EUROPEAN COMMISSION

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In the published version of this decision, some information has been omitted, pursuant to articles 30 and 31 of Council Regulation (EU) 2015/1589 of 13 July 2015 laying down detailed rules for the application of Article 108 of the Treaty on the Functioning of the European Union, concerning non-disclosure of information covered by professional secrecy. The omissions are shown thus […].		PUBLIC VERSION This document is made available for information purposes only.

Subject: **State Aid SA.42393 (2016/C) (ex 2015/N) – Germany - Reform of support for cogeneration in Germany**

Sir, Madam,

1. PROCEDURE: NOTIFICATION, CORRESPONDENCE, DEADLINE ETC.

(1) On 28 August 2015, further to pre-notification contacts, the German authorities notified to the Commission the draft bill on the Reform of the Combined Heat and Power Generation Act (Heat and Power Cogeneration Act, hereinafter: KWKG or KWKG 2016), which was then adopted into law on 21 December 2015. It replaces the Combined Heat and Power Generation Act enacted on 1 April 2002.

(2) As at the time of the notification, the draft law was still under discussion in Germany; Germany submitted updated versions of the draft law and additional explanations to the notification on 31 August, 18 September, 21 September and 28 September 2015. On 29 September 2015 it also submitted a draft evaluation plan that was updated on 14 June 2016.

(3) The Commission sent requests for information on 9 and 28 October, 13 November, 10 December 2015, 4 February, 19 May, 20 July, 30 August and 21 September 2016.

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(4) Replies were submitted on 12 November, 24 November and 17 December 2015, on 3 March and 30 May, in August and September 2016. The latest information was submitted on 28 September 2016.

(5) On 4 August 2016, Germany waived its right under Article 342 TFEU in conjunction with Article 3 of Council Regulation (EEC) No 1/1958[1] to have the decision adopted in German and agreed that the decision be adopted and notified in English.

(6) Germany has notified the measure for legal certainty. It considers that the measure is not financed from State resources. It has indicated that the arguments put forward in the EEG 2012[2] and EEG 2014[3] State aid cases as well as in the *EEG 2012* Court case[4] are valid for the CHP file as well, without however enumerating them. It has briefly pointed to the similarities with the EEG support: support based on a guaranteed feed-in tariff that is covered by a levy on electricity consumption and raised by network operators. It considers that such system does not qualify as financed from State resources.

2. DETAILED DESCRIPTION OF THE MEASURE

2.1. Overall objectives

(7) The KWKG aims at improving the energy efficiency of energy production in Germany by increasing the net electricity production from combined heat and power generation ("CHP") installations to 110 TWh/year by 2020 and to 120 TWh/year by 2025, as compared to the current yearly production of 96 TWh.

(8) The KWKG also aims at ensuring cohesion between support for CHP and the goals of the energy transition (*Energiewende*). The KWKG therefore also supports new heat/cooling storage facilities or retrofitted storage facilities, as they increase the flexibility of cogeneration facilities, and focuses on installations that can reduce CO_2 emissions in the electricity sector. CHP installations are expected to contribute to an additional reduction of 4 million tonnes of CO_2 emissions[5] by 2020 in the electricity sector as in Germany electricity from cogeneration installations displaces separated production of electricity by coal-fired power plants. In addition, new coal-fired and lignite-fired CHP installations are not supported and support under the KWKG is essentially directed at gas-fired CHP installations as they have lower CO_2 emissions. Bio-energy CHP installations are in theory also eligible for support under the KWKG but in practice they ask for support under the Renewable Energy Sources Act (EEG) under which support levels are higher.

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1 Council Regulation No 1 of 15 April 1958 determining the languages to be used by the European Economic Community (OJ 017, 6.10.1958, p. 385).

2 Case SA.33995 (2013/C) (ex 2013/NN) on the aid scheme implemented by Germany for the support of renewable electricity and of energy-intensive users.

3 Case SA.38632 (2014/N) - Germany – EEG 2014 – Reform of the Renewable Energy Law.

4 Case T-47/15 *Germany* v *Commission (EEG 2012)* ECLI:EU:T:2016:281.

5 Germany has indicated that electricity production from the supported CHP installations can on average over a year help Germany save 900 g CO_2 per kWh of cogenerated electricity.

(9) Under the KWKG, aid can also be granted for the construction or expansion of heating/cooling networks. Support to the latter is viewed as a complement to CHP-support, given that using CHP installations in connection with district heating increases the energy efficiency of the system.

(10) The district heating sector is expected to be the largest contributor to the aims of the KWKG; however, Germany has indicated that CHP installations used by the service sector and by the industry are also needed to achieve the objectives of the KWKG[6].

(11) The reform of the KWKG is based on a cost-benefit analysis concluded in 2014[7] in line with Article 14 of the Energy Efficiency Directive[8]. The cost-benefit analysis identified potential for new CHP installations in Germany but showed that under current market conditions new CHP installations could not be constructed without aid at least until 2020.

(12) The cost-benefit analysis also showed that depreciated gas-fired plants used for district heating could still technically be operated but could not generate sufficient revenue from the market alone under current market conditions. District heating companies typically operate both CHP installations and heat boilers to cover the heat demand. The companies are equipped with software that continuously verifies which combination of those installations will deliver the heat at the lowest cost. When electricity prices are low, production costs of CHP installations are higher than production costs of heat boilers; in those cases the heat boilers are used by preference to CHP installations for the heat production. While the average price for base-load electricity on the exchange was still around 50 €/MWh in 2010, it fell to 25 €/MWh in 2016.[9] Under those deteriorated economic conditions, existing gas-fired CHP installations in the district heating sector are under the threat of being closed and replaced by separate production installations[10].

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6 In 2013 96 TWh represented 16.2% of net electricity generation. Of this, around 50 TWh was generated by cogeneration installations providing district heating. The second largest amount of power (about 30 TWh) is attributable to industrial CHP plants. Around 12 TWh are attributable to bio-energy cogeneration plants. Around 5 TWh are attributable to small CHP plants (i.e. plants with not more than 1 MW of installed capacity).

7 Potenzial- und Kosten-Nutzen-Analyse zu den Einsatzmöglichkeiten von Kraft-Wärme-Kopplung (Umsetzung der EU-Energieeffizienzrichtlinie) sowie Evaluierung des KWKG im Jahr 2014, Endbericht zum Projekt I C 4 - 42/13, Prognos AG/Fraunhofer IFAM/IREES/BHKW-Consult, 01.10.2014, available under : https://ec.europa.eu/energy/sites/ener/files/documents/151221%20Mitteilung%20an%20KOM%20EED%20KWK%20Anlage%20Analyse.pdf.

8 Directive 2012/27/EU of the European Parliament and the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC, OJ L 315, 14.11.2012, p. 1.

9 See figure 11 of: https://ec.europa.eu/energy/sites/ener/files/documents/quarterly_report_on_european_electricity_markets_q4_2015-q1_2016.pdf.

10 See in particular Figure 53 of the cost-benefit analysis referred to under Footnote 7 above showing that for all gas-fired CHP installations examined active in the district heating sector, operating costs (after depreciation) could not be covered with market revenues.

(13) In order to maintain the current production level of 15 TWh/year of existing installations in the district heating sector and possibly bring it back to a previous level of 20 to 22 TWh/year, Germany intends to grant support to existing gas-fired CHP installations in the district heating sector until 2019.

2.2. The different support measures involved

2.2.1. CHP-support

(14) Under the KWKG, support is granted to new, modernised and retrofitted highly efficient CHP installations. It is open to various cogeneration technologies (including gas and steam turbines, Organic Rankine Cycle and fuel cells).

(15) CHP installations qualify as highly efficient if they comply with the high-efficiency criteria of Directive 2012/27/EU[11] (§2(8) KWKG).

(16) The CHP installation can be fired by biogas, biomass, natural gas, oil, waste and waste heat. The support level does not vary depending on the type of fuel used. As gas-fired CHP installations are the main focus of the KWKG 2016, the support level has been set by reference to typical costs of gas-fired CHP installations. Germany indicated in this connection that CHP installations using bio-energy were in practice supported under the EEG given that renewable support was higher than CHP-support. As to oil-fired CHP installations, Germany indicated that production costs for those installations are higher than for gas-fired CHP installations given that oil prices are significantly higher than gas prices (57 €/MWh for light oil compared to 23-24 €/MWh for natural gas). Concerning CHP installations burning waste, Germany explained that waste-fired CHP installations cannot use the most efficient CHP technology (GuD) but can only use steam processes, also the amount of electricity used by the CHP installation itself is higher than for gas-fired CHP installations (among others because it needs electricity to filter the waste gases). As a result, investment costs per installed kW are around 10 times higher for waste-fired CHP installations than for gas-fired CHP installations. Germany further indicated that waste incineration businesses were as a rule subject to public procurement. Competition to obtain the waste incineration concession is generally high. As a result the support for the CHP installation would also be integrated into the bid and any overcompensation can be excluded.

(17) The support is paid as a premium (the "CHP-support") on top of the market price by the network operator to which the installation is connected. Operators of CHP installations with an electrical capacity of more than 100 kW have to sell their electricity on the market or consume it themselves. Operators of smaller CHP installations have the choice to sell the electricity on the market, consume it themselves or ask the network operator to buy it at an agreed price. If no agreement is reached, the purchase price will be the average price for base-load electricity on the EEX exchange of the previous trimester. In this respect, Germany has communicated that it intends to amend this section of the KWKG so

[11] Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC (OJ L315, 14.11.2012, p. 1).

that in the future price agreements will no longer be allowed and the purchase price will in all cases be the above mentioned average price.

(18) Operators of CHP installations are subject to balancing responsibilities like any other generator. Those responsibilities are laid down in the Electricity Grid Access Ordinance (Stromnetzzugangsverordnung – StromNZV[12]).

(19) The support is paid in principle for CHP electricity injected into the public grid for 30 000 full load hours as of the moment the installation entered into operation. When the installation has an electrical capacity below or equal to 50 kW the support is granted for 60 000 full load hours.

(20) Germany has explained that according to normal accounting rules the usual depreciation period of CHP installations is 20 years. CHP installations operate between 3 000 and 8 000 full load hours per year, depending on the size of the installation and the sector concerned. 30 000 or 60 000 full load hours would thus be reached at the latest after 10 or 20 years in the case of an installation running only during 3 000 full load hours/year.

(21) The level of the subsidy is determined on the basis of the rates described in Table 1.

Table 1: CHP-support for CHP electricity injected into the grid

Electric CHP capacity	Support for CHP electricity injected into the grid
	€ cent/kWh
<=0.05 MW	8
> 0.05 and <=0.1 MW	6
> 0.1 and <=0.25 MW	5
> 0.25 and <=2 MW	4.4
> 2	3.1

(22) For two categories of operators support is also paid for the auto-consumed part of the electricity. Those are on the one hand operators of small CHP plants with an electrical capacity of up to 100 kW and on the other hand operators of CHP installations who qualify as electro-intensive users (EIU) eligible for a reduced EEG-surcharge under the EEG. In the latter case, the installation generally has a capacity above 100 kW. The CHP-support for those two categories is determined based on the rates described under Table 2.

12 According to section 4, paragraph 3 of the StromNZV, every feed-in point and every exit-point has to be part of a balancing group. Network users have to name a balancing responsible party for every balancing group. The balancing responsible party is responsible for the balance of feed-ins and draw-offs of electrical energy in every quarter of an hour in a balancing group and assumes the economic responsibility for deviations (section 4, paragraph 2, StromNZV).

Table 2: CHP-support for auto-consumption

Electric CHP capacity	Small installations	EIU
	€ cent/kWh	€ cent/kW
<=0.05 MW	4	5.41
> 0.05 and <=0.1 MW	3	4.00
> 0.1 and <=0.25 MW		4.00
> 0.25 and <=2 MW		2.40
> 2		1.80

(23) Support is also paid to operators supplying CHP electricity to third parties but using a private network (industrial parks) if the supplied customer bears the full EEG-surcharge (§6(4)(3) KWKG). This also covers the situation of an operator (the "*Kontraktor*") supplying electricity to third parties from an installation located on the premises of the client. In that case, the installation could be providing energy to a single client and the *Kontraktor* is in charge of the construction, operation and maintenance of the installation. The CHP-support for that category of operators is calculated using the rates described in Table 3.

Table 3: CHP-support for "Kontraktoren"

Electric CHP capacity	Supply to third party outside public grid ("*Kontraktore*")
	€ Cent/kWh
<=0.05 MW	4
> 0.05 and <=0.1 MW	3
> 0.1 and <=0.25 MW	2
> 0.25 and <=2 MW	1.5
> 2	1

(24) Modernised installations are existing CHP plants where old system parts relevant to determine the efficiency of the installation are replaced with new components. If the cost of such a modernisation exceeds 25% or 50% of a complete new construction of the cogeneration plant, this modernised plant is eligible for support under the KWKG (§8(3) KWKG 2016) respectively for 15 000 (when modernisation costs exceed 25% of a complete new construction of the cogeneration plant) or 30 000 full-load hours (when modernisation costs exceed 50% of a complete new construction of the cogeneration plant). The modernised CHP plants must provide sufficient evidence that they are more efficient than the old plants. Modernisation is eligible for support only if the existing system has reached a certain age (5 or 10 years respectively). The CHP-support is determined on the basis of the rates described in Table 1 above.

(25) Germany has explained that modernised CHP installations face higher operating costs than new CHP installations. Due to continuous technological progress, new installations will require less repair and maintenance costs and consume less fuel than modernised installations. Given that capital costs represent only 20 to 25% of total production costs of a CHP installation, once the modernisation costs reach a certain level (i.e. 50% of the costs of a new investment), the difference in capital costs compared to a new installation is outbalanced by additional operating costs of the modernised installation. For that reason, modernised installations are

entitled to the same level of subsidy as new installations when modernisation costs represent more than 50% of the investment costs of a new installation.

(26) Retrofitted installations are un-combined installations which are converted into CHP installations. They are eligible for support under §8(4) KWKG 2016 if the costs of the retrofitting correspond to at least 10% of a new CHP installation with the same capacity. Depending on whether the costs of the retrofitting exceed 10%, 25% or 50% of a new CHP installation with the same capacity, the aid will be granted for 10 000, 15 000 or 30000 full-load hours.

(27) An additional premium of 0.3 € cent/kWh is granted under §7(5) of the KWKG 2016 for CHP facilities subject to the Greenhouse Gas Emission Trading Law (TEHG) as they face higher costs compared to CHP installations not subject to the ETS system ("§7(5) premium"). The §7(5) premium has been established based on current and projected costs of CO_2 allowances, typical emission factor of CHP installation and has also taken account of the fact that CHP installations partially benefit from free allowances under Article 10a (4) of the ETS Directive[13]. In addition, in order to incentivize CHP plant owners to replace their existing coal-fired or lignite-fired plant with a gas-fired installation, a bonus of €0.6 € cents/kWh over the entire funding period (fuel switch bonus) is provided to operators for the part of the cogeneration electricity capacity of the installation that is replacing an existing coal-fired or lignite-fired CHP installation. The operator must demonstrate that the coal-fired or lignite-fired CHP installation has been closed within 12 months after the new installation started operation but at the earliest after 1 January 2016, he must also demonstrate that he owns both installations or that they are feeding the same heating network.

(28) In order to minimise the administrative burden for micro-cogeneration units, owners of CHP in the power range of up to 2 kW can receive their support payments as a flat one-time payment. This corresponds to a subsidy of 4 € cent/kWh multiplied by 60 000 full load hours.

(29) Operators of existing (depreciated) high-efficiency gas-fired CHP plants with an electrical CHP capacity of more than 2 MW can obtain a support of 1.5 € cents/kWh if i) the CHP electricity is injected into the public grid, ii) the installation was in general used for public supply and iii) the electricity is not supported anymore under the EEG or under other provisions of the KWKG. The support is limited in time (31 December 2019) and full-load hours (up to 16 000).

(30) Germany has estimated that the support to existing installations will increase the number of operating hours of the installations concerned. Per installation, the increase in the number of annual operating hours can vary between 300 and 1 000 hours. In some cases, the support will also prevent that the installation is closed altogether. Germany submitted the example of an installation which without support would be able to operate under economically acceptable conditions for 37 hours in 2016 and 3 hours in 2017. With a support of 1.5 € cent/kWh, it would be able to increase its operating hours to 751 in 2016 and 553 in 2017 allowing for the operation of the installation to be maintained.

[13] Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC, OJ L 275, 25.10.2003, p. 32.

(31) When the value of hour contracts is null or negative on the EPEX Spot SE exchange in Paris (price zone Germany/Austria), no premium will be paid out for the CHP electricity produced during those hours (§7(8) KWKG). The electricity generated during this period is not taken into account for the calculation of the number of full load hours during which support can be granted.

(32) Aid for CHP installations can be cumulated with investment aid. However, in that case, the cumulation of the investment aid and the operating aid can never exceed the difference between the levelized cost of electricity produced in the CHP installation and the market price for the electricity. When the support is granted to beneficiaries selected in a tender (see section 2.7.2 below) and is cumulated with investment aid, Germany committed to deducting the investment aid from the operating aid in line with point 151, read in conjunction with point 129 of the Guidelines on State aid for environmental protection and energy 2014-2020[14] ("EEAG").

2.2.2. Storage of heat and cooling

(33) §§ 22-25 of the KWKG 2016 provide for investment support for the building of new or retrofitting of heat or cooling storage facilities.

(34) While aid under the KWKG 2016 can also be granted when the owner of the storage and the CHP installations are different, Germany has indicated that storage facilities generally belong to the owner of the CHP installation to which it is connected. Storage facilities hence do no generate revenues. In addition, the increased flexibility of the CHP installation connected to the storage facility does not yield enough additional revenues for the CHP installation to trigger the investment into the storage facility.

(35) Germany, however, would like to generalise the use of heat/cooling storage facilities in connection to CHP installations. Germany views those storage facilities as key elements to increase the energy efficiency and integration of CHP installations into the electricity market. As the heat/cold can be stored more easily than electricity (in the form of warm/cold water), CHP installations connected to storage facilities can adapt their production to produce in particular at times of higher electricity demand instead of cogenerating the electricity when there is heat demand but not necessarily electricity demand. A later heat requirement can then be covered from the storage facility. This flexibility allows CHP installations to run for an increased number of operating hours. Indeed, when electricity prices are too low, the heat demand is by preference produced from heat boilers and the CHP installation is not used or its production is reduced. The flexibility induced by the storage facility has therefore a direct environmental impact: the increased operation of CHP installations displaces separate production in heat boilers. In addition, in Germany, CHP electricity produced at times of high electricity demand displaces coal-fired electricity generation and thus significantly reduces CO2 emissions linked to electricity production. Finally, the induced flexibility also improves the integration of CHP installations into the electricity market as the electricity will be produced more in line with electricity demand.

[14] OJ C 200, 28.6.2014, p. 1.

(36) In addition, storage facilities can also be filled with waste heat and renewable heat. As this type of heat is not necessarily produced when it is needed, the storage facility will increase the use of waste heat and renewable heat and reduce the need for heat only boilers.

(37) Storage facilities are eligible for aid if the storage facility is mainly filled with heat produced by a CHP installation that is connected to the public electricity grid. Industrial waste heat and renewable heat are assimilated to CHP heat provided that the CHP heat still corresponds to at least 25% of the stored heat. The storage facility must have a capacity of at least 1 m³ of water equivalent or 0.3 m³ per kW installed electrical capacity.

(38) The aid amounts to 250 €/m³ water equivalent of the storage volume when the storage volume does not exceed 50 m³ water equivalent. This results in a maximum aid amount for small storage facilities of EUR 12 500. If it exceeds 50 m³ water equivalent, the aid is limited to 30% of the eligible investment costs. In total the aid may not exceed EUR 10 million per project.

(39) Eligible costs are all costs related to the construction of the storage facility and resulting from services and goods delivered by third parties. Not eligible are: administrative fees, internal costs for the construction and planning, imputed costs ("*kalkulatorische Kosten*"), costs related to insurances, financing and land acquisition.

(40) Germany has submitted an example of a concrete project for [...]* a heat storage installation. Its capacity would amount to [...]m³ and project costs are estimated to amount to EUR [...] million. The example shows that the aid makes it possible to increase the internal rate of return of the project from [...]% to [...]%. With only [...]% projected internal rate of return the project would not have been implemented.

(41) Aid for storage facilities under the KWKG 2016 can be cumulated with aid from local authorities, the Länder or other federal aid schemes. It is in principle deducted from the aid granted under the KWKG 2016 except if cumulation has been explicitly authorised. In that case Germany has committed to verifying that the cumulated aid would not exceed the aid intensity authorised under Annex 1 of the EEAG for cogeneration installations[15].

2.2.3. District heating/cooling networks

(42) Under §§18-21 KWKG 2016 support is granted for the construction and expansion of energy-efficient district heating/cooling networks (i.e. networks for the public supply of heat and/or cooling).

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* *Business secret*

15 Annex 1 to the EEAG provide for the following aid intensities in the case of cogeneration installations: 65% for small enterprises, 55% for medium-sized enterprises, 45% for large enterprises with a possible bonus of 5% points in regions covered by Article 107(3)(c) TFEU and a bonus of 15% points in regions covered by Article 107(3)(a) TFEU. If the aid is allocated through a competitive bidding process, the aid intensity allowed is 100%.

(43) Those networks are eligible for support if they are fed with at least 60% of a combination of cogenerated heat, industrial waste heat and/or renewable heat. In this case, the share of cogenerated heat must in any event correspond to at least 25% of the transported heat. For networks which are fed with CHP heat which is not combined with industrial waste heat or renewable heat, Germany has committed to granting investment aid only if at least 75% of the heat injected into the district heating network is produced by CHP installations. The aid is granted according to the aid intensities described in Table 4 below.

Table 4: aid intensities for district heating/cooling networks

Small networks (diameter < 100 mm)	100 €/m pipe with a max. of 40% of costs	Max. EUR 20 million per project
Larger networks (diameter > 100 mm)	30% of costs	Max. EUR 20 million per project

(44) Eligible costs are all costs related to the construction or expansion of the network and resulting from services and goods delivered by third parties. Not eligible are: administrative fees, internal costs for the construction and planning, imputed costs ("*kalkulatorische Kosten*"), costs related to insurances, financing and land acquisition.

(45) Germany has explained that for district heating/cooling networks the funding gap corresponds to between 30% and 40% of the investment costs, depending on the diameter of the pipes. It has submitted a detailed funding gap calculation for an average district heating system (town of 150 000 inhabitants, diameter >100 mm and aid amount of 30% of investment costs, all values discounted with rate of 8%). Table 5 below summarises the results of the funding gap calculation.

Table 5: summary of funding gap calculation for average district heating system

(Net) Investments district heating network 1 after deduction of the costs that have to be borne by customers	19.310.951
Revenues and deduction of operating expenses (Operating Profit)	12.237.550
Ratio operating profit / net investment costs 1	63%
Remaining Funding gap	37%
Difference between net investment costs 1 and operating profit	-7.073.401
Amount of support	5.793.285
Difference between net investment costs 1, operating profit and support	-1.280.116
	The value is negative

(46) In case of additional aid at local, regional or federal level, Germany has committed to verifying that the cumulated aid would not exceed the funding gap authorised under the EEAG, i.e. the difference between the positive and the negative cash flows over the lifetime of the investment, discounted to their current value (typically using the cost of capital) (see Point 19(32) EEAG).

2.3. Production costs

(47) Germany has submitted Levelized Cost Of Electricity (LCOE) calculations for the production of cogenerated electricity in a series of representative installations for the district heating sector (one 10 MW, one 20 MW, one 100 MW, one 200 MW and one 450 MW installation) and 23 representative CHP installations used by households (single family houses or multiple family houses), service providers (retail, schools, hospitals, hotels) and the industry (construction of machines, car manufacturing, car repair, paper and chemistry sector). Germany has also provided LCOE calculations for CHP installations used by so-called contractors who operate a CHP installation to provide heat and power to a limited number of consumers (industry parks, for instance) as well as LCOE calculations for existing CHP installations. Finally they have also provided LCOE calculations for installations benefitting from the §7(5) premium and the fuel switch bonus. All calculations concern gas-fired CHP installations.

(48) Germany has calculated the LCOE based on the following formula:

$$LCOE = \frac{I_0 + \sum_{t=1}^{n} \frac{A_t}{(1+i)^t}}{\sum_{t=1}^{n} \frac{M_{t,therm}}{(1+i)^t}}$$

Where:

LCOE	Levelized cost of electricity
I_0	Investment in Euro
A_t	Annual total costs in Euro in the year t
$M_{t,therm}$	Volume of electricity produced in the concerned year in kWh
i	Discount factor in %
n	Economic lifetime of the installation in years
t	Year considered during the economic lifetime

(49) For each calculation, Germany has also provided: the type of CHP installation used, the number of full load hours, the rate at which the installation is used for self-consumption,[16] the sector concerned, the typical investment costs, the energy conversion efficiency rate, the heat and electricity outputs, and the fixed and variable operating costs. For the variable operating costs, Germany has further submitted the projected gas prices, electricity prices (both electricity price obtained when the electricity is injected into the grid and electricity price that is saved when the electricity generated is self-consumed), and the compensation for avoided network fees.[17] The LCOE calculations also take into account reduced energy taxes and costs of CO_2 emission allowances, where the installation is under the obligation to buy CO_2 emmission allowances, and heat revenues. As far

16 Electricity produced from CHP installations used in the district heating sector is generally entirely injected into the public grid but electricity produced in CHP installations run by households, service providers and the industry is generally partially used for auto-consumption and partially injected into the grid.

17 In case of decentralised production connected to the distribution network, transmission costs and transformation network costs are avoided when the decentralised production is consumed directly within the network to which the decentralised production unit is connected. In those situation, the decentralised producer obtains a compensation (§ 18 of the Ordinance on electricity network fees).

as heat revenues are concerned, Germany has taken the heat price into account for the district heating sector and the avoided heating costs for the other operators, since they would have had to buy or produce the heat in a boiler, had they not cogenerated it. The heat price obtained in the district heating sector has been computed based on the observation that the district heating sector needs to provide heat at the least cost possible as it has to compete with decentralized heat production. A CHP installation feeding heat into the grid is in competition essentially with gas boilers, other CHP installations and sometimes also incineration facilities or industrial heat. The heat price then corresponds to the marginal costs of the cheapest plant that is able to produce the demanded heat. For the purpose of determining the heat price taken into account for the LCOE calculations, Germany assumed that the heat demand would be covered 50% by gas boilers and 50% by CHP installations.

(50) The tables below represent the assumptions used in terms of consumption, gas and electricity prices.

Table 6: Typical consumption in the sectors examined by Germany

Sector	Activity	Electricity	Heating	Electricity	Gas
		MWh/a	MWh/a	Category	Category
Households	Single-family house	4	20	Households	Households
Households	Two-family house,	8	37	Households	Households
Housing	12-family apartment block	42	120	Households	GHD1
Housing	60-family apartment block	150	450	GHD1	GHD2
Trade and services	Services	50	125	GHD1	GHD1
Trade and services	School	80	700	GHD2a	GHD2
Trade and services	Retail	200	500	GHD2	GHD2
Trade and services	Hospital care	1 000	3 500	GHD3	GHD2
Trade and services	Hotel	1 000	1 400	GHD3	GHD2
Industry	E.g., manufacture of machinery and equipment	5 000	12 500	Industry 3	Industry 3
Industry	E.g., manufacture of automotive components	10 000	25 000	Industry 4	Industry 4
Industry	E.g., car plant	100 000	200 000	Industry 5	Industry 5
Industry	Paper	100 000	200 000	Industry 6	Industry 6
Industry	Chemistry	1 000 000	2 000 000	Industry 7	Industry 6

Source: Irees IFAM BHKW-Consult, Prognos

Table 7: Retail prices of gas to customers per category of consumer and consumption levels by 2050, real, gross calorific value, excluding VAT, duties and taxes in € cents 2013/kWh

Consumer category	2014	2020	2030	2040	2050
Households; < 55 500 kWh	4.8	5.4	5.6	6.0	5.9
Trade and services 1; < 55 500 kWh	4.6	5.3	5.5	5.7	5.9
Trade and services 2; > 55 555 kWh	4.3	5.0	5.2	5.4	5.6
Industry 1; < 277 MWh	4.4	5.1	5.2	5.3	5.4
Industry 2; < 2.7 GWh	4.2	4.9	5.0	5.1	5.2
Industry 3; < 27.7 GWh	3.8	4.5	4.6	4.7	4.8
Industry 4; < 278 GWh	3.2	3.9	4.0	4.1	4.2
Industry 5; < 1 111 GWh	2.8	3.5	3.6	3.7	3.8
Industry 6; > 1 111 GWh	2.6	3.3	3.4	3.5	3.6

Source: Prognos, based on Eurostat.

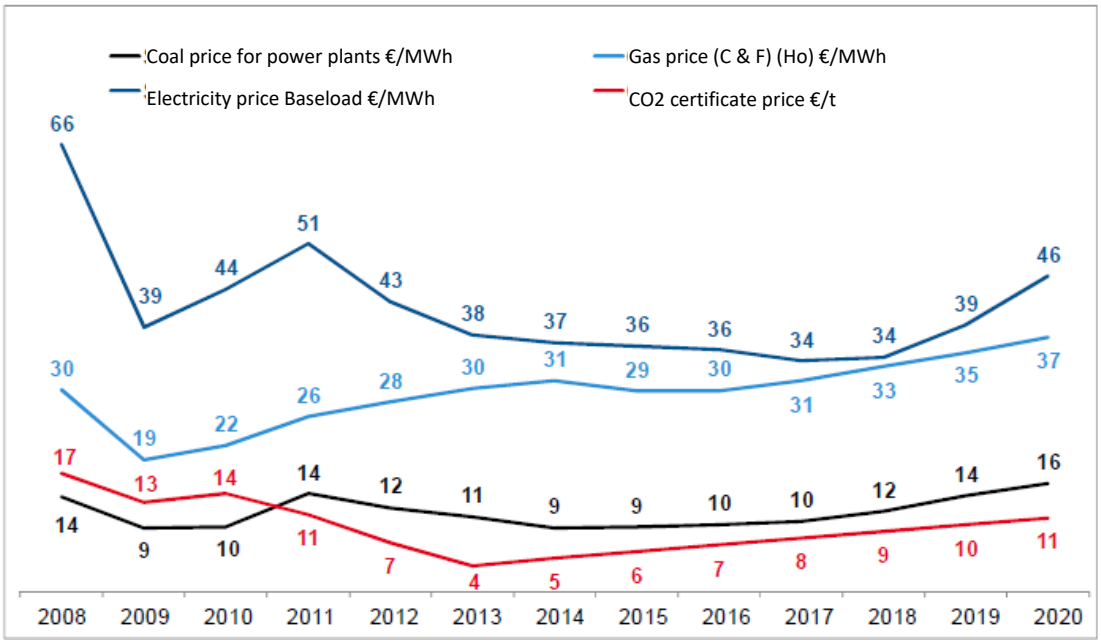
Table 8: Electricity prices for households, commercial customers and industrial customers in € cents 2013/kWh

Short name	Consumer category	2014	2020	2030	2040	2050
Household	Households, 3.500 kWh per year (incl. VAT)	26.7	28.2	27.6	27.5	27.5
GHD1	Trade and services, 50 MWh per year, low voltage, without electricity tax reduction	20.1	21.6	21	20.8	18.7
GHD2	Trade and services, 200 MWh per year, low voltage, without electricity tax reduction	19.8	21.3	20.7	20.5	20.4
GHD3	Trade and services, 1.000 MWh per year, medium voltage, without electricity tax reduction	17.4	18.8	18.1	17.9	17.8
IND1	IND (small), 50 MWh per year, low voltage, with electricity tax reduction	19.8	21.3	20.7	20.5	20.5
IND2	IND (SMEs) to 200 MWh per year, low voltage, with electricity tax reduction	19.1	20.7	20.1	19.9	19.8
IND3	IND (SMEs) to 1 000 MWh per year, medium voltage, with electricity tax reduction	16.1	17.5	17.4	17.1	17.0
IND4	IND (industrial), 10 000 MWh per year, medium voltage, with electricity tax reduction and spitzensteuerausgleich (i.e. additional electricity tax reduction), without EEG-surcharge reduction	14.6	16	15.5	15.2	15.1
IND5	Energy intensive industry, 100 000 MWh per year, high voltage, with electricity tax reduction and spitzensteuerausgleich (i.e. additional electricity tax reduction), with EEG-surcharge reduction	11.9	13.1	12.3	11.9	11.6

Short name	Consumer category	2014	2020	2030	2040	2050
IND6	Energy intensive industry, 100 000 MWh per year, high voltage, with electricity tax reduction and spitzensteuerausgleich (i.e. additional electricity tax reduction), with EEG-surcharge reduction	4.5	4.9	7.3	8.8	9.2
IND7	Energy intensive industry, 1 000 000 MWh per year, high voltage, with electricity tax reduction and spitzensteuerausgleich (i.e. additional electricity tax reduction), with EEG-surcharge reduction	4.1	4.5	6.9	8.4	8.8

Source: Irees IFAM bhkw-consult, Prognos,

Table 9: Forecasted evolution of fuel and energy prices 2008-2020, nominal (source EEX 2014, Prognos 2014 from the CHP cost-benefit analysis).



(51) Germany has indicated that since Prognos made those forecasts for the purposes of the CHP cost-benefit analysis on the basis of which the reform was designed, the market situation has slightly changed, with electricity base-load prices (forward market, 2016-2019) having dropped to 28-29 €/MWh, the natural gas prices having also dropped to 23-24 €/MWh (Ho) at the end of 2015 but CO_2 certificate prices having increased to 8.5 €/t. Germany noted that the drop in natural gas prices was more than compensated by the drop in electricity prices and the increase in CO_2 emission certificate prices.

(52) The following tables recap the resulting LCOE calculations. They include the rate of return of the investment taking into account the support under the KWKG when the installation is eligible for such support. They also contain a comparison with the average market price (average obtained from the market price of the energy injected into the grid and the market price of the electricity that would have had to be paid if the autoconsumed electricity had been purchased from a supplier) and with the support level.

Table 10: Housing, up to 100 kWel, calculation over 10 year period (2016-2025) with a discount rate of 10% per year – in € cents/kWh

type of housing	1-family house	2-family house	2-family house	12-appartment block
Type of CHP installation	BHKW 1	BHKW 1	BHKW 2	BHKW 2
el. capacity	1 kW	1 kW	5 kW	5 kW
Full-load hours	5 000 h/a	6 000 h/a	3 000 h/a	6 000 h/a
Self-consumption rate	50%	70%	40%	10%
Rate of return with CHP-support	-24%	-13%	-13%	-14%
LCOE	57.69	49.91	37.16	22.77
Average market price	16.07	20.62	13.79	6.96
Difference between LCOE and market price	41.62	29.29	23.37	15.82
CHP-support	5.38	4.66	5.74	6.81

Table 11: Trade and services, outside the BesAR, up to 100 kWel, 10 year period (2016 to 2025) with a discount rate of 20% per year – in € cents/kWh

designation	MFH 60	Services	School	retail	hospital	Hotel	local utility
plant type	BHKW 2	BHKW 2	BHKW 3	BHKW 3	BHKW 3	BHKW 3	BHKW 3a
el. power	5 kW	5 kW	50 kW	50 kW	50 kW	50 kW	100 kW
Full load hours	7 500 h/a	6 000 h/a	4 500 h/a	4 500 h/a	6 000 h/a	6 000 h/a	5 000 h/a
self-consumption rate	40%	80%	30%	50%	90%	90%	90%
Rate of return (with CHP-support)	- 1 %	6 %	1 %	7 %	19 %	19 %	16 %
LCOE	24.02	28.37	22.57	22.57	18.76	18.76	18.66
Average market price	10.76	16.47	8.64	11.35	14.56	14.56	14.56
Difference between LCOE and market price	13.25	11.9	13.93	11.22	4.2	4.2	4.1
CHP-support	5.38	4.36	6.18	5.45	4	4	2.84

Table 12: Non electro-intensive industry (not eligible under BesAR, more than 100 kWel, 15 year period (2016-2030) up to 10 MWel and 20 year depreciation period (2016-2035) if more than 10 MWel; 30% per year discount rate – in € cents/kWh

Sector	manufacture of machinery and equipment	manufacture of automotive components	manufacture of automotive components	automobile manufacturer	automobile manufacturer	automobile manufacturer	automobile manufacturer	automobile manufacturer
Installation type	BHKW 4	BHKW 4	BHKW 5	BHKW 5	DT 1	GT 1	BHKW 6	GUD 1
El capacity	500 kW	500 kW	2.000 kW	2.000 kW	5.000 kW	10.000 kW	10.000 kW	20.000 kW
Full-load hours	5 000 h/a	5 000 h/a	4 500 h/a	8 000 h/a	5 500 h/a	5 500 h/a	5 500 h/a	5 000 h/a
Self-consumption rate	80%	90%	50%	100%	100%	100%	100%	80%
Rate of return (including CHP-support)	27 %	27 %	32 %	58 %	21 %	42 %	41 %	21 %
LCOE	14	13.3	10.42	7.22	12.13	8.42	8.49	11.56
Average market price	12.44	12.03	8.64	10	10	10	10	8.84
Difference between LCOE and market price	1.56	1.27	1.78	- 2.77	2.13	- 1.57	- 1.51	2.72
CHP-support per electricity unit produced (incl. ETS premium of 0.3 ct/kWh as of 20 MW)	0.93	0.46	2.06	No support	No support	No support	No support	0.64

Table 13: Electro-intensive industry (eligible to BesAR) — 15 year period (2016-2030) up to 10 MWel and 20 year period (2016-2035) if more than 10 MWel; 30% per year discount rate – in € cents/kWh

Sector	Papier	Papier	Papier	Papier	Chemie
Installation type	DT 1	GT 1	BHKW 6	GUD 1	GUD 1
El capacity	5 000 kW	10 000 kW	10 000 kW	20 000 kW	20 000 kW
Full-load hours	6 000 h/a	6 000 h/a	6 000 h/a	5 000 h/a	6 000 h/a
Self-consumption rate	90%	90%	90%	80%	90%
Rate of return (including CHP)	1 %	16 %	15 %	7 %	6 %
LCOE	11.42	7.74	7.85	11.31	9.93
Average market price	4.79	4.79	4.79	4.73	4.45
Difference between LCOE and market price	6.63	2.95	3.05	6.57	5.48
CHP-support per electricity unit produced (incl. §7(5) premium of 0.3 ct/kWh as of 20 MW and 0.6 ct/kWh bonus for fuel switch)	1.86	1.73	1.73	1.92	1.64

Table 14: LCOE calculations for projects implemented by contractors, outside the BesAR, larger than 100 kWel, over 15 years (2016-2030) up to 10 MW and over 20 years (2016 to 2035) above 10 MW, discount rate 30% per year – in € cents/kWh (2013 values)

Sector in which the client of the contractor is active	manufacture of machinery and equipment	manufacture of automotive components	manufacture of automotive components	automobile manufacturer	automobile manufacturer	automobile manufacturer	automobile manufacturer	automobile manufacturer
Installation type	BHKW 4	BHKW 4	BHKW 5	BHKW 5	DT 1	GT 1	BHKW 6	GUD 1
El. Capacity	500 kW	500 kW	2 000 kW	2 000 kW	5 000 kW	10 000 kW	10 000 kW	20 000 kW
Full-load hours	5 000 h/a	5 000 h/a	4 500 h/a	8 000 h/a	5 500 h/a	5 500 h/a	5 500 h/a	5 000 h/a
Self-consumption rate	80%	90%	50%	100%	100%	100%	100%	80%
Rate of return (including CHP-support)	18 %	17 %	22 %	30 %	8 %	20 %	20 %	10 %
LCOE	14	13.3	10.42	7.22	12.13	8.42	8.49	11.56
Average market price	9.44	8.66	6.77	6.25	6.25	6.25	6.25	5.87
Difference between LCOE and market price	4.56	4.64	3.65	0.97	5.88	2.17	2.24	5.7
CHP-support per electricity unit produced (incl. §7(5) premium of 0.3 ct/kWh as of 20 MW)	2.01	1.78	2.43	0.99	1.13	1.04	1.04	1.34

Table 15: LCOE district heating – new installations (with §7(5) premium of 0.3 € cent/kWh) 20 year period (2016-2035) 8% discount rate – in €/MWh

Installation type	BHKW6	GuD1	GuD2	GuD 3	GuD 4
El capacity	10MW	20MW	100 MW	200 MW	450 MW
LCOE	147	350	182	153	126
Average market price	48	46	47	48	48
Difference between LCOE and market price	99	304	135	106	78

Table 16: LCOE district heating – new installations (with fuel switch bonus and including §7(5) premium of 0.3€ cent/kWh)
[...]: business secrets: the data relates to a concrete undertaking and would give insights into its production costs.

	year	**2014**	**2015**	**2016**	**2020**	**2025**	**2030**	**2035**
Parameters								
Full-load hours	h		[...]	[...]	[...]	[...]	[...]	[...]
Electricity production	MWh		[...]	[...]	[...]	[...]	[...]	[...]
Heat production	MWh		[...]	[...]	[...]	[...]	[...]	[...]
Gas price	€ 2013/MWh (Hu)		[...]	[...]	[...]	[...]	[...]	[...]
Heat price	€ 2013/MWh		[...]	[...]	[...]	[...]	[...]	[...]
Costs of CO_2 certificates	€ 2013/t		[...]	[...]	[...]	[...]	[...]	[...]

	year	2014	2015	2016	2020	2025	2030	2035
Parameters								
Costs - Total	€ 2013	[...]	[...]	[...]	[...]	[...]	[...]	[...]
Investment	€ 2013	[...]						
Fuel	€ 2013		[...]	[...]	[...]	[...]	[...]	[...]
CO_2 certificates	€ 2013		[...]	[...]	[...]	[...]	[...]	[...]
Variable operating costs	€ 2013		[...]	[...]	[...]	[...]	[...]	[...]
Fixed operating costs	€ 2013		[...]	[...]	[...]	[...]	[...]	[...]
Ramp up costs (fuel and wear and tear)	€ 2013		[...]	[...]	[...]	[...]	[...]	[...]
Revenues outside electricity production	€ 2013		[...]	[...]	[...]	[...]	[...]	[...]
Heat revenues	€ 2013		[...]	[...]	[...]	[...]	[...]	[...]
Compensation for avoided network fees	€ 2013		[...]	[...]	[...]	[...]	[...]	[...]
Remaining costs	€ 2013	[...]	[...]	[...]	[...]	[...]	[...]	[...]
LCOE								
Electricity production - discounted		[...]	[...]	[...]	[...]	[...]	[...]	[...]
Remaining costs - discounted		[...]	[...]	[...]	[...]	[...]	[...]	[...]
LCOE without CHP-support	€ 2013/MWh	[90-120]						
Market price and CHP-support								
Average market price (base)	€ 2013/MWh		[...]	[...]	[...]	[...]	[...]	[...]
CHP-support incl. fuel switch and §7(5) premium	€ 2013/MWh		[...]	[...]	[...]	[...]	[...]	[...]
Revenues from average market price base)	€ 2013		[...]	[...]	[...]	[...]	[...]	[...]
Revenues from CHP-support	€ 2013		[...]	[...]	[...]	[...]	[...]	[...]
Revenues from average market price (base) - discounted	€ 2013		[...]	[...]	[...]	[...]	[...]	[...]
Revenues from CHP-support - discounted	€ 2013		[...]	[...]	[...]	[...]	[...]	[...]
Leverlized market price	€ 2013/MWh	47.5						
Leverlized CHP-support	€ 2013/MWh	28.6						

Table 17: LCOE district heating — existing installation

[...]: business secrets: the data relates to concrete undertakings and would give insights into production costs.

Year			2016	2017	2018	2019
Parameters						
Full-load hours	(h)		[...]	[...]	[...]	[...]
Electricity generation	MWh		[...]	[...]	[...]	[...]
Heat production	MWh		[...]	[...]	[...]	[...]
Prices						
Natural gas price at power station	€ 2013/ MWh (HU)		[...]	[...]	[...]	[...]
Heat price	€ 2013/ MWh (HU)		[...]	[...]	[...]	[...]
price of CO_2-allowances	€ 2013/t		[...]	[...]	[...]	[...]
Costs (total)	€ 2013		[...]	[...]	[...]	[...]
Investment	€ 2013		/	/	/	/
Fuel	€ 2013		[...]	[...]	[...]	[...]
CO_2 allowances	€ 2013		[...]	[...]	[...]	[...]
Variable operating costs	€ 2013		[...]	[...]	[...]	[...]
Fixed operating costs	€ 2013		[...]	[...]	[...]	[...]
Ramp up costs (fuel and wear and tear)	€ 2013		[...]	[...]	[...]	[...]
Revenues outside generation	€ 2013		[...]	[...]	[...]	[...]
Revenue for heat generation	€ 2013		[...]	[...]	[...]	[...]
Compensation for avoided network fees	€ 2013		[...]	[...]	[...]	[...]
Remaining costs	€ 2013					
Calculation of levelized cost of electricity						
Discounted electricity production			[...]	[...]	[...]	[...]
Residual costs – discounted			[...]	[...]	[...]	[...]
Levelized cost of electricity without CHP-support	€ 2013/ MWh	51.3				
Calculation of market price and CHP-support						
Average market price (base)	€ 2013/ MWh		[...]	[...]	[...]	[...]
CHP-support	€ 2013/ MWh		[...]	[...]	[...]	[...]
Proceeds from average market price (base)	€ 2013		[...]	[...]	[...]	[...]
Proceeds from CHP-support	€ 2013		[...]	[...]	[...]	[...]
Proceeds from average market price (base), discounted	€ 2013		[...]	[...]	[...]	[...]
Proceeds from CHP-support, discounted	€ 2013		[...]	[...]	[...]	[...]
Levelized market price	€ 2013/ MWh	31.7				
Levelized proceeds from CHP-support	€ 2013/ MWh	13.9				

(53) The calculations use the following discount rates: 8% for the district heating sector, 10% for households, 20% for the service sector and 30% for the industry.

(54) For the district heating sector, Germany indicated that 8% corresponds to the average rate of return observed in the sector. It submitted a survey based on actual projects and conducted by the Fraunhofer Institute for Manufacturing Technology and Advanced Materials (IFAM) showing that the average rate of return for the surveyed projects was 8.1%.

(55) For households, the service sector and the industry, Germany has explained that the rates of return needed to trigger investments in those segments can vary greatly from one investor to another. For instance, while in the industry some project owners will engage into the project if it has a payback period of 5 years, others will require a payback period of 2 years. A 5-year payback period roughly equates to an annual project return of 20%,[18] a period of two years equates to an annual project return of 50% and a payback period of three years equates to a project return of 33%.

(56) Based on this observation, when it designed the level of support Germany had to conciliate two objectives: on the one hand ensure that enough CHP projects outside the district heating sector would be incentivised so as to meet its target and at the same time maintain the budget of the scheme within a certain limit. The discount rates in the service sector and in the industry (respectively 20% and 30%) used by Germany correspond roughly to what a significant portion of project owners would require as project return to implement the CHP project in Germany.

(57) Germany has submitted that the higher rates of return required by market participants in sectors other than the district heating can be explained by the fact that district heating companies are energy utilities and energy production belongs to their core business. The other sectors, however, are not specialised in energy production. While a more energy-efficient production could result in cost savings for them, it might also increase the complexity of operations. For those companies, the investment into the CHP installation does not constitute an investment into a side activity with its own costs and revenues but an investment having an impact on the production costs of the main activity of the company. Since operating a cogeneration installation is technically more complex than operating a heat boiler, investing in CHP projects will increase the risk of disrupting production. In addition, in most cases, the companies concerned, in particular in the industry, will have to invest into the CHP installation on top of a heat boiler that is needed to ensure security of energy supply in case the CHP installation is out of order or at times of maintenance. Companies would normally require higher rates of return to compensate for the additional risk.

(58) Germany has submitted several surveys of businesses and industrial plants confirming that in Germany many undertakings only accept relatively short payback periods, between 2 and 5 years.

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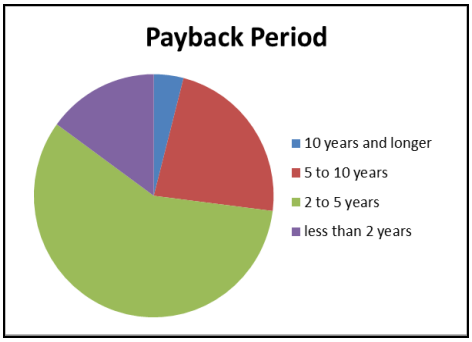
[18] In the case of short reference periods (up to five years), the rate roughly corresponds to 1 divided by the payback period.

Graph 1 – Payback period, projected total expenditures and financing sources - Source GfK 2014 / GfK EEDL *Monitor / Ergebnisbericht November 2014*

Total/Subgroup: Planners of efficiency measures, weighted average, excluding no replies, in %.



Projected total expenditures	%
Under 10 000 €	23
10 000 to 25 000 €	25
25 000 to 50 000 €	24
50 000 to 100 000 €	10
100 000 to 500 000 €	17
Above 500 000 €	10

Financing source	%
From liquid means	71
Subsidies	39
Credits	27

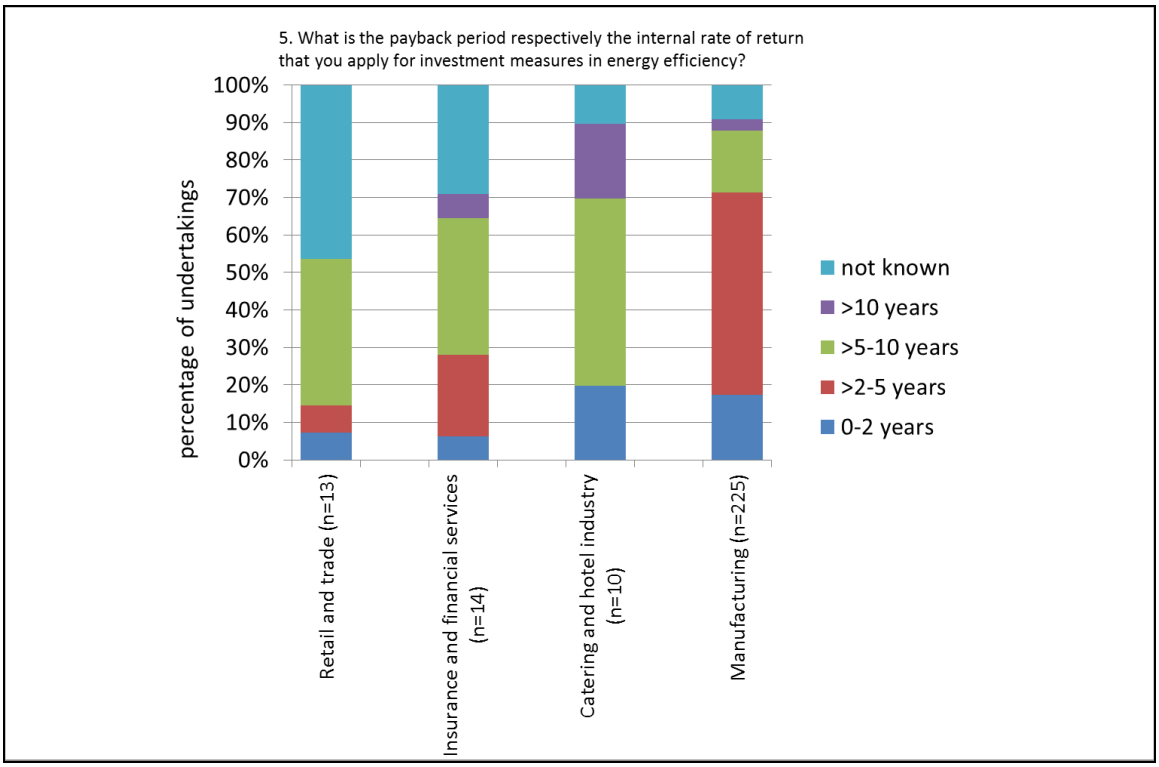
Basis: n= 963/474 (not weighted)

F6.1: In which period of time should costs linked to energy efficiency measures be paid back?

F6.2: What total expenditures are you planning in the next 2 years for measures aimed at increasing the energy efficiency of your company?

F6.3: How will you most likely finance the measures?

Graph 2 – Payback periods and rates of return of energy-saving investments - Source Prognos, IFEU, HWR Marktanalyse und Marktbewertung im Bereich Energieeffizienz [19]



(59) In 2015, the Association of Industrial Producers of Electricity (Verband der Industriellen Energie- und Kraftwirtschaft e.V. – VIK) has conducted a survey of

19 The participants to the survey have been asked which payback period they apply to investments into energy efficiency measures. They had the choice between the following categories: 0-2 years; 2-5 years, 5-10 years, 10 years, "don't know".

its member companies on the issue of the profitability requirements for CHP projects. The following table presents the replies to the question: *'What is your company's maximum acceptable payback period for projects in the field of energy supply, in particular the building or modernisation of plants for combined heat and power generation (CHP plants)?*'

Table 18: Maximum acceptable payback periods

Industry	Max. accepted payback period (in years)
Food (1)	3
Food (2)	3.5
Paper 1	3
Paper 2	3.5
Chemistry 1	3
Chemistry 2	3.5
Metalworking (non-iron)	4
Metalworking (iron)	2

(60) Germany has also referred to a study commissioned by the Commission on Energy Efficiency and Energy Saving Potential in Industry from possible Policy Mechanisms.[20] This study projected 2 output scenarios: a high and a low hurdle rate scenario. For the high hurdle rate scenario, the study uses a 2-year simple payback criterion as it has observed that this payback period represents a closer perspective of what industry might consider economically feasible. The study used a 5-year payback period in the lower hurdle rate scenario as projects with that longer payback period were often shortlisted but not implemented.

(61) Finally, Germany has made a survey among CHP project owners. This survey shows that projects with a short payback period of 2 to 3 years (corresponding to a 50% to 33% rate of return) are realised while projects with payback periods above 4 years (25% rate of return) tend to be abandoned – as shown below in Table 19.

[20] Study delivered by ICF Consulting Limited, December 2015, in the framework of Contract No. ENER/C3/2012-439/S12.666002, p. 6.

Table 19: Analysis of CHP projects in the industry

Industrial sector	Type of CHP	Electricity capacity	Thermal capacity	Was the project implemented?	Pay-back period
		kW	kW		Years
Manufacturing	Natural gas motor	[...]	[...]	Yes	2.0
Research	Natural gas motor	[...]	[...]	Yes	2.2
Logistics Centre	Natural gas motor	[...]	[...]	No	2.3
Reserach and development	Natural gas motor	[...]	[...]	Yes	2.6
Manufacturing	Natural gas motor	[...]	[...]	Yes	2.7
Motor vehicle manufacturers	Natural gas motor	[...]	[...]	Yes	3.0
Manufacturing	Natural gas motor	[...]	[...]	Yes	3.5
Automotive component manufacturers	Natural gas motor	[...]	[...]	Yes	3.5
Pharma	Natural gas motor	[...]	[...]	Yes	4.0
Automotive component manufacturers	Natural gas motor	[...]	[...]	No	4.5
Chemistry	Natural gas motor	[...]	[...]	Yes	4.5
Manufacturing	Natural gas motor	[...]	[...]	Possibly	4.5
Chemistry	Natural gas motor	[...]	[...]	No	5.0
Pharma	Gas turbine	[...]	[...]	No	5.1
Pharma	Natural gas motor	[...]	[...]	No	5.7
Food	Natural gas motor	[...]	[...]	Yes	6.0
Food	Gas turbine	[...]	[...]	Yes	8.0
Electroplating	Natural gas motor	[...]	[...]	No	8.0
Pharma	Natural gas motor	[...]	[...]	No	8.0
Manufacturing	Natural gas motor	[...]	[...]	No	8.5
Chemistry	Gas turbine	[...]	[...]	No	9.0

Source: non-public information by several planners

[...]: Business secret; the information concerns concrete individual projects and the combination of the sector, the electrical capacity and thermal capacity could allow identification of the projects and give insight into production costs of companies.

(62) Germany has also observed that CHP projects of more than 100 kWel implemented in the non-electro-intensive industry and used 100% for self-consumption generally yield rates of return of more than 30% without support. Those categories are excluded from support under the KWKG.

(63) Finally, Germany has explained that, in the case of contracting, the LCOE calculations have made use of the same discount rate as if the project had been implemented by the consumer directly. The reason for this is that contractors themselves require lower rates of return because energy production and supply to third parties is their main business. However, a consumer will engage into energy contracting only if this yields certain savings for him. If the savings are too low, he will abandon the project altogether or implement it himself directly (without resorting to the *Kontraktor*). This means that the project itself must yield both savings for the consumer and a reasonable rate of return for the contractor. In other terms the rate of return of the project is spread between the contractor and the consumer.

2.4. Monitoring of production costs

(64) Production costs will be examined on a yearly basis. Thereby, the Federal Ministry for Economic Affairs and Energy will verify that the support level is adequate and does not exceed the difference between production costs of CHP electricity and the market price for the electricity. Should there be indications that the support level would exceed that difference, the Federal Ministry for Economic will inform the Parliament by 31 August of the relevant year and introduce an amendment to the law if need be (§34(1) KWKG 2016).

2.5. Granting procedure, entry into force of the KWKG 2016 and duration

(65) Under the KWKG, support is paid out by network operators to operators of CHP installations, district heating/cooling networks and heat/cooling storage systems. In the case of CHP installations the payment responsibility rests on the distribution or transmission network operator to which the CHP installation is connected. In the case of district heating/cooling networks and storage facilities the responsibility rests on the transmission system operator to which the main CHP installation that feeds heat/cooling into the district heating/cooling network or the storage facility concerned is connected. The aid is paid out once the eligible installation or network enters into operation.

(66) The beneficiaries are automatically entitled to support under the KWKG once all eligibility requirements of the KWKG are fulfilled. If they are fulfilled, the network operator concerned is obliged to pay out the support. Eligibility is verified by the Federal Office of Economics and Export Control (BAFA) upon request of the beneficiary. If all eligibility conditions are satisfied, the BAFA has to deliver a document confirming the eligibility (called a "Zulassung").

(67) The request submitted to the BAFA must contain the name and address of the operator, the description of the installation (installed capacity or size of the network/storage facility, fuel used, energy efficiency, costs), whether the electricity is injected into a public grid, date at which the installation entered into operation and more generally all information demonstrating that all eligibility conditions are met (including proof of compliance with high energy efficiency requirement).

(68) In addition, in the case of district heating/cooling networks and storage facilities, Germany committed to verifying the incentive effect of the aid by requesting that the project owner also presents the counterfactual situation in the absence of aid.

(69) The request is in principle introduced only after the start of operation as eligibility conditions are easier to verify when the installation is already in operation. Germany explained, however, that in case of complex projects, project owners would contact the BAFA in the planning phase and ask the BAFA to already provide a view on whether eligibility criteria are met before engaging into the project. Also operators can request a preliminary confirmation "Vorbescheid" for CHP installations of more than 10 MW before they start building the installation. This will already confirm towards the operator the amount of the subsidy and its duration (§12 KWKG). A Vorbescheid can also be requested for district heating/cooling networks and heat/cooling storage facilities when project costs exceed EUR 5 million (§20(6) and §24(6) KWKG 2016).

(70) CHP projects are characterised by significant lead times between conception and starting of operations.[21] Germany has explained that after a preparation and planning phase, projects will start once investors have verified that with the help of the support the project makes economic sense. They will then start the procedures to obtain building and environmental permits and will order the installation. For these reasons, while the KWKG 2016 entered into force on 1 January 2016 new projects entering into operation as of 1 January 2016 remain subject to the previous KWKG when it is demonstrated that certain parts of the project (for instance the ordering of the installation) were undertaken before 1 January 2016 given that those projects were undertaken based on the provisions of the previous KWKG (§35 KWKG 2016).

(71) The KWKG 2016 will remain applicable to projects entering into operation at the latest by 31 December 2022. Germany indicated that the tender segment may require a longer applicability.

(72) Certain provisions of the KWKG 2016 are subject to a standstill clause: no "Zulassung" will be delivered for the projects listed below as long as the Commission has not approved the support scheme. Once it is approved, Germany indicated that payments would also relate to the CHP electricity produced since 1 January 2016 by the installation obtaining the “Zulassung”. The projects concerned by the standstill clause are:

(a) new, modernised and retrofitted CHP installations under §10 KWKG 2016;

(b) construction or expansion of district/heating networks under §§ 20-21 KWKG 2016;

(c) new or retrofitted heat/cooling facilities under §§ 24-25 KWKG; and

(d) existing CHP installations requesting ai under §13 KWKG 2016.

[21] The normal lead time goes from around 2 years for installations between 1 to 10 MW to 6 years for installations of more than 50 MW. Normally project conception takes 0.5 to 1 year, project planning can take up to 0.5 for smaller installations and 1 year for larger installations, ordering of the installation can take up to 0.5 for smaller installations and 1 year for larger installations, construction can take up to 0.5 for smaller installations and 2 years for larger installations, and starting of operations can take up to 0.5 for smaller installations and 1 year for larger installations.

(73) In addition, when the project owner of district heating/cooling network project is allocated more than EUR 15 million, the authorisation is issued only after Commission approval of the project (individual notification). The same applies when the CHP installation for which support is requested has an electric CHP capacity of more than 300 MW.

2.6. The financing mechanism and the budget

2.6.1. The CHP-surcharge (KWK-Umlage)

(74) The measure is financed by a levy imposed on electricity consumption collected as a supplement to network charges (the so-called "*KWKG-Umlage*"). Network operators have to keep separate accounts in respect of the collected CHP-surcharge (§26 (1) KWKG).

(75) The amount of the CHP-surcharge is calculated each year by the transmission system operators as a uniform rate per kWh consumed. Some categories of users benefit however from a reduced rate established in accordance with the CHP law. For consumers with a yearly consumption of more than 1 GWh (also called Category B consumers), the KWKG establishes a maximum CHP-surcharge of 0.04 € cent/kWh. The other category of consumers benefitting from a reduced CHP rate are consumers active in the manufacturing sector consuming more than 1 GWh and for which the electricity cost represents more than 4% of turnover (also called Category C consumers). For the latter category of consumers, the KWKG establishes a maximum CHP-surcharge of 0.03 € cent/kWh (§26(2) KWKG). Consumers paying the full CHP-surcharge are called Category A consumers.

(76) The current CHP-surcharge rates (in € cent/kWh)[22] are set out in Table 20 below

Table 20: Current CHP-surcharge rates

Category A	Category B	Category C
0.445	0.04	0.03

(77) Based on the forecasts made by transmission network operators to determine the CHP-surcharge in 2016,[23] Germany has provided the following figures showing the relative size of each category and the importance of the reductions:

Table 21: Relative share in consumption and in the CHP funding by each consumer category

	Total	Cat. A	Cat. B	Cat. C
Forecasted consumption in GWh	485 149	259 748	143 883	81 518
Share of total consumption	100.00 %	53.54 %	29.66 %	16.80 %
CHP-surcharge 2016 (€ cent/kWh), rounded		0.445	0.04	0.03

[22] See https://www.netztransparenz.de/de/file/KWKG-Aufschlaege_2016_V01.pdf.

[23] Forecasts available under: https://www.netztransparenz.de/de/file/KWKG_Prognose_2016_nach KWKG 2016 Internet.pdf.

	Total	Cat. A	Cat. B	Cat. C
Forecasted CHP-surcharge (total in million €)	1 239	1 157	58	24
Share of total revenue	100.00%	93%	5%	2%
Notional CHP-surcharge 2016 (€ cent/kWh), rounded	0.255			
Difference compared to notional CHP-surcharge		- 0.19	0.215	0.225
Advantage (in million €) - rounded		- 494	310	184

(78) In order to make sure that each network operator is compensated for the extra costs resulting from his compensation obligation, the CHP law organizes a system by which the burden resulting from the purchase and compensation obligations is spread evenly between network operators in proportion to the consumption of consumers connected to their network and then compensated in the same way through the CHP-surcharge (which is proportionate to the consumption in their respective network, as well) (§28 KWKG). This system can be summarized as follows:

(a) all distribution network operators can require full compensation of their extra-costs from their respective transmission network operator;

(b) transmission network operators balance the financial burden out between themselves in such a way that each of them bears the same burden in proportion to the consumption of end consumers (directly or indirectly) connected to their grid; then

(c) transmission network operators transfer part of the financial burden back to distribution network operators in such a way that each network operator (be it distribution or transmission) bears the same financial burden in respect of the consumption of the consumers directly connected to their grid.

(79) §27 KWKG 2016 establishes the methodology to be used by transmission network operators to calculate the CHP-surcharge. The level of the CHP-surcharge is on the one hand a function of the projected aid amount (this projection is based on the estimates made by each network operator regarding the volume of CHP electricity eligible for support that would be produced in their network area and on the estimates made by the BNetzA on the subsidies to be paid out for storage and district heating/cooling networks) and the projected consumption by each category of consumers. On the other hand it will take into account corrections for preceding years. As the CHP-surcharge is calculated based on estimates, there could be a deviation between the forecasted aid amount and the aid amount actually paid out as well as a deviation between the forecasted consumption and the actual consumption. In year X, transmission network operators verify whether the estimated aid amount and consumption for year X-1 corresponded to the aid actually paid out and electricity consumed in year X-1 (see §28(6) KWKG). If there are mismatches, it is corrected by a higher or lower CHP-surcharge in year X+1 (see §27(3) KWKG, second part of the sentence).

2.6.2. The maximum budget

(80) The KWKG sets a yearly limit to the budget of the scheme and hence the total CHP-surcharge (§29 KWKG "*Begrenzung der Höhe der KWKG-Umlage und der*

Zuschlagzahlungen"). The yearly amount of support paid to CHP installations, storage facilities and district heating/cooling networks under the KWKG may not exceed EUR 1.5 billion. Of this amount, the yearly support for storage and district heating/cooling networks may not exceed EUR 150 million, except if estimates indicate that the total budget of 1.5 billion will not be exhausted. Once the maximum budget has been reached, further storage or district heating/cooling projects will obtain authorisation in the following year.

(81) If on the basis of the estimates used to determine the level of the CHP-surcharge, it is established that the EUR 1.5 billion budget will be exceeded in year X+1, the support for all CHP installations of more than 2 MW of installed capacity will be reduced in the same proportion. This reduction will be compensated in the following years. Transmission system operators will have to warn the BAFA when they observe a risk of the budget being exceeded. The BAFA will then determine the reduced support rates and publish them (§29 (4) KWKG).

2.6.3. Arguments presented by the Member State on reduced CHP-levies

(82) Germany has indicated that reductions from the CHP-surcharge were needed to ensure the international competitiveness of the companies concerned. It has also explained that previously reductions were granted already as of 100 000 kWh of consumption. This was however putting too heavy a burden on households and small undertakings and the threshold was therefore increased. Finally, it has explained that the reductions are needed in order to maintain the support as the support is only possible if the levies do not jeopardize the competitiveness of the companies concerned. Germany fears that the full surcharge could in the medium term lead to a deindustrialisation of Germany and possibly also Europe and adds that without the reductions the support as such as well as the objective of reduced CO_2 emissions would not be accepted anymore.

(83) Germany has further indicated that it had no data available on the beneficiaries and the impact on their production costs and gross value added.

(84) However, as to Category C beneficiaries, Germany has indicated that most of them are likely to qualify as electro-intensive within the meaning of the "*Besondere Ausgleichregelung*" under the EEG (BesAR). In that connection, Germany has indicated that companies benefitting from reduced EEG levies under the EEG were mainly active in the sectors set out in Table 22 below.

Table 22: Overview of the sectors of the BesAR (Source: BAFA, May 2016)
[...]: business secrets: due to the low number of delivery points, the data would enable identification of the company and give insights into its production costs.One undertaking might have more than one delivery point.

Economic activities [WZ 2008]	Number of delivery points	Privileged electricity [GWh]
0800 Mining and quarrying except energy producing materials	171	516
1000 Manufacture of food products	414	3 754
1100 Manufacture of beverages	[...]	[...]
1300 Manufacture of textiles	[...]	[...]
1600 Manufacture of wood and of products of wood and cork, except furniture; etc.	142	3 038
1700 Manufacture of pulp, paper and paper products	118	11 843
1800 Manufacture of paper and paper products etc.	[...]	[...]

Economic activities [WZ 2008]	Number of delivery points	Privileged electricity [GWh]
1900 Manufacture of coke and refined petroleum products	[...]	[...]
2000 Manufacture of chemicals and chemical products	283	28 421
2200 Manufacture of rubber and plastic products	351	3 984
2300 Manufacture of glass and glass products, ceramic, etc.	285	7 550
2400 Manufacture of basic metals	280	24 351
2500 Manufacture of fabricated metal products, except machinery and equipment	205	1 453
2600 Manufacturing of computers, etc.	[...]	[...]
2700 Manufacture of electrical equipment	[...]	[...]
2800 Machinery	[...]	[...]
2900 Manufacture of motor vehicles, trailers and semi-trailers	[...]	[...]
3100 Manufacture of furniture	[...]	[...]
3800 Waste collection, treatment and disposal activities; etc.	[...]	[...]
4900 Land transport and transport via pipeline services	130	12 443
Aid to other sectors	61	1 624
Total	2 777	105 935

[...]: business secrets: due to the low number of delivery points, the data would enable identification of the company and give insights into its production costs.One undertaking might have more than one delivery point.

(85) Also, based on the data available for companies eligible to reduced EEG levies, Germany could simulate that the full CHP-surcharge (amounting to 0.255 € cent/KWh if no reductions were to apply) would represent between 1 and 9% of GVA for a sample of around 100 companies eligible to reduced EEG levies and having a consumption above 1 GWh.

(86) Germany submitted that it had no exact information on the sectors in which beneficiaries of Category B would be active but has indicated that companies of the manufacturing sectors generally had consumption above 1 GWh with the exception of the following sectors in which average consumption is below 1 GWh/a:

Table 23: Overview of manufacturing sectors with average consumption below 1 GWh/a

CPA 2008	Sectors
9.1	Support services to petroleum and natural gas extraction
10.7	Manufacture of bakery and farinaceous products
14.1	Manufacture of wearing apparel, except fur apparel
15.2	Manufacture of footwear
23.6	Manufacture of articles of concrete, cement and plaster
23.7	Cut, shaped and finished stone
25.1	Steel and light alloys
25.3	Manufacture of steam generators, except central heating hot water boilers
26.2	Manufacture of computers and peripheral equipment
26.4	Manufacture of consumer electronics
28.9	Manufacture of machinery for other sectors

32.1	Manufacture of jewellery, bijouterie and related articles
32.2	Manufacture of musical instruments
32.3	Manufacture of sports goods
32.5	Manufacture of medical and dental instruments and supplies
33.1	Repair of fabricated metal products, machinery and equipment
33.2	Installation services of industrial machinery and equipment

(87) It also submitted the following simulation to illustrate the possible impact of a full surcharge on companies:

Table 24: Simulation of the impact of a full surcharge

	Notional CHP-surcharge	Surcharge under the CHP law 2016	End consumer	Consumption (GWh)	Burden w/out privilege (GWh)	Burden under the CHP law KWKG 2016 (EUR)	Increase in burden by factor
Cat B	0.255	0.04	Industry 1	10	0.0255	8 050	3.17
			Industry 2	100	0.255	44 050	5.79
Cat C	0.255	0.03	Industry 3	1 000	2.55	304 150	8.38

(88) Germany finally stressed that the burden of the CHP-surcharge adds to the burden already resulting from the EEG surcharge.

2.7. Commitments

2.7.1. Imported CHP

(89) Germany has committed to opening the CHP-support to imported CHP electricity by allowing the participation of foreign operators in the CHP-support tenders (1-50 MW) described in section 2.7.2 as of Winter 2017/2018 on the basis of the following principles:

(a) Foreign installations can be selected up to 5% of the capacity of the 1-50 MW tender;

(b) The payment of the premium will be subject to physical imports of the electricity; physical imports can be demonstrated similarly to the way physical imports of renewable electricity can be demonstrated when foreign operators take part in tenders for the support of renewable electricity (see also § 5 (2), sentence 2, number 3 of the draft EEG 2016 of 8 June 2016);

(c) The support scheme will be opened to installations located abroad in a non-discriminatory way;

(d) As regards local specifications and conditions (e.g. site restrictions, permission, grid connection etc.), the conditions of the country in which the installation will be located will apply (unless both countries agree differently);

(e) The participation of an installation in another country in the opened tender will be subject to a cooperation agreement being concluded with the Member State in which the foreign installation is located; the following elements will be covered in that cooperation agreement:

i. Allocation of CO_2 emission reductions between the Member State who pays the support for the installation and the Member State where the generation takes place;

ii. The other Member State's agreement on technical issues regarding the installations built on its territory; such technical issues can be linked to grid connection and grid congestion management as well as requirements regarding the system integration of the power plants (e.g., market responsiveness – no must-run –, flexible operation, heat storage, remote control for flexible redispatch);

iii. The other Member State's agreement on the opening of the CHP-support scheme as such and on its scope.

(90) Germany has further indicated that the necessary legal basis to empower the Government to open CHP-support would be adopted in 2016. The adoption of the necessary ordinance to implement the scheme, and thus the commencement of the opening up of funding, depend on the negotiations with the neighbouring countries. Germany committed to working towards a swift entry into force of such cooperation agreements.

2.7.2. Tenders

(91) Germany has committed that as of Winter 2017/2018 support to installations with an installed capacity between 1 and 50 MWel will be granted to operators selected in tenders. Operators of installations with installed capacity between 1 and 50 MWel will continue to obtain the premium upon request directly on the basis of the KWKG, provided they have obtained authorisation under the Federal Act of Germany for Emission Control (Bundes-Immissionsschutzgesetz "BimSchG") or have made a binding order of the CHP installation by 31 December 2016 at the latest. Germany also indicated that in case of modernisation, the binding order should refer to essential parts for efficiency of the installation. In addition, the installations concerned must be in operation by end of 2018. If all these requirements are fulfilled, this category of operators would have a choice to claim premium directly under KWKG or take part in tenders (opt-out solution).

(92) The following CHP plants will not be subject to the tender requirement and will obtain the premium upon request directly on the basis of the KWKG:

(a) CHP plants with an installed capacity equal to or smaller than 1 MWel;

(b) CHP plants with an installed capacity larger than 50 MWel;

(c) Retrofitted CHP plants; and

(d) Existing CHP plants (support under §13 KWKG 2016).

(93) As to the scope of the beneficiaries, Germany submitted that participation in the tender will be subject to the condition that the entire electricity produced in the CHP installation is injected into the public grid. Thus, if the electricity produced by the CHP installation is directly consumed by the owner of the CHP installation or is injected into a private grid without being first injected into the public grid, the installation concerned will not be eligible to participate in the tender. Germany explained that self-consumed CHP electricity is eligible for a reduced

EEG-surcharge and that the exclusion aims at ensuring a level playing field between the different groups of CHP producers.

(94) Concerning installations with an installed capacity of more than 50 MWel, Germany has explained that while support was needed to further incentivise the construction of that kind of installations which are indispensable to reach its CHP and energy efficiency targets, allowing their participation in the tenders risks undermining the competitiveness of the tenders; it also risks increasing the level of support as a result of possible strategic behaviour in the tender by operators of very large installations.

(95) The study of Prognos et al (2014)[24] has estimated the German CHP potential to include around 356 projects above 1 MW for a total of 3 450 MWel and 14 100 GWh/a between 2017 and 2022, based on historical data (projects <50 MWel) and information from project owners (projects >50 MWel). This would include only eight projects bigger than 50 MW totalling 2 100 MWel and 8 250 GWh/a, i.e. around 60% of capacity and production. Of those eight projects, four are still in planning phase and expected to concern installations between 100 and 300 MWel, the others are more advanced and would in any event not be subject to the tender requirements (see recital (91) above).

Table 25: Number, capacity and consumption of additional CHP plants (2017-2022)

	Number of projects (2017-2022)	Additional CHP capacity (2017-2022)	CHP generation in 2022 (from plants built 2017-2022)	CHP generation eligible for support in 2022
		MWel	GWh/a	GWh
Total (above 1 MW)	356	3 450	14 100	12 300
District heating	128	2 700	10 350	10 350
- More than 50 MW	*8*	2 100	8 250	8 250
- 1 to 50 MW	*120*	*600*	*2 100*	*2 100*
Industry/GHD	228	750	3 750	1 950
- More than 50 MW	*0*	*0*	*0*	*0*
- 1 to 50 MW	*228*	*750*	*3 750*	*1 950*

(96) The eight projects above 50 MW of installed capacity in the district heating sector, mentioned in the table above, are the following:

[24] See above in footnote 7.

Table 26: Projects above 50 MW in the district heating sector planned for the period 2017-2022

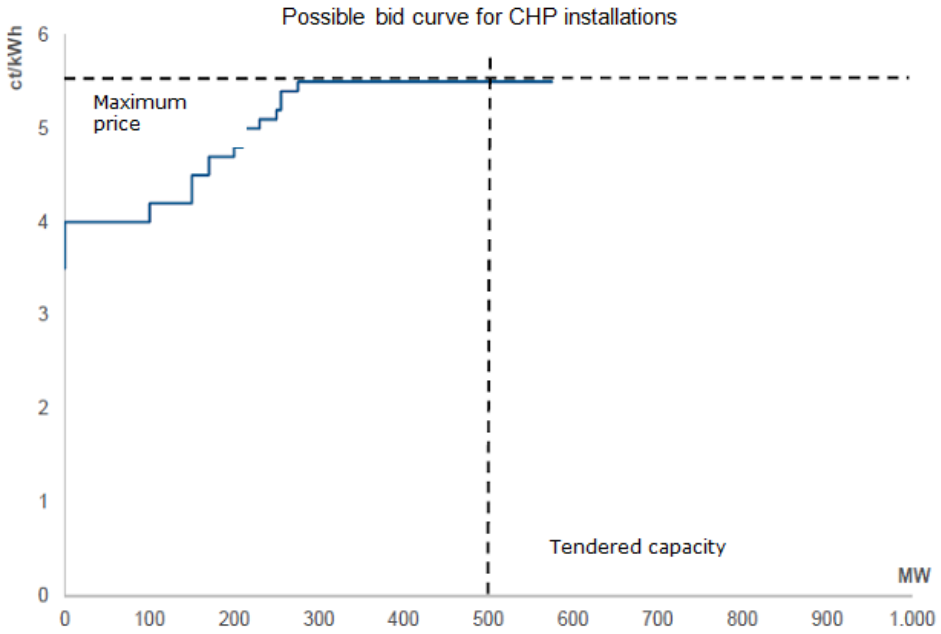
Company	Plant	Location	Planned entry into service	Electrical CHP capacity - net-nominal capacity	Planned CHP generation in GWh/year	Status of project
Total				2 100	8 250	
[...]	[...]	[...]	2017	[...]	[...]	under construction
[...]	[...]	[...]	2018	[...]	[...]	project launched
[...]	[...]	[...]	2019	[...]	[...]	project launched
[...]	[...]	[...]	2019	[...]	[...]	planned
[...]	[...]	[...]	2020	[...]	[...]	approved
[...]	[...]	[...]	2020 or later	[...]	[...]	planned
[...]	[...]	[...]	2020 or later	[...]	[...]	planned
[...]	[...]	[...]	2020 or later	[...]	[...]	planned

[...]: business secrets: the information relate to concrete projects and would give competitors insights into expected production.

(97) Germany has further submitted information showing that installations of more than 50 MW benefit from economies of scales leading to lower LCOE. For instance, for the same type of installation (GuD), the LCOE of a 20 MW installation is more than double the LCOE of 450 MW installations. Germany is concerned that if only a limited number of larger installations participate in a tender, such installations may bid strategically slightly below the LCOE costs of smaller installations (instead of submitting a bid reflective of their costs). This would result in the larger projects winning the tender and making windfall profits.

(98) The following graph illustrates a hypothetical scenario in which all CHP plants above 1 MW are taken into consideration and the tendered capacity amounts to 500 MW, out of an estimated annual potential of around 575 MW (including larger projects). In that scenario, several smaller projects take part in the tender and bid at the level of their LCOE. However, it is likely that those small projects alone would not be sufficient to deliver the whole tendered capacity. Therefore, the only larger project taking part in the bid will be needed to reach the tendered capacity.

Graph 3 – Hypothetical scenario for tenders for all CHP plants larger than 1 MW with only one larger project bidding in the tender.

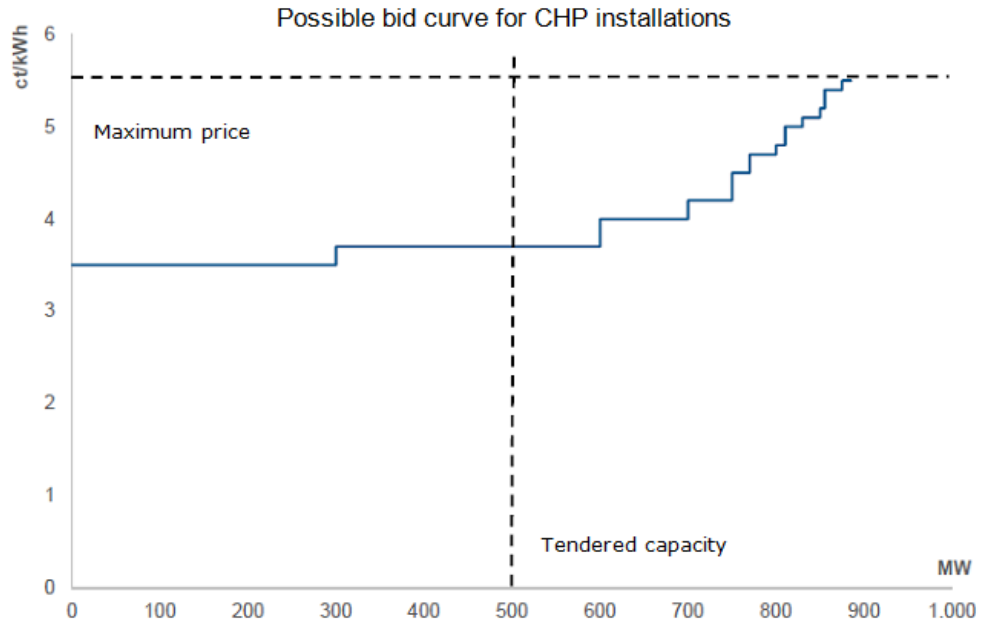


(99) If the large project is aware of the situation, it will be able to bid at a level that corresponds to costs of smaller projects, which is higher than its own costs, and nevertheless be selected.

(100) Germany has explained that larger project owners are in general better informed about other larger projects coming online soon (i.e., they have an asymmetric information advantage). First, part of the larger projects are developed by the same utilities, second given their limited number and their knowledge of the sector, they are able to perceive more easily in which tender another larger project might participate or not. As a result, they would likely be aware that they will be the only larger project to participate in the tender. They might also know that their large project will be needed to fill the capacity tendered out.

(101) Germany has further submitted that even if in a given year several larger projects participate, they would have an incentive to bid just slightly below the costs of the smaller projects. Short of eliminating all the smaller projects, this will result in windfall profits for the larger projects.

Graph 4 – Hypothetical Scenario for tenders for all CHP plants larger than 1 MW with two larger project bidding in the tender.



(102) Germany has explained that tendering out a more limited capacity does not solve the issue in the sense that it would have to be very limited to create sufficient competitive pressure on the larger installations to make them bid at their LCOE. But in that case, a likely outcome would be that the larger project decides not to take part in the tender in a given year (preferring to wait for a larger tender), resulting in an undersubscribed and thus uncompetitive tender. In addition, if Germany organises too small tenders, it will not reach its environmental objective of 110 TWh/a by 2020 and 120 TWh/a by 2025.

(103) Also, organising separate tenders depending on the capacity of the installations would imply the risk that the tender for larger installations is not competitive enough due to the very small number of projects and the information advantage that project owners of larger project have (capacity to estimate in which tender they are likely to be the only bidder).

(104) Over the years, this could also discourage smaller projects to take part in tenders, as they will have experienced that they are likely to be eliminated if larger projects take part in the tender. This would further reduce the competitive tension in tenders, including in those years in which larger installations would not bid (which other participants would not know in advance).

(105) As to retrofitted CHP installations, Germany has explained that those installations are not comparable to new and modernised CHP installations. Retrofitted installations get support for upgrading an existing uncoupled installation into a CHP one. This covers installations that previously were not CHP installations but have so far produced electricity or heat without combining the two processes.

(106) In practice, the CHP-upgrade is an exceptional case. So far, there has only been one case in this category.[25] There is thus not enough competition for organising

[25] See p. 161 of cost benefit analysis referred to in Footnote 7.

specific tenders for retrofitted CHP installations. If retrofitted installations were to be bound to participate in tenders along with new installations, it is likely that these installations would gain significant windfall profits as the CHP-upgrade is in general far less costly than a new installation.

(107) Germany has further committed to organize test tenders for innovative CHP systems. This tender would concern particularly innovative CHP systems that are going beyond CHP usual standards and which are developing because of higher production costs (combination of CHP installations with geothermal/PV thermal/heat pumps. The legislation would be adopted in 2016 (empowering act) and in 2017 (implementing act). The tenders would start in Winter 2017/2018.

2.7.3. Other commitments

(108) Germany has committed to implementing all transparency requirements laid down in section 3.2.7 of the EEAG (publication on a comprehensive website of the text of the approved scheme, the identity of the granting authority and – except if the individual aid remains below EUR 500 000 – the identity of the beneficiaries, the form and amount of the aid, the date of granting, the type of undertaking, the region in which the beneficiaries are located and the principal economic sector in which beneficiaries have their activities).

(109) Germany has further committed not to circumvent the waste hierarchy through the support to CHP installations. The waste hierarchy prioritizes the ways in which waste should be treated and consists of a) prevention, b) preparation for re-use, c) recycling, d) other recovery, for instance energy recovery and e) disposal.

2.8. Evaluation of the scheme

(110) Germany has submitted an evaluation plan for the measure. The main elements of the evaluation plan are described below.

(111) The evaluation plan notified by Germany envisages 23 evaluation questions in order to assess the scheme's outputs, its direct effects, its indirect effects (both positive and negative), as well as the proportionality of the aid and the appropriateness of the chosen aid instrument.

(112) The evaluation will provide general information, in particular, on whether the scheme achieves its objectives, on the number and type of beneficiaries, on the tenders to be organised, and on the participation of operators located in other EU Member States under the opening of the tenders (see section 2.7.1 above).

(113) The direct effects of the scheme will be evaluated, in particular, by assessing developments in the production of energy from cogeneration installations, in the construction or modernisation of eligible CHP installations and in investments in heat/cooling storage installations.

(114) The main indirect effects of the scheme that will be evaluated are its contribution to the reduction of CO_2 emissions, as well as its potential negative effects on the electricity market and on other electricity producers.

(115) The appropriateness of the aid instrument will be evaluated by comparing the scheme with alternative approaches used in other EU Member States. The

proportionality of the aid will be evaluated in particular by assessing the economic viability of the assisted projects.

(116) Evaluation questions related to the general outputs of the scheme will be mostly answered by providing quantitative statistical evidence, whereas questions related to the scheme's indirect effects and appropriateness of the aid instrument will be addressed through qualitative assessments supported where appropriate by quantitative analysis. To evaluate the direct effects of the scheme, Germany has committed to further extending the methodology used so far in the evaluation reports by employing, to the extent possible given data availability, counterfactual impact evaluation methods in line with the Commission Staff Working Document on Common methodology for State aid evaluation.[26] In particular, where appropriate, the identification of suitable 'control groups' of similar non-assisted projects will be pursued in order to rigorously estimate the causal impact of the aid on its beneficiaries.

(117) In order to perform the evaluation, Germany has committed to making available the detailed data collected throughout the scheme's implementation by the BAFA. General energy statistics will also be used, as well as some targeted qualitative information and *ad hoc* studies. The usual data protection rules apply.

(118) Germany has committed to submitting the evaluation report to the Commission in 2021.

(119) The evaluation will be conducted by an external independent evaluator to be selected through an open tender procedure. Germany has committed to duly considering the relevant experience of the tender applicants notably in the field of quantitative evaluation methods.

(120) The evaluation report will be published on the website of the Federal Ministry for Economic Affairs and Energy.[27] According to Germany, the evaluation results will be an important basis for optimising or refocusing the scheme in the future.

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[26] Commission Staff Working Document on Common methodology for State aid evaluation, Brussels, 28.5.2014, SWD(2014) 179 final.

[27] Currently http://www.bmwi.de/.

3. ASSESSMENT

3.1. Existence of aid

(121) Article 107 (1) TFEU provides that *"any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods, shall, in so far as it affects trade between Member States, be incompatible with the common market"*.

(122) The Commission has identified the following measures and has found that each of them constituted an aid measure within the meaning of Article 107(1) TFEU for the reasons set out in sections 3.1.1 to 3.1.3 below:

(a) the support to the production of CHP electricity in new, modernised and retrofitted highly efficient CHP installations;

(b) the support to energy-efficient district heating/cooling networks;

(c) the support to heat/cooling storage facilities;

(d) the support to the production of CHP electricity in existing highly efficient gas-fired CHP installations of the district heating sector; and

(e) the reduced CHP-levies.

3.1.1. Selective advantage

(123) For CHP installations, the aid takes the form of a premium that producers of CHP electricity obtain either in addition to the market price of the electricity they sell on the market or for the electricity they have used for their own consumption. It constitutes an advantage that operators would not have obtained under normal market conditions. It is also selective given that it is granted only to a certain sub-sector (CHP electricity production) or for the autogeneration of CHP electricity in certain sectors only (autogeneration in CHP installations of not more than 100 kW and autogeneration in certain electro-intensive manufacturing sectors, see recital (22) above).

(124) In the case of heat/cooling storage installations and district heating/cooling networks, the aid takes the form of a direct grant covering part of the investment costs, which constitutes an advantage that the operators would not have obtained on the market. It is also selective as it favours only certain sectors (i.e., the district heating and/or district cooling sector and, for the aid to storage facilities, which are meant to be connected to CHP installations, the same companies/sectors as the aid for CHP electricity itself; in addition, the latter could also favour the development of a new sector, viz. providers of storage services).

(125) As far as the reduced CHP-surcharge is concerned, by limiting the CHP-surcharge respectively to 0.04 € cent/kWh and to 0.03 € cent/kWh, the KWKG reduces the burden that companies qualifying as Category B or C consumers would normally

have to bear without the reductions (see recital (75) for the description of the categories A, B and C). This constitutes an advantage.[28]

(126) This can be further illustrated as follows: out of a yearly electricity consumption of 485 TWh, the end consumer group A (no privilege) accounts for around 54%, and the privileged end consumer groups B (electricity consumers with a consumption above 1 GWh/a) and C (electricity consumers in the manufacturing industry with a high electricity cost share and with a consumption above 1 GWh/a) account for approximately 30% and 17% respectively; however due to the reductions they enjoy, the two last-named groups contribute only to respectively 5% and 3% of the total CHP-surcharge's revenue (compared to 93% for end consumer group A (see recital (77) above).

(127) The advantage is also selective. Indeed, as far as Category C is concerned, the reduction is limited to the manufacturing sector only. Within this sector, the reduction is further granted only to companies having an annual consumption of more than 1 GWh and having electricity costs that represent more than 4% of their turnover. Such companies are typically found in certain manufacturing sectors where electricity costs represent a larger share of production costs (metal industry, paper and chemical sector, glass making industry, refineries, wood industry, food and feed sector). This reduction therefore favours manufacturing sectors over other sectors, companies reaching a certain electro-intensity over others, and larger companies over smaller companies. This is further confirmed by the data submitted by Germany showing that beneficiaries of reduced CHP-surcharge under Category C are concentrated in certain sectors (see Table 22, showing a concentration of beneficiaries in sectors 800, 1000, 1600, 1700, 2000, 2200, 2300, 2400, 2500) and that there are manufacturing sectors with average consumption below 1 GWh/a (see Table 23). As to Category B, it can include companies of all sectors in theory but will favour larger companies, consuming more than 1 GWh a year, over smaller companies and will in any event favour companies active in sectors in which electricity consumption is traditionally important. On the one hand, Germany indicated that reductions under Category B were likely to concern rather the manufacturing sector (see recital (86) above) as consumption above 1 GWh/a was more common in the manufacturing sector. Indeed, the data provided by Germany on consumption patterns show that the typical consumption for several service sectors is below or equal to 1 GWh/a (see in Table 6 and Table 7 the categories "Trade and services"). However, even within the manufacturing sector, there are groups of industrial companies with typical consumption below that level (see in Table 7 the category "Industry 1" with typical consumption below 277 MWh, as well as Table 23). The reduction for Category B consumers is therefore selective as well.

[28] Case T-251/11 *Austria* v *Commission* ECLI:EU:T:2014:1060, paragraph 112, Case T-47/15 *Germany* v *Commission (EEG 2012)* ECLI:EU:T:2016:281, paragraph 55.

3.1.2. State resources and imputability

(128) For all the types of aid at hand, the advantage is granted by law (KWKG 2016). Therefore, it is imputable to the State. In addition, the Commission observes that the BAFA (i.e. the Federal Office for Economic Affairs and Export Control, a superior federal authority subordinated to the Federal Ministry for Economic Affairs and Energy (BMWi)) is in charge of verifying that only eligible operators obtain the support.

(129) According to settled case-law, only advantages which are granted directly or indirectly through State resources are to be regarded as aid within the meaning of Article 107(1) TFEU. The distinction between aid granted by the State and aid granted through State resources serves to bring within the definition of aid not only aid granted directly by the State, but also aid granted by public or private bodies designated or established by the State.[29] Thus, resources do not need to transit through the State budget to be considered as State resources. It is sufficient that they remain under public control.[30]

(130) As explained more in detail below, the Commission observes that in order to finance the CHP-support, Germany introduced a special surcharge, the CHP-surcharge, and defined its purpose (i.e., the financing of the CHP-support and the investment subsidies for storage and district heating/cooling networks) and the methodology to determine its amount, which for some categories of consumers is set directly by the State. Also, deficits and surpluses of the collected CHP-surcharge (in comparison to the support needed) are corrected in the following year, thereby ensuring that network operators are entirely compensated for the extra costs resulting from their obligation to pay the support, but also implying that they cannot use the revenue from the surcharge for anything else than the financing of the support of CHP electricity, heating and cooling storage, and district heating/cooling. On that basis, the Commission concludes that, like in the case giving rise to the judgment of 19 December 2013 in *Association Vent de Colère!*,[31] the State has, within the framework of the CHP law, created a system where the costs incurred by the network operators in connection to the support of CHP electricity, storage facilities and district heating/cooling networks are fully compensated by the CHP-surcharge imposed on electricity consumers. This distinguishes this case from the case giving rise to the judgment of 13 March 2001 in *PreussenElektra*,[32] as in that case the electricity suppliers had to finance the additional costs from their own means.

(131) The CHP-surcharge is established by law (see §26 of the KWKG establishing the CHP-surcharge and giving the right to network operators to impose the CHP-surcharge on consumers). It serves to finance State policies, namely cogeneration and district heating and cooling support, which is not disputed by Germany.

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29 To this effect, see case C-78/76 March 1977 *Steinike & Weinlig* EU:C:1977:52, paragraph 21, joined cases C-72/91 and C-73/91 *Sloman Neptun* EU:C:1993:97, paragraph 19, and the case-law cited in the EEG 2014 Decision, paragraph 81.

30 See case C-482/99 *France* v *Commission* EU:C:2002:294, paragraph 37, and the case-law cited, in the EEG 2012 Decision, paragraph 83.

31 Case C-262/12 *Vent De Colère and Others* ECLI:EU:C:2013:851.

32 Case C-379/98 - *PreussenElektra* ECLI:EU:C:2001:160.

Germany itself has described the CHP-support as based on a guaranteed premium that is covered by a surcharge on electricity consumption and raised by network operators. In addition, neither the CHP-support granted to generators of CHP electricity nor the investment subsidies granted to operators of district heating and cooling networks and of storage facilities constitute prices or fees for goods or services. Indeed, the CHP-support is paid by the network operators to operators of CHP installations although the electricity is not sold to the network operators but to third parties; in certain cases, it is even consumed by the operator of the CHP installation itself. Also, as far as the district heating/cooling networks and the storage facilities are concerned, they remain in the ownership of the operator asking for the subsidy and the payment of the subsidy does not entitle the electricity network operators to any right in respect of the district heating/cooling networks and storage facilities concerned. Both the CHP-support and the CHP-surcharge are based on an initiative of the State and not on an initiative of the network operators. Paying out complementary revenues to producers of cogenerated electricity that the network operators have not even purchased or to owners of district heating/cooling networks or heat/cooling storage facilities does not correspond to the normal task of electricity grid operators. The CHP-surcharge serves to finance support for the deployment of CHP installations, storage facilities, and district heating and cooling networks, in order to reach the environmental and climate goals of the State (see §1 of the KWKG setting out the purpose of the CHP-support).

(132) The surcharge is calculated on the basis of the methodology determined by the law (see recital (79) above). The law also defines three categories of consumers and the respective level of the CHP-surcharge for each category: a maximum of 0.03 € cent/kWh for Category C consumers; a maximum of 0.04 € cent/kWh for Category B consumers; and for Category A consumers, an amount corresponding to the total CHP-support needed, minus the expected CHP-surcharge revenue from the other two categories of consumers, divided by the estimated consumption of Category A consumers.

(133) The KWKG provides for a correction mechanism ensuring that any surpluses resulting from the CHP-surcharge are used to reduce the CHP-surcharge of the following year(s). As a result, network operators are not allowed to keep any additional revenues resulting from the CHP-surcharge. The CHP-surcharge is not at their free disposal. Conversely, the correction mechanism also ensures that deficits are recouped through the CHP-surcharge of the following year(s) with the result that the CHP-surcharge offsets in full the additional costs imposed on network operators because of an obligation to pay out premiums and grants to operators of CHP installations, storage facilities and district heating/cooling networks.

(134) Transmission network operators play a special role in the system. They have been entrusted with the calculation of the CHP-surcharge based on the methodology set out in the KWKG and have to ensure that the financial burden and hence the compensation is equally spread between all network operators. They also have to warn the BAFA in case the budget would be exceeded. In that regard they display similarities with the situation of the Samenwerkende Elektriciteits-Produktiebedrijven NV in the case giving rise to the judgment of 17 July 2008 in

Essent Network Noord[33] and with that of the Transmission System Operators in the case giving rise to the judgment of 10 May 2016 in *EEG 2012*.[34]

(135) Furthermore, the Commission finds that the following elements confirm that the CHP-surcharge is under State control: it is calculated and allocated as provided for by the law, it is collected by network operators, and has to be placed on a separate account so that the regulator can verify the absence of cross-subsidies between the various activities of the network operators. In addition, the law requires that the invoicing between transmission network operators be controlled by an auditor or a chartered accountant.

(136) Finally, the law also limits the total budget of the measure and the total amount of the surcharge (see recital (80) above). When there is a risk that the budget would be exceeded, transmission network operators have to warn the BAFA which will then calculate new but reduced support rates to ensure that the budget is not exceeded. This is a further confirmation that the CHP-surcharge constitutes a resource under the control of the State.

(137) Based on those elements, the Commission concludes that the support scheme for cogenerated electricity, district heating/cooling networks and heat/cooling storage facilities is financed from State resources.

(138) As to the reduced CHP-surcharge rates, they are also financed from State resources. Those reductions constitute an additional burden for the State. Any reduction in the amount of the CHP-surcharge has the effect of reducing the amounts collected from the consumers concerned (categories B and C). They have to be regarded as leading to losses in revenues that subsequently have to be recovered from other consumers (Category A) via an increased CHP-surcharge. Thus, Category A consumers are involved in the subsidising of large (Category B) and electro-intensive (Category C) consumers. Therefore, also the reduced CHP-surcharge must be considered as financed from State resources.[35]

3.1.3. Effect on trade and impact on competition

(139) As regards support to CHP installations, the granting of aid to German producers of CHP electricity strengthens their position on the relevant market vis-à-vis other electricity producers, including from other countries of the European Economic Area (EEA). On a liberalised electricity market, producers of cogenerated electricity that is injected into the grid compete with other electricity producers. The measure has therefore the potential to distort competition between electricity producers. As there is cross-border trade of electricity, the measure also affects trade on electricity markets across the EEA. The support can further have an impact on the heat market given that by triggering or increasing electricity production from CHP installations, the support concomitantly increases production of heat from the CHP installations.

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33 Case C-206/06 *Essent Netwerk Noord and Others* ECLI:EU:C:2008:413.

34 Case T-47/15 *Germany* v *Commission (EEG 2012)* ECLI:EU:T:2016:281

35 See also Case T-47/15 *Germany* v *Commission (EEG 2012)* ECLI:EU:T:2016:281, paragraph 112, and Case T-251/11 *Austria* v *Commission* ECLI:EU:T:2014:1060, paragraph 76.

(140) As to the aid to CHP installations used for self-consumption, it can distort competition between undertakings within the same sector as not all undertakings are eligible (depending on the size of the installation and whether the undertaking is electro-intensive or not) and is also likely to affect trade between Member States. In particular, sectors like the chemical sector, the paper industry, automobile manufacturing and automotive supply that are likely to benefit from CHP-support are in competition with undertakings located in other Member States.

(141) As regards aid to district heating/cooling networks, it can have an impact in particular on the heat market. Construction or expansion of district heating/cooling networks enables district heating/cooling companies to connect more consumers to the network and is likely to increase the number of consumers switching from decentralised heat/cooling generation to district heating/cooling. There is trade between Member States in the production of heat boilers. As the utilities have to use the district heating/cooling networks in combination with CHP installations, investment aid for the network can reinforce their position on the heat and on the electricity market. The measure has therefore also the potential to distort competition between electricity producers. As there is cross-border trade of electricity, the measure also affects trade on electricity markets across the EEA.

(142) As regards aid to storage facilities, it can distort competition and affect trade between Member States in a similar way to the support for CHP installations, given that the storage facility will increase the number of operating hours of the CHP installations connected to the storage facility.

(143) As regards reductions from CHP levies, they can distort competition between undertakings within the same sector as not all undertakings are eligible (depending on their consumption level and the respective importance of electricity costs compared to turnover) and are also likely to affect trade between Member States and competition with undertakings in other Member States. In particular, sectors like the chemical sector, the paper industry, automobile manufacturing and automotive supply that are likely to benefit from reductions are in competition with undertakings located in other Member States.

3.1.4. Conclusion

(144) For the reasons set out in sections 3.1.1 to 3.1.3 above, the Commission concludes that:

(a) the support to the production of CHP electricity in new, modernised and retrofitted highly efficient CHP installations;

(b) the support to energy-efficient district heating/cooling networks;

(c) the support to heat/cooling storage facilities;

(d) the support to the production of CHP electricity in existing highly efficient gas-fired CHP installations of the district heating sector; and

(e) the reduced CHP-levies

constitute State aid within the meaning of Article 107 (1) TFEU

3.2. Legality

(145) Germany has notified the aid scheme and has subjected its application in respect of CHP installations, storage facilities and district heating/cooling networks to the approval by the Commission (§35 (12) KWKG). Germany has thus fulfilled its obligations under Article 108(3) TFEU.

(146) The Commission notes however that the reductions from the CHP-surcharge for Category B and Category C consumers described under recital (75) above have not been subject to the standstill clause and are already in force. In this respect, Germany has not complied with its obligations under Article 108(3) TFEU.

3.3. Compatibility

(147) As the notified scheme relates to measures aimed at the support of energy efficiency measures, including cogeneration and district heating and cooling, the Commission has assessed the aid measures listed in recital (144) (b) to (c) on the basis of the EEAG, in particular section 3.4 thereof. The measures listed in recital (144) (d) and (e) have been assessed directly under Article 107(3)(c) TFEU.

3.3.1. Support to the production of CHP electricity in new, modernised and retrofitted highly efficient CHP installations (aid measure mentioned under recital (144)(a))

3.3.1.1. Contribution to an objective of common interest

(148) Germany has explained that the notified scheme is aimed at incentivising production of electricity in high-efficiency heat and power cogeneration installations, which contributes to energy efficiency and CO_2 reductions, having thus an environmental objective.

(149) High-efficiency cogeneration has been recognised by the Energy Efficiency Directive (EED)[36] as having significant potential for saving primary energy and thus for energy efficiency.

(150) In line with point 139 of the EEAG, Germany limits the support to CHP electricity satisfying the definition of high-efficiency cogeneration pursuant to Annex II EED.

(151) State aid for cogeneration using waste as input fuel can make a positive contribution to environmental protection, provided that it does not circumvent the waste hierarchy principle as established under the Waste Framework Directive.[37] The notified scheme will not create incentives to circumvent the waste hierarchy. First, Germany has shown that gas-fired CHP installations have lower LCOE than waste-burning CHP installations. As the support levels are determined based on the costs of gas-fired CHP installations, the support measure will not create any

[36] Directive 2012/27/EU of the European Parliament and the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC, OJ L 315, 14.11.2012, p. 1.

[37] Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives, OJ L 312, 22.11.2008, p. 3.

incentive to burn waste instead of recycling it. Second, the Commission observes that Germany is recycling 62% of its waste, i.e. more than 50% as required by the Waste Framework Directive by 2020. Finally, Germany has committed that it will not circumvent the waste hierarchy with the support measure (see recital (109) above).

(152) The scheme is therefore directed at an increased level of environmental protection through promoting electricity from high energy-efficient cogeneration and thus, contributes to the objective of common interest in the form of energy efficiency.

3.3.1.2. Need for State intervention

(153) Member States need to demonstrate that State aid is necessary to remedy a market failure that otherwise would remain unaddressed (cf. point 37 of the EEAG). In the case of cogeneration, the Commission presumes that energy efficiency measures target negative externalities by creating individual incentives to attain environmental targets for energy efficiency and for the reduction of greenhouse gas emissions (cf. points 35 and 142 of the EEAG). The information provided by Germany shows that the market alone and the ETS system would not by themselves trigger investments in CHP installations. A residual market failure exists, as shown in particular by the extra costs borne by high-efficiency CHP plants (see Table 10 to Table 15 above showing that LCOE are higher than market price, with the exception of projects in which the electricity is 100% self-consumed, which are not eligible for aid). This market failure can be addressed through aid to promote energy efficiency.

3.3.1.3. Incentive effect

(154) According to point 49 of the EEAG, the Member State must demonstrate that the aid has the effect of incentivising the beneficiaries to change their behaviour in line with the objective of common interest pursued.

(155) The calculations provided by Germany (see Table 10 to Table 15) show that the production costs of electricity from high-efficiency CHP (LCOE) are higher than the electricity market price and that this will remain the case in the coming years as market conditions are projected to remain similar in the next years (see Table 9 showing that slight increases in electricity prices are compensated by increases in natural gas prices and CO_2 emission certificate prices; see also the updated market information under recital (51) above). The calculations further show that the notified aid improves the rate of return of the projects and creates the incentives to undertake or carry on cogeneration of electricity in CHP plants in most of the sectors and situations covered by the notified measure and that, conversely, without support such activity would unlikely be economically viable.

(156) For CHP installations above 100 kW by non-electro intensive companies with a rate of 100% of self-consumption of electricity, Table 12 shows that no additional support under the KWKG is needed to trigger the investment, as the savings resulting from the self-production and consumption of electricity compensate for the higher costs of the CHP installation given the level of the retail electricity prices for those users (see also Table 8). Consequently, these installations are not eligible for support under the KWKG.

(157) Finally, the Commission notes that the aid is granted under the KWKG automatically when all eligibility conditions are fulfilled. The BAFA has no discretion in delivering the "Zulassung". It will verify on the basis of an application form and the needed evidence that all eligibility conditions are needed. If it is the case, it has the obligation to deliver the "Zulassung".

(158) Based on those elements and in particular the automatic character of the aid when all conditions are fulfilled and the fact that Germany demonstrated that without the aid the CHP projects supported under the KWKG 2016 would not be implemented, the Commission concludes that the aid scheme has an incentive effect.

3.3.1.4. Appropriateness of the aid, proportionality and avoidance of undue distortion of competition

(159) In line with point 145 of the EEAG, State aid may be considered an appropriate instrument to finance energy efficiency measures, independent of the form in which it is granted. Premiums on top of market price are appropriate aid instruments to compensate CHP plants for the higher production costs of electricity from highly efficient cogeneration as they target the additional cost element that is not covered by the market price.

(160) The notified measure consists of operating aid for the production of electricity in highly energy-efficient CHP installations, thus point 151 of the EEAG is applicable for the assessment of proportionality.

(161) The CHP plants benefiting from the measure fall into both categories defined in point 151 (a) and (b) of the EEAG: they either partly or entirely sell electricity to the public and their output partly serves for industrial use.

(162) For the assessment of proportionality, point 151 of the EEAG makes reference to the conditions applying to operating aid for electricity from renewable energy sources as established in section 3.3.2.1 of the EEAG.

(163) According to point 124 of the EEAG, in order to incentivise the market integration of electricity generators, it is important that beneficiaries sell their electricity directly on the market and are subject to market obligations. The following cumulative conditions apply from 1 January 2016 to all new aid schemes and measures:

(a) The aid is granted as a premium in addition to the market price whereby the generators sell their electricity directly on the market;

(b) The beneficiaries are subject to standard balancing responsibilities, unless no liquid intra-day balancing markets exist;

(c) The scheme ensures that generators have no incentive to generate electricity when market prices are negative.

(164) The aid scheme complies with point 124 (a) of the EEAG given that the aid is paid out as a premium on top of the market price and the operator of the CHP installation has to sell the electricity on the market (see recital (17) above). The operator is also subject to normal balancing responsibilities (see recital (17) above). Finally, the scheme does not create any incentives to produce at time of negative prices. First the aid is paid out as a fixed premium and for a limited

amount of full load hours. This increases the incentives to sell the electricity at times of higher demand, as this will maximise the revenues and conversely reduces incentives to produce at times of negative prices. In addition, Germany suspends the support at times of negative prices (see recital (31) above).

(165) The operator can also self-consume the electricity produced in line with point 151 (b) of the EEAG. The aid is paid in the form of a premium obtained in addition to the benefits resulting from the fact that the operators of the CHP installations do not need to pay the market price for the electricity they are self-consuming.

(166) As set out in recital (17) above, CHP installations up to 100 kW have the possibility to request the network operators to purchase the electricity from them at an agreed price or at the average market price. This is in line with point 125 of the EEAG, which provides that smaller installations are exempted from the market integration obligations listed under point 124 of the EEAG.

(167) Point 126 of the EEAG requires that, from 1 January 2017, aid is granted in a competitive bidding process.

(168) As described under section 2.7.2 above, Germany committed to granting the aid for the production of electricity in highly efficient new or modernized CHP installations with a cogeneration electricity capacity between 1 and 50 MW on the basis of a competitive bidding process as of the Winter 2017/2018.

(169) Installations with the same capacity having obtained their emission authorisation or having ordered the installation no later than 31 December 2016 will not be subject to competitive tender. The Commission considers that beneficiaries having obtained their emission authorisation or having ordered the installation no later than 31 December 2016 can be considered as having been granted aid before 1 January 2017 and are therefore not subject to the tender requirement under Point 126 EEAG. Indeed, under the KWKG 2016, aid is granted automatically when all eligibility conditions are met (see recital (66) above). Given the long lead times of CHP projects (see recital (70) above), the granting moment of the aid corresponds to the moment when all cost information is available to the project owners so as to enable them to estimate whether the aid amount is sufficient to undertake the project (final investment decision). After that point in time, the project owners will introduce the request for an emission authorisation and will order the installation. The Commission therefore concludes that Germany can continue granting the aid without competitive bidding process to beneficiaries having obtained their emission authorisation or having ordered their installations no later than 31 December 2016.

(170) When the support is granted to beneficiaries selected in a tender and is cumulated with investment aid, Germany committed to deducting the investment aid from the operating aid in line with point 151, read in conjunction with point 129 of the EEAG (see recital (32) above).

(171) As described under recital (92)(a) above, installations with a capacity of not more than 1 MWel will obtain aid without having to be selected in a competitive bidding process. This is in line with point 151 read in conjunction with point 127 of the EEAG.

(172) As described under recital (92)(b) above, Germany will grant aid to installations with an installed capacity above 50 MWel without tender. The information submitted by Germany in this connection shows that in the relevant period (Winter 2017/2018 – 2022) only 4 larger projects are likely to participate in the tenders (see Table 26). Given their size (300 MW, see Table 26) compared to the probable size of the tender (500 MW, see recital (98)), the economies of scale and LCOE of those installations compared to smaller installations and the knowledge of the market by the utilities carrying out those projects (see recitals (97) to (100) above), the Commission concludes that it is very likely that owners of those large projects would be able to strategically bid in the tenders with the result that they would be largely overcompensated. Their participation in the tenders could also discourage participation of smaller projects and make the tenders uncompetitive, as also illustrated by the scenarios described under recitals (97) to (100) and (104) above. The Commission further notes that Germany has examined alternative tender designs which, however, do not solve the issue (see recitals (102) to (103) above).

(173) Based on those elements, the Commission concludes that including installations of more than 50 MWel in the tenders would render the tenders uncompetitive and would lead to higher support levels and that the exclusion from tenders of those larger projects is needed to avoid strategic bidding. The aid can therefore be granted to those installations without their participation in a competitive bidding process (as per point 126, third indent, letter b of the EEAG).

(174) The Commission further notes that Germany committed to complying with the obligation of individual notification for detailed assessment, in line with point 20(d) of the EEAG, when the aid is to be granted to installations with installed capacity of more than 300 MWel.

(175) Retrofitted installations are also exempt from the tender requirement (see recital (92)(c) above). Their production costs being lower than production costs of new or modernised CHP installations, those installations would be able to obtain windfall profits if they were to participate to the same tenders as modernised and new installations. A separate tender cannot be envisaged as the number of retrofitted installations would be too small to ensure a competitive tender (see recital (106) above). The aid can therefore be granted to those installations without their participation in a competitive bidding process (as per point 126 third indent, a and b of the EEAG).

(176) Point 128 of the EEAG stipulates that, in the absence of a competitive bidding process, the proportionality of the aid and distortion of competitions have to be assessed on the basis of the conditions of points 124, 125 and 131 of the EEAG. Compatibility with points 124 and 125 of the EEAG has already been examined above. The Commission will thus examine compatibility with point 131 of the EEAG as far as concerns the aid to installations listed under recitals (92)(a), (92)(b) and (92)(c) as well as to installations with a capacity between 1 and 50 MWel having obtained authorisation under the Federal Act of Germany for

Emission Control or having made a binding order of the CHP installation by 31 December 2016.

(177) Point 131 (a) and (b) of the EEAG provides that the aid per unit of energy shall not exceed the difference between the total levelized cost of producing energy (LCOE) from the particular technology in question and the market price of the form of energy concerned. The total LCOE may include the plant's normal return on capital but any investment aid should be deducted from the total investment amount in calculating the costs.

(178) The Commission has verified that the support, which is paid out as a fixed premium for a determined number of full-load hours, does not exceed the difference between the LCOE and the market price in those cases where support is given.

(179) The Commission first observes that when it calculated the LCOE used to determine the level of the premium (see section 2.3 above), Germany correctly deducted from the production costs revenues generated by heat production (either in the form of price obtained for the heat or in the form of savings made due to the fact that the heat does not need to be purchased on the market or produced in a gas boiler) and other advantages (as for instance reduced energy tax for highly efficient CHP). The calculations take also into account the reduced EEG surcharge paid by autogenerators.

(180) Second, concerning the market price used to determine the level of the premium, Germany correctly used the base-load market price as a reference given that CHP installations produce base-load electricity and in case of self-consumption of the electricity, it correctly used the market price that this category of consumer would have had to pay for the electricity concerned if he had to purchase it (see Table 8) above).

(181) Third, for modernised and retrofitted CHP installations, the support is set in proportion to the importance of the investment costs compared to a new installation. Only when the investment costs reach 50% of the costs of a new installation is the support level the same. This is justified by the fact that when the investment costs reach 50% of investment costs of a new installation, the difference in investment costs is not sufficient anymore to outbalance the higher operating costs of modernised or retrofitted CHP installations (see also recital (25) above).

(182) Fourth, as discount rate for the calculation of levelized cost, Germany has used 8% in the district heating sector, 10% for households, 20% in the service industry and 30% in the industry.

(183) The information described under recital (54) above confirms that 8% corresponds to the normal rate of return of the district heating sector. As to the discount rate used for households, it is in line with rates of return accepted as reasonable in

other cases[38], reflects also the higher risk resulting from the form of the aid (fixed premium instead of floating premium or feed-in tariff). In addition, the support provided under the KWKG is not sufficient to lead to a project return of that level (see Table 10 showing a negative project return even with the support).

(184) The discount rates used for the service sector and the industry are higher than what has been considered as reasonable in previous cases[39]. However, the evidence submitted by Germany confirms that in the industry in Germany, CHP projects with a short payback period of 2 to 3 years (corresponding to a 50% to 33% rate of return) are realised, while projects with a payback period above 4 years (25% rate of return) tend to be abandoned (see studies presented under recitals (58) to (61) above). Those rather short payback periods in those sectors can be explained by two factors: first, those sectors are not energy companies and choosing a CHP installation to cover their energy needs (instead of using a heat boiler and purchasing electricity from the grid) will have an impact on their core production process and costs. Investors in the service sector and industry will thus be more risk advert than energy utilities when they make the decision to invest into a CHP installation; they will require a shorter payback period. Second, the form of the subsidy (fixed premium) involves higher risks for the investor compared to floating premiums that are generally used for instance in renewable support schemes or to support CHP projects in other Member States[40]. This in itself increases the rate of return that investors will want to obtain in order to make the investment decision.

(185) The Commission further notes that for several categories of projects, the support will actually not yield 20% or 30% of rate of return. In particular in the electro-intensive industry, rates of return obtained with the support are much lower than 30%. Also, since the moment when the data used to set the level of support was gathered, market conditions have further deteriorated (see recital (51)) and the rate of return of the projects will be lower than depicted in Table 10 to Table 14 above. The support will thus yield projects for which the project owner has accepted a longer payback period (and thus a lower rate of return).

(186) Finally, the Commission notes that as of Winter 2017/2018 projects between 1 MW and 50 MW will be selected in a tender; the rate of return will thus be set by the market under competitive terms.

(187) Based on those elements, the Commission considers that the rate of return of supported projects can be considered as reasonable. This conclusion is valid also for projects under contracting as the rate of return of the project must be sufficient to remunerate both the contractor and the consumer (see recital (63) above).

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38 See for instance Commission decision of 15 June 2009 in case N354/2009 – Slovenia – Support for production of electricity from renewableenergy sources and in co-generation installations: the rate of return used was 12%, the aid was granted as feed-in tariff or floating premium; Commission decision of 14 July 2015 in case SA.35486 – Denmark – Aid for electricity generation in industrial combined heat and power plants: the rate of return used was 10% and the aid was in the form of a premium adapted on the basis of electricity price evolution.

39 See the examples referred to under Footnote 38; see also Commission decision of 9 August 2016 in case SA.43719 – France – CHP-support scheme: the rate of return was between 7 and 8% and the aid had the form of feed-in tariffs or floating premiums.

40 See cases referred to under Footnotes 38 and 39.

(188) The calculations provided by Germany (see Table 10 to Table 16) which are based on the methodology assessed under recitals (179) to (187) show that the production costs of electricity from high-efficiency CHP (LCOE) are higher than the electricity market price and that the CHP-premium paid does not exceed the difference between the LCOE and the market price of electricity. This is also the case in situations where the beneficiaries obtain the fuel switch bonus and/or the additional §7(5) premium to compensate for ETS costs (see in particular Table 16). Hence, the Commission concludes that, in line with point 151, read in conjunction with points 128 and 131 (a) and (b) of the EEAG, the aid is limited to the difference between the LCOE and the market price, including a reasonable rate of return on capital.

(189) The Commission also notes that the aid can be cumulated with investment aid, but in that case the investment aid and the operating aid together may not exceed the difference between the LCOE of the CHP installation and the market price of the energy produced, in line with point 151, read in conjunction with points 128 and 131(b) of the EEAG.

(190) The aid is limited to 30 000 hours or 60 000 hours, for smaller installations. As results from the elements set out in recital (20), aid granted for this amount of full-load hours does not exceed the normal depreciation period of CHP installations. Therefore, the notified scheme meets the criteria set out in points 131 (b) - 2nd sentence and 131 (d) of the EEAG.

(191) Costs are also updated regularly, at least once a year (see recital (64) above). The notified scheme therefore meets the criterion set out in point of the 131 (c) of the EEAG.

(192) Finally, the Commission notes that the scheme has a duration of less than 10 years, as it is limited to 2022.

3.3.2. Aid to the production of CHP electricity in existing highly efficient gas-fired CHP installations in the district heating sector (aid measure mentioned under recital (144) (d))

(193) Under the EEAG, the proportionality of operating aid to CHP installations is examined on the same compatibility criteria than for installations producing electricity from renewable energy sources ("RES installations"). The EEAG provide that in principle operating aid for CHP installations should be limited to the duration of their depreciation. The only exception from this rule has been made for biomass installations (Chapter 3.3.2.3.), which face higher production costs due to the additional cost element of the input fuel (i.e. biomass), which is not present for other RES technologies (wind, solar, etc.). While CHP installations other than biomass CHP installations also have fuel costs contrary to RES installations using solar, wind of hydro power, it was in the past possible to operate those installations on economically viable terms once the investment had been depreciated. The main hurdle being higher investment costs for CHP installations compared to separate production of heat and electricity. For this reason, the aid was considered proportionate if limited to the depreciation of the investment, in the same way as for RES installations like wind, solar and hydro installations.

(194) However, as it will be explained more in details below, Germany has shown that under current market conditions, existing gas-fired CHP installations in the district heating sector cannot operate economically anymore without support after the investment has been depreciated. Given the capacity of the installations involved, Germany also showed that the stop of activities of existing highly efficient gas-fired CHP installations would have damaging repercussions on climate protection in Germany (higher CO_2 emissions), and by consequence in the EU given that the electricity and heat produced therein would be replaced by separate production of heat and electricity (see recital (12)). All the CO_2 emission savings made by the gas-fired highly energy-efficient cogeneration would be lost. In addition, given the form of the aid (fixed premium limited to 1.5 € cent/kWh incentivizing the use of cogeneration at times of higher electricity demand), the cogenerated electricity production concerned would mainly be replaced by electricity produced from coal or lignite (see also recital (211) below).

(195) For those reasons, the Commission considers it appropriate to examine the aid measure planned by Germany for existing gas-fired CHP installations in the district heating sector directly under the Treaty. In this respect the Commission notes that the EEAG provide for compatibility criteria for aid to existing biomass plants after depreciation. The criteria set out in Section 3.3.2.3 of the EEAG aim in particular at ensuring the proportionality of the aid. The Commission finds it appropriate to use those criteria as guidance for the assessment of the proportionality of the notified aid to depreciated gas-fired highly efficient CHP installations. Moreover, the Commission intends to amend the EEAG in order to expressly provide for the possibility to approve operating aid to depreciated CHP installations in a comparable factual and economic situation as the installations examined under this section and under the conditions examined in sections 3.3.2.1 to 3.3.2.5 below. Pending the amendment of the Guidelines, the Commission will apply the same criteria as in the present decision to any similar case.

(196) The Commission may declare an aid measure compatible directly under Article 107(3)(c) TFEU if it is necessary and proportionate and if the positive effects for the common objective outweigh the negative effects on competition and trade.

(197) In this regard, the Commission considers it appropriate to assess the following questions:

(a) Is the aid measure aimed at a well-defined objective of common interest?[41]

(b) Is it targeted towards a situation where aid can bring about a material improvement that the market alone cannot deliver (for example because it addresses a market failure)?

(c) Is the aid well designed to deliver the objective of common interest (necessity of the aid)?[42] In particular:

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41 Case T-162/06 *Kronoply* v *Commission* ECLI:EU:T:2009:2, especially paragraphs 65, 66, 74 and 75.

42 Case T-187/99 *Agrana Zucker und Stärke* v *Commission* ECLI:EU:T:2001:149, paragraph 74; Case T-126/99 *Graphischer Maschinenbau* v *Commission* ECLI:EU:T:2002:116, paragraphs 41-43; Case C-390/06 *Nuova Agricast* ECLI:EU:C:2008:224, paragraphs 68-69.

i. Is the aid measure an appropriate and necessary instrument, i.e. are there other, better-placed instruments?

ii. Is there an incentive effect, i.e. does the aid change the behaviour of firms?

iii. Is the aid measure proportional, i.e. could the same change in behaviour be obtained with less aid?

(d) Are the distortions of competition and the effect on trade limited, so that the overall balance is positive?

3.3.2.1. Contribution to an objective of common interest

(198) German authorities have explained that due to the rise in fuel prices and taxes there is a risk that the CHP plants will go out of operation or significantly reduce their operating hours, although technically they could still produce or cogenerate during a higher number of hours.

(199) The aid to existing gas-fired cogeneration installations in the district heating sector thus aims at maintaining and even slightly increasing energy efficiency as compared to the current situation and further aims at keeping CO_2 emission reductions at their current level and even increasing the reductions. Germany has further limited the aid to highly efficient cogeneration installations and to installations using gas (instead of coal, lignite and oil) as this maximizes the reductions of CO_2 emissions that can be achieved in the district heating sector with cogeneration installations (see also recital (8)).

(200) The aid for existing gas-fired cogeneration installation is only available to highly efficient installations. High-efficiency cogeneration has been recognised by the Energy Efficiency Directive as having significant potential for saving primary energy and thus, for energy efficiency. The importance of reducing CO_2 emission for climate protection has also been recognized.

(201) The Commission therefore concludes that this aid measure aims at the same well-defined objectives of common interest as aid to new, modernized or retrofitted CHP installations (improvement of energy efficiency and climate protection, see section 3.4.1 of the EEAG).

3.3.2.2. Need for State intervention

(202) The Commission has further examined whether the aid measure is necessary to remedy a market failure that otherwise would remain unaddressed. The studies and information provided by Germany show that the market alone and the ETS system would not, in the coming 4 years, deliver sufficient incentives to keep existing gas-fired highly efficient CHP installations in operation in the district heating sector or to keep the same level of CHP production (see Recitals (12) and (30), Footnote 10 and Table 17). There is thus a residual market failure that the aid measure concerned aims at addressing.

3.3.2.3. Incentive effect

(203) An aid must have the effect of incentivising the beneficiaries to change their behaviour in line with the objective of common interest pursued.

(204) The calculations provided by Germany (see Table 17, see also Footnote 10) show that the production costs of electricity from gas-fired high-efficiency CHP installations in the district heating sector are higher than the electricity market price even after depreciation of the investment. That is likely to remain so in the coming 4 years as shown by the projected LCOE of Table 17 and the data referred to under Footnote 10. The calculations further show that the notified aid improves the rate of return of the projects and creates the incentives to maintain the installations in operation or at least significantly increase the number of operating hours (see also recital (30) above on the number of operating hours with and without the aid). It follows that without support the existing CHP plants would not be operated anymore or the number of operating hours would drastically decrease.

(205) Therefore, the Commission concludes that the notified measure has an incentive effect.

3.3.2.4. Appropriateness of the aid

(206) The Commission further finds that the aid is appropriate to address the residual market failure. In particular, other forms of aid like investment aid or research aid cannot impact the decision of existing and already depreciated installations to continue operating after depreciation.

(207) Also, had Germany tried to reach the same aim (maintain at least the same level of CHP production of 15 TWh) with new investments, it would have had to significantly increase the level of the subsidy.

(208) The Commission therefore concludes that the notified aid measure is an appropriate and necessary instrument.

3.3.2.5. Proportionality, avoidance of undue distortion and balancing test

(209) The aid is also proportionate to the aim. First the aid is only granted for the production of cogenerated electricity (see point 133 (a) of the EEAG by analogy) limited to the difference between the operating costs and the market price of electricity as the LCOE calculations show (see also point 133 (b) of the EEAG). The Commission observes in particular that the calculations include all types of revenues that the CHP installation can obtain and exclude any investment costs. Second, the evolution of costs is monitored on an annual basis to verify that the operating costs are still higher than the market price of energy (see also point 133 (c) of the EEAG). Should market conditions improve and the aid not be needed anymore, Germany would immediately inform the Parliament in order to adopt the needed amendment to the support (see section 2.4 above). Also, the scheme is limited to 16 000 full load hours and in time (2019) as it is expected that after 2019 the market situation might improve.

(210) The distortions of competition on the heat market will remain limited given that in the district heating sector, it is most of the time the same company that operates the CHP installations and the heat boilers and determines the mix based on which production is the less costly for the company. The subsidy will thus essentially impact the type of installation that is used rather than influencing the company that will provide the heat.

(211) The distortion of competition on the electricity market remains limited in comparison to the positive effects for the environment. In fact the distortion of competition resulting from the measure corresponds exactly to the environmental purpose of the measure. The support is rather limited and is not sufficient to enable CHP installations in the district heating sector to continuously run, but improves their economic conditions so as to produce electricity during a certain number of full load hours, in particular at times of higher electricity prices, i.e. of higher electricity demand. In those production hours the CHP installation will displace electricity produced from coal-fired plants and thus significantly reduce the CO_2 emission resulting from the electricity production, which is exactly the environmental purpose pursued by the measure.

3.3.3. Compliance with other provisions of EU law of the measures examined under sections 3.3.1 and 3.3.2

(212) As the support for CHP electricity is financed by a charge levied on all electricity consumption, the Commission has examined its compliance with Articles 30 and 110 of the Treaty (see also point 29 of the EEAG).

(213) According to the case-law, a charge which is imposed on domestic and imported products according to the same criteria may nevertheless be prohibited by the Treaty if the revenue from such a charge is intended to support activities which specifically benefit the taxed domestic products. If the advantages which those products enjoy wholly offset the burden imposed on them, the effects of that charge are apparent only with regard to imported products and that charge constitutes a charge having equivalent effect to custom duties, contrary to Article 30 of the Treaty. If, on the other hand, those advantages only partly offset the burden borne by domestic products, the charge in question constitutes discriminatory taxation for the purposes of Article 110 of the Treaty and will be contrary to that provision as regards the proportion used to offset the burden borne by the domestic products.[43]

(214) If domestic electricity production is supported by aid that is financed through a charge on all electricity consumption (including consumption of imported electricity), then the method of financing – which imposes a burden on imported electricity not benefitting from this financing – risks having a discriminatory effect on imported CHP electricity and thereby violating Article 30 or 110 of the Treaty.[44]

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43 Joined Cases C-128/03 and C-129/03 *AEM*, EU:C:2005:224, paragraphs 44 to 47; Case C-206/06 *Essent*, EU:C:2008:413, paragraph 42.

44 Case 47/69 *France* v *Commission*, EU:C:1970:60, paragraph 20. See also Case SA.38632 (2014/N) Germany – EEG 2014 – Reform of the Renewable Energy Law.

(215) As described under section 2.6.1 above the scheme will be financed by a surcharge on electricity consumption (KWK-Umlage). In this respect, therefore, the Commission notes that:

- the notified aid scheme is financed through a charge imposed on electricity consumed in Germany, irrespective of whether domestically produced or imported;
- the charge is calculated on the amount of electricity consumed (and thereby imposed on the product itself).

(216) Where a Member State finances aid for domestic producers through a charge that is levied on imported and domestic products alike, the charge may have the effect of further exacerbating the distortion on the product market caused by the aid as such. For that matter, it is not necessary that the charge exclusively finances the aid, since the additional distortive effect can already be present if a sizable share of the revenue from the charge is used to finance the aid (here the largest part of the budget of the scheme is reserved to the support of the production of CHP electricity while only a small part is used for the other support measures).

(217) In order to alleviate any concern regarding compliance with Articles 30 and 110 TFEU, Germany, as set out in section 2.7.1 above, ensures that producers located in other European Member States will be allowed to bid for 5% of the capacity allocated within the tenders. This corresponds to the percentage also used to allow participation of foreign producers in tenders for the support for renewable electricity.[45]

(218) The participation of producers from other Member States in the support scheme is subject to an agreement with the relevant Member State having the content described under recital (89)(e) above. The Commission considers that this type of technical agreement is necessary for practical reasons in order to determine the allocation of CO_2 emission reductions resulting from the CHP generation and also in order to obtain the agreement of the other Member State as to the conditions under which support can be given to a CHP installation located on its territory. The Commission therefore concludes that opening the scheme in this manner reduces the risk of possible discrimination against producers of CHP electricity in other Member States.

(219) In light of the above, the Commission considers that the financing mechanism of the notified aid measure does not infringe Article 30 or Article 110 TFEU.

[45] This percentage has been established as a function of the total capacity of interconnectors connecting Germany to other Member States and EEA countries divided by the total electricity consumption in Germany and multiplied by the yearly new installed renewable capacity (expressed in production volumes). The Commission has considered that this was in line with Articles 30/110 TFEU given that the cumulated capacity of interconnectors in turn determines how much electricity can be imported (see Commission decision of 23 July 2014 in file SA.38632 (2014/N) – Germany – EEG 2014 – Reform of the Renewable Energy Law, recital 335).

3.3.4. District heating infrastructure (Section 3.4 of the EEAG)

3.3.4.1. Common objective

(220) The Union set an objective of saving 20% of its primary energy consumption by 2020. In particular, the Union adopted the Energy Efficiency Directive, which establishes a common framework to promote energy efficiency within the Union. District heating/cooling networks can make an important contribution to energy efficiency when they are used to transport waste heat, renewable heat or cogenerated heat. Aid for district heating/cooling networks will therefore be considered as aiming at a common objective when it is granted to energy-efficient district heating/cooling networks. Efficient district heating and cooling within the meaning of Article 2(41) and 2(42) of the Energy Efficiency Directive is defined as a district heating or cooling system using at least 50% renewable energy, 50% waste heat, 75% cogenerated heat or 50% of a combination of such energy and heat.

(221) As set out in recital (43) above, investment aid under the KWKG is granted to district heating networks only if at least 60% of the transported heat stems from a combination of CHP installations, renewable heat or industrial waste heat with a minimum of 25% stemming from cogenerated heat. When the heat does not result from a combination of those sources, Germany committed to verifying that it would stem from at least 75% CHP heat. This complies with the definition of the energy-efficient district heating under point 19(14) of the EEAG).

(222) The aid measure thus aims at a well-defined objective of common interest, viz. improvement of energy efficiency.

3.3.4.2. Need for State intervention and appropriateness of aid

(223) The investment aid for energy-efficient district heating aims at covering positive externalities linked to the use of efficient district heating network but which are not priced in. Energy-efficient district heating/cooling is more energy-efficient than the separate use of individual boilers. These positive externalities are however not priced in. On the one hand, negative externalities of individual boilers are only very partially priced in. Most of those boilers are not subject to the ETS or a similar system. In addition, Germany has explained that the use of the district heating network is not remunerated separately. The district heating network generally belongs to the owner of the main heat generating facility feeding heat into the district heating network (generally a CHP installation). The network costs have to be recouped with the heat revenues (and as the case may be with electricity revenues linked to the coproduced electricity), which, however, are not sufficient to cover infrastructure costs. On the heat market, owners of district heating facilities will be in competition with individual boiler solutions but also in competition with other heat sources injecting heat into the district heating network, including waste heat and heat from waste incineration. An aid measure is therefore necessary to trigger the investment.

(224) The Commission considers that State aid can be considered an appropriate instrument to finance an energy-efficiency measure, independently of the form in which it is granted (point 145 of the EEAG).

3.3.4.3. Incentive effect

(225) As set out in recital (45) above, Germany has demonstrated that without support district heating or cooling networks could not be deployed as they typically have a funding gap of between 30% and 40% of investment costs. Also, in order to obtain the confirmation that the project is eligible for aid, the project owner has to submit the information requested under point 51 of the EEAG. In addition, Germany has committed to carrying out a credibility check of the counterfactual scenario as requested under point 52 of the EEAG (see recital (68) above). Based on those elements, the Commission concludes that the aid scheme has an incentive effect.

3.3.4.4. Proportionality (investment aid for energy-efficiency measures)

(226) Point 148 of the EEAG, read in conjunction with point 73, defines the eligible costs as the extra investment costs in tangible and/or intangible assets which are directly linked to the achievement of the common objective. Where the costs of achieving the common interest objective can be identified in the total investment costs as a separate investment, the costs of the separate investment constitute the eligible costs. In the case of district heating infrastructure, the entire investment constitutes the eligible costs given that the entire infrastructure is needed to achieve the energy efficiency and also the entire investment concerned would not have been made without the aid (see also Article 46(5) of the GBER[46]). However, the eligible costs will be limited to the funding gap (as per point 76 of the EEAG). The aid intensity can reach 100% of eligible costs (see Annex 1 to the EEAG, for district heating infrastructure).

(227) Point 19(32) of the EEAG defines the funding gap as the difference between the positive and negative cash flows over the lifetime of the investment, discounted to their current value (typically using the cost of capital).

(228) Germany has submitted a detailed funding gap calculation that shows that the funding gap of district heating/cooling networks projects corresponded to between 30% and 40% of the investment costs, depending on the diameter of the pipes, and that aid limited to those rates will thus not exceed the funding gap (see Table 5).

(229) In addition, as set out in recital (46) above, in cases where aid under the KWKG would be cumulated with aid from the Länder and local authorities or other federal aid schemes, Germany committed to limiting the aid to the funding gap within the meaning of point 19(32) of the EEAG.

[46] Commission Regulation (EU) No 615/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty, OJ L 187 of 26.6.2014, p. 1.

3.3.4.5. Distortion of competition

(230) As described under recital (141) above, the main impact on competition of the investment aid for district heating/cooling networks is that it enables district heating/cooling companies to connect more heat consumers to the district heating network. Also, larger district heating/cooling networks and larger consumer basis can help increasing the number of operating hours of the CHP installations feeding the heat into the network and thus also help increasing CHP electricity production. The investment aid can thus have the effect of reducing the number of consumers using individual heat boilers and of displacing coal-fired electricity. This impact, however, corresponds exactly to the environmental purpose of the aid.

(231) As the support is limited to the funding gap and available only to highly efficient networks, the Commission concludes that the negative effects of the aid on competition are sufficiently limited so that the overall balance of the measure is positive.

3.3.5. Storage

3.3.5.1. Common objective:

(232) For the reasons set out in recitals (35)-(36) above, heat storage can make an important contribution to energy efficiency when used as required by the notified support scheme to store cogenerated heat, waste heat and renewable heat. In the case of the German support scheme, it will in particular help increasing the energy efficiency of district heating and CHP installations and reduce CO_2 emissions from heat and electricity production in Germany.

(233) The Union set an objective of saving 20% of its primary energy consumption by 2020. The importance of reducing CO_2 emission for climate protection has also been recognized.

(234) The Commission therefore concludes that this aid measure aims at two well-defined objectives of common interest (improvement of energy efficiency and climate protection).

3.3.5.2. Need for State intervention and appropriateness of aid

(235) The investment aid for heat/cooling storage facilities aims at covering positive externalities linked to the use of storage facilities but which are not priced in. Storage facilities increase the energy efficiency of CHP installations and district heating/cooling systems but are not remunerated by separate fees. In addition, while they enable a more flexible use of CHP installations, the additional flexibility improves the economics of those installations only to a very limited extent, yielding a small surplus not sufficient to pay back the investment. Aid is therefore needed to achieve the objective pursued.

(236) Germany has explained that investment subsidies were the most suitable to trigger investment in storage facilities as they do not cover the entire investment costs and therefore incentivise the operators to maximise the use of their storage facilities by running the connected CHP plants in line with the demand for electricity. This yields the best results in terms of energy efficiency and

integration of the CHP plants into the electricity market. In addition, the Commission considers that State aid can be considered an appropriate instrument to finance an energy-efficiency measure, independently of the form in which it is granted (as per point 145 of the EEAG).

3.3.5.3. Incentive effect

(237) The information provided by Germany described under recitals (34) and (40) above shows that without support storage facilities are not deployed as the investment costs cannot be recouped through higher revenues from a more flexible use of the CHP installation. In addition, in order to obtain the confirmation that the project is eligible for aid, the project owner has to submit the information requested under point 51 of the EEAG. Finally, Germany has committed to carrying out a credibility check of the counterfactual scenario as requested under point 52 of the EEAG (see recital (68) above). Based on those elements, the Commission concludes that the aid measure has an incentive effect.

3.3.5.4. Proportionality

(238) Point 148 of the EEAG, read in conjunction with point 73, defines the eligible costs as the extra investment costs in tangible and/or intangible assets which are directly linked to the achievement of the common objective. Where the costs of achieving the common interest objective can be identified in the total investment costs as a separate investment, the costs of the separate investment constitute the eligible costs.

(239) In the case of heat/cooling storage facilities used in connection with CHP installations, the entire investment constitutes the eligible costs given that the entire infrastructure is needed to achieve the energy efficiency and also the entire investment concerned would not have been made without the aid. As the storage facility has to be linked to a CHP installation, the Commission will examine the proportionality of the investment aid in line with aid intensities for CHP installations. When the concerned CHP installations are used in the district heating sector, the maximum aid intensities for district heating production plants should be used.

(240) Under the KWKG, aid for storage facilities is limited to 30% of the eligible investment costs. In addition, eligible costs exclude administrative fees, internal costs for the construction and planning, imputed costs ("*kalkulatorische Kosten*"), costs related to insurances, financing and land acquisition. The aid amount under the KWKG is thus below the maximum aid intensities allowed under the Annex 1 of the EEAG and also the eligible costs are stricter than under the EEAG (see point 19(23), which under certain circumstances also considers investments in land as eligible costs when strictly necessary to meet environmental objectives).

(241) For small storage facilities the aid is limited to EUR 12 500 (see recital (38) above), which is well below the *de minimis* ceiling.

(242) Aid for storage under the KWKG can be cumulated with aid from the Länder, local authorities or other federal support schemes. As set out in recital (41) above, Germany has committed to limiting the aid to the aid intensities set out in Annex 1 to the EEAG for CHP installations.

3.3.5.5. Distortion of competition

(243) As described under recital (142) above, storage facilities can impact competition in the sense that they increase the flexibility of CHP installations and help increasing their number of operating hours.

(244) Distortion of competition on the heat market will remain limited given that in the district heating sector, it is most of the time the same company that operates the storage facility, the CHP installation and the heat boilers. The subsidy will thus essentially impact the type of installation that is used rather than influence the company that will provide the heat.

(245) The distortion of competition on the electricity market remains limited in comparison to the positive effects for the environment. In fact, it corresponds exactly to the environmental purpose of the measure. The storage facility enables CHP installations to produce at times of higher electricity demand, when they will displace electricity produced from coal-fired electricity plants in Germany. This will significantly reduce the CO_2 emission resulting from electricity production, which is exactly the environmental purpose pursued by the measure.

(246) As, the support is limited to the aid intensities set out in Annex 1 to the EEAG, the Commission concludes that the negative effects of the aid on competition are sufficiently limited so that the overall balance of the measure is positive.

3.3.6. Transparency

(247) As set out in recital (108) above, Germany has committed to implementing all conditions laid down in section 3.2.7 of the EEAG, thus the measures comply with the transparency provision for all aids granted as of 1 July 2016.

3.3.7. Evaluation plan

(248) The EEAG (paragraph 28 and Chapter 4) state that the Commission may require that certain aid schemes be subject to an evaluation, where the potential distortion of competition is particularly high, that is to say when the measure may risk significantly restricting or distorting competition if their implementation is not reviewed in due time. Given its objectives, evaluation only applies for aid schemes with large aid budgets, containing novel characteristics or when significant market, technology or regulatory changes are foreseen.

(249) The present scheme fulfils the criteria of being a scheme with a large aid budget and containing novel characteristics; therefore it will be subject to an evaluation.

(250) The scope and modalities of the evaluation have been defined, taking into account the Commission Staff Working Document on Common methodology for State aid evaluation, in an evaluation plan that Germany has notified together with the aid scheme and whose main elements are described in section 2.8 above.

(251) The Commission considers that the notified evaluation plan contains the necessary elements: the objectives of the aid scheme to be evaluated, the evaluation questions, the result indicators, the envisaged methodology to conduct the evaluation, the data collection requirements, the proposed timing of the evaluation including the date of submission of the final evaluation report, the description of the independent body conducting the evaluation or the criteria that

will be used for its selection and the modalities for ensuring the publicity of the evaluation.

(252) The Commission notes that the scope of the evaluation is defined in an appropriate way. It comprises a list of evaluation questions with matched result indicators. Data sources are individually defined for each question. Moreover, the evaluation plan sets out and explains the main methods that will be used in order to identify the impacts of the scheme, and discusses why these methods are likely to be appropriate for the scheme in question.

(253) The Commission acknowledges the commitments made by Germany (see recital (119) above) that the evaluation will be conducted according to the notified evaluation plan by an independent evaluation body. The procedures envisaged for selecting such evaluation body are appropriate in terms of independence and skills. Moreover, the proposed modalities for the publication of the evaluation results are adequate to ensure transparency.

(254) The Commission notes the commitment made by Germany to submit the final evaluation report at the latest in 2021 (see recital (118) above).

3.3.8. Reduced CHP-surcharges

(255) Taking into account the conclusion that the capped CHP-surcharge constitutes State aid, the Commission assessed the possible compatibility of such a measure with State aid rules.

(256) The capped surcharge relieves Category B and Category C consumers (see recital (75) above) from a part of the CHP-surcharge that they would normally have had to bear in their day-to-day operations as part of their electricity costs; it thus reduces operating costs for the companies concerned.

(257) Article 107(1) TFEU provides for the general principle of prohibition of State aid within the Union. Article 107(2) and 107(3) TFEU provide for exemptions to the general incompatibility set out in Article 107(1).

(258) According to settled case-law, it is for the Member State to put forward any grounds of compatibility and to demonstrate that the conditions thereof are met.[47]

(259) The aid measure under assessment does not fall within the scope of the EEAG. Those Guidelines contain provisions on aid in the form of reductions in the funding of support for energy from renewable sources but do not contain provisions on aid in the form of reductions in the funding of support for other energy policy objectives. In particular, they do not apply to aid in the form of reductions in the funding of support for cogeneration.

(260) No other Guidelines are applicable to the notified measure. However, the Commission may declare an aid measure compatible directly under Article 107(3)(c) TFEU if it is necessary and proportionate and if the positive effects for the common objective outweigh the negative effects on competition and trade.

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47 Case C-364/90 *Italy* v *Commission* ECLI:EU:C:1993:157, paragraph 20; Joined Cases T-132/96 and T-143/96 *Freistaat Sachsen and Others* v *Commission* ECLI:EU:T:1999:326, paragraph 140.

(261) The above conditions can be considered as fulfilled if the following questions can be positively replied:

a) Is the aid measure aimed at a well-defined objective of common interest?[48]

b) Is it targeted towards a situation where aid can bring about a material improvement that the market alone cannot deliver (for example because it addresses a market failure)?

c) Is the aid well designed to deliver the objective of common interest (necessity of the aid)?[49] In particular:

i. Is the aid measure an appropriate and necessary instrument, i.e. are there other, better-placed instruments?

ii. Is there an incentive effect, i.e. does the aid change the behaviour of firms?

iii. Is the aid measure proportional, i.e. could the same change in behaviour be obtained with less aid?

d) Are the distortions of competition and the effect on trade limited, so that the overall balance is positive?

3.3.8.1. Objective of Common Interest

(262) The Commission has examined whether the reductions from the CHP-surcharge aim at a well-defined objective of common interest.

(263) Germany has submitted that the reductions aimed at preserving the competitiveness of German companies subject to CHP-surcharge and that this ultimately helped increasing the acceptance for the support measures financed from the CHP-surcharge, i.e. support to highly efficient cogeneration, highly efficient district heating infrastructure and heating/cooling storage.

(264) While reductions from surcharges dedicated to support aid measures do not directly contribute to the objective pursued by the support measures (here energy efficiency), the Commission has however recognized that in certain cases reductions can indirectly contribute to the objective of the support measures because they help securing a sufficient financing base for the support measures themselves. This is for instance the case for reductions in the funding of support for energy from renewable sources (see section 3.7.2 of the EEAG and in particular point 182 of the EEAG).

(265) With regard to the support of highly efficient CHP, the Union has not established mandatory targets per Member State for the production of highly efficient CHP electricity, and the funding needs for supporting CHP installations are generally lower than funding needs for the support to renewable energy, which makes it less imperative to finance the support measures from a levy on electricity consumption. However, the Energy Efficiency Directive has set a 20% headline

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[48] Case T-162/06 *Kronoply* v *Commission* ECLI:EU:T:2009:2,especially paragraphs 65, 66, 74 and 75.

[49] Case T-187/99 *Agrana Zucker und Stärke* v *Commission* ECLI:EU:T:2001:149, paragraph 74; Case T-126/99 *Graphischer Maschinenbau* v *Commission* ECLI:EU:T:2002:116, paragraphs 41-43; Case C-390/06 *Nuova Agricast* ECLI:EU:C:2008:224, paragraphs 68-69.

target on energy efficiency and provided for indicative national efficiency targets to which highly efficient CHP installations can make an important contribution. In addition Member States are under the obligation to assess their potential for the implementation of energy efficiency measures, including CHP installations, district heating and storage facilities and to deploy the identified potential. As a result, financing needs for energy efficiency support measures could also potentially become significant, thereby increasing the need for Member States to be able to finance the measures from energy consumption levies.

(266) To avoid that electricity consumers particularly affected by the financing costs of the promotion of highly efficient CHP and of the other energy efficiency measures financed from the CHP-surcharge can be put at a significant competitive disadvantage, Member States may wish to grant partial reductions. In fact, bankruptcy or delocalisation of too many undertakings might erode the financing basis: instead of paying a reduced surcharge, the relevant companies would not contribute at all to the financing implying an even higher financial effort from other consumers to finance the support of CHP, again reducing acceptability of the surcharge and hence of the support of CHP as such.

(267) The CHP-surcharge does not in itself have an environmental objective (it does not aim at changing the behaviour of the surcharge payers itself) but is dedicated to the funding of the support measures examined under sections 3.3.1, 3.3.2, 3.3.4 and 3.3.5 above. It therefore indirectly contributes to the achievement of the objectives pursued by those support measures, which the Commission found to correspond to objectives of common interest. If reductions are needed to secure the financing of those support measures, they would also indirectly contribute to the objectives pursued by the support measures examined under sections 3.3.1, 3.3.2, 3.3.4 and 3.3.5 above.

(268) Based on those elements, the Commission considers that it could be argued that the reduced CHP-surcharges contribute to a common objective.

(269) However if such reductions are too high or awarded to too many sectors or electricity consumers, the overall funding of CHP-support might be threatened as well and the public acceptance for CHP, district heating and heat storage support may be equally hampered. At the same time, distortions of competition and trade may be particularly significant. In addition, while the CHP-surcharge is not aimed at creating incentives to reduce energy consumption but only at financing energy efficiency measures, it should be avoided that the magnitude of the reductions induce companies to be less energy-efficient, as this would run counter to the objective of the supported energy efficiency measures. For that reason as well, the scope of the reductions should not be too broad and their amount should not be too high.

3.3.8.2. Need for State intervention, appropriateness of aid and incentive effect

(270) Under sections 3.3.1, 3.3.2, 3.3.4 and 3.3.5 above, the Commission has concluded that the promotion of highly efficient cogeneration installations, energy-efficient district heating networks and heating/cooling storage installations would not be delivered by the market alone and that the aid measures (and their financing) are needed to incentivise the investments into and/or operation of those installations and facilities.

(271) The aid measures examined under sections 3.3.1, 3.3.2, 3.3.4 and 3.3.5 above are all directed at reducing energy consumption and the carbon footprint of energy production and consumption. While the CHP-surcharge is not the only conceivable financing mean, it can be argued that it is appropriate to finance aid measures for the production of cogenerated electricity, district heating networks and heat storage facilities on the basis of a levy on electricity consumption, because of the close link between the aided measures and energy consumption. Also, a consumption levy provides a relatively stable financing stream and does not impair budgetary discipline. Those are the reasons why this financing system is often used to finance support for the production of renewable electricity. As already mentioned in recital (265) above, financing needs for energy efficiency support measures could become significant, thereby increasing the need for Member States to be able to finance the measures from energy consumption levies.

(272) The Commission considers therefore that a reduced CHP-surcharge could be deemed necessary to reach the objectives of energy efficiency and environmental protection pursued by the measures examined under sections 3.3.1, 3.3.2, 3.3.4 and 3.3.5 if in the absence of reductions the CHP-surcharge financing those measures (and hence the measures themselves) would be put at risk.

(273) This could be the case if the payment of the full CHP-surcharge would imply the delocalisation or bankruptcy of too many undertakings or sectors. This would on its turn significantly reduce the acceptability of the CHP-surcharge as well as the number of surcharge payers and would risk jeopardizing the aid measures as such.

(274) The Commission has set out criteria under section 3.7.2 of the EEAG according to which such risk can be considered as demonstrated in the case of reduced renewable surcharges. In particular, points 185 to 187 of the EEAG establish the criteria on the basis of which sectors exposed to the risks described above can be identified. The Commission considers it appropriate to use those criteria as guidance in the present assessment.

(275) The German authorities have explained that the reduced CHP-surcharges were needed to ensure the competitiveness of the companies (energy users) concerned and that ultimately they would be needed to secure the financing for the support measures.

(276) However, Germany has not provided sufficient information to show that the reduced CHP-surcharges are needed for all types of undertakings or sectors included within categories C and B consumers to secure the financing of aid measures laid down in KWKG 2016. In particular, it has not demonstrated that the full CHP-surcharge would put the various sectors or beneficiaries benefitting from the reductions at risk of bankruptcy or delocalisation.

(277) No information was provided for beneficiaries of Category B (in particular, no information was provided on the sectors concerned, on the impact of the CHP-surcharge on GVA and on the market position of companies, on price elasticity, on exposure to international trade, etc.).

(278) For beneficiaries of Category C, no conclusive data could be provided either. Germany merely indicated that it assumed that a large part of the beneficiaries in Category C would be the same as companies eligible also for reductions from the EEG-surcharge. Assuming that the beneficiaries would be companies eligible for EEG-surcharge reductions, Germany simulated that a full CHP-surcharge could represent up to between 1 and 9% of the GVA for a significant number of companies.

(279) The Commission has accepted that some sectors with high electro-intensity and high exposure to international trade were very likely to be significantly affected by the full EEG-surcharge and that this threat to their competitiveness and viability would be sufficiently material to jeopardize support for renewable energies[50]. Assuming that beneficiaries would correspond to companies eligible for support under the EEG, the full CHP-surcharge would seem to represent for a significant number of those companies between 1% and 9% of GVA. This would constitute indeed a sizable burden.

(280) However, Germany did not provide information allowing the Commission to verify which share of the beneficiaries would indeed correspond to undertakings eligible for reduced EEG-surcharges or for reductions under Section 3.7.2 of the EEAG. As Category B does not contain any criteria of electro-intensity and exposure to trade, and as Category C does not contain any requirement linked to trade exposure, there is no guarantee that beneficiaries would all or in most cases qualify as electro-intensive within the meaning of section 3.7.2 of the EEAG. The reductions granted by Germany thus seem to go beyond what the Commission had accepted in the EEG 2014 decision as constituting a significant risk that justifies reductions from EEG-surcharge, on the basis of Section 3.7.2 of the EEAG.

(281) The Commission therefore has at this juncture doubts as to the need, appropriateness and incentive effect of the scope of beneficiaries of the reduced CHP-surcharge granted under the KWKG to secure the financing of the CHP-support.

3.3.8.3. Proportionality

(282) Even under the assumption that reductions were demonstrated to be necessary and appropriate for all beneficiaries, they cannot correspond to full exemptions or be so significant as to jeopardize the purpose of the support measure because they result in too heavy a burden on the other energy consumers. Also, too significant reductions increase the distortion of competition resulting from them. This is why under the EEAG, as far as reductions in the funding of support for energy from renewable sources are concerned, undertakings eligible for reductions should pay a minimum contribution corresponding in principle to 15% of the normal levy (see point 188 of the EEAG), with additional reductions possible when the levy represents more than a certain share of the GVA of the company (point 189 of the EEAG).

[50] See Decision of 24 July 2014 SA.38632 (EEG 2014 decision).

(283) Germany has not shown that the caps of 0.04 and 0.03 € cent/kWh were limited to the necessary minimum.

(284) The Commission first notes that the minimum contribution paid by the beneficiaries did not always represent 15% of the normal surcharge. In particular, for Category C companies in 2016, the minimum contribution was limited to 7% of the normal CHP-surcharge.

(285) Germany did not show that less significant reductions would not have been acceptable. It has insisted on the cumulation effect with the EEG but did not provide concrete information related to the beneficiaries of the reductions that would show the ratio between the reduced CHP-surcharge and the GVA and compared it with slightly higher CHP-surcharges (for instance 15%) or with the applicable EEG-surcharge.

(286) The reductions granted by Germany thus go beyond what the Commission had accepted as proportionate under the EEAG for renewable surcharges. At this juncture, in the absence of any additional information, the Commission therefore has doubts as to the proportionality of the CHP-surcharge reductions.

3.3.8.4. Distortion of competition

(287) Germany has not submitted any element that would enable the Commission to assess the overall balance of the potential distortion of competition and trade between Member States. Moreover, as the necessity, appropriateness, incentive effect and the proportionality of the aid have not yet been demonstrated, the Commission doubts at this stage that the aid measure ensures that the distortion of competition resulting from the relief of companies from part of their operating costs are limited and that the overall balance of the measure would be positive.

3.3.8.5. Commission decision of 2002

(288) The reduced CHP-surcharges were introduced in 2002, in the 2002 Law for the Safeguarding, modernisation and the deployment of combined heat and power. Germany has in this respect mentioned that in 2002 the Commission found that the then applicable CHP law did not contain State aid.[51] The decision, however, was based on the 2000 Law for the protection of electricity generation on the basis of combined heat and power ("*Gesetz zum Schutz der Stromerzeugung aus Kraft-Wärme-Kopplung*"), which entered into force on 18 May 2000. It was then replaced in 2002 by the "*Gesetz für die Erhaltung, die Modernisierung und den Ausbau der Kraft-Wärme-Kopplung*" of 19 March 2002 that entered into force on 1 April 2002. However, if relevant, the Commission will examine to what extent the conclusions made by the Commission on the basis of the 2000 law could create legitimate expectations.

[51] Commission decision of 22 May 2002 in case NN 68/2000 – Germany - Law for the protection of electricity generation on the basis of combined heat and power

3.3.9. Conclusions

(289) Based on the reasons set out in sections 3.3.1, 3.3.3, 3.3.6 and 3.3.7, the Commission concludes that the support to new, modernised and retrofitted highly efficient CHP installations is in line with the EEAG, in particular section 3.4 thereof and is therefore compatible with Article 107(3)(c) of the TFUE.

(290) Based on the reasons set out in sections 3.3.4, 3.3.6 and 3.3.7, the Commission concludes that the support to energy-efficient district heating and/or cooling networks is in line with the EEAG, in particular section 3.4 thereof and is therefore compatible with Article 107(3)(c) of the TFUE.

(291) Based on the reasons set out in sections 3.3.5, 3.3.6 and 3.3.7, the Commission concludes that the support to heat/cooling storage facilities is in line with the EEAG, in particular section 3.4 thereof and is therefore compatible with Article 107(3)(c) of the TFUE.

(292) Based on the reasons set out in sections 3.3.2, 3.3.3 and 3.3.7, the Commission concludes that the support to existing highly efficient gas-fired CHP installations in the district heating sector is compatible with Article 107(3)(c) of the TFUE.

(293) At this stage, based on the information submitted and the reasons set out in section 3.3.8, the Commission does not have sufficient elements to conclude whether the conditions for the compatibility of the reduced CHP-levies with the internal market in accordance with Article 107(3)(c) TFEU are met, in particular whether the aid is necessary. Furthermore, the Commission has also doubts that the notified measure is proportionate and does not unduly distort competition.

(294) The Commission has therefore, at this stage, doubts as to the compatibility with the internal market and, in accordance with Article 4(4) of Council Regulation (EU) No 2015/1589,[52] it has decided to open the formal investigation procedure, thereby inviting Germany to submit its comments as well as the requested information. The formal investigation procedure will also give the opportunity to third parties whose interests may be affected by the granting of the aid to comment on the measure.

(295) In light of both the information notified by the Member State concerned and that provided by any third parties, the Commission will re-assess the measure and will take its final decision on the reduced CHP levies.

4. AUTHENTIC LANGUAGE

(296) As mentioned under section 1 above, Germany has accepted to have the decision adopted and notified in English. The authentic language will therefore be English.

[52] Council Regulation (EU) 2015/1589 of 13 July 2015 laying down detailed rules for the application of Article 108 of the Treaty on the Functioning of the European Union , OJ L 248, 24.9.2015, p. 9.

5. DECISION

The Commission has accordingly decided not to raise objections to the following aid measures on the grounds that they are compatible with the internal market pursuant to Article 107(3)(c) of the Treaty on the Functioning of the European Union:

- the support to new, modernised and retrofitted highly efficient CHP installations;
- the support to energy-efficient district heating/cooling networks;
- the support to heat/cooling storage facilities; and
- the support to existing highly efficient gas-fired CHP installations in the district heating sector.

The Commission reminds the German authorities that, in accordance with article 108 (3) TFEU, any plans to refinance, alter or change this aid have to be notified to the Commission pursuant to provisions of the Commission Regulation (EC) No 794/2004 implementing Council Regulation (EC) No 659/1999 laying down detailed rules for the application of Article 93 of the EC Treaty (now Article 108 TFEU).[53]

The Commission further reminds Germany that individual aid granted on the basis of the scheme remains subject to the notification obligation pursuant to Article 108(3) of the Treaty if the aid exceeds the notification thresholds set in point 20 of the EEAG and is not granted on the basis of a competitive bidding process.

The Commission also reminds the German authorities that the evaluation report must be submitted by December 2021 at the latest.

In addition, in the light of the considerations set out under sections 3.3.8 and 0 above, the Commission, acting under the procedure laid down in Article 108(2) of the Treaty on the Functioning of the European Union, requests Germany to submit its comments and to provide all such information as may help to assess the reduced CHP-surcharge, within one month of the date of receipt of this letter. It requests your authorities to forward a copy of this letter to the potential recipient of the aid immediately.

The Commission wishes to remind Germany that Article 108(3) of the Treaty on the Functioning of the European Union has suspensory effect, and would draw your attention to Article 16 of Council Regulation (EU) No 2015/1589, which provides that all unlawful and incompatible aid must be recovered from the recipients.

The Commission warns Germany that it will inform interested parties by publishing this letter and a meaningful summary of it in the Official Journal of the European Union. It will also inform interested parties in the EFTA countries which are signatories to the EEA Agreement, by publication of a notice in the EEA Supplement to the Official Journal of the European Union and will inform the EFTA Surveillance Authority by sending a copy of this letter. All such interested parties will be invited to submit their comments within one month of the date of such publication.

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53 OJ L 140, 30.4.2004, p. 1.

If this letter contains confidential information which should not be published, please inform the Commission within fifteen working days of the date of receipt. If the Commission does not receive a reasoned request by that deadline, you will be deemed to agree to publication of the full text of this letter. Your request specifying the relevant information should be sent by registered letter, fax or electronically to:

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Yours faithfully
For the Commission

Margrethe VESTAGER
Member of the Commission