (h).

12 See COMMISSION RECOMMENDATION of 6 May 2003 concerning the definition of micro, small and medium-sized companies (2003/361/EC); <https://eur-lex.europa.eu/legal-content/DE/TXT/PDF/?uri=CELEX:32003H0361&from=DE>

When comparing the type of company with the State aid category, into which the companies can be classified based on the amount of aid received, it becomes clear that small companies can only be found in the two smallest aid categories of up to €100,000 and €100,000 to €1 million, as they also receive only a very small proportion of the total compensation. Large companies, on the other hand, are found in all aid categories and also have the largest proportion of applications in the three largest aid categories. In the 2021 accounting year, only large companies received aid in excess of €10 million. Most applications were made in the €100,000 to €1 million aid category.

Calculated amount of compensated, indirect CO₂ emissions

The total State aid for the 2013 to 2020 accounting years varied greatly in line with the fluctuating EUA price (see Figure 2 and 10 and Table 12 in the Annex). At the same time, with the CO₂ emission factor for Germany (0.76 tonnes of carbon dioxide per megawatt-hour) applied in the third trading period, the amount of carbon dioxide (on which the State aid calculation is based) was relatively constant at around 46 million tonnes of CO₂ up to and including 2018.¹³ Only in the last two accounting years of the third trading period was there a slight drop in the amount of carbon dioxide of around 5% – from around 46.4 million tonnes of CO₂ in 2018 to 44.1 million tonnes of CO₂ in 2020. Thus the 2020 accounting year saw the lowest amount of carbon dioxide on which the State aid calculation is based, since the introduction of electricity price compensation (see DEHSt 2022a).

From 2021 onwards, a lower CO₂ emission factor of 0.72 tonnes of carbon dioxide per megawatt-hour was applied for Germany (see EU State Aid Guidelines Annex III). Therefore, the amounts of carbon dioxide for the third and fourth trading periods on which the aid calculation is based, are not directly comparable. The amount of carbon dioxide on which the aid calculation was based for 2021 was 41.5 million tonnes of CO₂. This reduction was due to the changes in the sectors and subsectors eligible for electricity price compensation, the changes in eligible electricity consumption and the decreasing emission factor for electricity.

The high fluctuations in the aid amounts are due more to the volatile EUA price (and, in direct comparison with 2020, to the changed eligibility basis) and less to a change in the amount of carbon dioxide.

¹³ This value is determined from the amount of State aid disbursed, the EUA price P_t to be applied and the aid intensity A_{it} : the EUA price values result from the specifications of the funding guidelines, see Table 9. The aid intensity is also specified, i. e. $A_{i_{2013-2015}} = 0.85$, $A_{i_{2016-2018}} = 0.8$, $A_{i_{2019-2020}} = 0.75$, from 2021 constant 0.75.

4 Electricity Price Compensation and European Emissions Trading

The total of 341 companies that received State aid for the 2021 accounting year manufactured eligible products in a total of 676 installations. Of these, 348 installations, slightly more than half, participate in the EU ETS (see Table 6).

In the pulp and paper industry, the majority of installations are covered by the EU ETS – 124 installations (85%) received around 94% of the industry’s total aid.

At 53%, slightly more than half of all installations in the iron and steel industry are covered by the EU ETS. Nevertheless, the installations subject to the EU ETS account for a very high proportion of the industry’s total aid, at 87%. The reason for this is that the electricity consumption of iron foundries, the majority of which do not participate in the EU ETS, is comparatively low.

In the chemical industry, 112 out of 151 applicant installations (74%) are not subject to the EU ETS. These installations receive 92% of the industry’s State aid. This is because many electricity-intensive processes (e. g. chlorine electrolysis) do not lead directly to the emission of relevant quantities of greenhouse gases and are therefore not subject to the EU ETS. In addition, many chemical sites have centralised energy and steam supplies to which the emissions trading obligation is limited.

The situation is similar in the non-ferrous metals industry, where around 74% of installations (95 out of 126) are not integrated into the EU ETS. These are often installations that have no primary emissions (e. g. cold rolling or pressing plants – i. e. forming plants), or installations that do not reach the rated thermal input. However, these installations account for only 12% of the industry’s total State aid. This is mainly due to the fact that the major aid beneficiaries in the non-ferrous metals industry – the installations for the production of aluminium by electrolysis – are also subject to the EU ETS.

90% of the 49 plants manufacturing refined petroleum products are subject to the EU ETS and receive 99%, almost the entire overall amount, of State aid for the industry.

The five installations in the mineral processing industry are fully subject to the EU ETS.

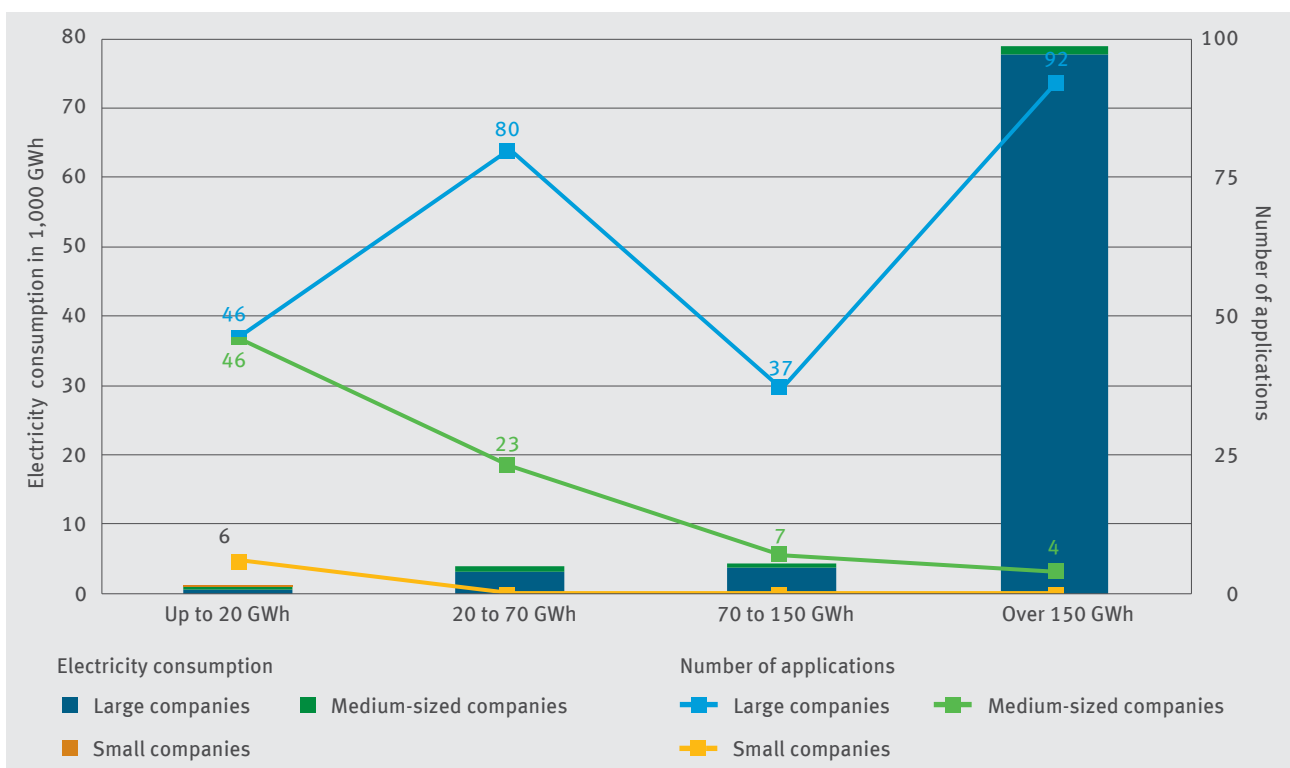
Table 6: Total number of installations per industry in 2021, subject to emissions trading and not subject to emissions trading

Industry (EPC)	Number of installations	thereof		Proportion of aid to the	
		ETS	Non-ETS	ETS	Non-ETS
Paper and pulp	146	124	22	94%	6%
Iron and steel	199	105	94	87%	13%
Non-ferrous metal	126	31	95	88%	12%
Manufacturing refined petroleum products	49	44	5	99%	1%
Chemical industry	151	39	112	8%	92%
Mineral processing	5	5	0	100%	0%
Total	676	348	328	71%	29%

As of 16/12/2022

5 Electricity Consumption

The basis for calculating State aid is a CO₂ emission factor of 0.72 tonnes of CO₂ per megawatt-hour of electricity, which is uniform for German companies. In contrast to the third trading period, new criteria apply to the eligibility of electricity consumed by the company for the manufacture of products eligible for aid. In the third trading period, no State aid was granted to companies if no CO₂ costs were associated with the electricity consumed.¹⁴ This is the case, for example, with companies that generate their own electricity from installations that are not subject to emissions trading. The following applies: for the consumption of in-house generated electricity from electricity generation plants that were commissioned before 01/01/2021 and for which there is a remuneration entitlement under the Renewable Energy Sources Act¹⁵, no further aid will be granted with effect from the 2021 accounting year (see number 5.2.5 of the Funding Guideline). Overall, only about 0.1% of the total electricity consumption reported by the companies is not eligible for aid. The total chargeable electricity consumption¹⁶ of companies in the 2021 accounting year amounts to 88,695 gigawatt-hours. The total chargeable electricity consumption is not necessarily based on the power electricity consumption eligible for State aid but may also include electricity consumption for the manufacture of products that are not eligible for State aid.



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Figure 5: Number of applicant companies by electricity consumption category¹⁷ and company size

¹⁴ See para 5.2.6 Directive for State aid to companies in sectors or sub-sectors deemed to have a significant risk of carbon leakage given the costs associated with EU ETS allowances passed on in the price of electricity (aid for indirect CO₂ costs) of 08/06/2013.

¹⁵ Law amending the Renewable Energy Sources Act and other energy regulations (EEG2021-EG n/s abbr.) ([Bundesgesetzblatt BGBl. \(Federal Law Gazette\) Online-Archiv 1949 - 2022](#) | [Bundesanzeiger Verlag \(Federal Gazette Publishing House\)](#))

¹⁶ The calculation of electricity consumption in the company or in the installations differs between the fallback and benchmark approach. In addition, the correction factor for the origin of electricity plays a role in the eligibility of electricity consumption (for explanations, see DEHSt 2022c Chapter 3 and EU 2020).

¹⁷ The categories are based on the Eurostat methodology, 'Energy statistics – electricity prices for domestic and industrial consumers, price components', Section 3.4. Statistical concepts and definitions, New Methodology (from 2007 semester 2 onwards), industry, Band (Vol.)- IA, -IB, -IC, -ID combined < 20 GWh, Band (Vol.)-IE 20 to 70 GWh, Band (Vol.)-IF 70 to 150 GWh, Band (Vol.)-IG over 150 GWh.

Figure 5 shows the number of installations summarised according to the total eligible electricity consumption of the respective companies by company size. The aim is to show the relationship between the size of the company and their eligible electricity consumption.

All small companies are found in the electricity consumption category of up to 20 gigawatt-hours. These six companies have a share of about 5% of the total eligible electricity consumption within the electricity consumption category of up to 20 gigawatt-hours and only 0.1% of the total electricity consumption across all categories. The rest of the electricity consumption within this category is shared by medium-sized and large companies, each with the same number of companies and roughly equal shares.

Most of the applications are found in the electricity consumption category 20 to 70 gigawatt-hours. However, these 103 companies, the majority of which are large companies, only accounted for 5% of total electricity consumption in 2021.

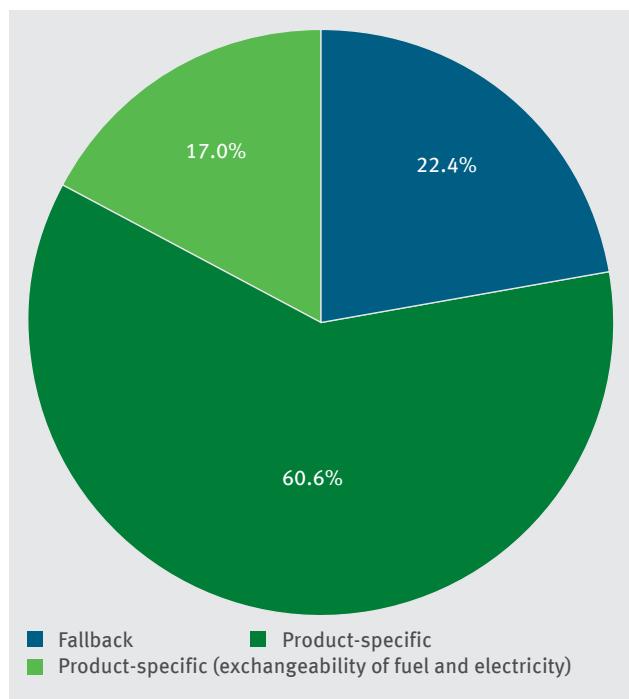
The fewest applications are in the electricity consumption category of 70 to 150 gigawatt hours. Of the 44 companies that fall into this category, large companies have the largest share of total electricity consumption with 37 applications.

A full 89% of the total eligible electricity consumption is allocated to the electricity consumption category greater than 150 gigawatt hours. Here, 92 out of 96 companies can be found almost exclusively in the largest company category.

Overall, with 96% of the total eligible electricity consumption, the largest share of electricity is used for the manufacture of eligible products by large companies.

6 Results at Product Level

As described in Chapter 2, products manufactured within the same installation are grouped into calculation elements to calculate aid. To combine different products into one calculation element, an identical benchmark is necessary, or the fallback products must belong to the same sector. There are 36 product-specific benchmarks and 14 fallback combinations available. An average of more than 1,000 calculation elements were used by the companies to determine State aid for the accounting years 2017 to 2020. In 2021, significantly fewer calculation elements, i. e. 868 (of 41 different types), were used as the basis for approving State aid (see Figure 7).¹⁸



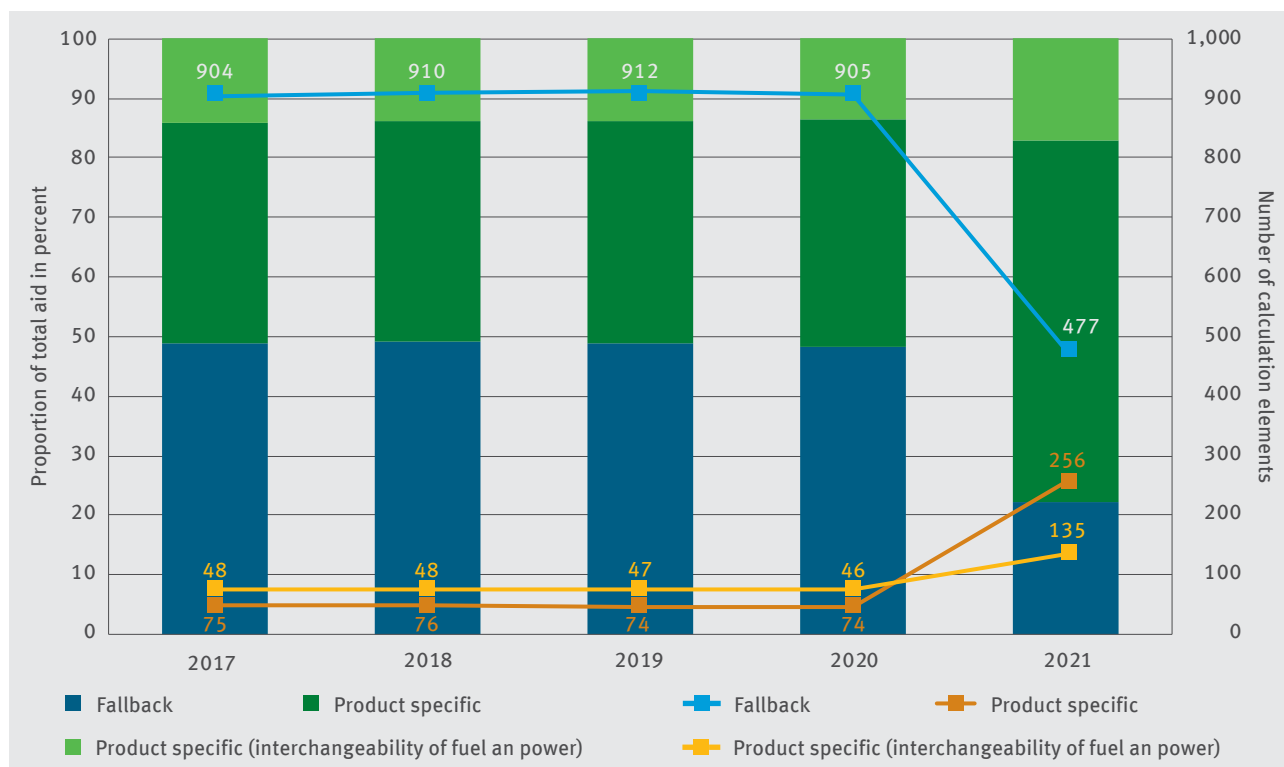
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Figure 6: Source of electricity in 2021

Figure 6 shows the proportions of fallback and benchmark approach for total aid granted for 2021. Around 78% of total aid came from the manufacture of products for which a product-specific benchmark exists. The remaining 22% of total aid is due to the manufacture of products where the fallback factor had to be applied to electricity consumption to determine the aid amount. The proportions of total aid have changed significantly compared to the 2020 accounting year. This remained constant at 50% in each of the years 2013 to 2020 (see DEHSt 2022a).

¹⁸ However, no application came from sector '1411 – Manufacture of leather clothes'. The product benchmark Chemical wood pulp, for dissolution, Semi-chemical wood pulp, Silicon carbide (SiC), High-carbon ferromanganese (FeMn HC), Ferromanganese, Ferronickel, Ferrosilicon manganese and Carbon black also did not apply.

Significantly more product-specific benchmarks have been available since the 2021 accounting year – with the entry into force of the amended EU State aid guidelines and the adjustment of the list of sectors and subsectors eligible for aid (see Table 1): there were 19 from 2013 to 2020, now there are 36, i.e. almost twice as many. The resulting increased use of product-specific benchmarks for determining individual aid levels is clearly visible in Figure 7. In the 2017 – 2020 period an average of 49% of the aid amount was determined using the fallback factor, where the aid calculation was based on an average of 908 calculation elements. In 2021, the number of calculation elements in the fallback approach fell to 477.

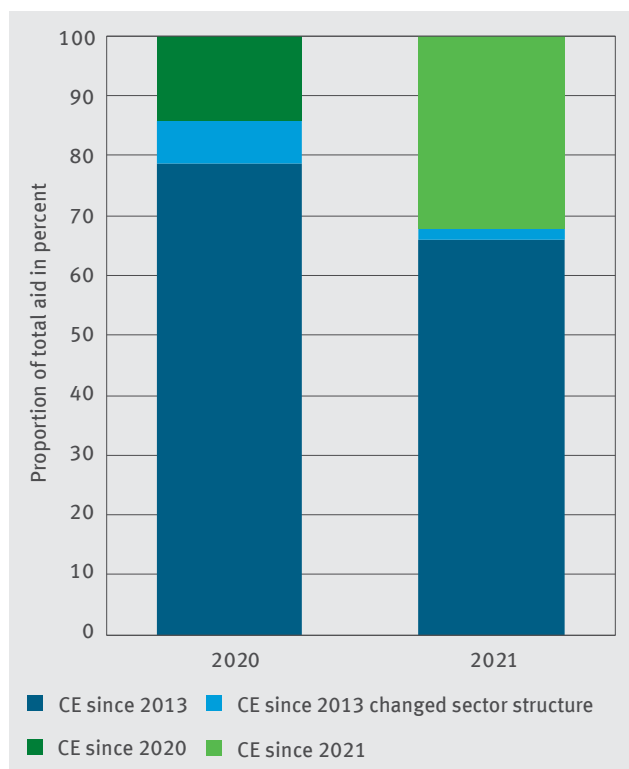


As of 16/12/2022

Figure 7: Proportions of fallback and benchmark approach in the total aid amount and number of calculation elements from 2017 to 2021

The product-specific benchmarks accounted for an average of 12% of the calculation elements and around 51% of total aid. The 2017 – 2020 aid determination was on average based on 122 calculation elements. This number increased to a total of 391 due to an increase in product benchmarks at the transition to the fourth trading period.

Figure 8 shows which calculation elements (see explanations in Chapter 2), differentiated according to how long they have been in place, of which¹⁹ were used to determine the aid in the 2020 and 2021 accounting years. The largest proportion of total aid in both years was determined by calculation elements that have been in place since 2013. In the case of the product benchmarks, these are calculation elements with benchmarks for chlorine and primary aluminium or the fallback approach for the sector '2410 – Manufacture of basic iron and steel and of ferro-alloys'. Calculation elements that were no longer applied in the 2021 accounting year because, for instance, the sector or a product was no longer eligible for aid, took up around 14% of State aid in 2020. The calculation elements for aromatic products ('2014 – Manufacture of other organic basic chemicals') and ammonia ('2015 – Manufacture of fertilisers and nitrogen compounds') are particularly worth mentioning here.



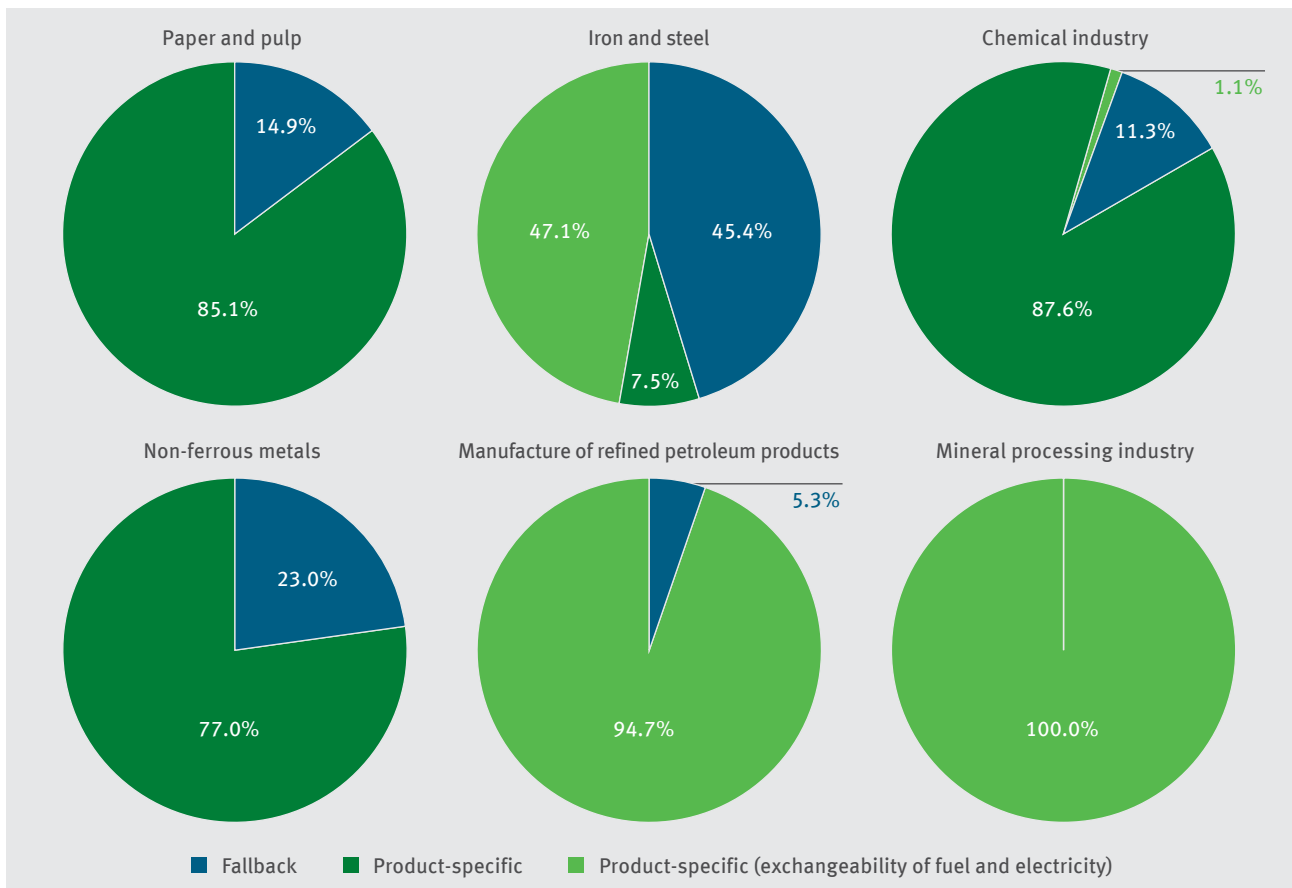
Around 32% of total aid was determined in 2021 by calculation elements that were newly applied. This mainly concerned new sectors or products eligible for aid, for example, manufacturing refined petroleum products ('1920 – Manufacture of refined petroleum products'). However, it also concerned calculation elements that were newly created for application from the 2021 accounting year onwards, since product-specific benchmarks have been envisaged for the products manufactured in the sectors since the amendment of the EU State Aid Guidelines according to Annex II.

For example, no product-specific benchmarks existed for the pulp and paper industry in the third trading period. In this period, the aid level was determined exclusively using the fallback factor. In the 2021 accounting year, a total of 13 product-specific benchmarks or calculation elements associated with the individual benchmarks were available to the companies in sectors '1711 – Manufacture of pulp' and '1712 – Manufacture of paper and paperboard'.

As of 16/12/2022

Figure 8: Proportion of calculation elements (CE) by existence category in the total aid for 2020 and 2021

¹⁹ The calculation elements were allocated according to how long they have been in place, corresponding to the period for which they were or are used. A distinction is made between calculation elements that have been used since 2013 and will continue to be used; calculation elements that were no longer to be used from 2021 because the sector or subsector was no longer eligible for aid or calculation elements for sectors that were in principle already eligible for aid from 2013 to 2020, but for which the sector structure has changed from 2021, and calculation elements that can only be used from 2021 onwards.



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Figure 9: Proportion of fallback and benchmark approach in the total State aid of the industries in 2021

For some of the sectors and subsectors eligible for State aid (see Figure 9), compensation according to benchmarks – taking into account the exchangeability of fuel and electricity – is envisaged. The decisive factor here is the requirements of the EU State Aid Guidelines that apply to the fourth trading period. As a rule, these benchmarks are applied to installations that are also subject to the EU ETS. If a benchmark product is manufactured using a fairly high electricity consumption, the installation receives a higher electricity price compensation. If a product is manufactured in a fuel or heat energy-demanding way, for example using a big steam input, it receives more free allocation. However, the emissions trading obligation is not a prerequisite for the application of benchmarks with exchangeability of fuel and electricity.

In the iron and steel industry, a slight change in the proportions of total aid granted towards more benchmark products can be seen. The discontinuation of the sector ‘0710 – Mining of iron ores’ and the sub-sector Seamless steel tubes and pipes from the sector ‘2420 – Manufacture of tubes, pipes, hollow profiles and related fittings, of steel’, for which no product-specific benchmarks existed, led to a slight decrease in the proportion of the fallback approach in 2021 compared to 2020. Within the iron and steel industry, electric steel installations in particular benefit from the electricity price compensation due to the technology involved. Benchmarks that take into account the electricity and fuel interchangeability also exist for the production of electric steel. However electricity use clearly dominates, even compared to other installations in the iron and steel industry which receive aid. This is reflected in the high share of benchmarks with exchangeability of fuel and electricity in the industry’s total aid.

Most of the products in the chemical industry that come from installations that also participate in the EU ETS are produced in a heat-demanding rather than an electricity-demanding way. The resulting electricity price compensation is therefore relatively low and free allocation predominates. Therefore, the proportion of benchmarks with exchangeability of fuel and electricity in the industry's total aid is relatively low. In the chemical industry, around 88% of aid in 2021 was determined via product benchmarks. In comparison, the proportion of product-specific benchmarks was significantly lower in the previous year at around 56%. This change can be explained primarily by the discontinuation of sectors '2414 – Manufacture of other organic basic chemicals' and '2415 – Manufacture of fertilisers and nitrogen compounds', and the change in the sector '2016 – Manufacture of plastics in primary forms', for which the State aid for electricity price compensation was largely determined using the fallback approach.

In the non-ferrous metals industry, around 77% of the aid amount was determined via benchmarks. The distribution of product benchmarks for the fallback approach remained unchanged compared to the previous year.

In the industry manufacturing refined petroleum products, the largest proportion of total aid for 2021 was determined using the product benchmark 'refinery products' with exchangeability of fuel and electricity. Most of the installations that received aid for their manufactured products in the sector '1920 – Manufacture of refined petroleum products' are installations that are also subject to the EU ETS as a typical refinery. The proportion of aid determined in this industry using the fallback approach primarily comes from installations that manufacture products in the '1920 – Manufacture of refined petroleum products' sector but do not constitute a typical refinery as defined by the EU ETS (see Chapter 4 and DEHSt 2022b).

Table 7 shows the proportions of the individual product benchmarks in total aid for 2021. As in previous years, the largest share is accounted for by the production of chlorine (Cl₂) with around 14%, followed by the production of primary aluminium with around 13%. The production of hyperpure polysilicon accounts for 6% of the aid amount.

The iron and steel industry benchmarks (carbon steel, high-alloy steel, oxygen steel) have a total proportion of 11.3% of the electricity price compensation approved for 2021.

A total of 11 benchmarks in the pulp and paper industry (corresponding to '1711 - Manufacture of pulp' and '1712 – Manufacture of paper and paperboard') account for a total of 23.5% of total aid. Three of the benchmarks are below one percent of total aid and are therefore not visible in the table.

Twelve other benchmarks account for a total of 4.3% of aid for 2021, including the product benchmarks for the manufacture of hydrogen and sulphuric acid.

The iron casting product benchmark introduced for the new '2451 – casting of iron' eligible sector accounts for 1.7% of the total electricity price compensation in 2021.

Table 7: Proportions of the benchmark calculation elements¹⁸ in the 2021 total aid amount

Product benchmark	Proportion of EPC 2021
Chlorine (Cl ₂)	14,0%
Primary aluminium	12,7%
Hyperpure polysilicon	6,1%
EAF (electrical arc furnace) carbon steel	5,8%
Refinery products	5,2%
Recovered paper	4,4%
Testliner and fluting	4,4%
EAF (Electrical arc furnace) high-alloy steel	4,0%
Coated fine paper	3,6%
Uncoated fine paper	3,0%
Deinked recovered paper	2,0%
Tissue	2,0%
Newsprint	1,8%
Iron casting	1,7%
Oxygen steel	1,6%
Coated carton board	1,2%
Other twelve benchmarks	4,3%
Total	77,6%

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Table 8 shows the proportions of the fallback calculation elements in the aid amount. The largest proportion is in the sector '2410 – Manufacture of basic iron and steel and of ferro-alloys' with about 11%.

The sectors '1711 – Manufacture of pulp' and '1712 – Manufacture of paper and paperboard' accounted for only 4.1% in 2021 and no longer 18% as in the previous year.

Three other sectors and subsectors have a proportion of 1.9 to 2.6% of the aid amount. The remaining seven sectors and subsectors account for about 0.8% of the aid amount.

Table 8: Proportion of fallback calculation elements¹⁸ in the 2021 State aid amount

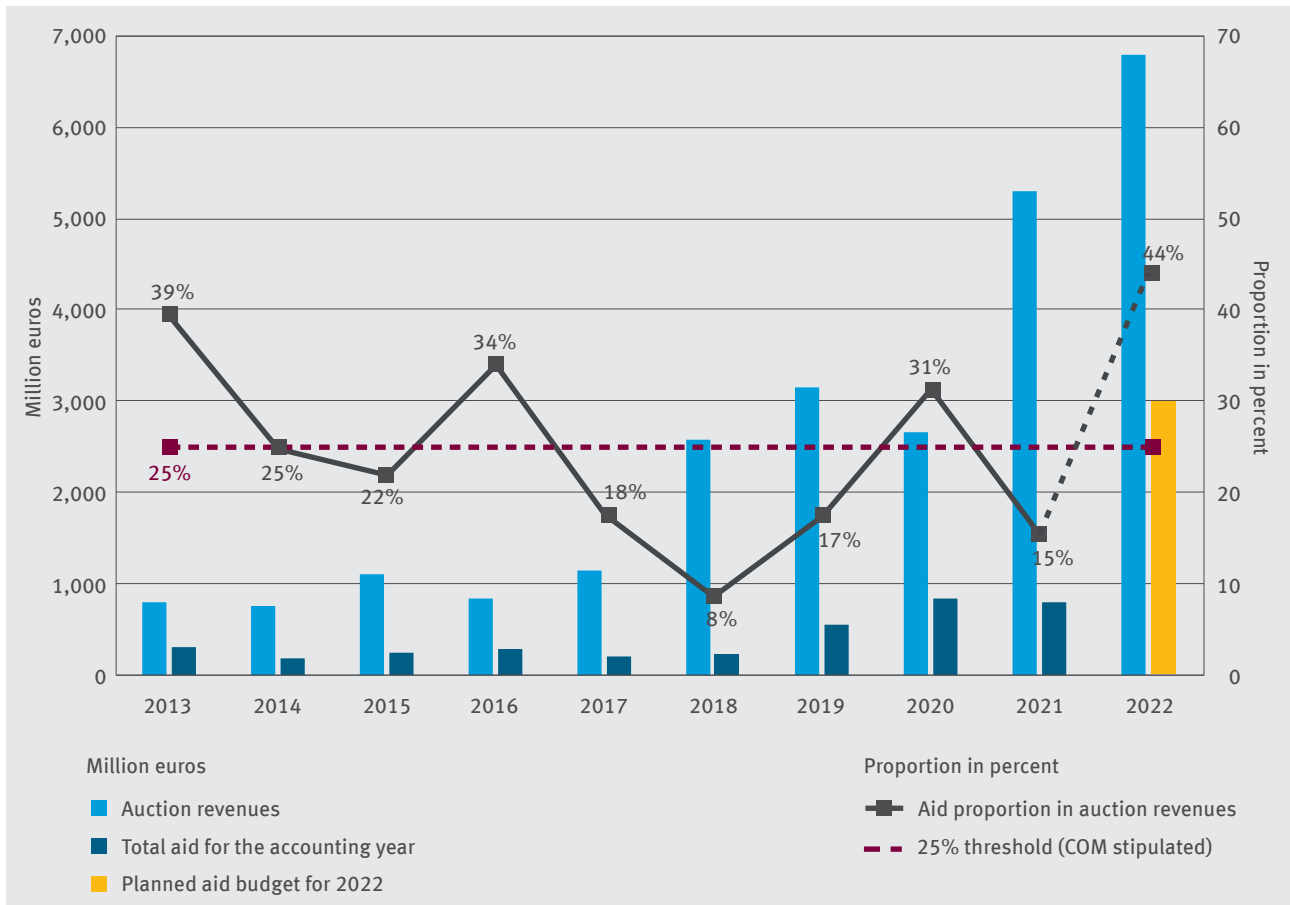
Fallback calculation element	Proportion in EPC 2021
Fallback – Manufacture of basic iron and steel and of ferro-alloys	10,9%
Fallback – Manufacture of other inorganic basic chemicals	2,6%
Fallback – Manufacture of paper and paperboard	2,2%
Fallback – Aluminium production	2,1%
Fallback – Manufacture of pulp	1,9%
Fallback – Copper production	1,9%
Other seven benchmarks	0,8%
Total	22,4%

As of 16/12/2022

7 Proportion of Electricity Price Compensation in Auction Revenues

According to Article 10a(6), the Emissions Trading Directive as amended in 2018 even before the start of the fourth trading period, specifies that the amount paid should not exceed 25% of the auction revenues of the Member State concerned. Otherwise, the Member State must justify why the proportion of aid in the auction revenues exceeds this threshold. According to the European Commission²⁰, the proportion is calculated as the ratio of aid for a given reporting year to the auction revenues of the same year.

Since electricity price compensation in Germany is applied for and granted in arrears, it means that for this report the reported State aid for 2021 (accounting year) was applied for and granted in 2022. This value for 2021 is offset against the 2021 auction revenues to determine the proportion. Thus the proportion available for the 2021 accounting year is around 15%.



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Figure 10: Disbursed aid in the accounting year (for 2022: estimated budget), auction revenues (EUA and aEUA) of the respective year and respective proportion since 2013

Figure 10 shows both the aid disbursed for the 2013 – 2021 accounting years and the auction revenues of the same years as columns, and the proportion of annual aid disbursed in the auction revenues as lines. The figure shows that this was not the case in 2013, 2016 and 2020 as the proportion in some cases was well above the 25% threshold in those years. In 2014, the figures were just below the threshold. For 2015, 2017, and 2018, the proportion was below the 25% threshold, and for 2019 it was also below the threshold at around 17%. For the 2021 accounting year, however, the proportion of aid disbursed in the auction revenues was again well below the 25% threshold at around 15%.

²⁰ See COM 2019, Table 4, p. 22.

What causes the proportions of disbursed aid to vary in the auction revenues?

Basically, several factors have an influence on the amount of State aid paid out and the associated exceeding or falling below the 25% mark.

The amount of State aid disbursed per year in the 2013 – 2021 period also depended on the aid intensity. This was highest in the years from 2013 to 2015 at 85% of the amount of electricity eligible for compensation, for the 2016–2018 period it was then 80%, and for 2019 to 2021 the aid intensity dropped to 75%. However, the intensity was identical in 2019 and 2020, for example, and yet it was in these two years that the jump from 17 to 31% proportion of the aid amount disbursed in auction revenues was particularly significant.

Another possible factor relevant to the amount of State aid is the amount of CO₂ on which the aid calculation is based (as the product of the relevant electricity consumption for the manufacture of products eligible for aid and the CO₂ emission factor). However, this has remained more or less the same since 2013 (see Chapter 3 and DEHSt 2022a) and therefore does not play a significant role in fluctuations in the proportion of State aid in the auction revenues.

Since the electricity consumption relevant for the State aid calculation also shows only minor fluctuations, the relevant EUA price remains as a possible cause for the strong fluctuations over time.

Electricity price compensation is determined based on the respective previous year's average of the daily settlement prices of the exchange-traded reference contract for European emission allowances (EUA). For the 2013-2021 accounting years, this was the futures contract traded on the ICE Futures Europe in London with delivery in December of the following year (see Figure 12). Thus, the maturity of the reference contract corresponds to the electricity price compensation accounting year. For the 2021 accounting year, the relevant EUA price was therefore the annual average for 2020 of the futures contract with delivery in December 2021. Nevertheless, it has been shown that futures can only reflect the actual price trend in the maturity year to a limited extent (see below). Table 10 shows the reference prices.

Table 9: EUA price relevant for State aid calculation and aid disbursed since 2013

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
EUA price (EPC calculation basis)*	7.94	4.68	6.17	7.80	5.40	5.88	16.15	25.20	25.09	54.06
EPC (aid disbursed)**	310.00	185.16	243.11	287.91	202.21	218.50	546.04	832.82	806.05	

* in euros
 ** in million euros
 As of 05/01/2023

The volume of the auction revenues depends on the auctioned amount and the prices obtained. German auction volumes – as well as those of other Member States – have been falling successively since 2013 in line with the declining cap. However, due to ‘backloading’, there was a significant unscheduled reduction in 2014–2016 – a total of 900 million EUA²¹ across Europe – in order to stabilise the price level. These auction volumes should have been returned to the market in 2019 and 2020 but have now been transferred to the Market Stability Reserve (MSR). The MSR came into force at the beginning of 2019, and the EUA volume to be auctioned was reduced in line with the MSR mechanism in 2019, 2020, 2021 and 2022.

Figure 12 shows the trend in the EUA price level since 2013. Between the beginning of 2013 and the end of 2017, the EUA price initially fluctuated within an interval of about three to eight euros. The price increased significantly after early 2018 with the benchmark contract (ICE EUA Front December) nearly reaching €30 in mid-2019. Due to strong turbulence on the international securities and energy markets caused by the COVID 19 pandemic, EUAs lost significant value in March 2020 and briefly fell to below €15. However, this was followed by a strong upward movement and the EUA price rose to over €30 by the end of 2020. In 2021, the continuous upward trend of the previous years intensified and the EUA benchmark contract gained significantly in value. In May 2021, the €50 mark was exceeded for the first time, and in December 2021 the EUA price reached a value of around €90. Overall, the EUA price trend in 2022 was characterised by high volatility, which was also caused by strong price fluctuations on the international energy markets. The EUA benchmark contract moved between the low for the year of below €60 in March and the new all-time high of just under €100 in August.



As of 31/12/2022

Figure 11: EUA price trend since 2013

²¹ Germany accounted for about 175 million of these allowances.

Table 10 shows the average volume-weighted German auction revenues per allowance on an annual basis.

Table 10: Volume-weighted annual average EUA price of the German auctions (excluding aviation) and EUA price relevant for the aid calculation

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
EUA price (German auctions)*	4.33	5.90	7.60	5.26	5.80	14.90	24.66	24.59	52.47	80.40
EUA price (EPC calculation basis)*	7.94	4.68	6.17	7.80	5.40	5.88	16.15	25.20	25.09	54.06

* in euros
As of 05/01/2023

As a result, the EPC calculation basis and auction price are clearly drifting apart. The relevant calculation price for electricity compensation is determined from the average of the futures price in the previous year, so there is a one-year delay between the relevant pricing for electricity price compensation and that for auction revenues. Certain market trends are thus not yet reflected in the price relevant to aid calculation. This becomes clear from a comparison of the prices in Table 10. For example, the price to be applied for the 2018 EPC settlement year was €5.88, while the average price amounted to €14.90, i. e. nearly threefold, in the 2018 German auctions.

If the prices for aid calculation and from auctions were identical, the proportion of aid in the German auction revenues would be between 19 and 32% in the 2013–2021 period. If one were to take into account the EUA quantities not auctioned between 2014 and 2016 (backloading) and from 2019 (MSR) in the calculation of the auction revenues, the proportion would be between 16 and 22% (see Table 11). By default, this adjusted calculation approach also applies when taking into account the auction volume reductions starting in 2019 and equalling the withdrawn volume for the MSR for the following years.

Table 11: Proportions of the disbursed aid in the auction revenues according to different calculation methods

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Regular (see Figure 10)	39.2%	24.7%	21.9%	33.9%	17.6%	8.5%	17.3%	31.3%	15.2%	43.9%
Identical EUA price	21.4%	31.1%	27.0%	22.8%	18.9%	21.4%	26.4%	30.5%	31.8%	65.3%
Identical EUA price, without backloading/MSR	21.4%	19.3%	19.3%	18.4%	19.0%	21.5%	15.8%	17.5%	17.7%	31.4%

As of 05/01/2023

25% threshold as a tool for assessing EPC aid levels?

The ratio of State aid disbursed for a given reporting year compared to auction revenues is largely determined by the time-delayed approach determining the two relevant EUA prices (EPC calculation basis based on the previous year's future contract versus the revenues of Germany's auctions in the year under consideration) and the amount of EUA auctioned and the electricity consumption eligible for aid, i. e. production in sectors eligible for aid.

In the period between 2020 and 2021, the effect of the time lag between the relevant pricing for electricity price compensation and that for auction revenues can be seen particularly clearly:

The average revenue per EUA of the German auctions in 2020 was almost at the previous year's level. However, due to the significantly lower auction volumes compared to 2019²², the total annual revenue in 2020 decreased by around 16% compared to the previous year. This resulted in an overshoot of the 25% threshold.

Due to a continuous upward trend in EUA prices in 2021, the average revenue per EUA is more than twice as high as in the previous year. The total annual revenue in 2021 is also almost 100% higher than in the previous year, despite moderately lower auction volumes. However, State aid was calculated using the significantly lower EUA average price during 2020 (EPC calculation basis 2021). Therefore, the ratio of disbursed State aid to auction revenues in the 2021 accounting year was significantly below 25%.

In general, it can be said that the 25% threshold has tended to be exceeded in the past when the auction revenues have decreased, for example in the 2020 accounting year due to a special effect, or when the EUA price of the EPC calculation basis exceeded the auction price. In addition, the level of production in sectors eligible for aid and thus the electricity consumption eligible for aid also played a role. This means that if this is higher (for example, compared to other Member States or compared to the previous year), the 25% threshold is also more likely to be exceeded. Whether the threshold is exceeded depends on factors outside the direct sphere of influence of the respective Member State's policy (for example, EUA price trend, economic structure).

²² The total volume of emission allowances to be auctioned in 2018 for Germany originally amounted to 194,027,000 EUAs. Auctions that were provisionally scheduled for the period after 09/11/2018 were deleted from the 2018 auction calendar. The corresponding volume of 21,807,000 EUAs was distributed among the volume to be auctioned in 2019.

8 Outlook

The applications for State aid for the 2022 accounting year take place between 03 April and 30 June 2023. The EUA price to be used for calculating State aid for 2022 is €54.06. It is thus more than twice as high as in the 2021 accounting year (€25.09). This will in turn lead to an increase in the total amount of aid. The Federal Ministry for Economic Affairs and Climate Action has therefore allocated around three billion euros for the 2022 accounting year.

9 Annex

The 2013–2020 figures published in the report may differ from previous publications due to retrospective amendments to aid payments because of legal actions such as appeals, lawsuits and reclamations.

Table 12: Number of approved applications and number of installations and total aid disbursed since 2013

Industry (EPC)	Number of applications	Number of installations	EPC*
2013	339	968	309.89
2014	333	926	184.86
2015	330	906	242.83
2016	326	903	287.24
2017	321	892	201.57
2018	321	897	218.31
2019	322	901	545.99
2020	324	892	832.14
2021	341	676	806.05

* in million euros
As of 16/12/2022

10 Literature and Sources

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