



State aid for indirect CO₂ costs of emissions trading (electricity price compensation) in Germany for 2016

(EPC report 2016)

Editorial information

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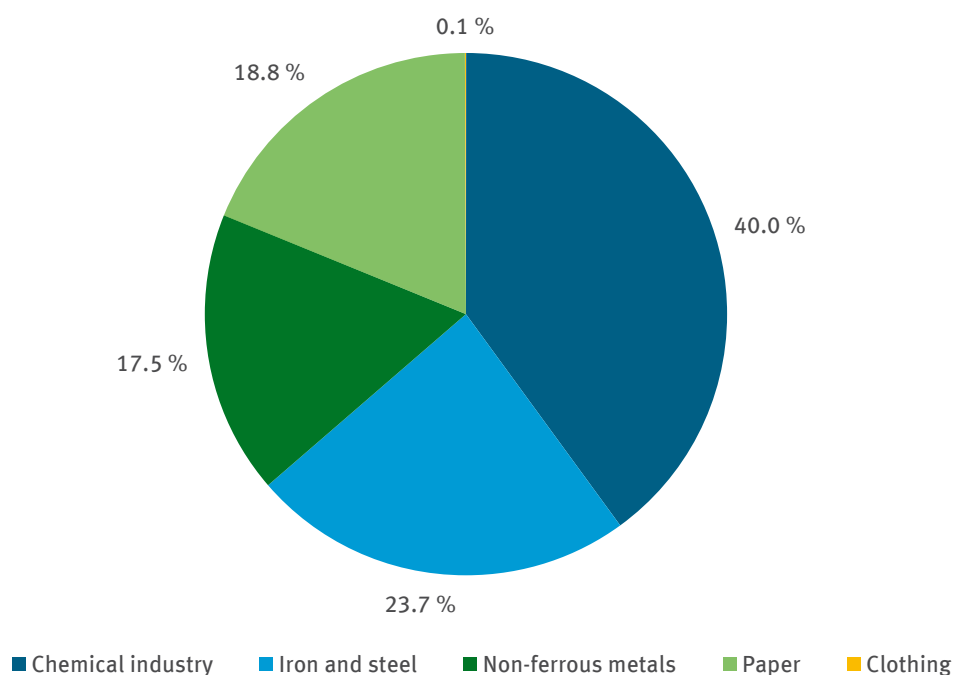
1 Results of the application process for electricity price compensation in 2016

State aid for emissions trading-related indirect carbon dioxide (CO₂) costs aims to prevent the risk of carbon leakage outside the European Union¹. The aid can be retrospectively applied for after the end of a calendar year and is intended to compensate for a part of the indirect CO₂ costs of the previous year in arrears. The application period for the 2016 accounting year was from 01/03/2017 to 31/05/2017. This deadline was a cut-off deadline.

A total of 329 applications were received for the 2016 accounting year. Following the verification of the applications, 326 undertakings with 902 installations received around € 289 million in aid. The EEA price used to calculate the aid (see explanatory notes in Section 2, p. 5 onwards) amounted to € 7.80. This means that the total approved state aid for 2016 amounted to € 289 million and is higher than in 2015 (€ 244 million).

In certain circumstances, the so-called difference carried forward (see explanatory notes in Section 2, p. 5 onwards) was applied to determine the aid amount for the 2016 accounting year, as was the case for the 2015 accounting year. In 2016, this amounted to around € 476,000 (about € 700,000 for the 2015 accounting year) and has already been included in the allocated aid sum of € 289 million. In 2016, 45 undertakings benefited from the difference carried forward due to the development of production and electricity consumption in 61 of their installations.

As in previous years, undertakings in the chemical industry received 40 percent, which was the largest share of the compensation for 2016. Undertakings in the iron and steel industry followed with 24 percent, the paper industry with 19 percent, and the non-ferrous metal industry with approximately 18 percent (see Figure 1). The shares of the individual industries have changed only slightly compared to the 2015 accounting year.



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Figure 1: Distribution of state aid for electricity price compensation in 2016 for individual industries

¹ Article 10a(6), Directive 2003/87/EC of 13/10/2003 as of 25/06/2009 (EC Emissions Trading Directive).

Of the 902 installations for which aid has been granted, 470 participate in the European Emissions Trading Scheme (EU ETS). Their share of the total state aid is almost 70 percent (see Table 3, p. 14). Many installations, particularly in the chemical industry and the non-ferrous metal industry, do not fall within the scope of the ETS. Installations of the paper industry as well as the iron and steel industry are largely covered by the European Emissions Trading Scheme.

As a basis for the calculation of state aid for 2016, product-specific electricity consumption efficiency benchmarks (hereinafter called 'benchmarks') are just as important as the so-called fallback factor: about half of the total state aid results from the manufacture of products for which a benchmark exists and from the manufacture of products whose electricity consumption have the fallback factor applied (see explanatory notes in Section 2, p. 5 onwards) in order to determine the aid amount. The largest share in the aid for the 2016 accounting year are held by the benchmarks chlorine (17 percent) and primary aluminium (12 percent), as well as the fallback calculation elements of the sectors 'Manufacture of paper and paperboard'² (14 percent) and 'Manufacture of basic iron and steel and of ferro-alloys'³ (11 percent).

Section 2 of the report provides initial information on electricity price compensation in general. Section 3 describes some evaluation methods. Section 4 addresses the electricity compensation at the application level, i.e. at undertakings level. Section 5 additionally contains evaluations at the installation level. Section 6 comprises evaluations at the level of the calculation elements. Finally, Section 7 provides an outlook on the electricity price compensation for the 2017 accounting year.

2 State aid for indirect CO₂ costs of the EU Emissions Trading Scheme

State aid for indirect CO₂ costs should prevent the risk of shifting CO₂ emissions to locations outside the geographical scope of the EU Emissions Trading Directive (EHRL)⁴ (so-called carbon leakage). Indirect CO₂ costs are caused by the fact that electricity generators are passing on the costs of emission allowances to their customers via the price of electricity. The aid is intended to compensate for some of these costs for undertakings in certain electricity-intensive sectors and subsectors mentioned in Annex II of the EU State Aid Guidelines⁵. The aid is therefore linked to the electricity consumption of installations. It does not matter whether the installations are covered by the emissions trading system or not. The granting of aid is based on the State Aid Directive adopted by the Federal Ministry for Economic Affairs and Energy⁶.

The European Commission has identified the sectors and subsectors in which it has detected such risks of indirect carbon leakage⁷. These sectors include particularly electricity-intensive production processes and are subject to strong international competition (see Table 1). Thus, the authorisation of the application depends on the products manufactured by an undertaking. If these products are eligible for aid, the assignment of an undertaking to a particular industry is not decisive for granting the aid.

Annex III 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 used to calculate the aid. The calculation of the aid in these cases is therefore based on the quantity produced, indicated in tonnes of product (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 'fallback factor') which is 0.8.

² Code 2112 according to NACE Rev. 1.1.

³ Code 2710 according to NACE Rev. 1.1.

⁴ Article 10a(6), Directive 2003/87/EC of 13/10/2003, as of 25/06/2009 (EC Emissions Trading Directive).

⁵ European Commission Guidelines on certain State aid measures in the context of the greenhouse gas emission allowance trading scheme post-2012 (Communication 2012/C 158/04, Official Journal of the European Union (OJ) EU C 158 of 05/06/2012, p. 4), amended by Communication 2012/C 387/06 (OJ) EU C 387 of 15/12/2012, p. 5), as corrected by Communication 2013/C 82/07 (OJ) EU C 82 of 21/03/2013, p. 9).

⁶ 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 (aid for indirect CO₂ costs) of 23/07/2013, official part of the Bundesanzeiger (Federal Gazette AT) 06/08/2013 B2, last amended by the second Amendment of Directive of 21/08/2018, Bundesanzeiger (Federal Gazette AT) 28/08/2017 B1.

⁷ Annex II of the EU State Aid Guidelines.

Products with an identical benchmark manufactured within an installation are grouped together into 'calculation elements' for further calculation. The affiliation to the same sector is decisive for the aggregation of fallback products into calculation elements.

According to the EU State Aid Guidelines and the German State Aid Directive, a total aid amount per applicant is calculated by using these quantities and the emission allowance price to be applied (EUA price)⁸, the CO₂ emission factor (0.76 tonnes of carbon dioxide per megawatt-hour) and the state aid intensity⁹.

The German State Aid Directive for electricity price compensation stipulates that the CO₂ costs of the electricity purchase of one gigawatt-hour per year and the installation considered are subtracted from the total aid amount of an undertaking. This retention is calculated based on the EUA price for 2016 (€ 7.80) and the CO₂ emission factor of 0.76 tonnes of carbon dioxide per megawatt-hour. For the electricity purchase of one gigawatt-hour, this results in CO₂ costs of € 5,928 as retention per installation.

In certain circumstances, the term known as difference carried forward¹⁰ applies to determine the amount of aid for the 2016 accounting year. In principle, the aid is determined based on the accounting year data. However, this is limited by the aid which would have resulted based on the baseline data – as a rule the period between 2005 and 2011.

If the amount of electricity actually purchased in a previous accounting year exceeded the aid based on the data of the baseline, the carryover will be credited as a positive balance to the difference account. If the amount of electricity for a later accounting year, in this case 2016, is lower than the amount of electricity based on the baseline data, the aid is increased by the difference carried forward. However, the increase is limited to the aid amount based on the baseline.¹¹

8 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 2016 accounting year, this was the ICE futures Europe with delivery in December of the respective year (see Section 5.1 k) of the State Aid Guidelines).

9 The following aid intensities (Ai) set out in the EU State Aid Guidelines under margin No. 26 apply: $Ai_{2013-2015}=0.85$; $Ai_{2016-2018}=0.8$; $Ai_{2019-2020}=0.75$.

10 Difference carried forward in euro at installation level pursuant to No. 5.2.1(a) and (b) of the State Aid Guidelines in conjunction with No. 1 of the Decree of 27/12/2013.

11 See DEHSt 2017a, Section 3.5 Influence of basic data of baseline and difference carried forward on the amount of aid.

3 Assessment methods

3.1 Combining sectors into industries

For a more transparent analysis and presentation, this report combines sectors and subsectors eligible for aid into industries (see Table 1). This enables an unambiguous assignment to industries at a calculation element level (see Section 6). Each calculation element belongs precisely to one of the sectors and subsectors eligible for aid. At the undertakings level (see Section 4), the assignment usually depends on which sectors have the largest share of the aid amount. The assignment at the undertaking level was subsequently transferred to that undertaking's installations (see Section 5).

Table 1: List of sectors and subsectors eligible for aid according to NACE Revision 1.1 (2007) in accordance with the EU State Aid Guidelines (Annex II)

Sectors according to NACE ¹² Revision 1.1	Name	Industry
1310	Mining of iron ores	Iron and steel
1430	Mining of chemical and fertiliser minerals	Chemical industry
1711	Spinning of cotton-type fibres	Clothing
1810	Manufacture of leather clothes	
21111400	Parts of the industry "Manufacture of pulp": mechanical pulp	Paper
2112	Manufacture of paper and paperboard	
2413	Manufacture of other inorganic chemicals	Chemical industry
2414	Manufacture of other organic chemicals	
2415	Manufacture of fertilisers and nitrogen compounds	
2416 (Parts)	Parts of the industry "Manufacture of plastics in primary forms": <ul style="list-style-type: none"> ▶ 24161039 Low-density polyethylene (LDPE) ▶ 24161035 Linear low-density polyethylene (LLDPE) ▶ 24161050 High-density polyethylene (HDPE) ▶ 24165130 Polypropylene (PP) ▶ 24163010 Polyvinyl chloride (PVC) ▶ 24164040 Polycarbonate (PC) 	
2470	Manufacture of man-made fibres	
2710	Manufacture of basic iron and steel and of ferro-alloys	Iron and steel
272210	Parts of the industry "Manufacture of steel pipes, steel tube fittings": seamless steel pipes	
2742	Aluminium production	Non-ferrous metals
2743	Lead, zinc and tin production	
2744	Copper production	

In Section 5.1, the installations are apportioned according to whether they are subject to emissions trading or not. The assignment to industries will continue to be oriented on the method mentioned above and not on assignments that may have originated from emissions trading assessments.

¹² NACE (Nomenclature générale des activités économiques dans les Communautés Européennes) Rev. 1.1 is the Statistical Classification of Economic Activities in the European Community, published by Commission Regulation (EEC) No. 29/2002 of the Commission of 19/12/2001.

3.2 Assignment of the aid amount at the calculation element level

The aid amount cannot be assigned to individual calculation elements without conversion due to the per-installation retention (see Section 2) The per-installation retention was therefore apportioned to the calculation elements of an installation.

4 Overview by undertakings

For 2016, a total of 329 applications for electricity price compensation were submitted to the German Emissions Trading Authority (DEHSt) at the German Environment Agency, of which three applications were rejected. One reason for this was that the manufactured products were not eligible for aid. Thus 326 applications including 902 installations were approved in total. The aid granted was € 289 million for 2016 (see Table 2).

The increase in the aid amount by € 45 million compared to the previous year (€ 244 million) is due to a higher EUA price for the aid calculation for 2016, which was € 7.80 in 2016 compared to € 6.17 in 2015. The shares of individual industries in the aid amount have changed only slightly compared to 2015.

Table 2: Number of approved applications and number of installations according to industries and sum of aid paid in 2016

Industry (EPC)	Number of applications	Number of installations	EPC 2016 [euro]
Chemical industry	113	485	115,350,442.20
Iron and steel	50	161	68,413,650.69
Non-ferrous metals	48	106	50,573,488.96
Paper	107	142	54,217,671.48
Clothing	8	8	168,054.73
Total	326	902	288,723,308.06

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Table 2 shows the distribution of the total aid amount to individual industries. The chemical industry continues to have the largest share in the aid amount with about € 115 million and a share of 40 percent. This is followed by the iron and steel industry with about € 68 million, which amounts to a share of 24 percent. The paper industry accounted for about € 54 million in 2016. Its 19-percent share is still about the third largest of the total aid. The non-ferrous metal industry received about € 51 million in 2016, about 18 percent of the total aid. The clothing industry received about € 168,000 or 0.1 percent, which is a very small proportion of the 2016 electricity price compensation.

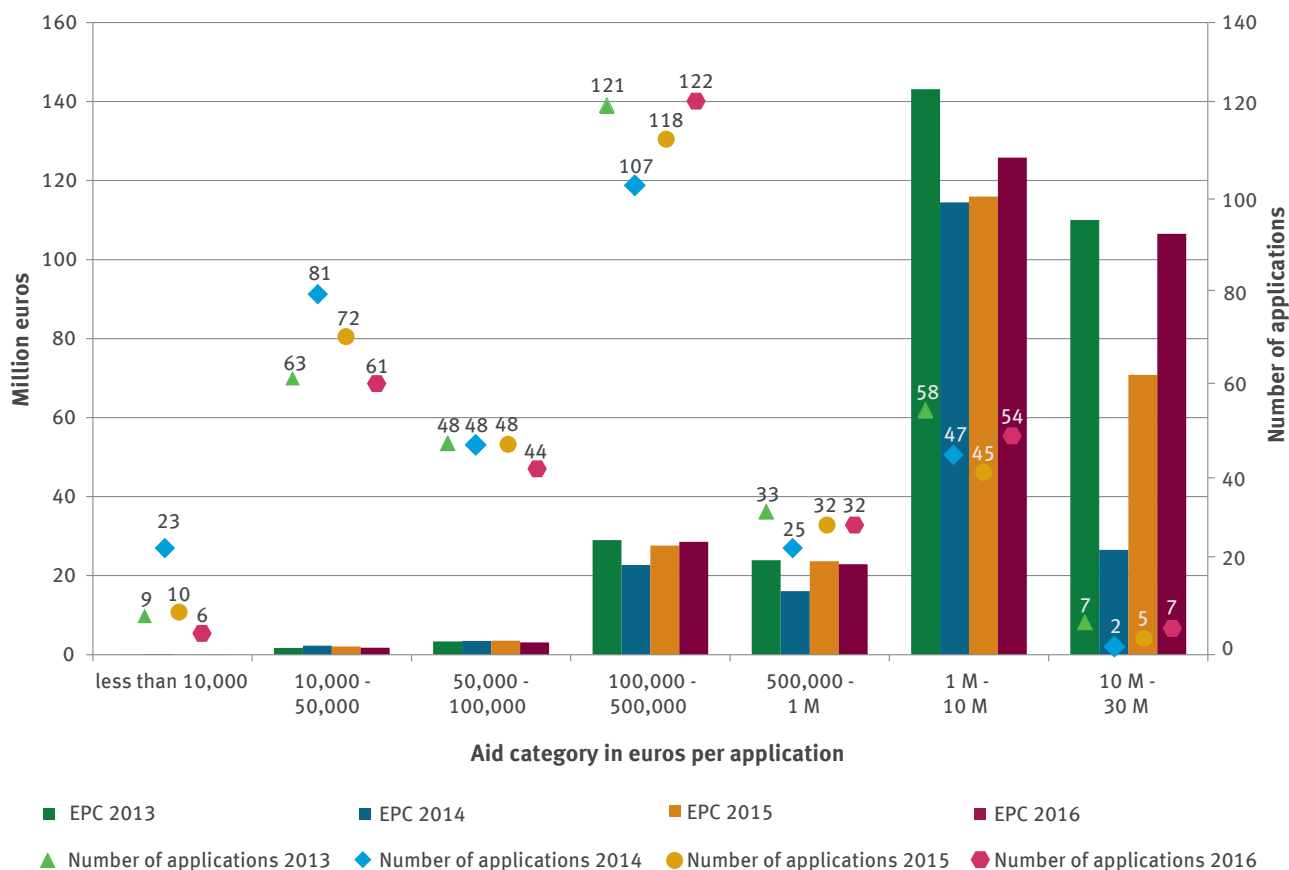
The average aid amount for an undertaking was about € 886,000 in 2016 (2015: € 739,000). However, the scattering of the aid per company is very broad.

Figure 2 shows the distribution of the number of undertakings and the aid amount according to differentiated types of aid. With € 4.68 in 2014, a lower EUA price was relevant for calculating the aid amount as opposed to € 7.94 in 2013. Therefore, the number of undertakings in the highest aid category (€ 10 million to € 30 million) decreased from seven to two. With € 6.17, the EUA price for 2015 was once again above the EUA price of the previous year and increased even more in 2016 to € 7.80. This is why the number of undertakings in the highest aid category increased yet again to seven – the same as in the 2013 accounting year.

For 2013, each of the 65 undertakings – about 19 percent – received more than € 1 million and over 80 percent of the total aid amount. Due to the lower effective EUA price, the number of undertakings receiving aid of over € 1 million decreased to 49 in 2014. This number increased to 50 undertakings in 2015. As a result of the sharp increase in the EUA price in 2016, which was comparable to the EUA price in 2013, the number of undertakings in the two highest aid categories increased to 61. In all four years, 18 percent of the undertakings on average received about 80 percent of the total aid amount.

Since the EUA price was only € 4.68 in 2014, the number of undertakings in the lowest aid category (less than € 10,000) increased significantly from nine undertakings to 23 undertakings. In the 2016 accounting year, only six undertakings were included in this category of aid.

With around 35 percent of the applications, most undertakings fall within the € 100,000 to € 500,000 aid category, but receive only about 10 percent of the total amount of aid.



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Figure 2: Number of applications and total aid according to aid amount per application

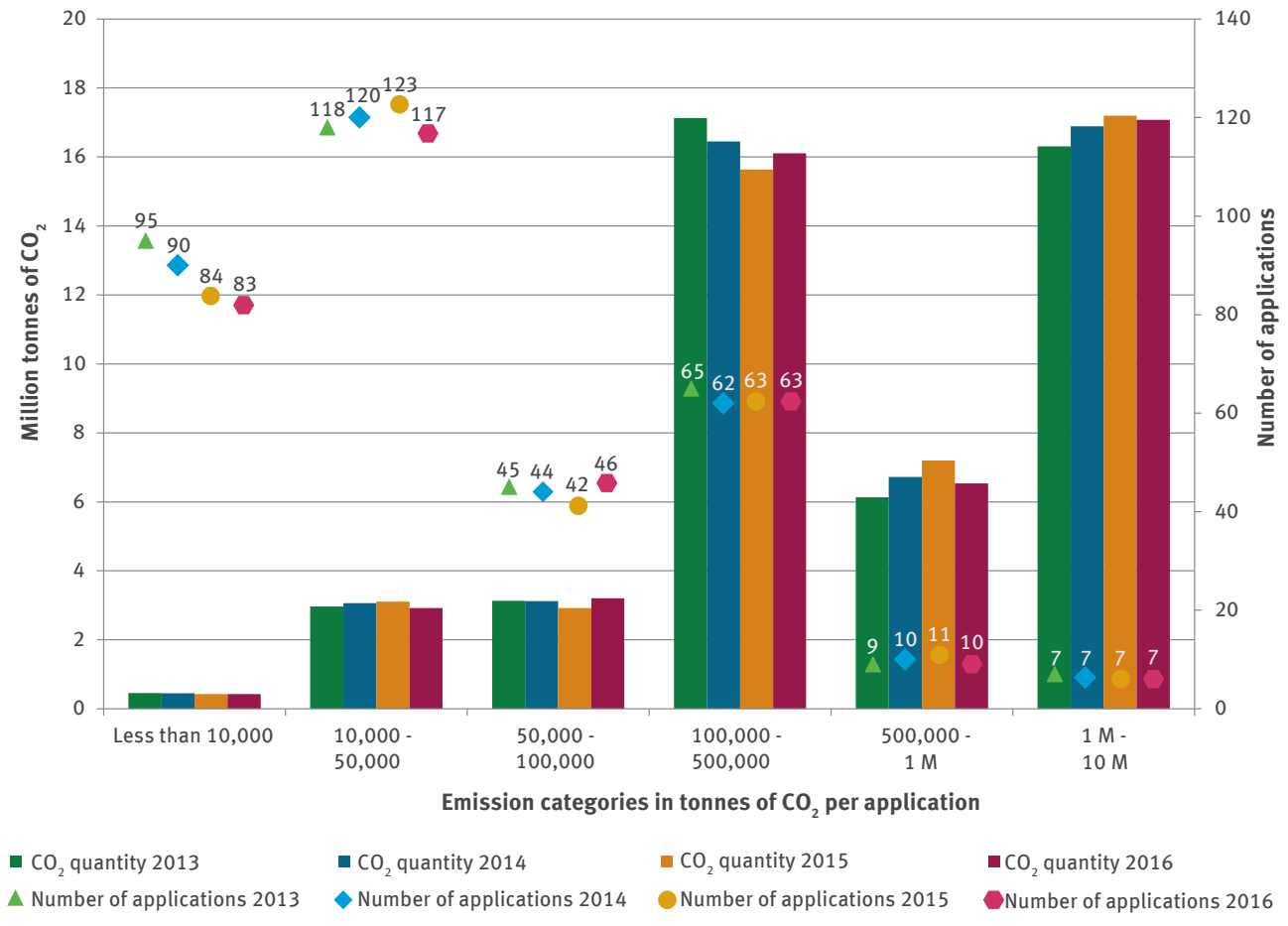
While the total aid of the 2013 to 2016 accounting years has so far differed significantly (see Table 6 to 9 in the Annex), the carbon dioxide used for the calculation of the aid for each of the years amounted on average to 46 million tonnes of CO₂.¹³ This means that the high fluctuations of the total aid can mostly be attributed to the volatile EUA price and less to a changed carbon dioxide quantity.

Figure 3 shows the number of applications and the total CO₂ quantity used for calculating the aid, according to the CO₂ quantity category per application. Slight changes can be observed over the course of time in the individual categories, while the number of applications also changed slightly. For example, the number of applications in the 500,000 to 1 million tonnes of CO₂ category increased from nine to eleven between 2013 and 2015. In the 2016 accounting year, the number of applications dropped to ten and, consequently, so did the amount of CO₂ used for the aid calculation.

The increase between 2013 and 2015 in the CO₂ quantity in the category of 1 to 10 million tonnes of CO₂ is clearly visible, even though the number of applications remained the same. This means that the amount of CO₂ increased in this category between 2013 and 2015 and sank slightly in 2016.

¹³ This value is determined using the disbursed aid sum, the EUA price P_t to be applied and the aid intensity A_{it} : the values for the EUA price result from the provisions of the State Aid Directive, i.e. $P_{2013} = € 7.94$, $P_{2014} = € 4.68$, $P_{2015} = € 6.17$, $P_{2016} = € 7.80$. The aid intensity is also stipulated, i.e. $A_{i,2013-2015} = 0.85$, $A_{i,2016} = 0.8$.

Despite a fluctuating number of applications in the category of 100,000 to 500,000 tonnes of CO₂, the amount of CO₂ fell between 2013 and 2015. In 2016, the number of applications remained the same, while the amount of CO₂ used for the aid calculation increased once again.



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Figure 3: Number of applications and total CO₂ amount used for the aid calculation, according to CO₂ amount per application

5 Results at installation level

5.1 Electricity price compensation and emissions trading

The 326 undertakings that received aid in the 2016 accounting year produced products eligible for aid in 902 installations. More than half of them (470 installations) participate in the emissions trading scheme (see Table 3). The proportion of installations subject to emissions trading that were eligible for aid was on the same level in the previous years.

In the chemical industry, 289 out of 485 installations (60 percent) are not subject to emissions trading. These installations received nearly 70 percent of the aid amount in this industry. The reason for this is that many electricity-intensive processes here do not discharge relevant amounts of greenhouse gases and are therefore not subject to emissions trading. In addition, many chemical sites are supplied from centralised power and steam sources, to which the emissions trading obligation is limited.

The same applies to the non-ferrous metal industry – about 74 percent of the installations here (78 out of 106) are not included in the emissions trading scheme. These installations count for a share of only twelve percent of the aid amount available to this industry. This is mainly due to the fact that the major beneficiaries in the non-ferrous metal industry – the installations for aluminium production through electrolysis – are also subject to emissions trading.

Table 3: Number of installations per industry in 2016, showing those subject to emissions trading and those not

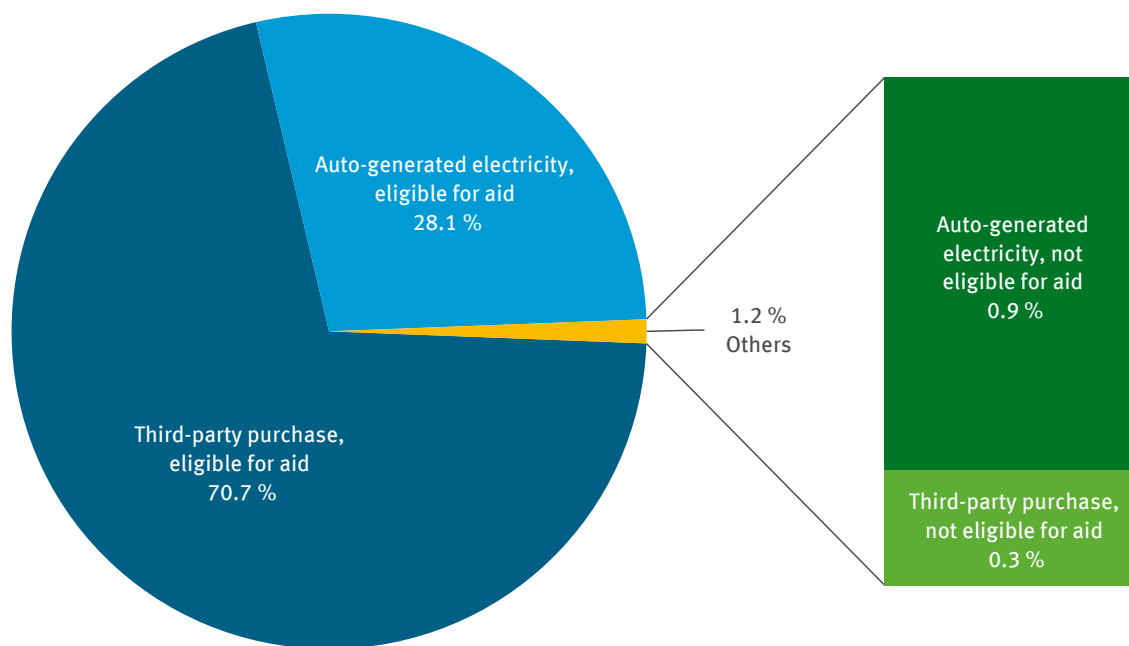
Industry (EPC 2016)	Number of installations	Of which		Share of aid in industry	
		ETS	Non-ETS	ETS	Non-ETS
Clothing	8	0	8	0 %	100 %
Chemical industry	485	196	289	31 %	69 %
Iron and steel	161	113	48	92 %	8 %
Non-ferrous metals	106	28	78	88 %	12 %
Paper	142	133	9	99 %	1 %
Total	902	470	432	68 %	32 %

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5.2 Source of electricity

The basis for calculating aid is a CO₂ emission factor of 0.76 tonnes of CO₂ per megawatt-hour of electricity, which is the same for all German undertakings. When no CO₂ costs are incurred in connection with the electricity consumed, no aid will be granted. This is the case, for example, when undertakings generate their own electricity from installations not subject to emissions trading. Figure 4 shows the share of individual electricity sources in the total electricity consumption of the installations for which electricity price compensation has been granted. Overall, 1.2 percent of total electricity consumption is not eligible for aid because no connected CO₂ costs are incurred. About 28 percent of electricity consumed is auto-generated in installations subject to emissions trading by undertakings that have received aid. Approximately 71 percent of electricity consumption is electricity eligible for aid generated by other undertakings. According to the applicants, CO₂ costs in the electricity supply contract were explicitly identified for only a small part (3 percent) of the third-party purchased electricity eligible for aid. For a large part, the CO₂ costs associated with eligible electricity purchased by third-party's (80 percent), was certified by means of electricity labelling according to Section 42 of the German Energy Industry Act (EnWG).¹⁴ In addition, around 14 percent of the third-party purchased eligible electricity stems directly from an electricity exchange, which means that the stock exchange price that usually contains CO₂ costs was already paid.

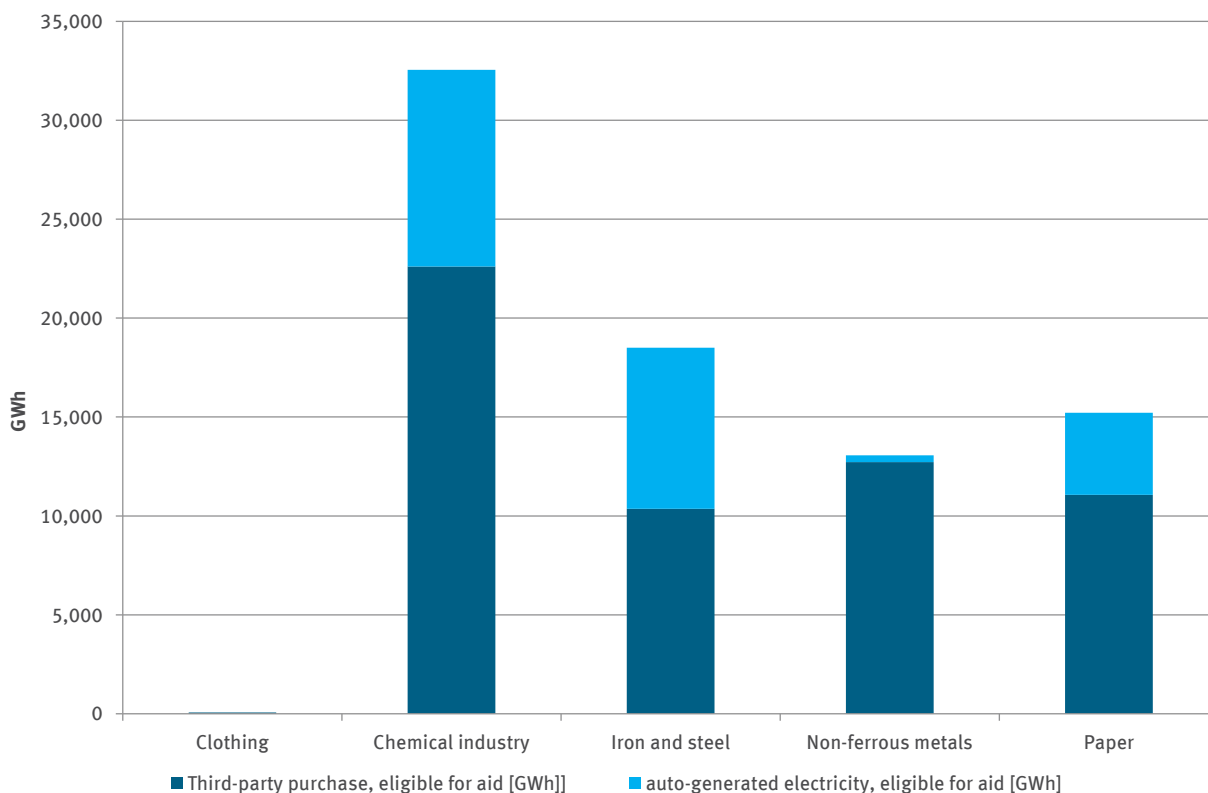
¹⁴ This means that it is not exclusively CO₂-free electricity (nuclear power or renewable energy), but part of the electricity supplied stems from fossil fuels. In this case, the electricity supplied within such an energy supply contract is fully eligible for aid.



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Figure 4: Source of electricity in 2016

Depending on the industry, the share of auto-generated electricity in the total electricity consumption, however, varies quite significantly. The clothing industry only purchases electricity from other undertakings. Hardly any electricity is produced in the non-ferrous metal industry: only three percent of eligible electricity consumption is auto-generated. At 27 percent, the share of in-house generation in the paper industry is about a quarter of the eligible electricity consumption. In the iron and steel industry, auto-generation makes up 45 percent of eligible electricity consumption. The in-house generation share in the chemical industry is about 31 percent.



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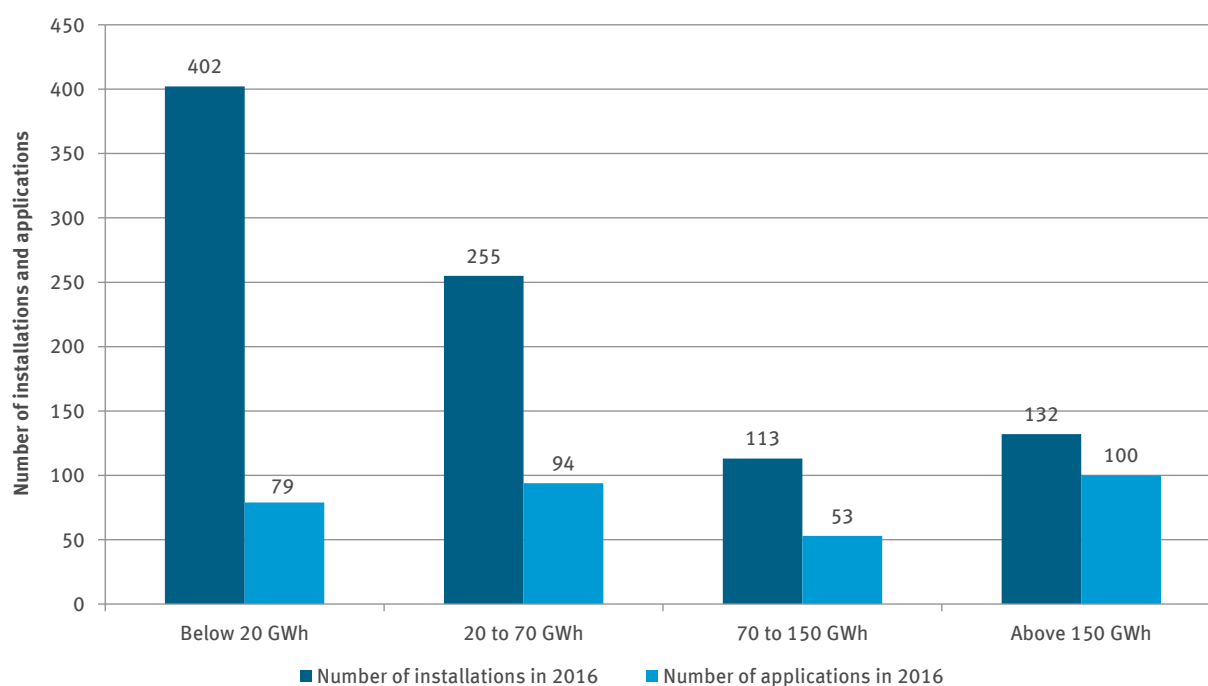
Figure 5: Source of electricity in 2016 of eligible electricity consumption by industry

5.3 Installations by electricity consumption

Figure 6 shows the number of installations and applications grouped according to the total electricity consumption of the respective undertakings or installations¹⁵. The total electricity consumption is not based on the eligible electricity consumption but may also contain electricity consumption for the production of non-eligible products. This serves to illustrate the actual size of the undertaking or the installation.

Most installations fall in the electricity consumption range of less than 20 gigawatt-hours per year, or 20 to 70 gigawatt-hours per year. However, considering the number of applications (i.e., those from undertakings in each category), the highest number belongs to the large consumers category with an annual electricity consumption of more than 150 gigawatt-hours. The number of applications in the remaining categories is similarly high and is only slightly less in the category of electricity consumption between 70 and 150 gigawatt-hours.

Compared to the figures of the previous years, it is obvious that the number of undertakings in the lowest electricity consumption categories continued to decrease. In 2014, 88 applications fell into the less than 20 gigawatt-hours electricity consumption category (see DEHSt 2016). In 2015, however, this was down to 82 applications (see DEHSt 2017b) and finally 79 applications in 2016. The reasons for this decline may be down to the effort required for preparing an application compared to the resulting amount of aid and the retention corresponding to the CO₂ costs of one gigawatt-hour electricity.



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Figure 6: Number of installations and applying undertakings according by electricity consumption in 2016

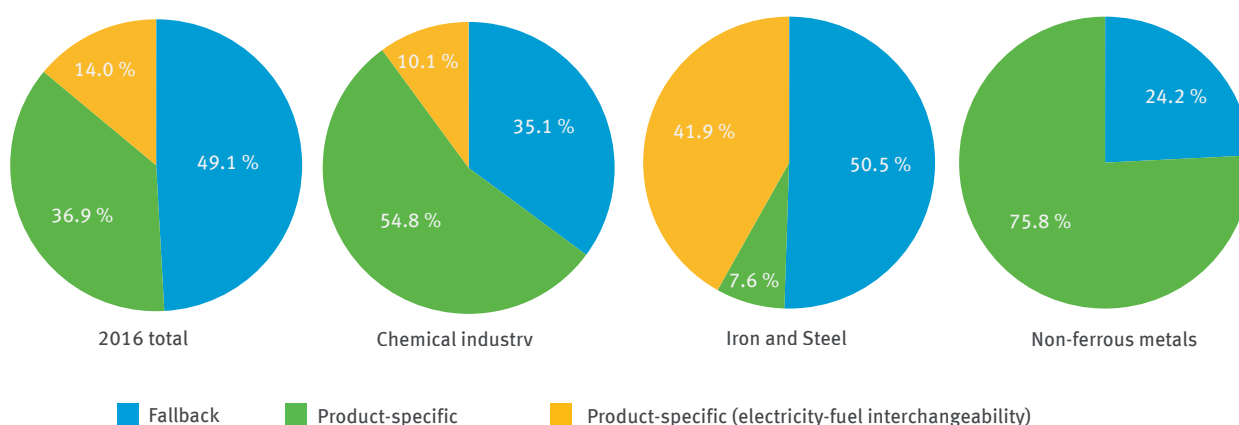
¹⁵ The categories are based on the Eurostat methodology "Energy statistics – electricity prices for domestic and industrial consumers, price components", Section 3.4. Statistical concepts and definitions, New Methodology (from 2007 semester 2 onwards), Industry, Volume-IA, -IB, -IC, -ID summarised < 20 GWh, Volume-IE 20 to 70 GWh, Volume-IF 70 to 150 GWh, Volume-IG above 150 GWh, see http://ec.europa.eu/eurostat/cache/metadata/DE/nrg_pc_204_esms.htm (last accessed 14/02/2018).

6 Results at calculation element level

As described in Section 2, products manufactured within the same installation are combined to form calculation elements for the purpose of calculating the aid. The prerequisite for combining various products into one calculation element is an identical benchmark, or they must belong to the same sector if they are fallback products. There are 19 product-specific benchmarks and 16 fallback combinations available. Overall, the aid decisions in 2016 were based on about 1,000 calculation elements.¹⁶

Figure 7 shows the shares for both fallback approach and benchmark approach in the total amount of aid granted for 2016. Around 51 percent of the total aid was given for the manufacture of products for which a product-specific benchmark applies. 49 percent of the total aid was due to product production where the fallback factor was used for electricity consumption to determine the aid amount. In the 2015 accounting year, this share was around 50 percent of total aid (see DEHSt 2017b).

Depending on the industry these shares are very different. There are no benchmarks in the mining and paper industries, and the aid amount is calculated using the fallback factor. In the non-ferrous metal industry, about 76 percent of the aid amount is determined through benchmarks. This figure is 65 percent in the chemical industry and around 50 percent for iron and steel due to a slight decrease in fallback products.



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Figure 7: Shares of fallback approach and benchmark approach in the 2016 total aid amount and in aid amounts of selected industries

In the chemical industry and the iron and steel industry, the EU State Aid Guidelines provide compensation based on benchmarks while taking into account the interchangeability of electricity and fuels. Typically, these benchmarks are used in installations that are also subject to emissions trading. If a benchmark product is produced in a fairly electricity-intensive way, the installation receives a higher electricity price compensation. However, if a product is manufactured in a fuel- or heat-intensive way, for example using a large amount of steam, it receives more free allowances. However, benchmarks with interchangeability of electricity and fuels can also be used in cases when the emissions trading obligation does not apply.

In the chemical industry, most of the electricity-intensive products from installations that also participate in emissions trading, are produced by using more heat than electricity, meaning that the resulting electricity price compensation is relatively low and the free allowances predominate. In addition, more than 60 percent of the installations in the chemical industry that receive electricity price compensation are not subject to emissions trading (see also Section 5.1, from p. 14). Therefore, the share of benchmarks with interchangeability of electricity and fuels in the overall aid amount in the industry is relatively low.

In the iron and steel industry, electric steel plants in particular benefit from the electricity price compensation. Benchmarks taking into account the interchangeability of electricity and fuel also exist for the production of electrical 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 interchangeability of electricity and fuel in the industry's overall aid amount.

¹⁶ However, there was no application from the „1810 – Leather clothing“ sector. The product benchmarks silicon carbide, high-carbon ferromanganese and silico-manganese were also not applied.

Table 4 shows the shares of the individual product benchmarks in the aid amount for the 2016 accounting year. Just as in the previous year, the production of chlorine (Cl₂) has the largest share (around 17 percent), followed by the production of primary aluminium (about 12 percent). Five other benchmarks account for 1.7 to 5.5 percent of the aid amount. They include the benchmarks of the iron and steel industry (carbon steel, high-alloy steel, oxygen steel). The remaining nine product benchmarks account for a total of 3.7 percent of the aid amount for 2016. Compared to the previous year, the shares of these major benchmarks have changed slightly.

Table 4: Shares of benchmark calculation elements in the 2016 aid amount

Product benchmark	Share of 2016 total EPC
Chlorine (Cl ₂)	16.5 %
Primary aluminium	11.9 %
EAF (electrical arc furnace) carbon steel	5.5 %
Hyperpure polysilicon	4.9 %
EAF high-alloy steel	4.4 %
Highly refined chemicals	2.3 %
Oxygen steel	1.7 %
Other nine benchmarks	3.7 %
Total	51 %

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Table 5 shows the shares of fallback calculation elements in the aid amount. The largest shares are held by the sectors "2112 – Manufacture of paper and paperboard" (14 percent) and "2710 – Manufacture of basic iron and steel and of ferro-alloys" (about 11 percent). Seven other sectors and subsectors have shares from between 1.6 to 5.6 percent of the aid amount. The remaining six sectors and subsectors account for 3 percent of the aid amount. Once again, there were no significant changes in the ranking of the individual shares in the total aid amount.

Table 5: Shares of fallback calculation elements in the 2016 aid amount

fallback calculation element	Share of 2016 total EPC
Fallback 2112 - Manufacture of paper and paperboard	14.3 %
Fallback 2710 - Manufacture of basic iron and steel and of ferro-alloys	10.5 %
Fallback 2414 - Manufacture of other organic basic chemicals	5.6 %
Fallback 2111 (subsector) - Mechanical pulp	4.4 %
Fallback 2416 (subsector) - Manufacture of plastics in primary forms	3.0 %
Fallback 2413 - Manufacture of other inorganic basic chemicals	2.6 %
Fallback 2744 – Copper production	2.2 %
Fallback 2742 - Aluminium production	1.9 %
Fallback 2415 - Manufacture of fertilisers and nitrogen compounds	1.6 %
Other six sectors and subsectors (fallback)	3.0 %
Total	49 %

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7 Outlook

A budget of € 300 million for electricity price compensation was available in the 2016 accounting year under the Energy and Climate Fund. More than 96 percent of this budget has been exhausted without budgetary reductions in state aid sums being necessary.

The application process for the 2017 accounting year began on 01/03/2018. Operators can submit applications by 31/05/2018. The EUA price to be applied in the aid calculation for the 2017 accounting year is € 5.40. It is thus lower than the 2016 price and will lead to a decrease in the overall level of total state aid. The Federal Ministry for Economic Affairs and Energy therefore provided € 210 million for the 2017 accounting year.

8 Annex

The 2013 to 2015 figures may differ from previous publications due to retrospective amendments to aid payments because of legal steps such as appeals, lawsuits and reclamations.

Table 6: Number of approved applications and number of installations by industries and sum of aid paid in 2013

Industry (EPC)	Number of applications	Number of installations	EPC 2013 [euro]
Clothing	8	8	294,916.01
Chemical industry	118	534	119,804,747.19
Iron and steel	54	165	76,644,802.38
Non-ferrous metals	49	113	51,421,161.76
Paper	111	147	63,057,791.48
Total	340	967	311,223,418.82

As of 08/12/2017

Table 7: Number of approved applications and number of installations by industries and sum of aid paid in 2014

Industry (EPC)	Number of applications	Number of installations	EPC 2014 [euro]
Clothing	8	8	112,527.51
Chemical industry	115	498	73,543,621.73
Iron and steel	52	160	45,176,409.83
Non-ferrous metals	49	113	31,706,259.93
Paper	110	146	35,183,598.30
Total	334	925	185,722,417.30

As of 08/12/2017

Table 8: Number of approved applications and number of installations by industries and sum of aid paid in 2015

Industry (EPC)	Number of applications	Number of installations	EPC 2015 [euro]
Clothing	8	8	152,301.63
Chemical industry	117	486	96,547,146.81
Iron and steel	51	161	58,659,714.55
Non-ferrous metals	47	109	42,217,586.52
Paper	107	142	46,179,057.19
Total	330	906	243,755,806.70

As of 08/12/2017

Table 9: Number of approved applications and number of installations by industries and sum of aid paid in 2016

Industry (EPC)	Number of applications	Number of installations	EPC 2016 [euro]
Clothing	8	8	168,054.73
Chemical industry	113	485	115,350,442.20
Iron and steel	50	161	68,413,650.69
Non-ferrous metals	48	106	50,573,488.96
Paper	107	142	54,217,671.48
Total	326	902	288,723,308.06

As of 08/12/2017

9 Literature and sources

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