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**Subject: State Aid SA.45461 (2016/N) – Germany  
EEG 2017 – Reform of the Renewable Energy Law**

**State aid SA.44679 (2016/N) – Germany - Modification of the method  
used to define electro-intensity under the EEG**

Sir,

**1. PROCEDURE**

- (1) Following prenotification contacts, the German authorities have notified by electronic notification on 1 July 2016 a planned modification of the support scheme for the promotion of the production of electricity from renewable energy sources ("renewable electricity") and from mining gas, as well as a planned reduction from renewable surcharges ("the EEG surcharge") for energy-intensive undertakings. The initial support scheme for the promotion of the production of renewable electricity and from mining gas (the "EEG 2014") has been approved by the Commission by decision of 23 July 2014 in State aid file SA.38632 (2014/N) – Germany - EEG 2014 – Reform of the Renewable Energy Law<sup>1</sup> (the "2014 EEG Decision").
- (2) Further to requests from the Commission, the German authorities provided additional information on 8 July, 28 July 2016, 14 October 2016 and in the course of November and December 2016. The latest information was submitted on 13 December 2016.

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<sup>1</sup> OJ C 325, 2.10.2015, p. 1.

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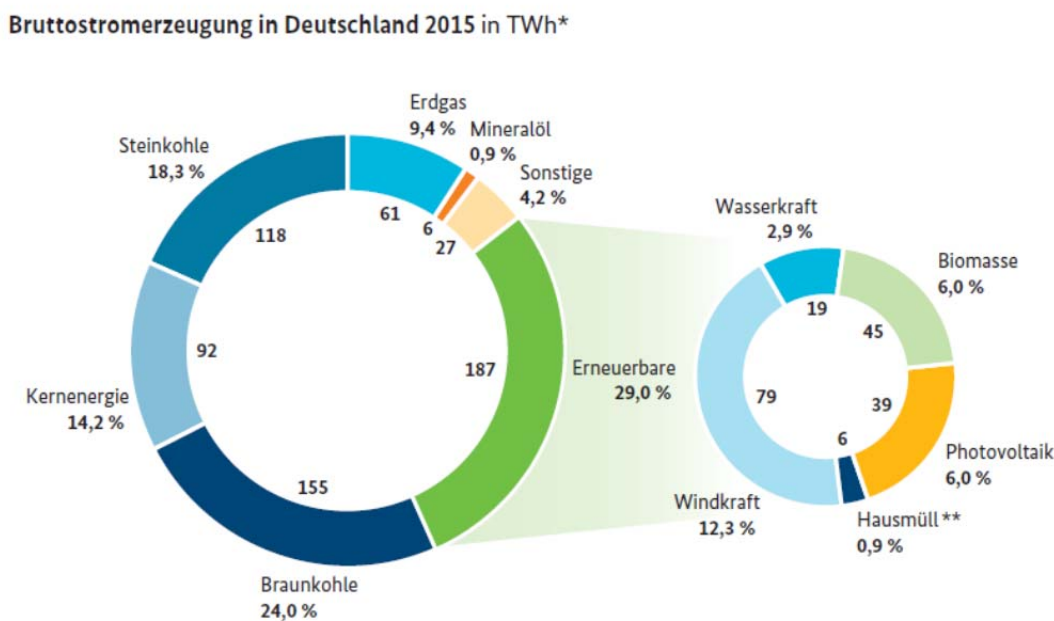
- (3) The measures were notified for legal certainty as Germany considers that they do not constitute State aid.
- (4) On 26 February 2016 Germany notified an amendment to the EEG 2014 that concerns the methodology used to determine the electro-intensity of companies in order to determine whether they are eligible for reduced EEG-surcharges.
- (5) Germany provided additional information on this amendment on 25 May 2016 and agreed to the joining of the cases on 20 July as this amendment is maintained in the EEG 2017.
- (6) On 23 November 2016, Germany has waived its right under Article 342 TFEU in conjunction with Article 3 of Regulation (EEC) No 1/1958 to have the decision in both procedures SA.44679 and SA.45461 adopted in German and agreed that the decision be adopted and notified in English.

## **2. DESCRIPTION OF THE SCHEME**

### **2.1. National legal basis, background and objective**

- (7) The notified scheme is included in the Law for the introduction of auctions for electricity produced from renewable energies and for other modifications of the legal framework applicable to renewable energies (*Gesetz zur Einführung von Ausschreibungen für Strom aus erneuerbaren Energien und zu weiteren Änderungen des Rechts der erneuerbaren Energien*). This law on the one hand amends the EEG 2014 (which becomes the "EEG 2017") and introduces a law for the development and support of offshore wind (Windenergie-auf-See-Gesetz – "WindSeeG"). It was adopted on 13 October 2016 and is due to enter into force on 1 January 2017.
- (8) Like the EEG 2014, the notified EEG 2017 aims at ensuring that the share of renewable electricity in electricity supplied to German final customers rises to 40-45 % by 2025, to 55-60 % by 2035 and to 80 % by 2050. Electricity consumption is expected to remain at around 600 TWh.
- (9) Currently, renewable electricity represents around 30 % of electricity production in Germany. The main renewable electricity sources are wind, biomass and solar:

**Figure 1: Gross electricity production in Germany, 2015 in TWh – source: AG Energiebilanzen, August 2016<sup>2</sup>.**



\* vorläufige Zahlen z. T. geschätzt \*\* regenerativer Anteil

Quelle: AG Energiebilanzen, Stand: August 2016

- (10) This increase of the renewable electricity share should be constant, cost efficient but should also remain sustainable for the grid.
- (11) In order to ensure cost efficiency of support and steer the expansion of renewable electricity installations in accordance with targets and in synchronisation to grid development, the EEG 2017 introduces auctions to select renewable electricity producers eligible for support when their installation reaches certain installed capacity and make use of certain technologies. The reform of the EEG has been based on numerous and extensive studies and market analysis for each renewable technology<sup>3</sup>.
- (12) The EEG 2017 sets out the following expansion corridors and volumes to be auctioned:
  - For offshore wind energy, the expansion targets set out in the EEG 2014 will remain unchanged, meaning that 6,5 GW of new capacity are to be installed by 2020 and 15 GW by 2030.

<sup>2</sup> The data has been compiled by using estimates for a part.

<sup>3</sup> Market analysis on onshore wind, offshore wind, solar energy, biomass, hydropower and geothermal energy available on [http://www.erneuerbare-energien.de/EE/Navigation/DE/Recht-Politik/EEG-Ausschreibungen/Marktanalysen/marktanalysen.html?cms\\_gtp=139644\\_list%253D2](http://www.erneuerbare-energien.de/EE/Navigation/DE/Recht-Politik/EEG-Ausschreibungen/Marktanalysen/marktanalysen.html?cms_gtp=139644_list%253D2); as well as a study on auctions : Ausschreibungen für erneuerbare Energien - Wissenschaftliche Empfehlungen - Studie im Auftrag des Bundesministeriums für Wirtschaft und Energie, available under <http://www.bmwi.de/DE/Mediathek/publikationen/publikationen.did=721112.html>.

- For large-scale photovoltaic (PV) installations (over 750 kW), the annual capacity volume to be auctioned is 600 MW. Overall, generation capacity from solar energy is to increase by up to 2 500 megawatts per year (gross).
- For onshore wind, 2 800 MW (gross) will be auctioned per year, and from 2020 on, 2 900 MW (gross).
- The annual auction volumes for biomass will start at 150 MW and will rise to 200 MW (gross) for the year 2020 to 2022.

## 2.2. Beneficiaries

- (13) Beneficiaries are the producers of electricity from renewable energy sources (see also 2014 EEG decision, recital 16). Overall, new renewable electricity installations will be supported under the EEG 2017 until renewable electricity installations reach 52 GW of installed capacity.
- (14) Installations with an installed capacity above 750 kW (150 kW for biomass installations) will be eligible for support only if they have been selected in auctions.
- (15) Installations up to 750 kW (150 kW in the case of biomass installations) are exempt from the auction scheme. For these installations, the level of funding is set by law as was the case under the EEG 2014.
- (16) Also exempt from the auction system are certain technologies: for installations producing electricity based on hydro power, geothermal power, landfill gas and sewage gas, the level of funding continues to be set by law as under the EEG 2014.
- (17) Pilot installations are also exempt from auctions. Those are:
- (a) Onshore wind installations showing innovative technical characteristics and requiring individual certification. Only the first two prototypes of the wind turbines concerned can qualify as pilot installations and they may not have a rated capacity of more than 6 MW.
  - (b) Onshore wind installations which are mainly dedicated to research and development and which are testing a significant innovation going well beyond the state of the art.
  - (c) The first three offshore wind turbines of a kind that are testing a significant innovation going well beyond the state of the art.
- (18) Germany has explained that the categories b and c correspond to the concept of demonstration projects within the meaning of paragraph 19(45) of the Guidelines on State aid for environmental protection and energy 2014-2020<sup>4</sup> ("EEAG"). However, as the concept of "first-of-its-kind" in the EU could not be inserted in the law (because the text of the law must be entirely in German), the definition was slightly adapted; however the explanatory memorandum accompanying the law<sup>5</sup> explains the concept by reference to the EEAG. In order to demonstrate the

<sup>4</sup> OJ C 200, 28.6.2014, p. 1.

<sup>5</sup> Deutscher Bundestag 18. Wahlperiode, Drucksache 18/9096, p. 359.

existence of a significant innovation going well beyond the state of the art, it will thus be necessary to demonstrate that the technology is entirely new, i.e. that it is the first of its kind.

- (19) The EEG 2017 applies to installations entering into operation as of 1 January 2017 with the exception of onshore wind (§22(2)(2) EEG 2017) and biomass/biogas installations (§22(4)(2) EEG 2017) having obtained approval under emissions control law in 2016 (or in the case of biomass another type of authorization when they apply) and entering into operation before end 2018.
- (20) As far as offshore installations are concerned, the EEG 2007 applies to offshore installations that have been given an unconditional grid connection commitment within the meaning of §118(12) of the Energiewirtschaftsgesetz (Energy Act, EnWG) (i.e. that have been given unconditional grid connection before September 2012) or been allocated a connection capacity before the end of 2016 and that start operating before the end of 2020 (§22(5)(1) EEG 2017). Germany confirmed that installations that can fulfil those conditions are almost exclusively projects notified to and approved by the Commission under State aid cases SA.39723, SA.39724, SA.39725, SA.39726, SA.39731, SA.39732, SA.39733, SA.39735, SA.39738, SA.39739, SA.39741, SA.39742 (2014/N); SA.39722, SA.39727, SA.39728, SA.39729, SA.39730, SA.39734, SA.39736, SA.39740 (2015/NN): Support to 20 large offshore wind farms under the EEG Act 2014 (Germany) or are demonstration projects within the meaning of paragraph 19(45) of the EEAG and in any event projects having made their final investment decision before 2017.

### **2.3. Form of aid, level of support and market price**

- (21) As was already the case under the EEG 2014, the aid is paid as a market premium ("*Marktprämie*") that is obtained on top of the market price for the electricity (see also 2014 EEG Decision, recital 12(a)). The premium is paid out by the network operator to whose network the renewable electricity production installation is connected. The premium is a gliding premium: it corresponds to the difference between a reference value ("*der anzulegende Wert*") and the market price of the electricity. The reference value aims at covering the production costs of the electricity concerned, a reasonable return and a management premium to cover the costs of direct marketing. For installations subject to auctions, the reference value is determined by the auction, for installations not subject to auctions, the reference value is set in the EEG.
- (22) However, electricity produced in installations having an installed capacity of maximum 100 kW are still entitled to feed-in tariffs (see also 2014 EEG Decision, recital 14). When they apply for feed-in tariffs, they transfer their electricity to the network operator to which they are connected and obtain the feed-in tariff.
- (23) In addition, the EEG 2017 maintains the fall-back feed-in tariff ("*Ausfallvergütung*") introduced in the EEG 2014: electricity operators producing renewable electricity in installations with installed capacity of more than 100 kW can temporarily obtain a feed-in tariff and transfer their electricity to the network operator to which they are connected when they cannot find a buyer for their electricity. The feed-in tariff is limited to 80 % of the reference value; this was already the case under the EEG 2014 (see 2014 EEG decision, recital 12(c)). In addition, the EEG 2017 limits this fall-back feed-in tariff to three months in a row

and to six months per year in total. Beyond those periods of time, the feed-in tariff is still available but limited to the monthly average market price. Germany provided statistics as to the use of the fall-back feed-in tariffs in 2015-2016<sup>6</sup>. It also explained that the limitation in time of the fall-back feed-in tariff is introduced in order to prevent any misuse of the fall-back feed-in tariff.

- (24) Operators of renewable power installations also have the possibility to sell their electricity directly on the market without requesting any support under the EEG (§21a EEG 2017 – "*sonstige Direktvermarktung*"). In that case, they are entitled to a guarantee of origin for the electricity concerned and will be able to sell the electricity as renewable electricity (§79 EEG 2017).
- (25) At the beginning of each month, EEG electricity operators can change the way they sell their electricity (with or without market premium, feed-in tariffs for small installations or fall-back feed-in tariffs).
- (26) Cumulation between aid under the EEG 2017 and investment aid is possible. However, the cumulation of the EEG aid, investment aid and revenues from the sale of the electricity may not exceed the production costs of the energy concerned (§80a EEG 2017).
- (27) If cumulation occurs between administratively set tariffs or premiums and investment aid, Germany has indicated that it would:
  - First examine what the maximum permissible aid intensity is for investment aid.
  - Second identify the (potential) subsidy gap (*Förderlücke*), i.e. the difference between EEG support and electricity production costs (*d.h. der Unterschied zwischen der EEG 2014 Förderung und den Stromerzeugungskosten*). The potential subsidy gap will as a rule be based on the Levelized Cost of Electricity ("LCOE") of standardized installations and on the individual LCOE when the installation is too different from the reference model. The potential subsidy gap can be calculated as a value per kWh or as a total amount over the entire lifetime period.
  - Thirdly: the possible investment aid would then be paid out only to the extent that it does not exceed either the potential subsidy gap or the allowed aid intensities for investment aid.
- (28) Germany has further indicated that when the beneficiary has been selected in an auction, cumulation with investment aid is in principle not possible given that the aid obtained in the auction is covering the entire levelized costs of electricity (including a reasonable return). Germany has however submitted that an investment aid would be justified in addition to the aid under the EEG (even though obtained after an auction) when this investment aid is to cover investment costs unrelated to electricity production and which are separate from the costs that were part of the scope of the auction. Germany has also submitted that it cannot be excluded that for specific projects an additional investment aid might be justified to cover abnormal costs resulting from environmental obligations that are

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<sup>6</sup> <https://www.netztransparenz.de/EEG/Transparenzanforderungen/Anlagendaten-zur-Ausfallvermarktung>.

specific to a certain area and that the other participants don't have to bear. Any investment aid that would distort the auction results will however be excluded.

- (29) Support is granted for 20 years, except for modernized biomass installations where the support is limited to 10 years.
- (30) Operators of renewable installations are subject to balancing responsibilities according to §20(1)(4) and §21(c)(3) EEG 2017. In particular, they must be part of a balancing group in which the balancing of the electricity is ensured.
- (31) According to §51 EEG 2017, when market prices are negative for at least 6 hours in a row on the day-ahead market (prices for the German zone on the EPEX spot market), no market premium will be paid for the period during which the prices were negative. This rule also applies to installations benefitting from the fall-back feed-in tariffs. It does not apply to wind installations having an installed capacity of less than 3 MW and to other renewable installations with installed capacity of less than 500 kW. In both cases, Germany confirmed that in order to determine whether the installation has reached the threshold, account will be taken of installations using the same type of primary energy source belonging to the same owner and built in the proximity of the first installation within a period of 12 months. In addition, the negative prices rule does not apply to pilot onshore wind installations and pilot offshore wind installations. Concerning the pilot onshore wind installations, Germany has however explained that it does not expect any pilot onshore wind installations of category a (see recital (17) above) to come online in the coming two years and has committed that in the EEG 2018 the definition of pilot installations not subject to the 6-hours rule would be limited to demonstration projects within the meaning of paragraph 19(45) of the EEAG.
- (32) The premium and the feed-in tariffs are obtained only on the basis of electricity that is injected into the grid. In addition, producers of renewable electricity whose reference value has been determined through auctions cannot use the electricity for self-consumption. If they are using it for self-consumption, they lose their entitlement to a premium during the year in which electricity has been self-consumed.
- (33) The feed-in tariffs and reference values set in the EEG 2017 have all decreased compared to the feed-in tariffs and reference values initially set in the EEG 2014. They will apply to installations entering in operation as of 1 January 2017. Those reduced values are in most cases resulting from the mere application of the automatic decrease of tariffs and reference values provided for under the EEG 2014 (see 2014 EEG decision, recitals 79, 81, 83, 85, 87, 88, 90, 92, 96, 98-100, 102, 105).
- (34) The tariff for deep geothermal energy has remained unchanged but the application of the tariff decrease initially foreseen for 2018 has been postponed to 2020 as studies have shown that costs remain high and that no cost reduction is expected before 2020.
- (35) The tariff/reference value for onshore wind installations has been decreased slightly more than what the automatic decrease would have led to in order to take into account the results of the recent studies in terms of costs. Also the automatic decrease rates have been slightly amended to take into account the objective of 2 500 MW per year (instead of a corridor between 2 400 and 2 600 MW) and to

take into account the very fast deployment in last years (tariffs/reference values are to be decreased by 2,4 % if the 2 500 MW threshold is exceeded by 1 000 MW).

- (36) As of 2019, when almost all onshore wind installations will be subject to the auction requirement, the tariff/reference value for onshore wind installations not subject to the auction requirement will be determined based on the same methodology than for onshore wind installations subject to auctions (the reference value is corrected by a correcting factor that takes into account the wind quality of the site concerned and revision of wind quality is done every 5 years (see below, recitals (59) to (61)). The reference value/tariff will be set by reference to the average of the highest winning bids of the auctions of the preceding year.
- (37) The automatic decrease of the biomass tariffs/reference values has been changed to take into account the fact that currently biomass is not developing as fast as planned and to take into account the fact that expected cost decreases on the basis of which the automatic decrease rates had been designed have been partially compensated with cost increases.
- (38) Also the automatic decrease for solar installations has been slightly adapted as Germany has observed that solar deployment is largely below the expected deployment rate and was not reacting quickly enough to this development.
- (39) Finally, Germany has indicated that the average spot prices (Day-Ahead) from January to October 2016 corresponded to: 27,21 EUR/MWh (Baseload) and 29,40 EUR/MWh (Peakload).

## **2.4. Technologies subject to auctions**

### *2.4.1. Choice of sectors*

- (40) Germany has undertaken various studies to update production costs, determine the remaining potential for each technology, its learning curve, the typical project duration, typical number of operating hours, etc.
- (41) The findings of those studies are summarized in the following table:



**Table 1: Overview of production costs, remaining deployment potential and regional distribution per technology**

Levelized costs of electricity for installations above 1 MW	Offshore	Onshore	PV roof	PV ground	Biomass	Biogas	Hydro	Landfill gas	Sewage gas	Geothermal
<b>New installations in Cent/kWh</b>	15	5-9	10-11	7.4	16.9 (spread 12 – 25)	no installations > 1 MW	5.3 – 12.2 (large spread)	no installations > 1 MW	no installations > 1 MW	27
<b>Modernisation</b>	--		--	--	As of 2020 high modernisation share	-	high modernisation rate		no new built	--
<b>Characteritics</b>										
<b>Potential</b>	high	high	middle/high	middle	middle	middle	low	low	low	low
<b>Full load hours</b>	4000-4500	3000-3500	800	1000	up to 8000	up to 8000	4000-6000	6000-8000	6000-8000	6000
<b>Planning phase – duration in years</b>	5-10	5,5	0,2-1	1	1-3	1-3	5-10	1-3	1-3 (3 years when subject to emission permit)	
<b>Cost decrease</b>	high	middle	high	high	low	low	low	low	low	low
<b>Risks</b>	very high	middle	low	low	middle	middle	high	middle	middle	very high
<b>Regions</b>	North-/Baltic Sea	Entire territory but tendency in the north	Entire territory but tendency in the south	Entire territory but tendency in the south and east	south	south	rivers	entire territory	entire territory	south/west
<b>Average market volume</b>	800 MW	2,5 GW	800 MW (decreasing)	600 MW	3.9 MW	--	--	1 MW	1 MW	4 MW

#### 2.4.2. Common characteristics of all auctions

- (42) Where aid is granted by way of auctions, installations will be eligible for funding only if they have made a successful bid. Auctions will be conducted for each of the technologies concerned by the Federal Network Agency (the Bundesnetzagentur, "BNetzA").
- (43) As a rule, the BNetzA will announce auctions eight weeks in advance.
- (44) The calls will invite single, sealed bids. The bid relates to the reference value ("anzulegender Wert") that serves to determine the level of the premium after deduction of the market price (see recital 20 of the EEG 2014 Commission decision).
- (45) A security must be lodged to ensure realisation of projects. The level of the security can vary per technology. For instance, for onshore wind installations, the security is lower than for solar installations. The reason is the higher probability at the time of the auction that wind projects will be implemented, because of the 'late auction' system.
- (46) Bids may not exceed the maximum price, which will be published in advance. It is based initially on the previous amount of funding and will in principle evolve in the light of the average level of funding established by the auctions.
- (47) The lowest bids will be awarded funding until the amount of installed capacity that is being auctioned is reached. In principle, the amount of funding corresponds to the individual bid (pay as bid principle).
- (48) Once a bid has been accepted, the project must be implemented within a specified time frame. In the interest of maximising the rate of project implementation, a contractual penalty applies in the event of non-completion of a project.
- (49) The auctions are organized for each technology separately. Biomass and biogas installations are however subject to the same auctions.
- (50) In addition, joint auctioning for onshore wind and photovoltaics will be tested in a pilot project in order to gain experience of auctions that are open to more than one technology.
- (51) The pilot will be organised as follows:
  - (a) From 2018, a capacity of 400 MW/year will be auctioned on a technology-neutral basis (onshore wind and large-scale photovoltaic installations combined).
  - (b) The volumes awarded in this way will reduce the technology-specific volumes auctioned in the following year by the amount actually awarded to each technology.
  - (c) The "Referenzertragsmodell" (described in recital (60) below) will not be used in the pilot project. Instead, the auction design will include mechanisms to take account of grid and system integration costs. The actual design will first be determined by way of a scientific study of system costs and approaches to regional management.

- (52) Also, Germany will undertake innovation auctions from 2018 to 2020 (in principle one auction of 50 MW per year) for installations providing specific services to the grid. Those installations could also be groups of installations (ex. a renewable installation combined with a storage facility to provide a more stable electricity production or a more flexible production).

#### 2.4.3. *Solar*

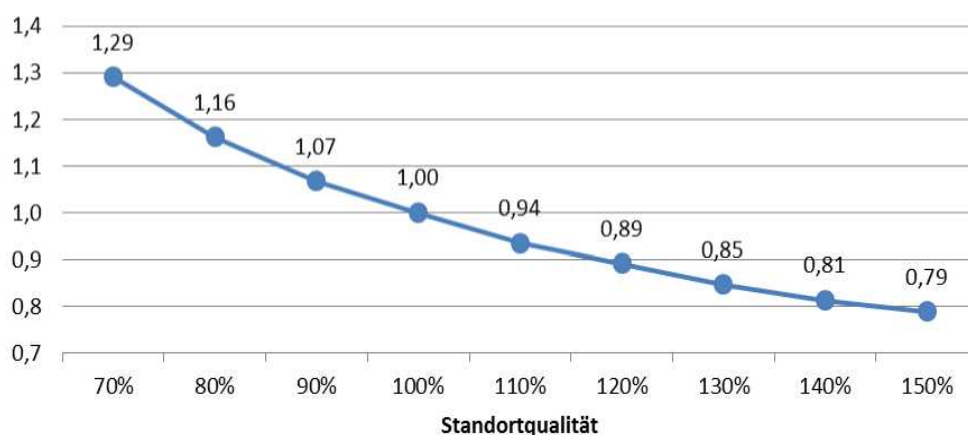
- (53) Funding for all solar installations with a capacity over 750 kW will be auctioned in three auctions a year. Participation will be open to ground-mounted installations, rooftop installations, and PV systems installed on other types of physical structure, e. g. landfills but certain restrictions apply as to the location of the PV systems. The maximum size of 10 MW per installation used in the pilot solar auctions will continue to apply.
- (54) Participation in auctions will mainly be open to solar installations mounted in or on:
- road and rail-side strips of land (110 metres wide alongside motorways and railways),
  - conversion areas,
  - sealed areas,
  - disadvantaged areas, to a limited extent; this is subject to a regional enabling clause, whereby the governments of the Länder can adopt a regulation allowing further arable land or green spaces in disadvantaged areas to take part, and
  - land administered by the Institute for Federal Real Estate (BImA).

- (55) These locational restrictions aim at ensuring that only a limited amount of arable land and of areas that are key to conservation is used for installing PV systems.

#### 2.4.4. *Wind energy onshore*

- (56) Auctions will be open to all installations that have obtained approval under the Federal Emissions Control Act ("late auctions").
- (57) The first bids must be submitted by 1 May 2017. This is to ensure that a sufficient number of installations can take part in the first bidding round, as all installations that receive emissions-control approval before the end of 2016 can still be built under the 2014 renewable Act (see recital (19) above). Alternatively, transitional installations may switch to the new auctioning system, provided that they take a binding decision to that effect by 1 March 2017.
- (58) Two further bidding rounds will be held in 2017, and a total of four rounds in 2018 and 2019. The reason for holding more frequent rounds of bidding to start with is to allow a funding level to be established as quickly as possible. As of 2020, there will only be three rounds per year, in the interests of greater competition. The dates for submitting bids will then be aligned on those for solar installations.

- (59) Participants will bid on the reference value for a 100 % quality-factor reference site (this system is called the "*Referenzertragsmodell*"). The winning bids will be multiplied by a correction factor that depends on the concrete wind quality of the site. The wind yield of the site will be reviewed after 5, 10 and 15 years so that the funding can be adjusted in line with the installation's actual yields. If the wind yield in the five years preceding the review is exceeding with 2 % the wind yield taken into account initially to set the reference value, the operator of the wind installations will have to reimburse the amounts obtained in excess of his actual wind yield. The system has been chosen with a view to supporting the addition of new capacity across Germany (and not only in regions with higher wind quality sites).
- (60) The correction factor has been set based on interpolation values in 10 % increments (between 70 % and 150 %). Linear interpolation will be used to calculate the correction factors in between values. Below a quality factor of 70 %, the correction factor will not be increased further. The figure below represents the correction factor curve.



- (61) Germany has explained that the correction factors reflect the difference in LCOE observed in function of the wind quality of the site. Two studies have been used to determine the LCOE of the onshore wind installations in function of the wind quality of the site<sup>7</sup>. For installations between 70 and 100 % wind exposure an internal rate of return of 8 % has been used; for installations between 100 and 150 % an internal rate of return of between 8 and 10 % has been used in order to integrate a slight incentive to construct on better sites by priority as otherwise the *Referenzertragsmodell* would remove all incentives to use more (wind) efficient sites.
- (62) The maximum level for bids will initially be set at 7,0 euro cents/KWh for the 100 % reference site over 20 years. This rate is roughly the same as the

<sup>7</sup> Deutsche Windguard (Dezember 2015): Kostensituation der Windenergie an Land in Deutschland – update. Im Auftrag des Bundesverbandes WindEnergie e.V. und des VDMA Power Systems e.V., [www.wind-energie.de/sites/default/files/download/publication/kostensituation-der-windenergie-land-deutschland-update/20151214\\_kostensituation\\_der\\_windenergie\\_an\\_land\\_in\\_deutschland\\_update.pdf](http://www.wind-energie.de/sites/default/files/download/publication/kostensituation-der-windenergie-land-deutschland-update/20151214_kostensituation_der_windenergie_an_land_in_deutschland_update.pdf); Leipziger Institut für Energie GmbH (2014): Stromerzeugung aus Windenergie. Vorbereitung und Begleitung der Erstellung des Erfahrungsberichts 2014. im Auftrag des Bundesministeriums für Wirtschaft und Energie, <https://www.bmwi.de/BMWi/Redaktion/PDF/XYZ/zwischenbericht-vorhaben-2e.property=pdf,bereich=bmwi2012,sprache=de,rwb=true.pdf>.

remuneration rate that applies under the 2014 EEG for a similar site. From 2018 the maximum figure will be calculated on the basis of the preceding rounds of auctions.

- (63) The installations must be built within two years of the bid's being accepted. After thirty months, the acceptance will no longer be valid. This deadline can be extended once in cases where a lawsuit has been filed against a project.
- (64) Owing to existing bottlenecks in the transmission grid, wind installations in northern Germany in particular have to be curtailed more often despite the existence of electricity demand for this electricity in the south. In so far as significant bottlenecks continue to occur across regions, Germany considers that additional onshore wind capacity should be restricted in grid areas where important bottlenecks have been observed as long as the grid expansion planning has not been fully implemented. Based on the system analysis of the transmission grid operators for the grid reserve, a grid expansion area in the transmission grid will be defined as an area where electricity generation from wind will have to be shut down to a significant extent in the next three to five years (the grid expansion area: "*Netzausbaugebiet*"). The proposal by the transmission grid operators will be examined by the BNetzA and confirmed in a regulation. In the light of developments in grid planning and construction, the grid expansion area will be reviewed every two years and adjusted if appropriate. In the grid expansion area, new onshore wind capacity will be restricted: a ceiling will be set to the capacity to be awarded by auction. The ceiling corresponds to 58 % of average new capacity in the grid expansion area in the last three years.

#### 2.4.5. *Offshore wind energy*

- (65) Auctions will be introduced for all installations commissioned as of 2021. In the interests of ensuring a coherent legal framework for spatial planning and auction design, these auctions will be governed by the new Offshore Wind Act (WinSeeG). This Act will cover all offshore wind installations that start operating as of 2021.
- (66) According to § 3 Nr. 6 WindSeeG, only pilot projects will be exempt from the auction system. Germany has confirmed that projects would qualify as pilot installations within the meaning of § 3 Nr. 6 WindSeeG only if the installation is testing a new technology, i.e. the first of its kind (see recital (17) above).
- (67) Germany has justified the separate auctions for offshore wind on the basis of the longer term potential of offshore wind, the need to achieve diversification but also the need to manage network constraints and grid stability and – with regard to the centralised system period – the advantages of limiting auctions to selected and pre-examined offshore sites.
- (68) As regards the longer term potential of a new and innovative technology, Germany submits that wind offshore is a young technology with high potential for cost reductions due to a high learning curve and innovation. The long term potential is reflected in the envisaged capacity increase. According to § 1 WindSeeG, the purpose of the scheme is to increase the installed capacity of wind energy offshore as of 2021 to 15 GW in 2030 (from approximately 7,7 GW

in 2020).<sup>8</sup> According to § 17 WindSeeG, the increase should amount to 700 - 900 MW as of 2021. As regards the cost reductions, Germany expects significant cost decreases in the technology with a 20-40 % reduction in costs until 2020 as a result from improved logistics, risk management and grid connection.

- (69) As regards the need to achieve diversification, Germany submits that offshore wind projects are subject to high risks due to high upfront investments, technological challenges and long planning periods. Germany notes that investors price-in these risks, which result in higher costs for wind offshore compared to lower costs for other energy sources. As a result, Germany considers it likely that wind offshore will be at a disadvantage vis-à-vis less risky technologies if both were to participate in technology neutral auctions.
- (70) As regard network constraints and grid stability, Germany argues that a technology specific approach is necessary to facilitate the planning of network capacities in order to avoid network constraints and to ensure grid stability. With regard to wind offshore Germany noted that the average full load hours<sup>9</sup> of wind offshore is approximately 4 000 hours per year compared to an average full load hours for solar of less than 1 000 hours a year. It is therefore important for Germany to be able to plan with some certainty the increase of different renewable energy sources in order to adapt the network to the additional capacity.
- (71) The WindSeeG distinguishes between the rules for the bidding processes during the transitional period and the rules for the bidding processes under the centralised model. The centralised model applies to projects which are put on stream as of 1 January 2026 (§ 16 WindSeeG) and for which the BNetzA will organise yearly auctions as of 1 September 2021 (§ 17 (1) WindSeeG). The transitional period applies to projects which are put on stream as of 1 January 2021 (§ 26 (1) WindSeeG) and for which the BNetzA will organised two separate auctions in 2017 and 2018 respectively (§ 27 (2) WindSeeG). The transitional period will thus cover the time for projects that go on stream between the 1 January 2021 and the 30 December 2025.
- (72) In order to ensure sufficient competition in the auctions, future offshore wind sites will be examined in advance by the State ('centralised model'). Bidders in the auction will compete for the right to build a wind farm at the site that has been examined. The centralised model will ensure better and more cost-effective dovetailing between site planning, regional planning, approval of installations, funding under the Renewable Energy Sources Act and grid connection. The rules for the bidding processes for the centralised model period are laid down in §§ 16-25 WindSeeG. According to Germany, the auctions organised as of 2021 will be open to everyone on a non-discriminatory basis. Furthermore, according to the information provided by Germany, it is likely that there will be a sufficient number of actors to ensure effective competition in the auctions organised as of 2021 under the centralised model, because several actors will compete for the same site.<sup>10</sup> Moreover, according to § 23 (1) WindSeeG, the BNetzA will award the auction to the offer with the lowest initial bid. Finally, according to § 17

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<sup>8</sup> Germany has currently approximately 3 GW of wind energy installed.

<sup>9</sup> Full load hours per year describe the number of hours an installation would operate, if it were to produce its entire annual output at maximum load only.

<sup>10</sup> Ecofys-Study, Ausschreibungen für Erneuerbare Energien, 2015, p.99.

WindSeeG, the BNetzA will auction a volume of a minimum of 700 MW and a maximum of 900 MW yearly as of 2021.

- (73) As regards the advantages of limiting auctions to suitable offshore sites under the centralised system, Germany notes that the technology specific auction approach is an inherent feature of the centralised system to the extent that auctions for offshore sites are per se only for offshore wind installations, because they are not suited for other renewable technologies. Germany submits that the centralised model for offshore installations has several advantages:
- (74) Firstly, Germany has provided an analysis according to which the centralised model under the WindSeeG will increase the number of potential bidders for each of the selected projects as compared to an auction design in which different sites compete with each other<sup>11</sup>, so that the bidders bear the risk of sunk costs if their project does not win the auction. However, while the costs for the pre-development for land based renewable sites may be relatively moderate, the costs for the pre-development of offshore wind sites are much higher, so that many potential bidders may consider them to be prohibitive. Therefore, under the centralised model of the WindSeeG, the State selects and pre-develops specific sites for wind offshore installations, before organising an auction for each of these sites. Since the State has already pre-examined the relevant sites, the costs associated with the pre-examination are known to all bidders, who will price them into their bid. The costs of pre-examination will therefore only be borne by the winning bidder. This significantly limits the risk of sunk costs for losing bidders. Because the risks of sunk costs associated with the bid are lower, more players will be able and willing to participate.
- (75) Secondly, the analysis provided by Germany considers that the centralised model will reduce the risk of wind-fall profits compared to the auction design in which different sites would compete with each other.<sup>12</sup> Under such design different sites with different costs factors compete in the same auction. While this approach seems suitable for land based sites, because the difference in the costs factors of land based sites may be more moderate, the approach may lead to significant windfall profits for offshore wind installations, because the differences in the cost factors between different sites are much more significant. Therefore, under the centralised model, bidders compete for the same pre-selected site in a site-specific auction, so that the risk of windfall profits is minimised.
- (76) Thirdly, Germany considers that the centralised model will further reduce the risk of network constraints compared to an auction design putting several sites in competition.<sup>13</sup> Under the centralised system the State determines the order in which the respective sites will be auctioned. This enables the State to 'synchronise' the timing of the new projects with the construction of new grid connections. This synchronisation significantly reduces the risks of wind installations becoming operational before the connection to the grid is ensured or vice versa. The limitation of the auctions to suitable sites therefore limits the risks of sunk costs both for the developers of offshore wind projects and for the developer of the offshore grid.

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<sup>11</sup> Ecofys – Ausschreibungen für Erneuerbare Energien, 2015, p. 95 f.

<sup>12</sup> Ecofys – Ausschreibungen für Erneuerbare Energien, 2015, p. 95 f.

<sup>13</sup> Ecofys – Ausschreibungen für Erneuerbare Energien, 2015, p. 96 f.

- (77) In view of the longer lead times for planning and approval, the centralised state pre-development system can however only take effect in 2026, after a transitional period. During the transitional period (2021-2025), in order to ensure that new capacity continues to come on stream, existing wind farm projects, which are in an advanced planning state, can bid for new capacity in line with the expansion corridor. The rules for the bidding processes for the transitional period are laid down in §§ 26-38 WindSeeG. According to § 26 WindSeeG, the auctions for the transition period are only open to existing projects, which are in an advanced planning state<sup>14</sup> and which are located in a suitable cluster.<sup>15</sup> Germany submits that for that time frame there will be a sufficient number of actors to ensure effective competition in the two auctions organised on 1 March 2017 and 1 of March 2018 for the transition period, because the limitation of the number of auctions for a given volume is likely to increase competition.<sup>16</sup> Germany expects more than 20 projects to qualify for participation in these auctions and estimates that the volume of these projects will amount to double the size of the auctioned volume.<sup>17</sup> According to § 36 (1) WindSeeG and in line with the definition of § 3 Nr. 51 EEG 2017, the aid will be granted based on the initial bid. According to § 27 WindSeeG, the auction volume for the two 2017/2018 auctions for the transition period is limited to 1 550 MW per auction. If the BNetzA approves less than 1 550 MW in the first auction, the volume of the second auction will increase accordingly.<sup>18</sup> The total size of both auctions combined is therefore limited to 3 100 MW.
- (78) Germany argues that the advantages associated specifically with the centralised model, cannot be replicated during the transitional period, because the centralised model requires significant lead-time for the State to pre-examine suitable sites. However, Germany argues that the transitional period serves to bridge the time needed for the pre-examination until the start of the centralised model.

#### 2.4.6. Biomass/Biogas

- (79) Auctions will also be introduced for biomass installations with an installed capacity of at least 150 kW. They are open to new installations as well as to existing installations.
- (80) The aid to existing installations is limited to ten years if they are successful and existing installations are eligible only if at the moment of the auction they are still entitled to support under an existing contract for a maximum of 8 remaining years. As biomass/biogas installations under the EEG are entitled to support for 20 years + the year in which they entered into operation, the installations concerned should at the latest have entered into operation in 2004, i.e. 13 years

<sup>14</sup> According to the different categories of § 26 WindSeeG, an existing projects are projects which – by 1 August 2016 - have been approved under § 5 or § 17 Seeanlagenverordnung (in its version of 1 January 2017), which have been approved under § 4 (1) Bundes-Immissionsschutzgesetz or which a hearing under § 73 (6) Verwaltungsverfahrensgesetz has already been taken place.

<sup>15</sup> The suitable clusters are listed in § 26 (2) Nr. 2 WindSeeG.

<sup>16</sup> Ecofys-Study, Ausschreibungen für Erneuerbare Energien, 2015, p.103.

<sup>17</sup> BMWI – Overview over the main changes of the Bundesrat to the draft EEG, dated 6 July 2016, point 1, bullet point 5.

<sup>18</sup> According to § 27 (3) WindSeeG, the two auctions organised in the transitional period should lead to the construction of installations with a capacity of 500 MW in 2021 exclusively in the Baltic Sea and – from then on irrespective of whether the project is located in the North Sea or in the Baltic Sea – to the construction of installations with a capacity 500 MW in 2022, 500 MW in 2022, 700 MW in 2023, 700 MW in 2024 and 700 MW in 2025.



before 2017. Installations in that situation represent around 1 GW of installed capacity<sup>19</sup>. For the years 2017 to 2019, the auction volume will correspond to 150 MW minus the volume of installed capacity in the previous year stemming from installations for which the support was administratively set. On that basis, Germany expects auction volumes of around 120 MW.

- (81) If existing installations are selected, the new contract will replace the previous one. It will enter into force between 13 and 36 months after announcement of the winners of the auction. The existing installations will as of the date of the entry into force of the new contract be considered as a new installation and will be subject to the same requirements as installations entering into operation after 31 December 2016 (approval under the Federal Emission Control Act, biomass type, flexibility see below).
- (82) As biomass installations in general need to replace important parts of their equipment<sup>20</sup> before expiry of the 20 year duration of their contract, Germany believes that an important number of existing installations will be interested to take part in the auction despite the fact that they would be subject to more stringent requirements in terms of flexibility and types of biomass and could have to obtain a new emission permit (see below).
- (83) Auctions will be open to all installations that have obtained approval under the Federal Emissions Control Act ('late auctions' like for onshore wind). If installations do not require approval under the Federal Emissions Control Act, a building permit will suffice. Installations may not be larger than 20 MW<sup>21</sup>.
- (84) For eligible installations, the premium will be paid only for the production related to 50 % of the installed capacity of the installation in case of biogas and 80 % in case of biomass installations. As biogas and biomass installations are as such flexible, the purpose of this limitation of the support to part of the installed capacity provision is to incentivize installations to make use of their flexibility to increase output in case of higher electricity demand. In the case of biogas, Germany would like to incentivize a particularly high grade of flexibility by inducing operators to double the capacity of their installation. This increased flexibility, however, implies important investment costs that cannot be recouped only through additional revenues on the market at times of peak demand. Biogas installations having been selected in an auction will therefore obtain a flexibility premium of 40 €/KW/year. This premium is aimed at covering the average additional costs incurred for the provision of flexible generation capacity of up to 50 % of installed power taking during the 20 years that the installation can also obtain the premium (it covers the difference between the projected investment and operating costs and the market revenues). Germany has submitted 2016 cost calculation for a biogas installation of 1,2 MW using biodegradable waste showing that the premium does not lead to overcompensation. This flexibility premium is also available to biogas installations that are eligible for administratively set feed-in tariffs and premiums. For those installations, the

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<sup>19</sup> Market analysis on biomass, available on [http://www.erneuerbare-energien.de/EE/Navigation/DE/Recht-Politik/EEG-Ausschreibungen/Marktanalysen/marktanalysen.html?cms\\_gtp=139644\\_list%253D2](http://www.erneuerbare-energien.de/EE/Navigation/DE/Recht-Politik/EEG-Ausschreibungen/Marktanalysen/marktanalysen.html?cms_gtp=139644_list%253D2), figure 1.

<sup>20</sup> Germany has indicated that the cogeneration unit generally lasts between 8 and 12 years.

<sup>21</sup> This excludes de facto biomass installations using black liquor as they are larger than 20 MW. A follow up tariff is provided for those installations under the EEG 2017. It is however subject to Commission's approval and is not part of procedure SA.45461.

flexibility premium has been approved under the 2014 EEG Decision (see Section 3.3.1.12). Its purpose and functioning are described under Section 2.2.5 of the 2014 EEG decision.

- (85) Installations are also subject to requirements linked to the type of biomass that they use. On the one hand, the biomass used must be a biomass within the meaning of the *Biomasseverordnung* (Biomass regulation), which excludes waste wood from support given that it is subject to a recovery obligation (this is expected to create sufficient incentives to have the waste wood being recovered for material use or for energetic use without additional support). On the other hand, §39h EEG 2017 sets limits to the share of corn or grain that the installations can use to produce biogas. Also, installations using liquid biomass are not eligible for support under the EEG 2014 and 2017 and cannot take part in auctions.
- (86) The EEG 2017 sets maximum caps for bids at 14,88 euro cents/KWh for new biomass installations and 16,9 euro cents/KWh for existing installations. The slightly higher cap for existing installations results from the fact that the follow-up premium is granted only for 10 years and takes into account the fact that existing biomass installations can cover a large variety of different biomass types while for new biomass installations the focus is on cheaper raw materials. Those caps will decrease with 1 % every year as of 2018. An additional cap applies to existing biomass installations selected in the auction: their applicable reference value may not exceed, irrespective of their bid, the average feed-in tariff/applicable value that applied to the concerned type of renewable electricity in the 3 last years preceding the auction. Lower caps also exist for specific types of biogas (§39(h)(3) EEG 2017).
- (87) Germany has explained that the production costs of biomass installations depend on the raw material used for the biomass (agricultural products or organic residues and waste, residues from wood industry, wood pellets, etc.), on the installation technology used (biogas installation, biomethane installation, steam turbine, ORC-installations, etc.) and on the installation size.
- (88) Installations with production costs around 14 and 16 euro cents/KWh are larger biogas installations that are using to a large extent organic residues and waste as well as installations using residues from certain wood industries. Germany has indicated that the LCOE of a standard biogas installation of 1,2 MW using biodegradable waste as raw material is of 14,26 euro cents/KWh. For a standard installation of 4,2 MW using a mixture of residues from the wood industry and from forestry, the LCOE have been calculated at 14,43 euro cents/KWh.
- (89) Biomass and biogas installations in Germany represented 7 % of total electricity production in Germany in 2015 and 25 % of renewable electricity production in Germany in 2015<sup>22</sup>. As biomass and biogas installations provide a relatively stable electricity production, Germany has underlined that biomass and biogas installations can make an important contribution to grid stability and reduce system costs given also their relative share in the renewable electricity mix. This is the more so given that biogas and biomass installations can –if correctly

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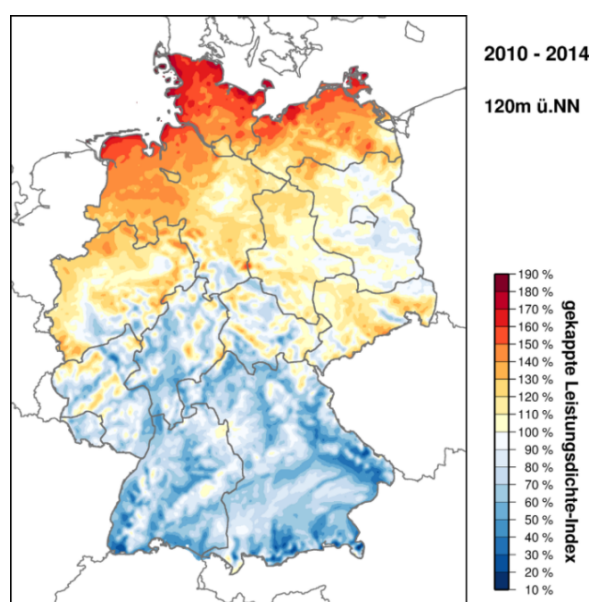
<sup>22</sup> See <https://www.bmwi.de/DE/Themen/Energie/Erneuerbare-Energien/erneuerbare-energien-auf-einen-blick.html> and <https://www.bmwi.de/BMWi/Redaktion/PDF/B/bruttostromerzeugung-in-deutschland.property=pdf.bereich=bmwi2012.sprache=de.rwb=true.pdf>. These figures also include the incineration of household waste (only the biodegradable part).

equipped – be operated flexibly so as to adapt production to electricity demand. Basically, they can run at a certain level of their capacity in a stable manner and in case of peak demand or sudden decrease of production from other electricity generation sources, they can increase (in the case of biogas installation they can double) their production.

## 2.5. Network integration and network stability issues in Germany

- (90) Germany has explained that it has an important wind potential but that this potential is concentrated in the North. Despite a differentiated tariff, wind installations were much more deployed in the North (67 % of total installed wind capacity on 31 December 2015) than in the South at a rate of 1 500 MW/year additional capacity in the period 2013-2015 in the North.

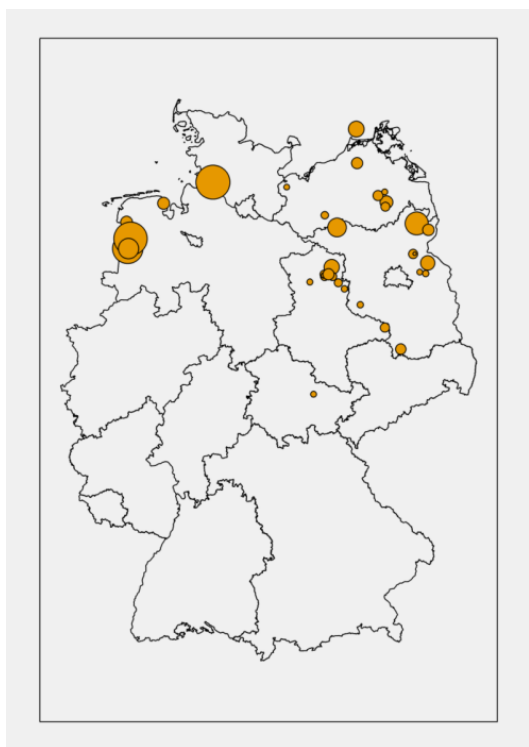
**Figure 2: wind conditions in Germany, Anemos 2015<sup>23</sup>.**



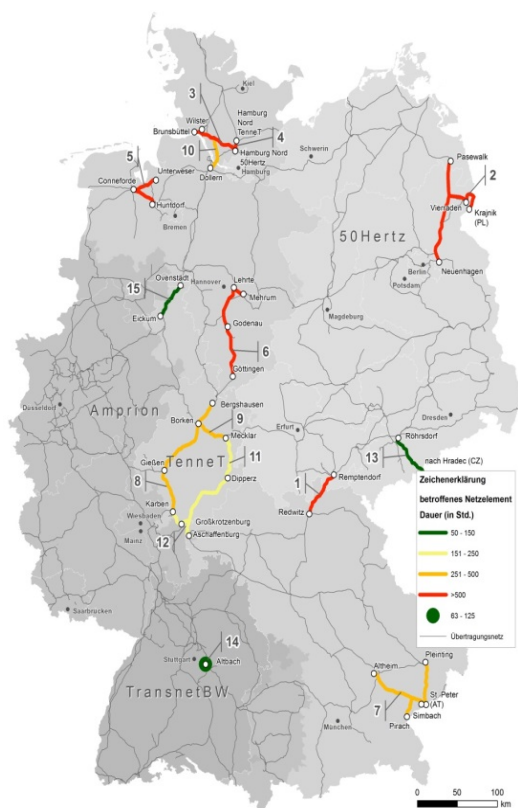
- (91) The resulting significant increase in electricity production in the north combined to the shutting down of nuclear power plants in the South where electricity consumption is particularly intensive, as well as high exports of electricity in the South and several delays in the construction of additional or expanded North-South transmission lines, have led to bottlenecks and to increasing re-dispatching needs. In times of both intensive wind and intensive consumption in the South, the electricity cannot flow North-South anymore due to congested transmission lines. Conventional power plants, and if necessary wind installations, then need to be curtailed while power stations in the South need to be ramped up in order to supply the South with the needed electricity and keep the electricity system in balance. In 2015 the congestion management costs amounted to EUR 1 billion. They are expected to increase as additional offshore installations will be connected to the grid in 2017 and additional nuclear reactors will go offline, in particular in the south. Germany also expects that without a cap on the deployment of wind installations in the north the planned transmission grid expansion and reinforcement measures that are planned or in construction will not be sufficient.

<sup>23</sup> Anemos (2016): Windenergie an Land. Erarbeitung einer Roadmap zur Erstellung eines Windatlanten. Unveröffentlichter Zwischenbericht. Im Auftrag des Bundeswirtschaftsministeriums.

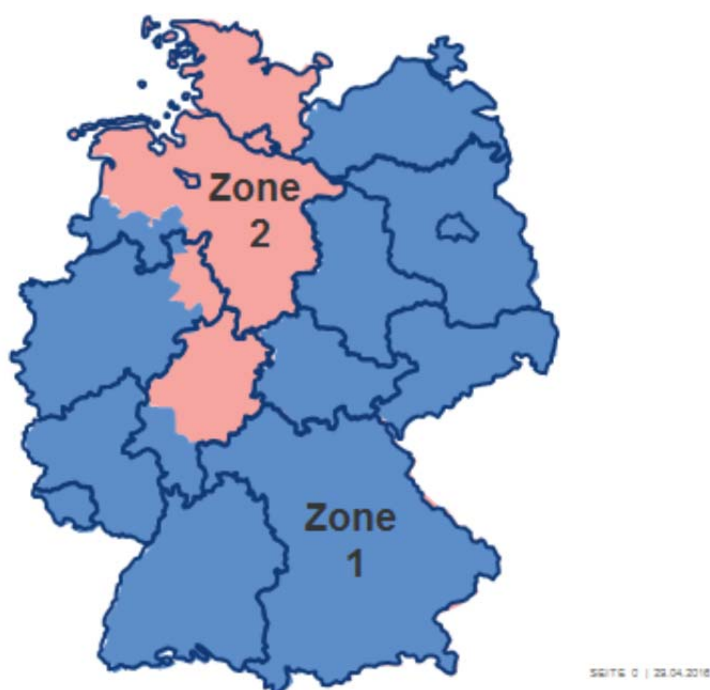
**Figure 3: Netzknoten mit EE-Abregelung (system analysis of the BNetzA of 1 May 2016)**



**Figure 4: Bottlenecks in the transmission network – grid elements causing re-dispatching (2015) – source: German authorities**



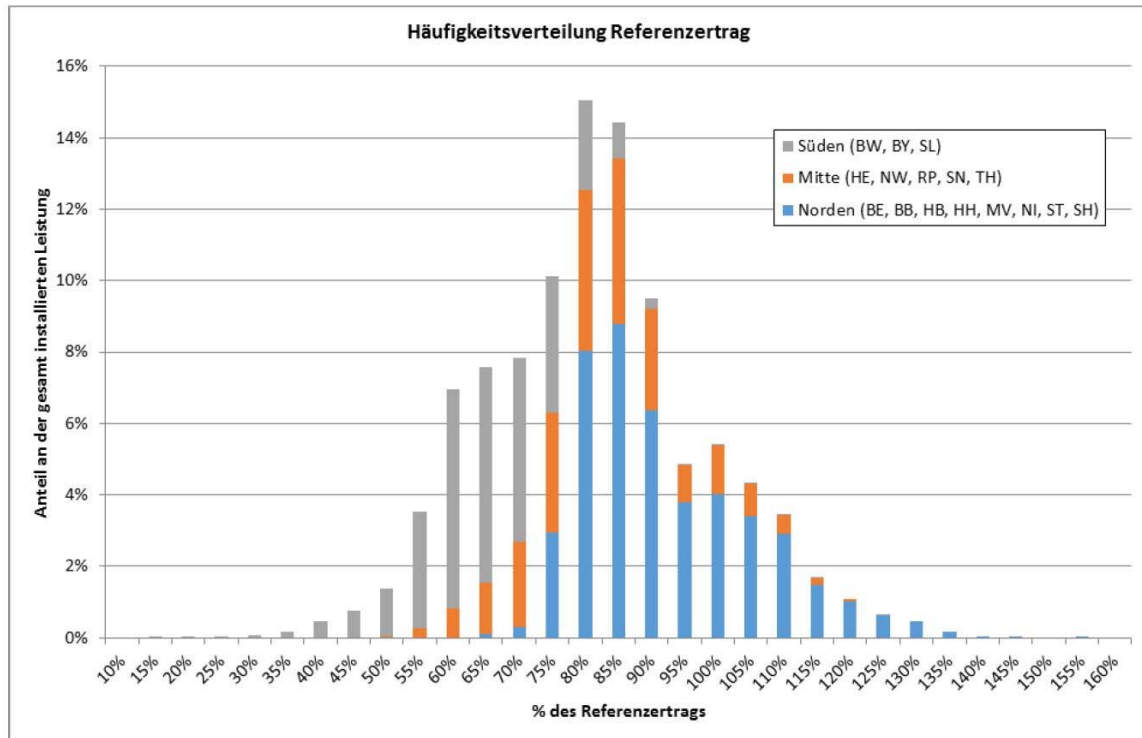
**Figure 5: Identification of the main bottleneck zone and the likely area for the Netzausbaugesamt (Zone 2) – source: the German Government**



- (92) Germany has indicated that spots with particularly high wind exposure are being exploited already. The largest part of the remaining potential of around 1 190 GW<sup>24</sup> rests with sites of between 70 and 90 % wind exposure. Sites with more than 90 % of wind exposure represent 20 to 25 % of the potential. But even the 70 % to 90 % sites are spread unevenly. While 80 to 90 % sites are mainly located in the North and the middle of Germany, the South has more 70 to 75 % sites. Germany has further indicated that LCOEs of 70 % and 90 % sites range between 7.5 euro cents/KWh (90 % sites) to 9 euro cents/KWh (70 % sites).

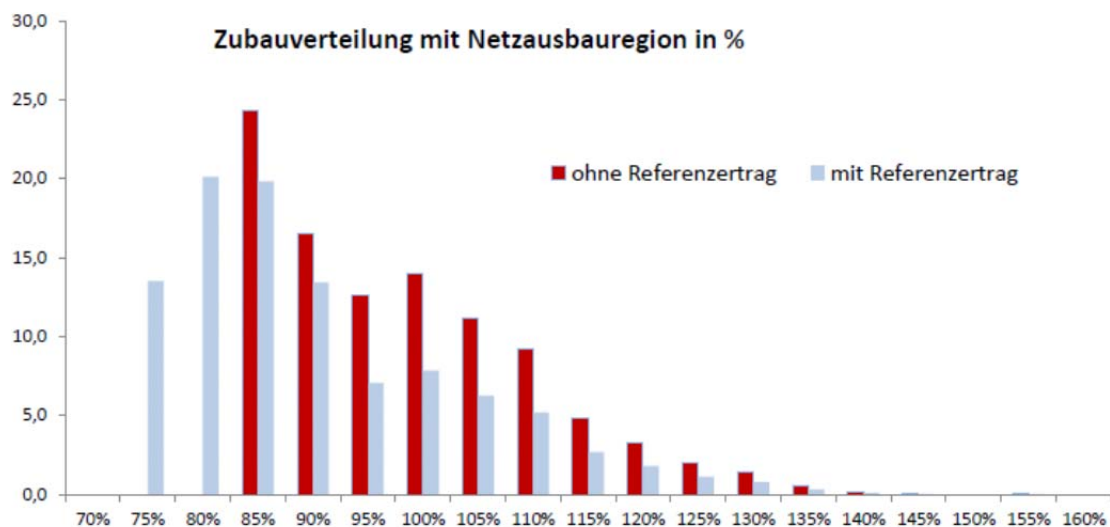
<sup>24</sup> Potenziale der Windenergie an Land – Studie zur Ermittlung des bundesweiten Flächen- und Leistungspotenzials der Windenergienutzung an Land (2013, available under: [https://www.umweltbundesamt.de/sites/default/files/medien/378/publikationen/potenzial\\_der\\_wind\\_energie.pdf](https://www.umweltbundesamt.de/sites/default/files/medien/378/publikationen/potenzial_der_wind_energie.pdf)).

**Figure 6: geographical repartition of the remaining wind potential in Germany**



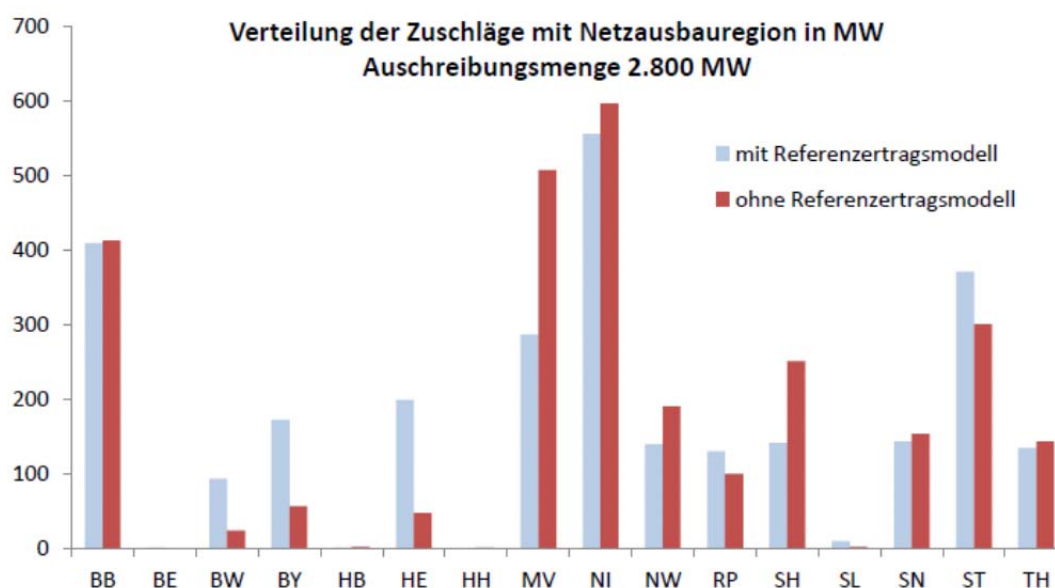
(93) It is because of those grid constraints, that Germany on the hand has introduced the concept of Netzausbaubereich (see recital (64) above) to limit the expansion of wind installations in the north and has, on the other hand, conceived the Referenzertragsmodell (see recital (59) above) to increase the chances of wind installations in the south to submit winning bids and more generally – as bidders will submit bids as if they were all benefitting from similar wind conditions – it should increase the probability of an even spread of installations across Germany and avoid a concentration in the windiest spots. It has provided simulations showing what could have been the result of auctions with and without the Referenzertrags-modell.

**Figure 7: Spread of deployment with the concept of "Netzausbaubereich"**





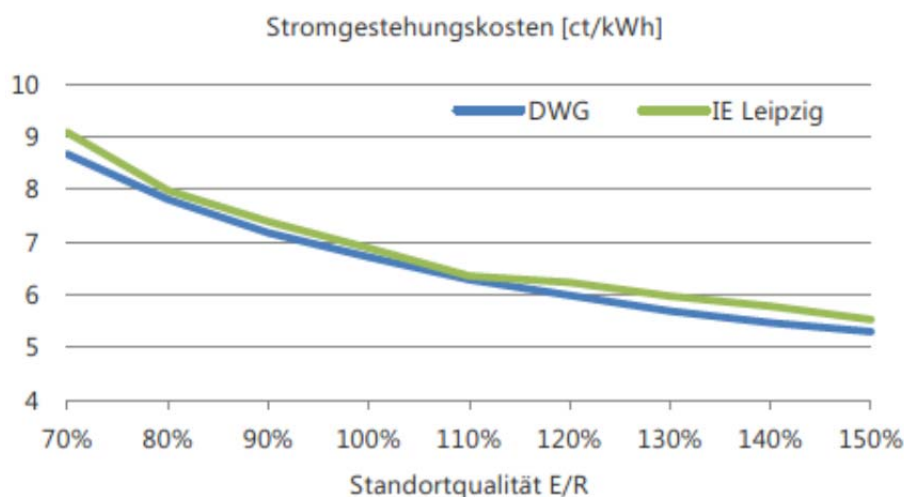
**Figure 8 spread of deployment with the concept of "Netzausbaubereich" and with the "Referenzertragsmodell"**



- (94) Germany has submitted that in an auction in which solar installations and onshore wind installations compete, it is not for practical and legal reasons possible to use Referenzertragsmodell for the wind installations (as otherwise wind installations would be subject to a bidding rule that does not apply to solar installations and would actually be discriminated. While the competition with solar installations could have solved part of the issues that the Referenzertragsmodell intend to address (increase competitive pressure on wind installations with better wind quality), Germany has submitted that a joined competition would nevertheless lead to suboptimal results. Given the relative cost curves of wind installations and PV installations in the South of Germany, Germany submits that PV installations in the South would outbid the wind installations (the 70 % and 75 % sites) in a joined competition as their LCOE are above 8 euro cents/KWh while PV installations can already bid below 8 euro cents/KWh. In the last pilot bid that Germany organized, the average bidding price of the last two PV auctions was of 7,41 euro cents/KWh and 7,25 euro cents/KWh<sup>25</sup>. Germany has explained that statistically wind and solar installations tended to operate at divergent times; the deployment of only solar installations in the south would thus not help decreasing the grid constraints described under recital (90) above. By contrast, more wind installations in the south should help reduce the bottleneck. Germany has indicated in this respect that when the wind blows at high speed in the north of Germany, it is also blowing fast in the south so that there is a concomitant important wind production both in the north and in the south (assuming that there are a significant number of wind installations in the south as well).

<sup>25</sup> For the April 2016 auction, see: Bundesnetzagentur (BNetzA 2016). Hintergrundpapier. Ergebnisse der vierten Ausschreibungsrunde für Photovoltaik (PV)-Freiflächenanlagen vom 1. April 2016, for the August 2016 auction, see [http://www.bundesnetzagentur.de/cln\\_1432/DE/Sachgebiete/ElektrizitaetundGas/Unternehmen\\_Institutionen/ErneuerbareEnergien/PV-Freiflaechenanlagen/Beendete\\_Ausschreibung/Beendete\\_Ausschreibungen\\_node.html](http://www.bundesnetzagentur.de/cln_1432/DE/Sachgebiete/ElektrizitaetundGas/Unternehmen_Institutionen/ErneuerbareEnergien/PV-Freiflaechenanlagen/Beendete_Ausschreibung/Beendete_Ausschreibungen_node.html).

**Figure 9: LCOE wind, in function of wind quality of the site (€cents/kWh)**



- (95) Also, PV in Germany is expected to be able to further decrease their costs in the future (sharp learning curve<sup>26</sup> with projected LCOE of around 3,4 to 4,4 euro cents/KWh by 2050<sup>27</sup>) while cost decrease for wind would occur at lower pace. Germany has added that the potential for PV installations is much larger than for wind installations. PV installations can be installed almost everywhere and despite the land planning restrictions the potential is extremely high. For example, Germany transmitted estimates and studies showing potential of around 200 GW<sup>28</sup> for PV installations alongside motorways and railways and for conversion areas (compared to an annual auction volume of 600 MW). In addition, the PV installations on the ground can also to a certain extent be installed on disadvantaged areas. Also there the potential is extremely high but depends on land planning.
- (96) Germany has indicated that given the high potential and the sharp learning curve, solar installations would in Germany soon outbid all wind installations in a joined auction. Given however, the high share of renewable energy in the electricity mix and the very ambitious targets for 2025, 2030 and 2050 (see recitals (9) and (8) above) Germany submits that a renewable energy mix as balanced as possible is very important to maintain grid stability and limit system integration costs. Wind and solar production are rather complementary. Having a balanced solar and wind production therefore reduces the grid stability challenges due to their volatility and intermittence. In addition, system integration costs (network expansion and balancing costs) are higher for solar installations than for onshore wind installations. The difference in expansion costs is linked to the fact that solar

<sup>26</sup> IEA - International Energy Agency 2014: 23 Technology Roadmap Solar Photovoltaic Energy 2014 edition; International Technology Roadmap for Photovoltaic (ITRPV) 2015 Results. Seventh Edition, March 2016 <http://www.itrpv.net/Reports/Downloads/> p. 40-41.

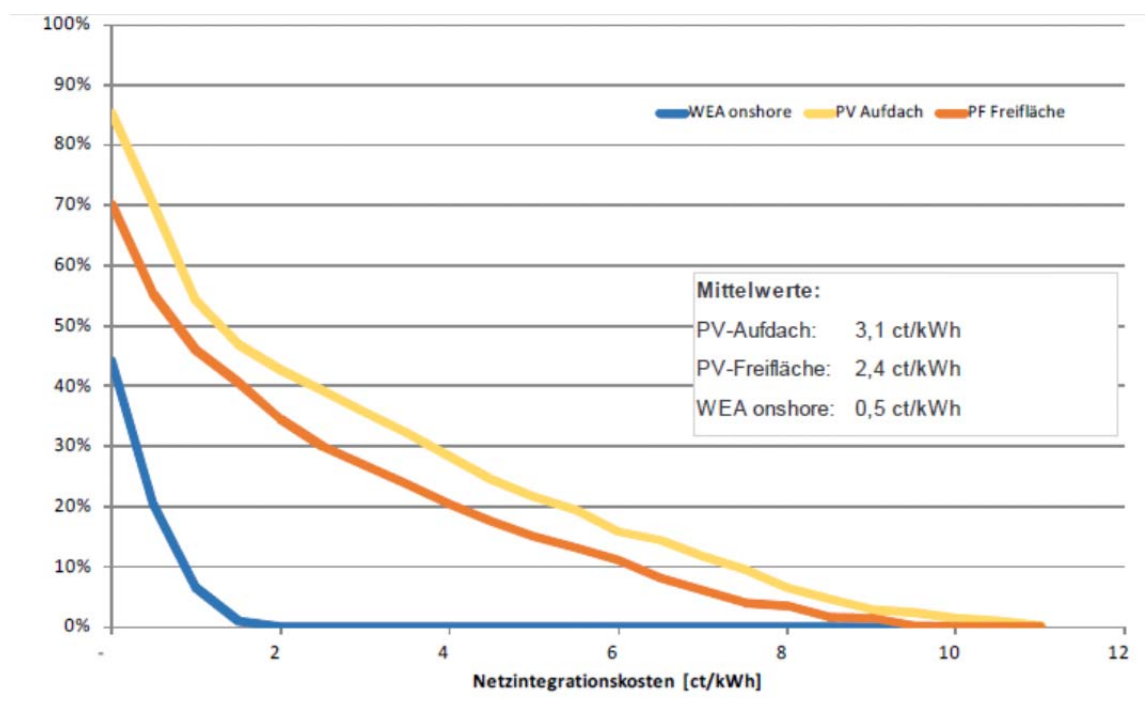
<sup>27</sup> P. 54. Fraunhofer ISE (2015): Current and Future Cost of Photovoltaics. Long-term Scenarios for Market Development, System Prices and LCOE of Utility-Scale PV Systems. Study on behalf of Agora Energiewende.

<sup>28</sup> [https://www.solarwirtschaft.de/fileadmin/media/pdf/IWES\\_Netzintegration\\_lang.pdf](https://www.solarwirtschaft.de/fileadmin/media/pdf/IWES_Netzintegration_lang.pdf); ZSW 2016: Zentrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg (ZSW). Zusammen mit Bosch und Partner. Vorbereitung und Begleitung der Erstellung des Erfahrungsberichts 2014 gemäß § 65 EEG im Auftrag des Bundesministeriums für Wirtschaft und Energie. Vorhaben IIc Solare Strahlungsenergie. Endbericht. Auftragsweiterung und -verlängerung 09/2015 – 02/2016.



installations are generally connected to low or medium voltage grids and the addition of solar installations to the low voltage grid requires grid expansion measures at a faster pace than onshore wind installations. In addition, depending on their concentration, they will require expansion works on the low voltage but also on the medium or high voltage lines (transmission lines) while onshore PV installations will not create any additional costs to low voltage (distribution networks). Germany has submitted a study showing the following trend in system integration costs:

**Figure 10: network integration costs of onshore wind, solar installations on the ground and solar installation on the roof (source: Consentec)**



(97) Finally, Germany has indicated that a auction in which onshore wind installations and solar installations would compete based on their production costs as well as the system integration costs or congestion costs that they induce would require that those system integration costs or congestion costs be measured, which is complex. Germany has however indicated that it is interested in testing out such test concept and has committed to start test auction in 2018 (see also recital (50) above).

## 2.6. Technologies not subject to auctions

(98) For those technologies, Germany plans to continue providing support based on tariffs or reference prices set by the law as there are not enough projects expected for those technologies that would allow the organization of a competitive auction.

### 2.6.1. Sewage gas installations and landfill gas installations

(99) As far as sewage gas and landfill gas installations are concerned, Germany does not expect any installation of at least 1 MW to be built in the future.

(100) Germany has indicated that between 2009 and 2012 almost no additional sewage gas installations were built (less than 1 MW for the entire period) and the

electricity from sewage gas injected into the grid has been decreasing since 2007 while the installed capacity of landfill gas installations has been decreasing since 2009.

- (101) For landfill gas installations, this is due to the prohibition of the landfilling of untreated biodegradable waste in place since July 2005. Since then, landfill gas potential has decreased as well as the production of electricity from landfill gas. In 2012 electricity from landfill gas was only about half the production of 2006<sup>29</sup>.
- (102) For sewage gas, this is due to the fact that the potential is already exploited up to 80 %<sup>30</sup>; i.e. already 80 % of sewage installations in Germany use the sewage gas to produce electricity. Only a very small part of that electricity is injected into the grid and eligible for support. Most sewage plant operators use the electricity produced from sewage gas installations for own consumption. Given the high electricity consumption rate of sewage gas installations, auto consumption of electricity is often economically more interesting than injection into the grid. Germany has further submitted that if against expectations installations of at least 1 MW of installed capacity would still be built, there would not be enough potential for a competitive auction. Competition with other technologies would not be desirable given that production costs of those larger sewage gas installations are rather low (below 6 euro cents/KWh); solar, wind or biomass installations would not exert competitive pressure on those installations and support levels for them would risk being higher.

#### *2.6.2. Deep geothermal installations*

- (103) For deep geothermal energy, Germany has explained that the technology is not yet very developed in Germany. There are only 8 projects being operated, 10 are under construction. Some of them have been delayed. Projects are generally undertaken by different developers and project owners and no economies of scale can be observed yet. Given the high risks included in the exploration phase and the high costs (drillings to find the potential deep geothermal resource), the project requires a significant amount of pre-financing in the form of equity and risk capital. The geothermal resource is scarce and depends on the geology of the ground. Project development durations are long (between 5 and 7 years). The competition potential of this technology is thus extremely limited. For instance, Germany expects 3 projects to come online in the next one to three years and submits that an auction for geothermal projects would not be competitive and would lead to higher support levels.

#### *2.6.3. Hydropower installations*

- (104) Under the EEG 2017, support is granted to new installations as well as to existing installations when they extend their capacity. For existing installations with rated installed capacity of more than 5 MW the support is limited to the capacity extension. Most installations obtaining support under the EEG are installations of no more than 5 MW. Installations above 5 MW generally operate on the market without EEG support.

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<sup>29</sup> Marktanalyse Biomasse, p. 8 Figure 8.

<sup>30</sup> Marktanalyse Biomasse, p.8.

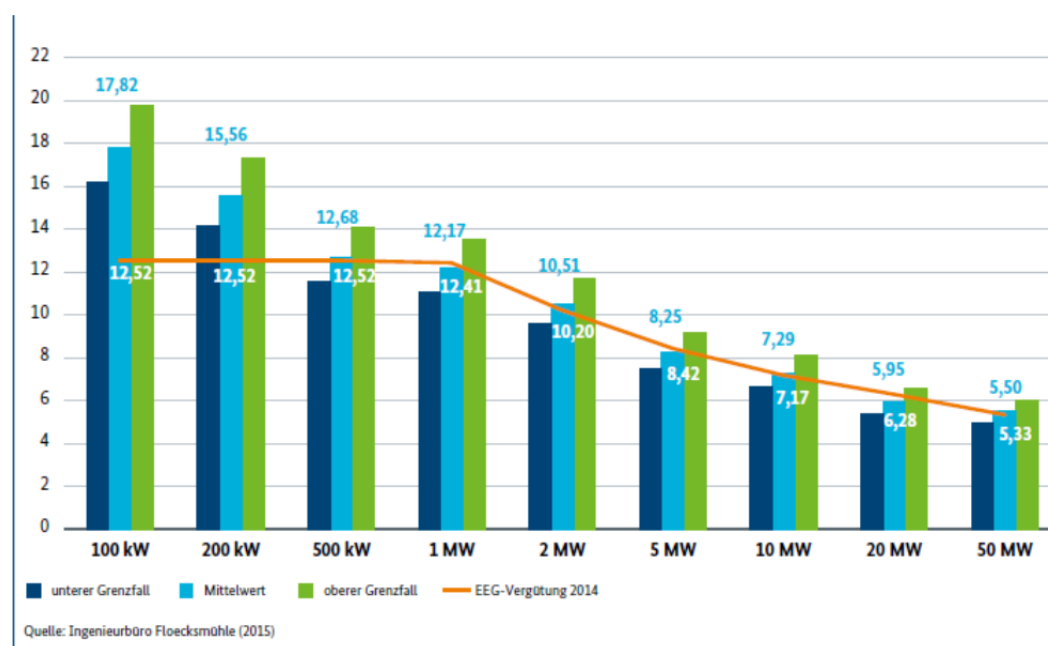
(105) The applicable reference value for the feed-in tariffs and the premiums are as follows. They correspond to the values applicable under the EEG 2014 after deduction of the automatic decrease of the tariff provided for under the EEG 2014 (see also 2014 EEG decision, recitals 80-81).

≤ 500 kW	≤ 2 MW	≤ 5 MW	≤ 10 MW	≤ 20 MW	≤ 50 MW	> 50 MW
12,40	8,17	6,25	5,48	5,29	4,24	3,47

(106) Germany has provided production cost information. Figure 11 shows LCOE for new installations for different sizes and assuming a lower scenario (90 % of standard number of full load operating hours), a standard scenario and a high scenario (110 % of standard number of full load operating hours).

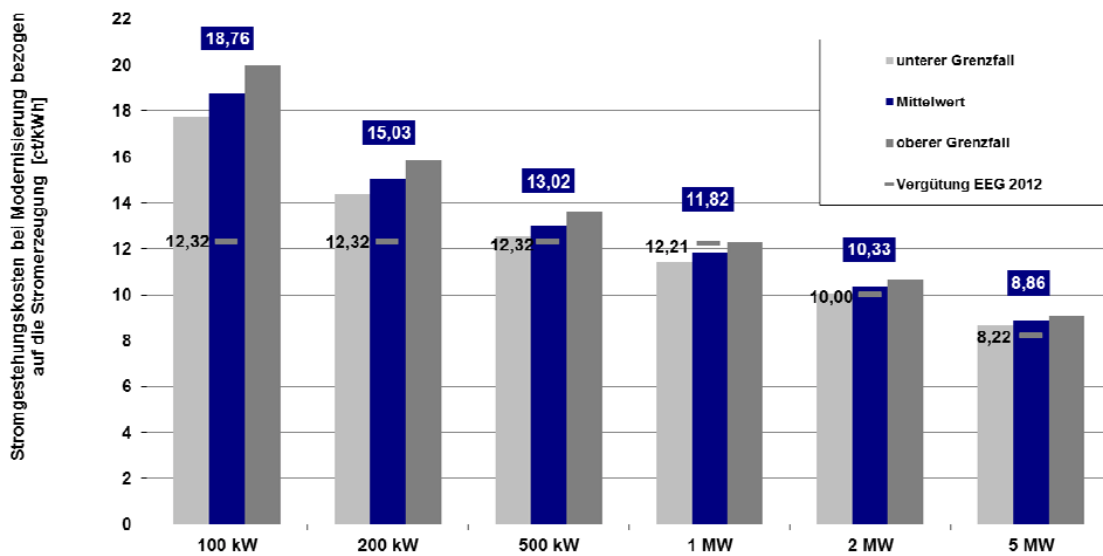
(107) Figure 12 shows LCOE for existing installations with installed capacity of maximum 5 MW that are upgrading their installation to current more stringent environmental requirements and are extending their capacity. Figure 13 shows LCOE for existing installations with installed capacity of 5 MW and above that are extending their capacity. Germany has indicated for Figure 13 the LCOE are in fact higher because the Figure 13 shows only the LCOE linked to the capacity extension but not the costs linked to modernisation. However, if the LCOE is examined in relation to the entire capacity of the installations, the LCOE would be more similar to the LCOE curve described under Figure 11, i.e. with relatively low costs for large installations compared to installations of less than 5 MW. In the case of an extension of the capacity and modernisation of the installations, those costs could however vary greatly between modernisation and extension projects. Small extensions will relatively speaking be much more expensive than larger extensions.

**Figure 11: LCOE for new hydropower installations for different classes of installed capacity, entering into operation in 2015 – LCOE in €cents/kWh<sup>31</sup>**

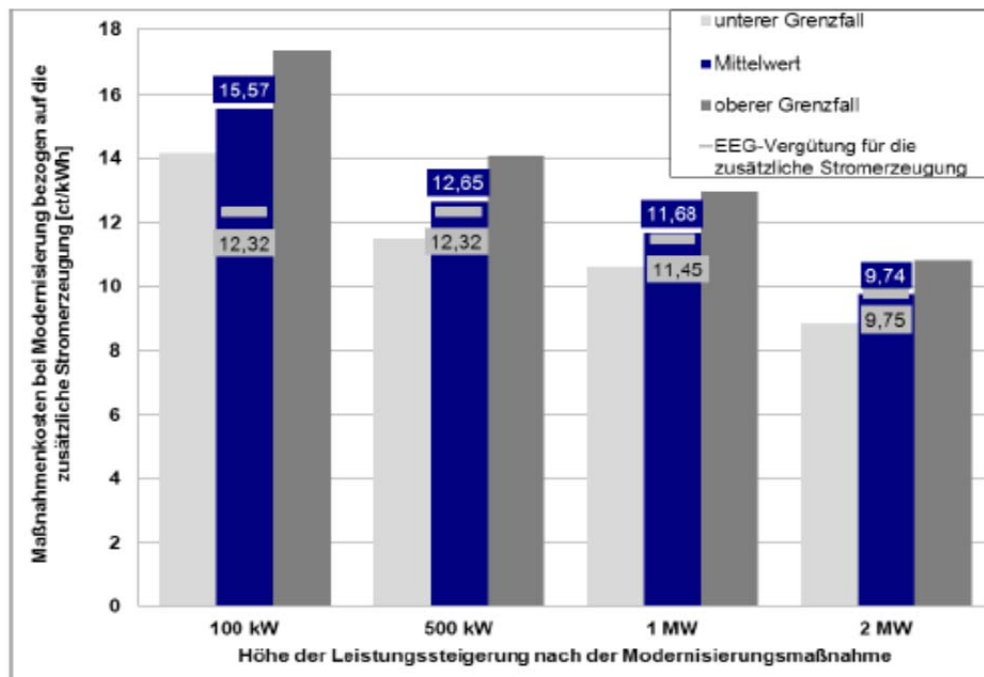


<sup>31</sup> Source: <http://www.bmwi.de/BMWi/Redaktion/PDF/M-O/marktanalyse-freiflaeche-photovoltaik-wasserkraft,property=pdf,bereich=bmwi2012,sprache=de,rwb=true.pdf>.

**Figure 12: LCOE in €cents/kWh of existing installations with installed capacity of maximum 5 MW that are being modernized and which extend their capacity<sup>32</sup>**



**Figure 13: LCOE in €cents/kWh of existing installations with installed capacity of 5 MW and above that are extending their capacity (costs of modernisation and extension as a function of the additional capacity)<sup>33</sup>**



<sup>32</sup> Source: Marktanalyse zur Vorbereitung von Ausschreibungen - Vorhaben IId, Wasserkraft (March 2015), available under : [https://www.erneuerbare-energien.de/EE/Redaktion/DE/Downloads/bmwi\\_de/marktanalysen-studie-wasserkraft.pdf?\\_\\_blob=publicationFile&v=4](https://www.erneuerbare-energien.de/EE/Redaktion/DE/Downloads/bmwi_de/marktanalysen-studie-wasserkraft.pdf?__blob=publicationFile&v=4) (Abbildung 15).

<sup>33</sup> Source: Marktanalyse zur Vorbereitung von Ausschreibungen - Vorhaben IId, Wasserkraft (March 2015), available under: [https://www.erneuerbare-energien.de/EE/Redaktion/DE/Downloads/bmwi\\_de/marktanalysen-studie-wasserkraft.pdf?\\_\\_blob=publicationFile&v=4](https://www.erneuerbare-energien.de/EE/Redaktion/DE/Downloads/bmwi_de/marktanalysen-studie-wasserkraft.pdf?__blob=publicationFile&v=4) (Abbildung 16).

- (108) Germany has submitted that based on both the technical feasibility and navigation and ecological constraints the remaining deployment potential of hydropower in Germany is estimated at around 1 GW<sup>34</sup>. While this potential is low in comparison to the solar and wind potential, it is however meaningful and can make a valuable contribution to grid stability given that hydropower is much more stable than solar or wind energy and given also that the additional hydropower potential is situated South of the network bottleneck.
- (109) This potential can essentially be realised by modernising and extending the capacity of existing installations and marginally by constructing hydropower installations on existing dams. 80 % of that potential (800 MW) is related to the modernisation or extension of existing installations of 1 MW and more.
- (110) Germany has further explained that the support of hydropower installations under the EEG had a twofold objective: incentivizing a more optimal exploitation of the hydropower but also incentivizing the modernization of the installation to upgrade it to higher (currently applicable) environmental standards (increased protection of water body and water species). Many old hydropower installations are operated with no support; they have very long-term exploitation licences and could in theory be operated for still many years. While modernization is desirable for all those installations, it is particularly important for installations below 5 MW. Support for hydropower installations is therefore subject to compliance with currently applicable environmental standards and to the increase of the capacity. For installations of no more than 5 MW, the tariff is set in order to cover all costs while for installations above 5 MW, the tariff is set to cover only additional costs linked to the capacity extension.
- (111) On the basis of these elements, Germany has concluded that it was not appropriate to put hydropower installations in competition with other technologies. Given the level of the LCOE of these installations compared to solar and wind, hydropower installations below 5 MW (as well as installations with capacity extensions up to 1 MW) would be unlikely to submit a winning bid. They are however the installations with the most dynamic extension potential and for which upgrade to higher environmental standards are particularly important for the environment.

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<sup>34</sup> Considering technical feasibility, navigation and ecological constraints, the potential is estimated at around 2,5 TWh from installations of 1 MW and more and 0,6 TWh on installations of less than 1 MW; see Marktanalyse zur Vorbereitung von Ausschreibungen - Vorhaben IId, Wasserkraft (March 2015), available under : [https://www.erneuerbare-energien.de/EE/Redaktion/DE/Downloads/bmwi\\_de/marktanalysen-studie-wasserkraft.pdf?\\_\\_blob=publicationFile&v=4](https://www.erneuerbare-energien.de/EE/Redaktion/DE/Downloads/bmwi_de/marktanalysen-studie-wasserkraft.pdf?__blob=publicationFile&v=4), Sections 7 to 7.2.

**Table 2: Number and installed capacity of hydropower installations obtaining EEG support in the years 2011-2013, sorted by classes of installed capacity**

	2011		2012		2013	
	Anzahl	Leistung (MW)	Anzahl	Leistung (MW)	Anzahl	Leistung (MW)
≤ 100 kW	4.558	145	5.045	156	5.411	167
> 100 kW, ≤ 200 kW	502	75	488	74	538	81
> 200 kW, ≤ 500 kW	619	205	627	207	703	233
> 0,5 MW, ≤ 1 MW	228	161	224	158	254	180
> 1 MW, ≤ 2 MW	126	179	128	182	144	206
> 2 MW, ≤ 5 MW	139	491	141	498	146	520
> 5 MW, ≤ 10 MW	3	22	2	16	3	23
> 10 MW, ≤ 20 MW	1	12	1	12	1	12
> 20 MW, ≤ 50 MW	1	50	1	50	2	79
> 50 MW	0	0	0	0	1	53

Quelle: Auswertung IBFM und Hydrotec, EEG-Daten Bundesnetzagentur

- (112) Germany has further indicated that due to project development durations, the additional hydropower potential will be realised over a period of 20 years (implying on average an annual potential of around 40 MW). There are currently around 430 hydropower installations in Germany with installed capacity of 1MW and more. Most of them have been built between 1920 and 1960. Around 270 of those installations are obtaining support under the EEG implying that they are recent or have been modernized and extended recently. The extension potential thus rests with the remaining 160 installations. Mathematically this would imply a potential extension size of 5 MW<sup>35</sup> per installation but Germany underlined that in reality it would cover a wide range between 100 kW and 50 MW.
- (113) Germany estimates that in order to ensure a sufficient degree of competition the auction volume for hydropower installations should ideally be around 20 MW. This would mean that per year on average 4 projects would be selected. Projects of 20 MW or more would hardly take part in the auctions as they would have to split their projects on several successive (annual) auctions, which would most likely discourage those projects and also reduce competition in the auction. Also this auction size would mean that an important number of projects would not be selected. Given the respective costs of 1-2 MW projects and 5 MW projects, 1-2 MW projects would unlikely be selected in the auctions and hence a significant number of installations would not be modernized; which is at odds with Germany's environmental upgrading and capacity extension objectives for hydropower installations.
- (114) Germany explained that in order to achieve its environmental upgrading and capacity extension objectives for hydropower installations, it would have to increase the volume of the auctions to almost the volume of the potential itself. This would, however, render the auction uncompetitive and thus lead to increased support levels.
- (115) Finally, Germany indicated that an auction for hydropower installations could lead for the same installations to higher support levels. Given the rather large cost spread and the competitive advantage that larger installations have compared to smaller installations, those larger installations could easily underbid smaller

<sup>35</sup> Potential of 800 MW divided by 160 installations = 5 MW.

installations without however bidding their real costs but bidding slightly below the costs of smaller installations. This risk would be increased by the fact that in an auction where all hydropower installations would compete it would not be possible to maintain the distinction between modernized installations of no more than 5 MW and more than 5 MW (only eligible for support on the extended capacity); installations of more than 5 MW would thus be allowed to bid for their entire installed capacity and production.

## **2.7. Bürgerenergiegesellschaften and small existing biomass**

- (116) In order to maintain acceptance of renewable energy development, Germany would like to maintain a certain level of diversity of players among renewable producers given that the involvement of a many different individuals, companies and associations has been instrumental to achieving current levels of renewables capacity in Germany. This includes local energy cooperatives formed by members of the public.
- (117) Germany has further explained that the auction design includes features that should maintain the high level of diversity of players in the renewable sector in Germany. Priority has been given to simple eligibility criteria. Also, the interests of small players have been taken into account in setting the penalties and implementation deadlines: rigid deadlines would have entailed high risks for small players and made it significantly harder for them to obtain financing for their projects.
- (118) However, during the consultation phase preceding the drafting of the EEG 2017, numerous players have argued that small, local citizens' cooperatives were still facing specific risks in onshore wind auctions and that the only way to alleviate those risks was to introduce special arrangements. The 2017 EEG therefore contains special arrangements for local citizens' cooperatives. The citizens' cooperatives are eligible for those special arrangements only if :
- At least ten members of the cooperative are natural persons.
  - Each member holds no more than 10 % of the voting rights, and at least 51 % of the voting rights are held by natural persons.
- (119) At least 51 % of the voting rights are held by members who have been registered as principal resident for at least a year in the locality where the wind installation is to be built.
- (120) For onshore projects, the project will be considered as a citizens' project only if it is restricted to a maximum of six wind installations and a total capacity of 18 MW.
- (121) The cooperative and all of its members may not have taken part in another onshore wind auction for another project in the past twelve months. This is to exclude large cooperatives (such as multiple bidders) who can spread the risk of not being successful (bidding risk) over several projects.
- (122) Like all other players, these citizens' cooperatives and their projects will take part in the auction for onshore wind energy. This ensures effective capacity management and competitive price-setting. However, in order to avoid the

problems cited above, special rules apply to them within the auction design for onshore wind installations; in particular, they have the option of taking part in the auctions at an earlier date.

- (123) In principle, emissions-control approval is required to take part in a wind energy auction ('late auction' system, see above). While this does not prevent small players with low financial standing from taking part, it means that they have to develop their projects to an advanced stage without knowing whether they will be successful in the auction process. For onshore wind installations, project development takes between three and five years, and the pre-approval development costs come to about 10 % of total investment costs. Owing to the risk of making an unsuccessful bid, a bidder may expend the entire development cost in vain. This could threaten the existence of small citizens' cooperatives and deter them from project development, as the risk may prevent them from obtaining sufficient capital from local citizens for the development phase.
- (124) Local citizens' cooperatives, often key to securing the necessary acceptance for new onshore wind installations, will accordingly have the option of bidding in an auction before obtaining emissions-control approval. The material threshold for participation is therefore lower for them. This is tied to three prerequisites, in order to ensure that only serious bids are made:
- The bidder must have the land-owner's agreement to sole use of the site.
  - A wind resource assessment for the site must have been conducted by a certified expert.
  - An initial security of 15 EUR/kW must be lodged with the bid. A second security of 15 EUR/kW must be lodged once the approval is obtained. If the second security is not forthcoming, the award of remuneration will be withdrawn.
- (125) The deadlines for community projects are extended by two years. This means: four years after the bidding deadline the penalty starts to be applied progressively and after four and a half years the remuneration is withdrawn.
- (126) As emissions-control approval is not required for citizens' cooperatives to take part in auctions, the biggest cost item is removed and the cost risks are reduced. The participation threshold is thereby also reduced for such cooperatives. It can be particularly difficult for them to manage the risk of first having to bear the cost of pre-development, only to be unsuccessful in the auction subsequently. That is why, in future, these cooperatives will be able to take part in auctions with only a small financial security. Although this brings with it the risk of a reduced likelihood of implementation, this risk is manageable, given the limited number of citizens' cooperatives.
- (127) Citizens' cooperatives that submit bids in auctions for onshore wind projects of maximum six wind installations and a total capacity of 18 MW will be ranked based on their bid but the reference value will be determined on the basis of the pay as clear procedure and not on the basis of their bids as would be the case for the other projects.



- (128) Germany has explained that these citizens' cooperatives generally have less knowledge on the competitive situation and a higher bidding risk as they as a rule undertake only one single project. In comparison, other participants have more experience on the competitive situation and have a larger portfolio of projects, which reduces their bidding risk ("*Zuschlagsrisiko*"). Cooperatives also might have a tendency to reduce their rate of return more than other bidders in a pay as bid auction. Overall, Germany expects that the pay as clear system will give the cooperatives the possibility to bid their true costs and return expectations. The pay as clear approach gives them only a slight advantage in their bidding behaviour as compared to other participants that should however be sufficient to reassure citizens' cooperatives as to their chances of submitting a winning bid and to encourage them to take part in the auctions. As the citizens' cooperatives will be ranked according to their bid like the other participants and as the concept of "*Bürgerenergiegesellschaft*" has been defined strictly and should not concern too many projects, Germany thinks that it will not or only very marginally impact the auction results. Germany will evaluate the situation in the coming two years to analyse the development of *Bürgerenergiegesellschaften*, their costs and other specificities. It will also analyse whether this type of support successfully tackles the issues and challenges that they face and whether the specific auction design for citizens' initiatives leads to significant distortion of the auctions.
- (129) A similar system is provided for existing biomass installations of less than 150 kW (§39f EEG 2017): they have the possibility to participate in auctions to apply for modernisation aid (modernisation aid is not available outside auctions). Their reference value will be determined based on a pay as clear method while the other applicants will be cleared based on the pay as bid rule. Also this possibility aims at facilitating the participation to auctions of very small biomass projects. Those very small installations are operated by small farmers having no experience in auctions and no market visibility. They also often have slightly higher production costs. Germany expects that allowing them to bid based on the pay as clear rule would allow them to bid their real costs and slightly increase their chances of submitting a winning bid and thus also increase the incentive for them to take part in such auctions and ultimately modernize their installations. Germany underlines that given their small size and number their impact on the auction is very limited.
- (130) Germany however also recognizes that there is not yet any practical experience with an auction in which the two bidding rules are combined. It will therefore examine closely how auctions using the combination of both bidding rules will evolve, whether they indeed create incentives for smaller players to take part in auctions and what the impact is on the competitiveness of the auctions.

## **2.8. Cross-border auctions (§5 EEG 2017)**

- (131) In continuity with a similar provision under the EEG 2014, the EEG 2017 provides for the adoption of a regulation opening up 5 % of annual auctioned capacity to bidders from other EU Member States with which Germany has concluded cooperation agreement under Articles 5 to 8 or Article 11 of the

Renewable Energy Directive 2009/28/EC<sup>36</sup>. The auctions can be jointly organized or held by each partner State separately.

- (132) Based on the EEG 2014, the implementing regulation was adopted on 1 June 2016 (Cross-Border Renewable Energy Ordinance) and a cooperation agreement on the mutual opening up of auctions for ground-mounted photovoltaic installations was signed with Denmark in July 2016. On 12 October 2016 the BNetzA launched the 50 MW pilot cross-border auction for ground-mounted photovoltaic (PV) installations with Denmark. PV installations located both in Germany and in Denmark could submit bids in this cross-border auction. Danish PV installations submitted lower bids and were selected in the auction. A similar auction will be held by Denmark in which also installations located in Germany can bid (see file SA.44626 (2016/N) - Pilot tender for solar energy in Denmark).

## **2.9. Changes to EIU provisions**

### *2.9.1. Changes to electro-intensity*

- (133) Germany has also notified a change to the eligibility rules for reduced EEG-surcharges: under the EEG 2014, undertakings with electro-intensity below 17 % would not have been eligible for reductions. The EEG 2017 amends this provision and provides that undertakings active in sectors listed in List 1 of Annex 4 to the EEG and having an electro-intensity between 14 and 17 % are eligible for an 80 % reduction on the EEG-surcharges (i.e. they will be subject to a 20 % EEG-surcharge). Undertakings active in sectors listed in List 1 of Annex 4 to the EEG and having an electro-intensity of minimum 17 % remain eligible for an 85 % reduction and undertakings active in sectors listed in List 2 of Annex 4 to the EEG and having an electro-intensity of minimum 20 % remain eligible for an 80 % reduction.

### *2.9.2. Changes to benchmarks*

- (134) Eligibility for reduced EEG-surcharges (the "BesAR", see 2014 EEG decision Section 2.1.7) depends among others on the electro-intensity of an undertaking. This electro-intensity is defined by reference – among others – to the electricity consumption. For the calculation of the electricity consumption, Germany had indicated in 2014 that it would develop efficiency benchmarks and use standardized consumption defined by reference to efficiency benchmarks as of 2016 (see 2014 EEG decision, recital 313). In the meantime, the consumption would be measured based on the arithmetic mean over the last three years for which data on electricity consumption is available.
- (135) Germany has decided that it would not develop the efficiency benchmarks and would continue to measure consumption based on the arithmetic mean over the last three years for which data on electricity consumption is available. Germany has explained that the development of energy efficiency benchmarks for all sectors proved to be too complex.
- (136) Germany has also indicated that it cannot use the existing EU Emission Trading System emission benchmarks (the "emission benchmarks") which are set for

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<sup>36</sup> Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC (OJ L 140, 5.6.2009, p.16).

certain products and installations<sup>37</sup> because these benchmarks set emission levels per product unit or alternatively emission levels per unit of heat or fuel but do not capture the energy amounts that are relevant for defining the electro-intensity and thus the eligibility to reduced EEG-surcharges.

- (137) Germany has also submitted that the efficiency benchmarks established under the aid guidelines for the compensation of indirect CO<sub>2</sub> costs<sup>38</sup> ("ETS Guidelines") set electricity consumption efficiency benchmarks for 19 products<sup>39</sup>. Around 5 % of companies eligible for reduced EEG-surcharges produce the concerned products. There are no efficiency benchmarks for other products and using them for some sectors or companies only would be discriminatory as their eligibility would be defined in a more restrictive way than for companies producing products for which no efficiency benchmarks exist. In addition, the efficiency benchmarks indicate a level of efficiency that is not appropriate for determining the cost of electricity for the BesAR. The ETS efficiency benchmarks establish the most efficient production method for a product in terms of electricity consumption<sup>40</sup>. This corresponds to the efficiency level of the 10 % most efficient installations in a sector. These benchmark values indicate the lower limit of the power required to produce a given product, and only that energy consumption can be compensated. This is appropriate for the use of these benchmarks to determine the level of consumption that can be compensated as the benchmark values exclude overcompensation and reduce the aid given to installations that are inefficient in relation to the technically possible minimum. However, the BesAR does not involve direct compensation for electricity consumption; the energy consumption is used as a criterion to determine electro-intensity of companies and to verify their eligibility for reduced EEG-surcharges. It would not be appropriate to set a benchmark that would cover only the most efficient companies and exclude the others while they are at least as electro-intensive as the efficient ones.

## **2.10. Duration of Support**

- (138) Germany has notified the scheme for the period 01/01/2017 to 31/12/2020 in view of the evaluation.

## **2.11. Financing**

- (139) The support remains financed from the EEG-surcharge as described under recitals 18, 22 to 73 of the 2014 EEG decision.
- (140) The following changes have been made:

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<sup>37</sup> Annex 1 to Commission Decision 2011/278/EU of 27 April 2011 determining transitional Union-wide rules for harmonised free allocation of emission allowances pursuant to Article 10a of Directive 2003/87/EC of the European Parliament and of the Council (OJ 2011 L 130, 17.5.2011, p. 19 et seq.).

<sup>38</sup> Communication of the Commission Guidelines on certain State Aid measures in the context of the greenhouse emission allowance trading scheme post-2012 (OJ C 158, 5.6.2012, p. 4).

<sup>39</sup> Communication from the Commission amending the Communication from the Commission Guidelines on certain State aid measures in the context of the greenhouse gas emission allowance trading scheme post 2012 (OJ C 387, 15.12.2012, p. 5).

<sup>40</sup> See definition of 'electricity consumption efficiency benchmark' in Annex 1 to the Communication from the Commission: Guidelines on certain State Aid measures in the context of the greenhouse emission allowance trading scheme post-2012 (OJ C 158, 5.6.2012, p.18).

- (141) Penalties are introduced in order to sanction certain obligations of auction applicants (§55 EEG 2017, §60 WinSeeG). The revenues from those penalties have to be transferred on the EEG-Konto and are thus used to finance the support system (§3 (10) of the AusgleichsmechanismusVO).
- (142) When the final consumer is an electro-intensive company eligible for reduced EEG-surcharges under the BesAr or if the final consumer is a railway company, the transmission network operator can request the payment of the EEG-surcharge directly from this consumer rather than through the electricity supplier.
- (143) The tasks of the BNetzA have been increased. The BNetzA has also been entrusted with the organisation of the auctions.

## **2.12. Evaluation**

- (144) Germany has submitted an evaluation plan for the measure. The main elements of the evaluation plan are described below.
- (145) The evaluation plan notified by Germany includes around 70 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. In addition to the general evaluation questions, sub-sets of questions will address technology-specific elements.
- (146) The evaluation will provide general information, in particular, on whether the scheme achieves its objectives, on the number and type of beneficiaries, on the auctions to be organised, and on the participation of operators located in other EU Member States under the opening of the auctions.
- (147) The evaluation will also provide insights into the impact of certain specific features of the scheme on the auction results. In particular, it will examine the impact of the Referenzertragsmodell on auction results and on the location of winning installations, the impact of the special rules for Bürgerenergie and existing small biomass installations (among others the pay as clear rule) on auction results.
- (148) Further, the evaluation will examine the impact of the follow up tariff for existing biomass installations on their modernisation.
- (149) The direct effects of the scheme will be evaluated, for example by assessing developments in the production of energy from renewable energy sources, installed capacity and investment (in EUR).
- (150) The main indirect effects of the scheme that will be evaluated are its contribution to the reduction of CO<sub>2</sub> emissions, as well as its potential negative effects on the market concentration and the geographical dispersion of production capacity.
- (151) The appropriateness of the aid instrument will be evaluated by comparing the scheme with alternative approaches used in other EU Member States and to the situation in Germany before adopting the new law. The proportionality of the aid will be evaluated in particular by assessing the economic viability of the assisted projects and the intensity of competition of the auctions.

- (152) Evaluation questions related to the general outputs of the scheme will be mostly answered by providing quantitative statistical evidence. Other questions may require qualitative assessment. 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.<sup>41</sup> In particular, where appropriate, the report might include a comparison of projects that were just awarded the aid via an auction and projects that were not supported since they had a slightly worse bid. In addition, a supply curve from the auction bids which, in turn, allows estimating a counterfactual will be used in the framework of the evaluation.
- (153) In order to perform the evaluation, Germany has committed to making available to the independent evaluator the detailed data collected throughout the scheme's implementation by the BNetzA. General energy statistics will also be used, as well as some targeted qualitative information, ad hoc studies and surveys. Moreover and in particular in relation to the auction bid information, the BNetzA will provide the independent evaluator with the necessary data for conducting the evaluation in full respect of data protection rules and while ensuring protection of business secrets and sensitive information.
- (154) Germany has committed to submit the final evaluation report to the Commission by 30 June 2020. Some parts of the evaluation will be available earlier and made available to the Commission through interim reports (for example the impact of special rules for citizens' initiatives will be available in 2018 as well as the impact of the follow up tariff for existing biomass installations on their modernisation).
- (155) The evaluation will be conducted by an external independent evaluator to be selected through an open auction procedure. Germany has committed to duly consider the relevant experience of the auction applicants notably in the field of quantitative evaluation methods.
- (156) The evaluation report will be published on the website of the German Ministry for Economic Affairs and Energy According to Germany, the evaluation results will be duly taken into account by the relevant authorities for future policy-making.

### **3. ASSESSMENT**

#### **3.1. Presence of State Aid**

- (157) Under Article 107(1) TFEU, 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, in so far as it affects trade between Member States, is incompatible with the internal market.
- (158) Germany has notified the scheme as non-aid measure for legal certainty but has not provided any arguments in support of that claim. The amendments to the scheme do not change the Commission's assessment in the EEG 2014 decision in

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<sup>41</sup> Commission Staff Working Document on Common methodology for State aid evaluation, Brussels, 28.5.2014, SWD(2014) 179 final.

which the Commission concluded that the support measures for producers of renewable electricity and the reduced EEG-surcharges for electro-intensive undertakings and certain autogenerators constituted State aid. Reference is therefore made on the existence of aid to recitals 148 to 227 of the 2014 EEG decision. The main elements of the assessment are summarized below.

#### *3.1.1. Advantage*

- (159) Producers of renewable electricity are advantaged because, through the market premiums, feed-in tariffs and flexibility premiums, they obtain more than what they would obtain on the market. Indeed those payments guarantee the producers of EEG electricity that they will obtain a price for their electricity that is higher than the market price. They are thus advantaged by the EEG-system.
- (160) Electro-intensive undertakings are advantaged because they are, through the reductions, relieved from a burden that they would normally have to bear.

#### *3.1.2. Selectivity*

- (161) Furthermore, the measure is selective because it favours only producers of renewable electricity on the one hand and undertakings active in certain sectors on the other hand and reaching a certain level of consumption and electro-intensity.

#### *3.1.3. Threat of distortion of competition and trade*

- (162) The electricity market has been liberalised and electricity producers are engaged in trade between Member States so that the advantage granted to the producers of renewable electricity is likely to distort competition and affect trade between Member States. The renewable electricity is generally sold on the spot market where it enters in competition with all sources of electricity. The German spot market is interconnected with other markets.

#### *3.1.4. Imputability*

- (163) The financing of support for renewable electricity and the capped EEG-surcharge for electro-intensive undertakings are imputable to the State, as they are established by law and implementing decrees. In addition, it is the State (through the BAFA) that grants the entitlements to a capped EEG-surcharge for EIU and (through BNetzA) that organizes the auctions and select producers of renewable electricity.

#### *3.1.5. Existence of State resources*

- (164) In its decision on the EEG 2014, the Commission had established that the aid scheme was financed through State resources, because (i) the State has established a mechanism that guarantees that TSOs are compensated for all the costs, (ii) TSOs have been designated to administer the EEG surcharge, (iii) TSOs are strictly monitored in their administration of the EEG-surcharge and (iv) the EEG surcharge is a price-surcharge and not a remuneration for a good.<sup>42</sup> These main characteristics of the EEG 2014 aid scheme remain fundamentally

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<sup>42</sup> State aid SA.38632 (2014/N) – Germany – EEG 2014 – Reform of the Renewable Energy law, recitals 175 – 220.

unchanged in the EEG 2017 aid scheme. Some features have been added and they reinforce this assessment: by providing that electro-intensive companies have to pay the reduced EEG-surcharge directly to TSOs, the EEG 2017 further extends the circle of final consumers from whom the TSOs can require the payment of the surcharge directly and further confirms the whole system has been conceived by the State as a surcharge that will necessarily be passed on to final consumers. The Commission therefore concludes that the TSOs have been designated by the State with the task to administer the EEG-surcharge and that the revenues from the EEG-surcharge constitute a State resource.

### **3.2. Lawfulness of the aid**

- (165) The EEG 2017 and the WindSeeG were notified to the Commission on 1 July. It has not been implemented before. Germany has complied with its obligations under Article 108 TFEU.

### **3.3. Compatibility**

- (166) The Commission has assessed the notified aid scheme on the basis of the EEAG. In particular, it has assessed the changes brought to the support to the production of renewable electricity under Section 3.3 (Aid to energy from renewable sources) and the changes made to the reduced EEG-surcharges under Section 3.7.2 (aid in the form of reductions in the funding of support for energy from renewable sources).

#### **A. Aid to energy from renewable sources**

- (167) According to paragraph 120 of the EEAG, for operating aid schemes the general provision of Section 3.2 will be applied as modified by the specific provisions as set in subsection 3.3.1. of the EEAG.

##### *3.3.1. Objective of common interest*

- (168) According to paragraph 31 of the EEAG, Member States need to define precisely the objective of common interest pursued and explain the expected contribution of the scheme to that objective.
- (169) According to §1(2) EEG 2017, the aid scheme's purpose is to increase the share of energy from renewables in the overall energy consumption in Germany (i) to 40-45 % by 2025, (ii) to 55-60 % by 2035 and (iii) to at least 80 % by 2050 by means of the deployment targets set for the various technologies supported under the scheme (see above recital (8)).
- (170) The promotion of the development of renewable energy is one of the aims of the Union's policy on energy pursuant to Article 194 TFEU. Moreover, paragraph 30 of the EEAG recognises the increase of environmental protection as an objective of common interest which may be attained through a shift to a low carbon economy with a significant share of variable energy from renewable sources. Also the scheme contributes to achieving the overall (all energy consumption types confounded) national target set out in the Directive 2009/28/EC of the European

Parliament and of the Council (Renewable Energy Directive "RED")<sup>43</sup> for Germany: reaching 18 % of energy from renewable sources in gross final consumption of energy by 2020. The scheme is therefore directed at the objective of common interest of promoting the deployment of renewable energy. The purpose of the scheme as described in §1(2) EEG 2017 is therefore in line with an objective of common interest.

- (171) Paragraph 117 of the EEAG requires that aid to hydropower has to comply with Directive 2000/60/EC of the European Parliament and of the Council<sup>44</sup> ("Water Framework Directive") and in particular Article 4(7) thereof. The Commission had already examined compliance with that requirement in the 2014 EEG decision (Section 3.3.1.10). As those provisions have not been amended, the Commission's assessment remains valid. The Commission notes in addition, that aid to modernized hydropower installations is subject to the compliance with environmental requirements (in particular in terms of water body preservation and species protection).
- (172) Paragraph 118 of the EEAG requires that State aid for energy from renewable sources using waste, including waste heat, as input fuel should comply with the waste hierarchy, as laid down in the Waste Framework Directive. Germany had already demonstrated compliance with that condition under the 2014 EEG Decision (Section 3.3.1.11) and the Commission's assessment remains valid as those provisions have not been amended by Germany.
- (173) Germany has therefore defined an objective of common interest and explained the measure's contribution towards this objective.

### 3.3.2. *Need for State intervention*

- (174) According to subsection 3.2.2 of the EEAG, Member State needs to demonstrate that there is a need for State intervention and in particular that the aid is necessary to remedy a market failure that otherwise would remain unaddressed. In the case of the production of renewable electricity, the Commission presumes that a residual market failure remains, which can be addressed through aid for renewable energy, for the reasons set out in paragraph 115 of the EEAG. The preliminary investigation has not revealed any indication of the contrary. On the contrary, the market price (below 30 €/MWh) remains significantly below the production costs of renewable electricity (that are comprised between 50 and 270 €/MWh, see Table 1).

### 3.3.3. *Appropriateness*

- (175) According to paragraph 40 of the EEAG, the proposed measure must be an appropriate instrument to address the policy objective concerned. According to paragraph 116 of the EEAG, the Commission presumes the appropriateness of aid and the limited distortive effects of the aid provided that all other conditions are

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<sup>43</sup> Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC (OJ L 140, 5.6.2009, p. 16).

<sup>44</sup> Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (OJ L 327, 22.12.2000, p. 1).



met. The notified measure is therefore deemed appropriate provided that the other conditions are met.

- (176) As will be shown in the sections below, these conditions are met. Therefore the Commission considers the aid to be appropriate.

#### *3.3.4. Incentive effect*

- (177) According to paragraph 52 of the EEAG, it is not required to meet the conditions of paragraph 51 (Application Form Requirement) where the aid is awarded on the basis of a competitive bidding process.
- (178) As will be shown in the sections below the aid to offshore wind installations, onshore wind installations above 750 kW, solar installations above 750 kW and biomass above 150 kW is granted by way of a competitive bidding process. Therefore Germany is not required to meet the conditions of paragraph 51 of the EEAG.
- (179) As to installations not subject to the auction requirement, the Commission notes that production costs of supported renewable electricity installations (between 50 and 270 €/MWh) are higher than market price of electricity (27 €/MWh baseload and 29 €/MWh peakload, see recital (39)).
- (180) Germany has further confirmed that beneficiaries have to indicate in their request for payment of the feed-in tariff/market premium: identification of the aid applicant, installed capacity of the installation concerned and the type of technology in line with paragraph 51 of the EEAG.
- (181) The Commission therefore concludes that the aid has an incentive effect.

#### *3.3.5. Proportionality*

##### *3.3.5.1. Aid granted as premium*

- (182) According to paragraph 124 (a) of the EEAG aid must be granted as a premium in addition to the market price (premium) whereby the generators sell their electricity directly to the market. According to paragraph 125 of the EEAG, this condition does not apply to installations with an installed electricity capacity of less than 500 kW.
- (183) According to §20(1) EEG 2017, the aid will be granted in the form of a market premium only for months in which the producer or a third party sell their electricity directly to the market.
- (184) There are two exceptions to this principle, namely an exception for small installations and an exception in the form of a measure of last resort, by which beneficiaries may opt for the feed-in-tariff-model for a limited period of time under certain conditions.
- (185) Firstly, as regards small installations, according to §21(1) No. 1 EEG 2017 small installations with an installed capacity of less than 100 kW can opt for the feed-in tariff. This capacity threshold is lower than those established under paragraph 125 of the EEAG and hence comply with it.

- (186) Secondly, as regards the measure of last resort, according to §21(1) No. 2 EEG 2017, feed-in tariffs are also available to installations for a maximum period of three consecutive months and for a maximum total duration of not more than 6 months a year at a reduced rate of 80 % of the actual feed-in tariff (§53 Sentence 2 EEG 2017) (the "fall-back tariff").
- (187) The Commission considers that this exception to market premium can be justified for the following reasons:
- (188) First, this feed-in tariff for producers of renewable electricity is conceived as an emergency clause, a fall-back tariff that can be used only for a limited time period when no buyer can be found or when a new buyer needs to be found. The 20 % reduction for feed-in-tariffs ensures that producers have no incentives to replace direct sales by feed-in-tariffs. Also, the explicit time limitation (maximum three months in a row) and six months in a year further ensure that the provision cannot be abused.
- (189) Secondly, Germany has shown that in 2015 and 2016, the provision has been used in the past only very sporadically (by different operators for often only one month in a given year) and by a very limited number of installations with installed capacity of at least 500 kW (39 in 2015 and 17 in 2016). The data also shows a decreasing trend in its use. Over the same period of time, the data shows that five installations with installed capacity of 500 kW or more have used the fall-back tariff during the entire year. Germany has however identified these situations as possible abuses and explained that this risk for abuse existed in case the installations are used to a large extent for auto-consumption. In those cases it could economically be interesting to remain in the fall-back tariff. However, it is precisely to counter that risk that Germany is in the EEG 2017 restricting the fall-back tariff to three months in a row and six months over the year. Under those conditions it does not become economical anymore to remain in the fall-back-tariff in the absence of any emergency.
- (190) Thirdly, the great part of producers of renewable electricity given the lower threshold for installed capacity foreseen in §21(1) No. 1 EEG 2017 (100kW) are subject to market premium while under paragraph 125 of the EEAG, the Commission would apply the requirement of market premium to installations with installed capacity above 500 kW and 3MW for onshore installations. Thus the fall back FIT would apply to a large extent to small installations with installed capacity below 500 kW subject however to market premium requirement under stricter German Law.
- (191) Given the fact that it is limited to 80 % of the reference value, the experience with the fall-back tariff and the limited period in time during which it can be used, the Commission considers that the exception provided in §21(1) No. 2 EEG 2017 does not undermine the rationale of the principles set out in paragraphs 124-125 of the EEAG and simply serves as an emergency clause.
- (192) Therefore the Commission considers that the forms of the notified aid scheme are compatible with paragraph 124 (b) of the EEAG and Article 107(3)c TFUE.

### 3.3.5.2. Standard balancing responsibility

- (193) Germany has confirmed that renewable electricity operators selling their electricity on the market are subject to standard balancing responsibilities (see recital (30) above).
- (194) The Commission therefore concludes that the notified aid scheme complies with paragraph 124 (b) of the EEAG.

### 3.3.5.3. No incentive to sell at negative prices

- (195) According to paragraph 124 (c) of the EEAG, the Member State must put measures in place to ensure that generators have no incentive to generate electricity under negative prices.
- (196) According to §51 EEG 2017, no market premium will be paid during the hours when market prices are negative for at least 6 hours in a row on the day-ahead market. The Commission has already considered in the 2014 decision that this mechanism was compliant with paragraph 124 (c) of the EEAG.
- (197) The rule does not apply to installations of less than 500 kW for all technologies (except wind) and of less than 3 MW for wind installations. Germany has committed that in the case of wind installations account will be taken of other wind turbines belonging to the same owner and built in the vicinity of the first installation within a period of twelve months to verify whether the threshold of 3 MW is reached. This implies that the generation units taken together may not exceed the 3 MW. This is in line with paragraph 125 of the EEAG providing that paragraph 124 (c) of the EEAG does not apply to installations with an installed capacity of less than 500 kW and in case of wind installations of less than 3 MW or 3 generation units.
- (198) The rule does further not apply to pilot installations, as the pilot installations described under recital (17) b and c correspond to demonstration projects within the meaning of paragraph 19(45) of the EEAG. This exception is in line with paragraph 125 of the EEAG providing that paragraph 124 (c) of the EEAG does not apply to demonstration projects.
- (199) The Commission further takes note of the fact that the pilot installations described under recital (17) a will not be built in the next years and that Germany has committed to abolish the possibility for that category of pilot onshore wind installations to be exempted from the negative prices requirement under paragraph 124 (c) of the EEAG.

### 3.3.5.4. Aid granted through auctions putting in competition all renewable electricity producers

- (200) According to paragraph 126 of the EEAG, aid should in principle be granted through a competitive bidding process on the basis of clear, transparent and non-discriminatory criteria, unless a) Member States demonstrate that only one or a very limited number of projects or sites could be eligible; or b) Member States demonstrate that a competitive bidding process would lead to higher support levels (for example to avoid strategic bidding); or c) Member States demonstrate

that a competitive bidding process would result in low project realisation rates (avoid underbidding).

- (201) According to paragraph 126 of the EEAG, aid should in principle be granted through a competitive bidding process in which all generators producing electricity from renewable sources compete on a non-discriminatory basis. However, the bidding process can be limited to specific technologies where a process open to all generators would lead to suboptimal results which cannot be addressed in the process design in view of (a) the longer-term potential of a given new and innovative technology, (b) the need to achieve diversification, (c) network constraints and grid stability, (d) system (integration) costs, or (e) the need to avoid distortions on the raw material markets from biomass support.
- (202) In the recitals (204) to (271) below the Commission has thus first examined whether the aid would be granted based on a competitive bidding process open to all or several technologies. If the aid would be granted without competitive bidding process, the Commission examined whether this is justified in light of paragraph 126 3rd sentence litera a) to c) of the EEAG and examined the proportionality of the aid based on paragraph 131 of the EEAG.
- (203) For aid to specific renewable-technologies granted within a specific bidding process (in the absence of competition between several technologies) the Commission assessed whether there were reasons for such limitation in light of point 126 5th sentence EEAG. For renewable-technologies to which aid would be granted based on a competitive bidding process, the Commission examined whether the bidding process would be competitive and based on clear, transparent and non-discriminatory criteria.

(1) Landfill gas, sewage gas, geothermal

- (204) Germany does not plan to grant support to installations producing electricity from landfill gas, sewage gas and geothermal energy on the basis of auctions (see recital (16)).
- (205) Germany has demonstrated that due to the prohibition of the landfilling of untreated biodegradable waste in place since July 2005, there is not sufficient landfill gas potential anymore that could trigger the construction of 1 MW installations. While it cannot be excluded that the residual landfill gas potential could justify the construction of a small installation, even that situation is very unlikely as the decreasing installed capacity shows (see recital (101)). It appears therefore justified to not include landfill gas installations in auction specifications
- (206) As to sewage gas, Germany has demonstrated that the potential for installations producing electricity from sewage gas of 1 MW or more is extremely reduced due to the fact that it is linked to the existence of a sewage plant and that the electricity production of sewage facilities is to a large extent already exploited (see recital (102)). An auction limited to sewage gas installations of 1 MW would thus be uncompetitive given the very limited number of projects that would be eligible (paragraph 126 3rd sentence litera (a) of the EEAG). In addition, given the relatively low costs of those installations compared to PV, onshore and offshore wind or biomass installations, including them in a competition together with other technologies would not create a competitive pressure on other technologies (given the very low potential of sewage gas installations) but risks

leading to higher support levels for the sewage gas installation (paragraph 126 3rd sentence litera (b) of the EEAG).

- (207) The Commission therefore considers that the exemption from auctions for installations of 1 MW and more producing electricity from landfill gas and sewage gas is in line with paragraph 126 of the EEAG.
- (208) As to geothermal installations, the Commission notes that this technology is in Germany not yet very developed and that production costs are still very high (27 euro cents/KWh) compared to all the other technologies, including offshore wind, and that economies of scales are not yet expected. The Commission therefore agrees with Germany that putting this technology in competition with the other cheaper technologies could jeopardize the longer term potential of this technology (paragraph 126 5th sentence litera (a) of the EEAG). In particular, given also the important upfront investments and uncertainties as to the geological potential of the project, investors would not be willing to take up the exploration risk knowing that they would not have any possibility to recoup those costs later as their chances to be selected in an auction by bidding their production costs seems in the current stage of the development of the technology close to null. Furthermore, given the limited number of projects expected in the coming years an auction limited to geothermal installations would not be competitive and would lead to higher support levels (paragraph 126 3rd sentence litera (a) and (b) of the EEAG).
- (209) The Commission therefore considers that the exemption from auctions for installations producing electricity from geothermal energy is in line with paragraph 126 of the EEAG.

## (2) Hydropower

- (210) Germany has demonstrated that organizing an auction that would put hydropower installations in competition with other technologies would lead to suboptimal results.
- (211) If put in competition with biomass, solar and onshore wind installations, new installations between 750 kW<sup>45</sup> and 2 MW, as well as modernized installations of between 750 kW and 5 MW are likely not to be selected in the auction given that solar and wind installations have relatively high additional development potentials and also lower costs compared to new hydropower installations between 750 kW and 2 MW, as well as modernized hydropower installations of between 750 kW and 5 MW.
- (212) As Table 2 shows (segment 0,5 to 5 MW), those installations have represented in the last years the segment in which additional deployment of capacity was the most dynamic (51 new projects for additional 68 MW between 2012 and 2013) and in which Germany expects further deployment and modernisation. Most of this potential rests in the south, i.e. below the grid bottleneck (see recital (108)). Germany is therefore aiming at inducing the development of new installations between 750 kW and 2 MW, as well as the modernisation and capacity extension of installations of between 750 kW and 5 MW given their ability to provide a more stable electricity production compared to intermittent PV and wind.

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<sup>45</sup> 750 kW is the threshold as of which installations (except biomass) are subject to auctions by virtue of §22 (2) EEG 2017.

- (213) Based on those elements, the Commission agrees that an auction in which hydropower installations would compete with solar and wind installations would put at risk the deployment of the remaining hydropower potential and its contribution to the diversification of the energy mix and grid stability (paragraph 126, 5th sentence, *litera b*) and *c*) of the EEAG); it would also put at risk the objective of inducing existing hydropower installations to upgrade their installations to higher environmental standards.
- (214) An auction putting hydropower installations with installed capacity of 750 kW and more in competition with biomass installations with an installed capacity of 150 kW would also lead to suboptimal results. As the cost curves almost do not overlap (hydropower installations of the relevant range have production costs between 8 and 12 euro cents/KWh while biomass installations targeted by the auctions have production costs between 14 and 17 euro cents/KWh with only a few with costs between 12 and 13 euro cents/KWh), biomass installations would not exert any competitive pressure on hydropower projects while hydropower projects would probably all outbid biomass projects. The vast majority, if not all hydropower projects would be selected even if they submit bids higher than real costs given the magnitude of the cost advantage compared to biomass installations. Also in such auction, it would not be possible to maintain the distinction between modernized installations of no more than 5 MW and more than 5 MW (only eligible for support on the extended capacity). This would further exacerbate cost advantages for hydropower installations of more than 5 MW as they have production costs that can be significantly lower than 8 euro cents/KWh (see Figure 11 and recital (106) above) and could lead to windfall profits for those installations (paragraph 126 3rd sentence *litera b*) of the EEAG).
- (215) In addition, the number of biomass projects to be realised would necessarily be lower than the projected 150 MW. This is however the capacity that Germany targets on a yearly basis in order to progressively modernize and make more flexible its biomass/biogas park in order to maintain and increase the grid stabilizing effect that biomass/biogas installations (see recital (89)). Given the high share of renewable electricity that Germany envisages and the relatively high share of intermittent renewable electricity that Germany already has and will continue to have, this grid stabilizing effect of biomass/biogas plays an important role in Germany's electricity mix. The Commission therefore agrees that an auction in which biomass/biogas and hydropower would compete would lead to suboptimal results in terms of the diversification needed to improve grid stability (in line with paragraph 126 5th sentence *litera b*) and *c*) of the EEAG).
- (216) As to auctions for hydropower installations, Germany has submitted that auctions would be non-competitive and lead to higher support levels or lead to lower realisation rates.
- (217) The Commission agrees that under current market circumstances and characteristics of the hydropower installations and their costs, hydropower auctions in Germany would soon risk becoming uncompetitive.
- (218) In particular, Germany has shown that the limited potential of 800 MW for installations with installed capacity of 1 MW or more would take approximately 20 years to be realised and would suggest an annual potential of around 40 MW. Under those circumstances the Commission agrees that in order to ensure

sufficient competition in the auction its volume should ideally be limited to 20 MW.

- (219) There is, however, a large variety of projects, sizes and costs amongst hydropower projects. For instance 5 MW projects have a potential cost advantage of around 30 EUR/MWh compared to 1 MW projects and 15 EUR/MWh (see Figure 12). This structural cost advantage will enable 5 MW installations to systematically win the auctions. Smaller installations would then either from the start be discouraged from participation in the auction if they are aware of their cost disadvantage or will rapidly be discouraged from participating in the auctions. This would after a while (significantly) decrease the number of projects participating in auctions and substantially decrease and even eliminate the competitiveness of the auctions and thus lead to higher support prices
- (220) This scenario is further confirmed by the observations of trends in past years: assuming the 20 MW auction would have been organized in 2013, 5 MW projects would have filled the entire auction volume and thanks to their cost advantage they would have easily won the auction. This could then in following years discourage smaller projects to compete if they think that they will get eliminated again by larger projects in the next auction rounds. This seems likely as the remaining potential is essentially spread over installations of 0,5-1MW, 1-2 MW and 2-5 MW projects and they follow parallel deployment trends (see Table 2). However, if only projects in the range of 2-5 MW apply, the competitive pressure in the auction will not be sufficient anymore to ensure the competitiveness of the auction as the potential in the range of 2-5 MW is equal to or lower than 20 MW.
- (221) While auctioning does not seem adequate for hydropower installations in Germany, Germany has committed to launch a pilot innovation auction of 50 MW in which it would require participants to provide a specific quality of the production (stable or flexible). Applicants could apply with joined projects (ex. a renewable installations coupled with a storage facility or a combination of two renewable facilities having complementary qualities). This could on the one hand trigger innovative joined renewable projects and make it possible to test alternative auction designs open to several technologies, including hydropower.
- (222) Based on those elements, the Commission concludes that Germany has adequately demonstrated that auctions for hydropower installations would lead to higher support levels due to the risk that the auction would from the start be or soon become uncompetitive. Based on paragraph 126 3rd sentence litera b) of the EEAG, the Commission finds it justified that the support is not granted based on a bidding process.

### (3) Offshore wind energy

- (223) The aid scheme organises auctions separately for offshore wind in the WindSeeG. The Commission notes that it has approved State aid to site specific offshore wind energy projects in the past.<sup>46</sup>

#### *Exemption for pilot projects*

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<sup>46</sup> e.g. SA.39399 (2015/N) – The Netherlands Modification of SDE+ scheme.

- (224) The Commission notes that the notified scheme exempts pilot projects from the obligation to participate in competitive auctions. According to paragraph 127 of the EEAG, Member States may grant aid without a competitive bidding process to demonstration projects. According to paragraph 19 (45) of the EEAG a demonstration project is a project which demonstrates a technology as a first of its kind in the Union and which represents a significant innovation that goes well beyond the state of the art. Offshore wind pilot projects are limited to significant innovations going well beyond the state of the art. In addition, Germany has confirmed that projects would qualify as pilot installations within the meaning of §3 Nr. 6 of the WindSeeG only if the installation is testing a new technology, i.e. the first of its kind in the EU (see recital (18) above). This exemption from the auctions is thus in line with paragraph 127 of the EEAG.

#### *Technology specific auctions*

- (225) According to paragraph 126 of the EEAG, aid should in principle be granted through a competitive bidding process open to all generators producing electricity from renewable sources. However, the bidding process can be limited to specific technologies where a process open to all generators would lead to suboptimal results which cannot be addressed in the process design in view of (a) the longer-term potential of a given new and innovative technology (b) the need to achieve diversification, (c) network constraints and grid stability, (d) system (integration) costs, or (e) the need to avoid distortions on the raw material markets from biomass support.
- (226) The aid scheme organises auctions separately for wind offshore in the WindSeeG, independently from auctions for wind onshore, solar and biomass. Germany has justified the separate auctions for offshore wind on the basis of the longer term potential of offshore wind, the need to achieve diversification, the need to manage network constraints and grid stability and – with regard to the centralised system period – the advantages of limiting auctions to selected and pre-examined offshore sites. The Commission considers that separate auctions for offshore wind are justified, because a process open to all generators would lead to a suboptimal result, which could not be addressed in the process design for the reasons set out below:
- (227) Firstly, offshore wind energy is an innovative technology with a longer term potential within the meaning of paragraph 126 of the EEAG. Wind offshore is a young technology with high potential for cost reductions due to learning curve and innovation. The long term potential is reflected in envisaged capacity increase. According to § 1 WindSeeG, the purpose of the scheme is to increase the installed capacity of wind energy offshore as of 2021 to 15 GW in 2030. According to § 17 WindSeeG, the increase should amount to 700 – 900 MW as of 2020. As regards the cost reductions, Germany provided an analysis according to which Germany expects significant cost decreases in the technology with a 20-40 % reduction in costs until 2020 as a result from improved logistics, risk management and grid connection. The Commission notes that there seems to be a market consensus that costs for offshore wind energy projects will decrease significantly over the next years due to increased experience and more efficient turbines.<sup>47</sup> If the process would be open to all generators, offshore wind energy

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<sup>47</sup> See for example, NREL, 2014-2015 Offshore Wind Technologies Report, USA, September 2015; DONG press release, DONG Energy and Oxford University collaboration – bringing down the cost



projects would likely lose in the auctions in favour of more established and less risky forms of renewable energy sources, such as onshore wind energy and solar energy given the lower costs of those technologies (see Table 1) and their significant deployment potential (see recitals (92) and (95) above). As a result, the long-term potential of this form of offshore wind energy projects could likely not be achieved.

- (228) Secondly, specific auctions for offshore wind projects are necessary to achieve diversification within the meaning of paragraph 126 of the EEAG. Offshore wind projects are subject to high risks due to high upfront investments, technological challenges and long planning periods. Investors price-in these risks, which result in higher costs for wind offshore compared to lower costs for other energy sources. In a process open to all generators, offshore wind energy projects would likely lose in the auction process in favour of more established and less risky forms of renewable energy sources. As a result, offshore wind energy projects would likely not be included to a sufficient extent in Germany's energy mix. Given, however, their deployment potential and the number of operating hours, they can make a significant contribution to baseload production from renewable electricity and, on average over the entire renewable electricity mix, reduce its volatility. By contrast, if the volume represented by offshore wind installations were replaced in the energy mix by solar installations (which would likely be the case if solar and offshore wind were in competition, given the relative cost curves, the expected cost evolution of solar and the solar potential), this volatility would increase given that solar installations have 1 000 full load hours on average while off-shore wind installations have 4 000 to 4 500 full load hours.
- (229) Thirdly, a site specific approach is justified to facilitate the planning of network capacities in order to avoid network constraints and to ensure grid stability within the meaning of paragraph 126 of the EEAG. Due to the significant potential of offshore wind farms and the volatility of wind intensity, the connection of such farms to the grid also requires the reinforcement of existing transmission lines onshore, as well as the setting up of congestion management mechanisms. If offshore wind farms would be connected to the mainland grid without the onshore transmission lines being reinforced and congestion management mechanisms being in place, then this could lead to network constraints and result in grid instability, in particular in case of sudden supply peaks during times of high wind intensity. If the process would be open to all offshore wind energy projects it would be less predictable when and where wind offshore projects would go on stream and it would be more difficult to coordinate the building of offshore wind farms with the reinforcement of existing onshore transmission lines and the establishment of congestion management mechanisms. As a result, technology neutral auctions could lead to network constraints and grid instability.
- (230) Fourthly, a technology specific approach is necessary in order to limit system integration costs within the meaning of paragraph 126 of the EEAG. Offshore wind projects generally require the construction of new offshore grid connection. The construction of offshore grid connections is time and cost intensive. If an offshore wind farm project materialises without the grid connection being in place, it would result in significant sunk costs for the wind farm developer. If a grid connection would be put in place without the respective wind farm being in

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of offshore wind, 18 March 2014; Siemens press release, Siemens presents costs out strategy for offshore wind by 2025, 22 June 2016.

place, it would result in significant sunk costs for the grid developer. If the process would be open to all generators, it would be difficult to predict at what point which form of renewable energy projects would be developed. It would therefore be very difficult to synchronise the construction of offshore wind farms with the construction of the respective grid connections. As a result, technology neutral auctions would likely lead to a significant risk of sunk costs for the developers of offshore wind farms and/or the respective offshore grid connections.

- (231) The Commission therefore considers that the Germany can limit the bidding process to wind energy offshore generators, because a process open to all generators would lead to a suboptimal result which cannot be addressed in the process design.

#### *Competitive bidding process*

- (232) According to paragraph 126 of the EEAG, aid should be granted in a competitive bidding process. According to paragraph 19 (43) of the EEAG, a competitive bidding process means a non-discriminatory bidding process that provides for the participation of a sufficient number of undertakings and where the aid is granted on the basis of either the initial bid submitted by the bidder or a clearing price. In addition, the budget or volume related to the bidding process must be a binding constraint leading to a situation where not all bidders can receive aid.
- (233) The WindSeeG distinguishes between the rules for the bidding processes during the transitional period and the rules for the bidding processes under the centralised model.

#### *Centralised model*

- (234) Under the centralised model, several actors will compete for the same site and participants face less uncertainty and reduced risks when applying in the auction for the respective sites, because the suitability and eligibility of the site will already be established. As a result, more players – including such with less industry know-how – may be willing to participate in the respective auctions. The Commission concludes that the scheme ensures the participation of a sufficient number of undertakings to ensure effective competition in the auctions under the centralised model.
- (235) Furthermore, according to § 17 WindSeeG, the BNetzA will auction a volume of a minimum of 700 MW and a maximum of 900 MW yearly as of 2021. In addition, according to § 22 WindSeeG, the aid will be capped at the level of the lowest winning bid in the second auction for the transitional period dated 1 March 2018. The Commission concludes that the volume limitation constitutes a binding constraint leading to a situation where not all bidders can receive aid in a given year.
- (236) Moreover, according to §23(1) WindSeeG, the BNetzA will award the auction to the offer with the lowest initial bid.
- (237) Finally, the Commission notes that – according to §16 WindSeeG – the auctions will be limited to pre-examined suitable sites. The Commission considers that Germany has a legitimate interest to restrict auctions to pre-examined suitable

sites, because it is a suitable means to increase the number of potential bidders for each of the selected projects, reduces the risk of windfall profits and enables the synchronised extension of the electricity grid. Moreover, it provides more transparency on the development costs and thus increases planning reliability, which will enable a wider range of market players to compete on each of the auctions. The Commission therefore considers that the scheme is non-discriminatory in that it is open to a wide range of suitable developers and that the limitation of the auction to pre-examined suitable sites is justified by the need to increase competition per site, avoid windfall profits and increase planning reliability for the grid extension.

- (238) The Commission therefore concludes that the aid for the centralised model period is granted through a competitive bidding process and thus complies with the requirements of paragraph 126 of the EEAG.

#### *Transitional period*

- (239) According to the information provided by Germany, the advantages associated specifically with the centralised model, cannot be replicated during the transitional period. This is so, mainly because the centralised model requires significant lead-time for the State to pre-examine suitable sites. The transitional period serves to bridge the time needed for the pre-examination until the start of the centralised model. While it is not feasible to replicate the features of the centralised model, the technology specific approach of the auction design of the transitional period is still supported by the longer term potential of wind energy offshore, by the need for diversification and by the need to take into account network constraints and grid stability.
- (240) There are currently more than 20 projects from a number of market players which would be eligible to participate in the auctions of the transitional period. The Commission concludes that the scheme ensures the participation of a sufficient number of undertakings to ensure effective competition in the two auctions organised on 1 March 2017 and on 1 March 2018.
- (241) Furthermore, the volume of the bidding process is limited to 3 100 MW and Germany estimates that the number of projects qualifying for competition in the auction will amount to double the size of the auctioned volume. The Commission concludes that the volume limitation constitutes a binding constraint leading to a situation where not all bidders can receive aid.
- (242) Moreover, according to § 36 (1) WindSeeG and in line with the definition of § 3 Nr. 51 EEG 2017, the aid will be granted based on the initial bid.
- (243) Finally, the Commission notes that – according to § 26 WindSeeG – the auctions for the transition period are only open to existing projects<sup>48</sup> in suitable clusters.<sup>49</sup> As noted above, the Commission considers that Germany has a legitimate interest to limit the auctions to suitable offshore sites, notably because this ensures a synchronised extension of the electricity grid and avoids stranded investment

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<sup>48</sup> According to the different categories of § 26 WindSeeG, an existing projects are projects which – by 1 August 2016 - have been approved under §5 or §17 Seeanlagenverordnung (in its version of 1 January 2017), which have been approved under § 4 (1) Bundes-Immissionsschutzgesetz or which a hearing under § 73 (6) Verwaltungsverfahrensgesetz has already been taken place.

<sup>49</sup> The suitable clusters are listed in § 26 (2) Nr. 2 WindSeeG.

costs on the part of the developers. Moreover, the Commission considers Germany has a legitimate interest to limit the auctions during the transitional period to existing projects, because it is a suitable means to ensure that the projects will indeed materialise. The limitation thereby reduces the risk that the network developers will extend the grid to offshore sites which may in the end not be built. The Commission notes that developers, which are not able to participate in auctions during the transitional period, may still participate in the auctions under the centralised model at a later stage. The Commission therefore considers that the scheme is non-discriminatory in that it is open to all existing projects in suitable clusters and that the limitation of the auction to existing projects in suitable clusters is justified by the need to avoid sunk costs.

- (244) The Commission therefore concludes that the aid for the transitional period model period is granted through a competitive bidding process and thus complies with the requirements of paragraph 126 of the EEAG.
- (245) The auction requirement does not apply to offshore installations that have been given an unconditional grid connection commitment in 2012 or have been allocated a connection capacity before the end of 2016 and that start operating before the end of 2020 (see recital (20)). The Commission notes in this regard that footnote 66 of the EEAG provides that installations that started works (i.e. projects starting implementation) before 1 January 2017 and had received a confirmation of the aid by the Member State before such date can be granted aid on the basis of the scheme in force at the time of the confirmation. The Commission considers that the installations concerned by §22(5)(1) EEG 2017 are such installations for which project implementation started already before 2017 and having obtained a confirmation of aid by the State. Offshore projects have long lead times (5 to 10 years of development, see Table 1). An unconditional grid connection commitment entitles the installations concerned to be connected to the electricity network by the transition system operator. Installations that have been given an unconditional grid connection commitment are installations having obtained all applicable permits. They have already secured financing (upon condition of obtaining network connection) and pre-ordered the installations (upon condition of obtaining network connection) as those elements had to be demonstrated to obtain an unconditional grid connection commitment within the meaning of § 118 (12) EnWG. Installations having been allocated a connection capacity before the end of 2016 are also entitled to being connected to the electricity grid by the transmission operator and under the obligation to build the offshore wind park by a certain date defined by the transmission system operator. This unconditional grid connection commitment and allocation of grid capacity were decisive under the EEG 2014 for the project to go ahead as this connection commitment/grid capacity allocation determines whether the offshore wind installation can be connected to the grid and thus sell its electricity. It is a decisive step before project can be completed; as a result, in Germany, financing contracts and installation ordering are concluded upon condition that grid connection commitment is obtained. Hence, in the specific context of the German EEG, the unconditional grid connection commitment and allocation of grid capacity can be assimilated to a confirmation of aid within the meaning of Footnote 66 of the EEAG and the Commission considers that §22(5)(1) EEG 2017 requiring that the unconditional grid connection commitment or allocation of grid capacity be obtained before 2017 is in line with paragraph 126 read in conjunction with Footnote 66 of the EEAG. In addition,

Germany confirmed that the projects unconditional grid connection commitment or allocation of grid capacity are only projects notified to and approved by the Commission under State aid cases SA.39723, SA.39724, SA.39725, SA.39726, SA.39731, SA.39732, SA.39733, SA.39735, SA.39738, SA.39739, SA.39741, SA.39742 (2014/N); SA.39722, SA.39727, SA.39728, SA.39729, SA.39730, SA.39734, SA.39736, SA.39740 (2015/NN): Support to 20 large offshore wind farms under the EEG Act 2014 (Germany) or are demonstration projects within the meaning of paragraph 19(45) of the EEAG, and in any event installations for which the final investment decision has been made.

(4) Biomass

- (246) The aid scheme organises a separate auction for biomass installations. It includes however both biomass and biogas installations and both new and existing installations. Bids are subject to price caps. They are set below average LCOE of biomass/biogas installations given that Germany would like – in order to limit the costs of further biomass deployment – to promote more particularly biomass/biogas installations using cheaper types of biomass types like bio-waste and biomass installations using certain streams of residues from wood industry. The Commission notes, however, that the auction would be competitive given that there is a relatively high volume of existing installations that would be eligible to participate in the auction. Installations older than 13 years represent around 1000 MW (see recital (80)).
- (247) Germany has submitted that putting biomass and biogas installations in competition with other technologies would lead to suboptimal results. In particular if faced with wind installations and solar installations, biomass installations would not be able to submit winning bids given the rather high wind and solar potential and their LCOE being (significantly) lower than biomass and biogas LCOE (see Table 1).
- (248) Biomass and biogas installations can however make important contributions to grid stability through their ability to offer non intermittent production and their ability to provide flexible production (and thus reduce grid balancing costs). Given the increasing grid stability issues raised by intermittent wind and solar in Germany, Germany has a particular interest in maintaining its biomass/biogas park, to still expand it if possible and to make it more flexible. The possibility for existing installations to take part in the auctions is closely linked to that objective.
- (249) The Commission therefore agrees that, in Germany, auctions in which biomass and biogas installations would compete with wind and solar installations are unlikely to enable the further deployment and the modernisation of biomass/biogas installations. This deployment and modernisation is however needed by Germany to address system constraints, grid stability and system integration costs.
- (250) The Commission therefore concludes that Germany has sufficiently demonstrated that the limitation of the auction to biomass and biogas installations only was justified as per paragraph 126 5th sentence litera b) and c) of the EEAG.
- (251) The Commission has also verified that the auction conditions for biomass and biogas installations ensure a competitive bidding process based on clear, transparent and non-discriminatory criteria.

- (252) The Commission notes in this regard that Germany has demonstrated that it has sufficient potential to expect the auctions to be competitive as a result of the integration of both biomass and biogas and of new and existing installations in the auction, given in particular the high potential volume of existing installations that would be entitled to and interested in a follow up support. Also the auction criteria will be published in advance, selection is based on the reference value, and eligibility criteria are clear and limited in number (they can be summarized as criteria linked to the financial guarantee, to the flexibility requirement and the biomass requirements). They are non-discriminatory as all eligibility criteria apply in the same way to new and existing installations.
- (253) The Commission notes that all biogas installations selected in the auction will be eligible for a flexibility premium. It is aimed at covering the additional costs resulting from doubling the size of the installation in order to obtain a 50 % flexibility of the installation (see above recital (84)). Those additional costs result from the fact that, in order to make the biogas installation flexible, it is necessary to double the size of the installation (it must be equipped with a second cogeneration unit). Biomass installations do not have those additional costs as they can be run flexibly to a certain extent without the need to modify the installation.
- (254) The aim of the flexibility premium is on the one hand to help biogas installations to cover the additional costs resulting from increasing the flexibility of the installation to 50 % of the installed capacity and at the same time has been shaped in such a way that it obliges the operator to run the installation in a flexible manner: the flexibility premium has been calculated in such a way that an operator will be able to recoup his production costs and a reasonable profit only if he increases production at peak times and reduces production to a lower base load level outside peak demand times.
- (255) Given that a) this flexibility premium is accessible to all selected biogas installations and is the same per KW/a of installed capacity, b) it is aimed at covering costs that only biogas installations have, c) it has been measured so as to create incentives to run the installations flexibly, d) the market premium obtained by biogas installations is limited to half of their installed capacity and e) this flexibility premium will necessarily be taken into account by biogas installations in their bids, the Commission concludes that this flexibility premium is unlikely to distort the auction and therefore concludes that it is compatible with paragraph 126 of the EEAG.
- (256) The obligation to take part in tenders in order to be eligible for aid does not apply to installations having obtained approval under emissions control law in 2016 (or another type of administrative authorization, depending on which authorisation applies) and entering into operation before 2019 (see recital (19)).
- (257) The obligation to take part in tenders in order to be eligible for aid does not apply to installations having obtained approval under emissions control law in 2016 and entering into operation before 2019 (see recital (19)). The Commission notes in this regard that footnote 66 of the EEAG provides that installations that started works (i.e. projects starting implementation) before 1 January 2017 and had received a confirmation of the aid by the Member State before such date can be granted aid on the basis of the scheme in force at the time of the confirmation. The Commission considers that the installations concerned by §22(4)(2) EEG

2017 are such installations for which project implementation started already before 2017 and having obtained a confirmation of aid by the State. Biomass projects of at least 1 MW are subject to approval under emission law. They have longer lead times (3 years of development, see Table 1) with a longer planning phase that results from all the steps that need to be taken to obtain the authorisation (securing the biomass, securing the financing, impact studies of the installation on transportation, etc). The emission permit is decisive for the project to go ahead as the emission permit determines whether the public authorities grant their authorisation for the biomass/biogas project or not. It is thus the last decisive administrative step before project realisation; indeed, in Germany, financing contracts and installation ordering are concluded upon condition that approval under emission control law is obtained. Hence, in the specific context of the German EEG, the approval under emissions control law can be assimilated to a confirmation of aid within the meaning of Footnote 66 of the EEAG. Therefore the provisions of EEG which were already applicable before 1st January 2017 (EEG 2014) and which set the market premium directly by law and not through tendering procedure may apply to them. Such transitional provision is justified by the long lead times of biomass/biogas projects subject to emission permits (3 years of development, see Table 1). The Commission therefore considers that the exception from tendering procedure in situations described in §22(4)(2) EEG 2017 is in line with paragraph 126 read in conjunction with Footnote 66 of the EEAG.

(5) Solar and onshore wind

- (258) The aid scheme organises a separate auction for onshore wind installations and solar installations. The auction for solar installations includes both solar on the ground and roof-top solar installations.
- (259) Germany has submitted that a joined auction would lead to suboptimal results that cannot be addressed through auction design.
- (260) Germany has demonstrated that it is currently facing important grid constraints, with congestion management measures and system integration costs on the increasing trend. This is the result of the conjunction of factors: sharp increase in onshore wind installations in northern Germany in particular while most consumption intensive centres are located in the south, delays in grid expansion and the shutting down of nuclear power plants in the south of Germany (see recital (93)). Those constraints call for a limitation of the deployment of wind installations in the north and for additional renewable installations in the south.
- (261) Given the already high share of intermittent renewable electricity in its energy mix, the fact that most of the future renewable deployment will also be realised through wind and solar energy (see the annual targets under recital (8), as well as the assessment of the future potential per technology in Table 1), the fact that wind installations tend to run when solar installations are not and conversely, Germany has further demonstrated that it needs to have a balanced wind and solar production and that this balance must be achieved not only at national level but also at regional level given the grid constraints that are preventing the electricity from being transported from the production areas to the consumption areas. This balance is needed to improve grid stability, limit system integration costs and more generally in order to have a complementary renewable energy mix.

- (262) Germany has further demonstrated that the costs of solar installations in the south of Germany are lower than costs of wind installations in the south: LCOE above 8 euro cents/KWh for onshore wind installations and PV installations bidding at 7,25 euro cents/KWh in the August 2016 auction (see recital (96)). It has also demonstrated that the potential for solar energy is much larger than onshore wind and that the LCOE of PV installations are expected to continue to decrease sharper than the LCOE of onshore wind installations. As a result, solar installations could outbid all wind installations in the south, which would run counter the objective of having wind installations more deployed in the south in order to reduce grid constraints and system integration costs.
- (263) Germany has further demonstrated that auction design can currently not address the issue. Bearing in mind the geographical repartition of the wind and solar potential in Germany, the relative cost curves and the cap on the "Netzausbaugesbiet" (see recital (64) above), setting a cap on the PV deployment (in addition to the cap on wind installations in the north) within a volume based joined wind/PV auction would in this case not yield any added value compared to separate auctions.
- (264) Germany has also demonstrated that currently the organisation of an auction – in which congestion costs and system integration costs caused by the renewable electricity installations concerned are taken into account – cannot be envisaged. Such auction would require that a congestion factor or system integration cost factor be calculated. This is difficult ex ante as in both cases those costs depend on the number of installations located at a given point as well as on consumption patterns. Also, they can change rapidly (if the grid is expanded, congestion issues disappear and if suddenly 20 PV installations ask to be connected to a given grid, a sudden system integration issue can occur). Also, experience with such auction models in the EU is limited. Germany has, however committed to undertake a study into possibilities to integrate those costs into the auction design and to undertake test auctions based on the results of the study (see recitals (49)-(51) above).
- (265) The Commission therefore concludes that a bidding process open to onshore wind installations and solar installations would currently lead to a suboptimal result given the network constraints and grid stability issues that Germany is facing, the system integration costs that such bidding process could lead to and the need to achieve a balanced wind and solar deployment. The bidding process can therefore be conducted separately for onshore wind and solar energy in line with paragraph 126 of the EEAG.
- (266) The Commission has also verified that the auction conditions for solar installations would ensure a competitive bidding process based on clear, transparent and non-discriminatory criteria.
- (267) The Commission notes in this regard that Germany has demonstrated that it has sufficient potential to expect the auctions to be competitive. Also the auction criteria will be published in advance, selection is based on the reference value, and eligibility criteria are clear and limited in number (they can be summarized as criteria linked to the financial guarantee and to the type of land on which the installation would be built) and non-discriminatory.



- (268) Concerning the onshore wind auctions, the Commission notes that Germany has demonstrated that it has sufficient potential to expect the auctions to be competitive. To be eligible, projects must already have reached a certain level of development but in exchange the financial guarantees to be provided are lower. Participants in the auction do not submit bids based on their true costs but by reference to a modelled 100 % onshore wind farm. Once their bids are ranked, selected operators obtain a premium based on a corrected reference value. However, as all bidders are subject to the same methodology, as the methodology is set in advance, including a detailed manual on how to determine the wind quality of a given site, as also the correction factor curve is publicly available, the Commission considers that it can conclude that a priori the onshore wind auctions will constitute a competitive bidding process based on clear, transparent and non-discriminatory criteria. As the Referenzertrags-modell is an auction model on which there is little experience, its impact on auctions will be examined in the evaluation plan (see also recital (147)).
- (269) Germany exempts from auctions pilot installations described under recital (17) a) and b) above. This exemption is in line with paragraph 127 of the EEAG. The pilot installations described in recital category recital (17) b) corresponds to demonstration projects within the meaning of paragraph 19(45) of the EEAG given that it must represent a significant innovation that goes well beyond the state of the art and that Germany confirmed that it must be a project demonstrating a technology as a first of its kind in the Union (see recital (18) above). The exemption for pilot installations described under recital (17) a) is also in line with paragraph 127 of the EEAG given that it is limited to an installation of 6 MW and cannot concern more than 2 prototypes. Prototypes are generally not located on the same site in order to test different geographical conditions. However, even if they were, in total the exemption would concern wind parks of maximum 2 generation units and maximum 12 MW in line with paragraph 127 of the EEAG.
- (270) The obligation to take part in tenders in order to be eligible for aid does not apply to installations having obtained approval under emissions control law in 2016 and entering into operation before 2019 (see recital (19)). The obligation to take part in tenders in order to be eligible for aid does not apply to installations having obtained approval under emissions control law in 2016 and entering into operation before 2019 (see recital (19)). The Commission notes in this regard that footnote 66 of the EEAG provides that installations that started works (i.e. projects starting implementation) before 1 January 2017 and had received a confirmation of the aid by the Member State before such date can be granted aid on the basis of the scheme in force at the time of the confirmation. The Commission considers that the installations concerned by §22(2)(2) EEG 2017 are such installations for which project implementation started already before 2017 and having obtained a confirmation of aid by the State. The emission permit is decisive for the project to go ahead as the emission permit determines whether the public authorities grant their authorisation for the onshore wind project or not. It is therefore the last decisive administrative step before project realisation; indeed, in Germany, financing contracts and installation ordering are concluded upon condition that approval under emission control law is obtained. Hence, in the specific context of the German EEG, the approval under emissions control law can be assimilated to a confirmation of aid within the meaning of Footnote 66 of the EEAG. Therefore the provisions of EEG which were already applicable

before 1st January 2017 (EEG 2014) and which set the market premium directly by law and not through tendering procedure may apply to them. Such transitional provision is justified by the long lead times of onshore projects (5,5 years of development on average, see Table 1) with long a planning phase (securing the land, definition of wind quality of the site, local and regional coordination in respect of distance to habitations, nature conservation etc.). The Commission therefore considers that the exception from tendering procedure in situations described in §22(2)(2) EEG 2017 is in line with paragraph 126 read in conjunction with Footnote 66 of the EEAG.

(6) Citizens' initiatives and small existing biomass installations

(271) The Commission notes that the reference price of projects of citizens' cooperatives having submitted a winning bid will be determined based on the pay as clear principle while other bidders will be assessed based on the pay as bid principle. The same principle applies to very small existing biomass installations and is linked to the same objective of facilitating the access to auctions to operators not familiar with auction procedures, owning only one single project. The fact that they will be cleared based on the pay as clear rule rather than the pay as bid rule could give those projects a slight advantage in the bidding process as they could in theory be in a position to submit a lower bid to be selected but would nevertheless obtain the reference price of the last bidder selected. The Commission notes that citizens' initiatives play a positive role, inter alia to increase acceptance of renewable energy policy. There is currently little experience on how to best promote citizen's cooperatives. The Commission notes that the projects concerned by the pay as clear rule are small projects which Member States can decide to support outside of auctions<sup>50</sup>. The Commission therefore views positively that these projects – despite their small size – participate in auctions, increasing thereby also the competitiveness of auctions. The design feature of allowing these installations the clearing instead of bidding price does not directly reduce the "Zuschlagsrisiko". It could give the installations a slight advantage in the auction. The effect of this design and the concrete size of the advantage is, however, at this stage unknown. The Commission notes that the studies submitted by Germany indicate a limited number of citizens' initiatives in the near future. The studies let to believe that this rule will above all enable citizens' initiatives projects to bid their real costs and that it will not distort the auction overall significantly given that citizen's initiatives are ranked according to their bid like the other participants (see recitals (128)-(129) above). The studies underline that the absence of distortion can be assumed as long as the concept of citizen's initiative remains defined in a strict manner and is limited to local projects lead by citizens. The Commission notes in this regard that the definition of citizen's initiatives seems indeed to be defined in a strict manner. The Commission concludes that this specific treatment is in line with Section 3.3.2 of the EEAG and notes in particular that Germany will evaluate the impacts of the provision and publish the results of the evaluation in 2018.

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<sup>50</sup> The requirement to grant aid through competitive bidding processes in paragraph 126 of the EEAG apply to biomass installations as of 1 MW while Germany is incentivizing participation by projects of less than 150 kW to auctions; it also applies to wind installations larger than 6 MW or having more than 6 generation units; while Germany introduces auctions already as of 750 kW.

### 3.3.5.5. No aid beyond depreciation and no cumulation

- (272) According to paragraph 129 of the EEAG, aid must only be granted until the plant has been fully depreciated according to normal accounting rules and any investment aid must be deducted from the operating aid.
- (273) Market premiums (and feed-in-tariffs) can be granted under the aid scheme for a maximum duration of 20 years, which corresponds to the normal depreciation period of installations (see also EEG 2014 decision, recital 260). The only exception is biomass installations: modernized installations can bid for a follow up premium which can prolong the duration of the aid by maximum 10 years. However, as installations eligible for that follow up premium are only installations that have been modernized, i.e. have renewed the power station, invested into flexibility equipment and adapted to new biomass requirements, this 10 year period mirrors the depreciation period of the additional investments in line with paragraph 131 (d) of the EEAG.
- (274) For installations not subject to auctions, cumulation is possible provided the cumulated revenues and aids do not exceed the LCOE. This is in line with the cumulation rule examined and approved by the Commission under SA.40912<sup>51</sup>. Germany has submitted additional detail on how in practice this rule would be implemented (see recital (27) above). Those details are in line with Commission approval under SA.40912.
- (275) For installations subject to auctions, the aid under the EEG 2017 can be cumulated with investment aid in theory, provided the cumulation of different aid measures and revenues do not exceed the LCOE. As, however, the EEG support allocated through auctions is deemed to cover the LCOE, including a reasonable rate of return, this cumulation will in practice always be excluded, except if the investment aid is granted to an operator in respect of costs that do not belong to the scope of the auction, i.e. for other eligible costs or for abnormal costs resulting from nature protection that are not imposed on other operators participating in auctions and which can for that reason be viewed as other eligible costs. The Commission takes note of the commitment provided by Germany not to grant any investment aid in cases where it would distort the results of the auction. Under those circumstances, the Commission agrees that investment aid granted for other eligible costs, i.e. for costs that clearly fall outside the scope of the auction and can have no impact on the bids, is in line with paragraph 129 of the EEAG.

### 3.3.5.6. Aid to installations not subject to auctions

- (276) Aid not granted through a competitive bidding procedure has to be assessed under paragraph 131 of the EEAG. The Commission has already examined the tariff and reference values applicable to beneficiaries not subject to auctions in its 2014 EEG decision. It found that the methodology followed by the EEG 2014 to determine feed-in tariffs, market premiums and flexibility premiums were in line with paragraph 131 of the EEAG (see Section 3.3.1 of the 2014 EEG decision). This methodology has not been modified. On the contrary, as indicated under

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<sup>51</sup> Commission decision of 19 April 2016 – Germany - Modification of the modalities of the support under the EEG 2014 – Reform of the Renewable Energy Law, cumulation, OJ C 390 of 21.10.2016, see in particular recital 13.

recital (33) above, the tariff adjustments result from the implementation of the automatic decrease provided for under the EEG 2014. When amendments were made, they have been made on the basis of the studies and market observations undertaken by Germany in line with the revision procedure described under Section 2.3.3 of the 2014 EEG decision.

- (277) As to the changes made to the determination of the tariff/reference value for onshore wind installations not subject to the auction requirement, the Commission notes that the reference value/tariff will be determined based on the same methodology as for installations subject to auctions and the exact reference value/tariff (for a site with 100 % wind quality) will be established based on the average highest winning bids submitted in the auctions of the preceding year. This system implies that the reference value is defined by reference to latest LCOE information and is therefore ensuring that the aid will not exceed the difference between the LCOE and the market price.

### *3.3.6. Distortion of competition and Balancing test*

- (278) According to paragraph 90 of the EEAG the Commission considers that aid for environmental purposes will by its very nature tend to favour environmentally friendly products and technologies at the expense of other more polluting ones. Moreover, the aid will in principle not be viewed as an undue distortion of competition since it is inherently linked to its very objective.
- (279) Furthermore, according to paragraph 116 of the EEAG, the Commission presumes the limited distortive effects of aid to renewables provided all other conditions are met. The Commission considers therefore that the notified measure does not have undue distortive effects because the applicable conditions laid out in Section 3.3.2.1 of the EEAG are fulfilled, as discussed above.
- (280) Consequently, the Commission concludes that the distortion of competition caused is limited and are outbalanced by the positive impact of the support scheme for the environment.

### *3.3.7. Transparency*

- (281) According to point 104 EEAG, Member States must ensure the publication of key information on the aid scheme on a comprehensive State aid website. Germany had already demonstrated compliance with that condition under the 2014 EEG Decision and has confirmed that it would publish the details of the scheme on [www.bmwi.de](http://www.bmwi.de).

### *3.3.8. Evaluation plan*

- (282) 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.

- (283) 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.
- (284) 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 2.15 above.
- (285) 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.
- (286) 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.
- (287) The Commission acknowledges the commitments made by Germany (see recital (155) 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.
- (288) The Commission notes the commitment made by Germany to submit the final evaluation report at the latest by 30 June 2020 and the commitment to deliver interim reports in 2018 (see recital (154) above).

### *3.3.9. Compatibility with Articles 30 and 110 TFEU*

- (289) In accordance with paragraph 29 of the EEAG, as the EEG-surcharge has the aim of financing the support for EEG electricity, the Commission has examined its compliance with Articles 30 and 110 TFEU.
- (290) The financing mechanism of the support of EEG electricity, i.e. the EEG-surcharge, is imposed on domestic and imported products according to the same criteria. As a result of the aid, the burden resulting from the EEG-surcharge or a part thereof – depending on the level of the aid – is offset. Therefore, the Commission has assessed whether there could be discriminatory treatment with regard to imported products, to the extent that these are in a similar situation.
- (291) The Commission had in its decision SA38632 concluded that the notified aid scheme (the EEG 2014), including its financing mechanism, complied with Articles 30/110 TFEU in view of the opening of auctions to operators located in other Member States provided for under §2(6) EEG-Act 2014.

- (292) This conclusion remains valid: first the §5 EEG 2017 maintains the principle introduced by the EEG 2014 that auctions are open for operators established in other Member States subject to the same conditions as those examined in decision 2014. The Commission notes in addition, that Germany has already adopted implementing regulation and a cooperation agreement with Denmark. The first auction open to also installations located in other Member States was launched on 12 October 2016 and several Danish installations were selected in the auction. Finally, Germany has adopted a flexible implementation of the requirement to demonstrate physical imports as the EEG 2017 also accepts that an impact on the German electricity market comparable to imports is demonstrated. In the case of Danish installations for the purpose of the pilot auction in 2016, this comparable import was presumed given the high level of connectivity between Germany and Denmark and the volumes of electricity concerned.
- (293) In view of the opening of auctions to operators located in other Member States provided for under §5 EEG 2017, in view also of the fact that Germany started to implement the opening of auctions as committed under the EEG 2014 decision SA.38632 and in view of the possibility to demonstrate physical imports by way of demonstrating comparable impacts on the German electricity market, the Commission concludes that the notified aid scheme, including its financing mechanism, complies with Articles 30/110 TFEU.

## **B. Aid in the form of reductions in the funding of support for energy from renewable sources**

### *3.3.10. Changes to electro-intensity*

- (294) Under the EEG 2017 eligibility for reduced EEG-surcharges has been extended to undertakings belonging to List 1 of Annex 4 to the EEG having an electro-intensity between 14 % and 17 % (while under the EEG 2014 the electro-intensity required was of 17 % for undertakings belonging to List 1 of Annex 4 to the EEG).
- (295) In line with paragraph 185 of the EEAG, Member States can grant aid to undertakings belonging to the sectors listed in Annex 3 to the EEAG. As List 1 of Annex 4 to the EEG corresponds to Annex 3 of the EEAG, it is in line with the EEAG to grant reductions to undertakings active in sectors listed on List 1 of Annex 4 to the EEG.
- (296) In addition, Germany subject eligibility to an electro-intensity between 14 % and 17 %. This is in line with paragraph 187 of the EEAG as Member States can reduce the choice of eligible beneficiaries within the eligible sector provided the choice of beneficiaries is made on the basis of objective, non-discriminatory and transparent criteria and must be granted in the same way for all competitors in the same sector if they are in a similar factual situation.
- (297) The Commission has already concluded that additional eligibility criteria based on electro-intensity are objective, transparent and does not discriminate between competitors in the same sector that are in a similar factual situation. The fact that undertakings in the same sector with electro-intensity above 17 % and electro-intensity between 14 % and 17 % obtain respectively an 85 % and an 80 % reduction is also in line with the principle of non-discrimination. Undertakings active in the same sector (i.e. exposed to the same trade intensity) but having a

higher electro-intensity will relatively speaking be more sensitive to the EEG-surcharge. This can justify a slightly higher reduction.

### *3.3.11. Changes to benchmarks*

- (298) Germany has also changed the methodology to define electro-intensity: instead of using efficiency benchmarks, Germany will continue to use the arithmetic mean over the last three years for which data on electricity consumption is available.
- (299) For the calculation of the electro-intensity of the undertakings, paragraph 186 of the EEAG provides that use is to be made of standard electricity consumption efficiency benchmarks for the industry where available. Paragraph 5 of Annex 4 to the EEAG provides that if such benchmarks are not available, the arithmetic mean over the last three years for which data on electricity consumption is available is to be used.
- (300) The Commission agrees that emission benchmarks under Annex 1 to Commission Decision 2011/278/EU of 27 April 2011 determining transitional Union-wide rules for harmonised free allocation of emission allowances pursuant to Article 10a of Directive 2003/87/EC of the European Parliament and of the Council<sup>52</sup> cannot be considered as efficiency benchmarks within the meaning of paragraph 186 of the EEAG given that they do not benchmark electricity consumption but only emissions.
- (301) The Commission takes note of the fact that for the time being Germany does not intend to develop standard electricity consumption efficiency benchmarks.
- (302) The Commission further agrees that benchmarks established under the State aid guidelines in the context of the EU Emissions Trading System (EU ETS) cannot be considered as suitable standard electricity consumption efficiency benchmarks for the purpose of calculating the electro-intensity of undertakings with a view to determine their eligibility for reduced renewable surcharges under paragraph 187 of the EEAG and Annex 4 to the EEAG.
- (303) First, the electricity consumption efficiency benchmarks developed under the State aid guidelines in the context of the EU ETS were developed for another purpose: calculating the maximum amount of aid to be granted for indirect emissions, in sectors and subsectors deemed to be exposed to a significant risk of carbon leakage. Also, they were developed only for 19 products, with fall-back electricity consumption efficiency benchmark applicable for other cases. Finally, in line with their purpose of ensuring proportionality of aid to eligible undertakings, they have been established by reference to the most efficient producers of a given product at EU level.
- (304) By contrast, efficiency benchmarks within the meaning of paragraph 187 of the EEAG aim at defining electro-intensity of companies to verify their eligibility to surcharge reductions. Given that difference in purpose (definition of eligibility of undertakings versus ensuring proportionality of aid), the perspective used to define the efficiency benchmark will logically be different; defining an efficiency benchmark on the basis of the consumption of the most efficient producers is consistent with the purpose of limiting the aid to the minimum necessary but

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<sup>52</sup> OJ 2011 L 130, p. 19 et seq.

would be too restrictive to determine eligibility of undertakings. This is why the EEAG refer to the use of benchmarks based on standard electricity consumption.

(305) This difference in the purpose and the perspective renders the benchmarks developed under the State aid guidelines in the context of the EU ETS unsuitable to benchmark standard electricity consumption within the meaning of paragraph 187 of the EEAG with a view to verify eligibility to reductions<sup>53</sup>.

(306) The Commission therefore concludes that the changes made to the EEG 2014 with a view to: a) extend eligibility for reductions on the EEG-surcharge to undertakings of List 1 of Annex 4 to the EEG and b) use the arithmetic mean over the last three years for which data on electricity consumption is available in order to calculate electro-intensity of potential beneficiaries of reductions on the EEG-surcharge are in line with Section 3.7.2 of the EEAG, in particular paragraphs 187 and 186 of the EEAG.

#### **4. AUTHENTIC LANGUAGE**

(307) 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.

#### **5. CONCLUSION**

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

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).<sup>54</sup>

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 of paragraph 20 of the EEAG and is not granted on the basis of a competitive bidding process.

The Commission also reminds Germany that the evaluation report must be submitted by 30 June 2020 at the latest and that this decision is valid until 31 December 2020.

If this letter contains confidential information which should not be disclosed to third parties, 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 the disclosure to third parties and to the publication of the full text of the letter in the authentic language on the Internet site:

<http://ec.europa.eu/competition/elojade/isef/index.cfm>.

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<sup>53</sup> Given the difference in the purpose and the perspective, this conclusion is without prejudice to the Commission's future position on the risk of carbon leakage as regards ETS for the work in the context of elaborating carbon leakage rules in the 2030 climate and energy policy framework.

<sup>54</sup> OJ L 140, 30.4.2004, p. 1.



Your request should be sent electronically to the following address:

European Commission,  
Directorate-General Competition  
State Aid Greffe  
B-1049 Brussels  
[Stateaidgreffe@ec.europa.eu](mailto:Stateaidgreffe@ec.europa.eu)

Yours faithfully  
For the Commission

Margrethe VESTAGER  
Member of the Commission