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C(2021) 1342 final

<p>In the published version of this decision, some information has been omitted, pursuant to articles 30 and 31 of Council Regulation (EU) 2015/1589 of 13 July 2015 laying down detailed rules for the application of Article 108 of the Treaty on the Functioning of the European Union, concerning non-disclosure of information covered by professional secrecy. The omissions are shown thus [...]</p>		<p style="text-align: center;">PUBLIC VERSION</p> <p>This document is made available for information purposes only.</p>
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**Subject: State Aid SA.53625 (2020/N) – Germany – Lignite phase-out**

Excellency,

The Commission wishes to inform Germany that, having examined the information supplied by your authorities on the measure referred to above, it has decided to initiate the procedure laid down in Article 108(2) of the Treaty on the Functioning of the European Union (“TFEU”).

**1. THE PROCEDURE**

- (1) Following pre-notification contacts, Germany notified to the Commission, by electronic notification of 2 December 2020, pursuant to Article 108(3) TFEU, support to Lausitz Energie Kraftwerke AG (“LEAG”) and RWE Power AG (“RWE”) for the phase-out of lignite powered electricity generation. Germany submitted additional information on 13 and 14 January 2021.
- (2) The Commission also received spontaneous submissions from third parties. Submissions of Greenpeace Energy and an anonymous party were forwarded to Germany for comments on 7 October 2020. Germany responded to the allegations of the third parties on 17 November 2020. LEAG submitted observations on 10 December 2020.

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## 2. DETAILED DESCRIPTION OF THE MEASURE

### 2.1. Background

#### 2.1.1. Germany's climate objectives

- (3) Germany aims to achieve greenhouse gas neutrality by 2050. In this context, Germany has set an intermediary target for 2030 of reducing the economy-wide greenhouse gas emissions by at least 55% compared to 1990 levels. In order to achieve this, it has set also sector-specific targets for the energy sector. The CO<sub>2</sub> emissions from the energy sector will have to be reduced from approximately 254 million tonnes CO<sub>2</sub> in 2019<sup>1</sup> to 175 - 183 million tonnes CO<sub>2</sub> eq. by 2030.
- (4) Germany considers the reduction of coal-fired power generation critical to achieve its climate goals. Germany envisages the phase-out from coal-fired powered generation by 2038 at the latest. This includes both hard coal and lignite. In 2019, coal-fired power generation accounted for 28% of Germany's electricity mix, whereof lignite contributed 19%<sup>2</sup>. Lignite emitted 130.74 million tonnes of CO<sub>2</sub> in 2018<sup>3</sup>. This represents approximately 40% of the CO<sub>2</sub> emissions of the energy sector in that year<sup>4</sup>.

#### 2.1.2. Elaboration of policy measures

- (5) In order to secure a social consensus on a revised energy and climate policy, the German government appointed the Commission on Growth, Structural Change and Employment ("Coal Commission") on 6 June 2018. The members of the Coal Commission represented a broad cross-section of societal, political and economic actors.
- (6) The Coal Commission's proposals were presented in January 2019 and aimed at reaching the national climate targets, whilst at the same time meeting the objectives of security of supply, affordable electricity and safeguarding prospects for those employed in coal regions. With regard to hard coal and lignite-fired power generation, it proposed a phase-out by 2038. To achieve this goal it proposed a combination of mutually agreed closure arrangements between the government and lignite operators, as well as tenders to encourage early closure of hard coal and small lignite plants.
- (7) In addition to the Coal Commission's proposals, Germany assessed alternative policy options to achieve the envisaged CO<sub>2</sub> emission reductions. More specifically, it assessed the following: (i) reliance on the existing EU Emissions Trading System ("ETS") and the targets for renewable energy, (ii)

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<sup>1</sup> Source: <https://www.umweltbundesamt.de/galerie/entwicklung-der-treibhausgasemissionen-in-2019>.

<sup>2</sup> Source: <https://www.ag-energiebilanzen.de/>. Strommix 2019 estimates lignite generation at 114 TWh, against the total generation (excluding *Pumpspeicherenergie*) of 605 TWh, which corresponds to a 19% share.

<sup>3</sup> <https://de.statista.com/statistik/daten/studie/1086407/umfrage/kohlendioxidemissionen-aller-braunkohlekraftwerke-in-deutschland/>.

<sup>4</sup> The CO<sub>2</sub> emissions of the energy sector amounted to 305 million tonnes in 2018 according to <https://www.umweltbundesamt.de/galerie/entwicklung-der-treibhausgasemissionen-in-2019>.

a national minimum price for CO<sub>2</sub> for sectors already covered by the EU ETS, (iii) regulatory closure without a compensation. Germany explained that these options were not retained in view of the following:

- (8) Option (i): Relying on the EU ETS would have led to emission reductions at European level, but would not have allowed reaching national emission reduction targets in a similarly targeted way. It would not have been possible to plan a gradual closure path upfront, which would have had a more significant impact on security of supply and employees in the sector.
- (9) Option (ii): A minimum price for CO<sub>2</sub> would have led to higher costs for the energy sector, as well as industry. This would disadvantage German undertakings and distort the internal market. Like for the first option, the impact on coal-fired power generation would be difficult to predict and it would not have been possible to plan a gradual reduction path upfront. In addition, setting the price at the correct level is challenging. If the price were to be set too low, it would take longer to reach the desired environmental results. If the price were to be set too high, this could lead to the sudden closure of a significant amount of coal-fired generation, which could have negative social impacts and threaten security of supply. The same arguments hold true for other policies with comparable effects, such as higher excise duties for hard coal and lignite, a carbon tax or stricter environmental performance standards.
- (10) Option (iii): Regulatory closure as of 2020 without any compensation would have been a stronger interference with the property rights of the individual operators.
- (11) Germany also carried out additional assessments to help shape the design of the coal phase-out measures. In particular, Germany examined the expected profitability of lignite-fired power plants going forward and the additional mine rehabilitation costs the operators face due to the fact that their lignite installations close down earlier than envisaged (see recitals (29) et seq. below).

### 2.1.3. *The closure law*

- (12) Following the Coal Commission’s proposals and the complementary assessments, Germany adopted the “Act on the reduction and termination of coal-fired power generation and on the amendment of other laws” (hereafter, “the closure law”). The closure law sets the following targets for the reduction and termination of coal-fired generation in Germany.

*Table 1: Targets for coal-fired generation in Germany*

Target date	Overall target level (GW)	Hard coal target (GW)	Lignite target (GW)
31.12.2022	30	15	15
01.04.2030	17	8	9
31.12.2038	0	0	0

*Source: closure law, Article 1, Part 2, para. 4.*

- (13) In order to reach these reduction targets, the closure law foresees a gradual and steady phase-out of coal-fired generation. The design of the phase-out instruments was largely inspired by the proposals of the Coal Commission. For lignite, the phase-out and the compensation are elaborated through a negotiated procedure between the German government and the operators. A deferred closure mechanism (see recitals **Error! Reference source not found.** et seq. below) for three lignite installations is also envisaged. For hard coal, the phase-out will be encouraged through annual auctions from 2020 to 2026, accompanied by a regulatory closure path without compensation for the period 2024 – 2038.
- (14) Germany explained that it has not chosen to phase-out lignite-fired power installations via auctions, because lignite installations are inextricably linked to the mining facilities, which requires a more systemic approach. In addition, there are only two major players (RWE and LEAG), which makes a truly competitive auction difficult.
- (15) Germany will regularly evaluate the impact of these phase-out instruments, notably their contribution to the CO<sub>2</sub> emission reductions, as well as their impact on security of supply and electricity prices. The evaluations are scheduled for 2022, 2026, 2029 and 2032<sup>5</sup>.

#### *2.1.4. Scope of the current decision*

- (16) This decision concerns the closure of the lignite installations of LEAG and RWE against a compensation<sup>6</sup>.
- (17) It does not cover the parts of the closure law related to the phase-out of hard coal and small lignite installations or related to the CHP (combined heat and power) scheme. In addition, this decision does not constitute an implicit prolongation of the State aid approval for the capacity reserve or the network reserve<sup>7</sup>. The tender mechanism for the phase-out of hard coal was covered by a separate Commission decision in which it did not raise objections to the measure<sup>8</sup>.

## **2.2. Closure compensation for lignite plants**

### *2.2.1. Legal basis*

- (18) The legal basis for the measure is the closure law of 8 August 2020 as amended by Articles 22 and 23 of the “Act amending the Renewable Energy Act and other energy acts” (“renewable energy law”), published on 21 December 2020. The closure law contains a suspensive clause making the

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<sup>5</sup> Article 1, Part 7, para. 54 of the closure law.

<sup>6</sup> Excluding lignite plants with a net capacity of up to and including 150 MW.

<sup>7</sup> These security of supply instruments were introduced by Germany following the Commission’s no-objection decision on the capacity reserve in 2018, which covered the period up until 30 September 2025 (Commission Decision of 7 February 2018 in SA.45852) and the no-objection decision on the network reserve with a size of 5.4 GW in 2016, which covered the period up until 30 June 2020 (Commission Decision of 20 December 2016 in SA.42955).

<sup>8</sup> Commission Decision of 25 November 2020 in SA.58181.

payments to RWE and LEAG subject to the Commission’s State aid approval<sup>9</sup>.

- (19) The closure law authorises the German government to conclude a public law contract with the lignite operators in order to regulate the terms and conditions of the reduction and termination of the lignite-fired power generation<sup>10</sup>.
- (20) On that basis, Germany and the lignite operators elaborated terms and conditions included in the “Public-law contract on the reduction and termination of lignite-fired electricity generation in Germany” (hereafter, “the contract”). The contract was approved by the German Parliament on 13 January 2021 and contains a clause making its entry into force subject to the State aid clearance by the European Commission<sup>11</sup>.

### 2.2.2. *Closure dates*

- (21) The closure law contains a table of 30 lignite installations belonging to RWE and LEAG indicating their final closure dates between 2020 and 2038 (see Table 2 below)<sup>12</sup>. For certain installations, RWE can choose between two blocks for a specific closure date<sup>13</sup>. In addition, some blocks will be transferred to the deferred closure mechanism, before they close down on a permanent basis.
- (22) Lignite installations with a net capacity of up to and including 150 MW do not fall within the scope of this measure. Under the closure law, they are treated in the same way as small hard-coal installations<sup>14</sup>.
- (23) The operator of a lignite installation may temporarily or definitely close the installation before the closure date envisaged in the closure law, unless the installation is necessary for network stability. In such a case, the installation would be required to run in the network reserve<sup>15</sup>, but no longer than until the closure date that was initially foreseen<sup>16</sup>. Such earlier closure would not affect the compensation payments described in section 2.2.3. below.
- (24) As mentioned in recital (15), Germany will regularly review and assess the measures taken for the coal phase-out. As part of this review, Germany will also examine whether the closure date for lignite installations foreseen to close after 2030 can be brought forward by up to three years, which would allow a complete phase-out by 2035<sup>17</sup>. This possibility would not impact the

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<sup>9</sup> Article 10 of the closure law.

<sup>10</sup> Article 1, Part 5, para.49 of the closure law.

<sup>11</sup> Para. 25 of the contract.

<sup>12</sup> Annex 2 of the closure law.

<sup>13</sup> E.g. either Weisweiler G or H is to be closed on 1 April 2028 and the other block shall close on 1 April 2029. Article 1, Part 5, para.41 of the closure law.

<sup>14</sup> In accordance with Article 1, Part 5, para.43 and Part 4, para.38 they are eligible to participate to the auctions organised for the hard-coal phase-out and they will also be subject to the regulatory closure only as of 2030.

<sup>15</sup> The Commission adopted a no-objection decision on the network reserve with a size of 5.4 GW in 2016, until 30 June 2020 (SA.42955).

<sup>16</sup> Article 1, Part 5, para.42 of the closure law.

<sup>17</sup> Article 1, Part 5, para. 47 of the closure law.

duration an installation would become part of the deferred closure mechanism and is referred to below as “the frontloading decommissioning” option.

*Table 2: Lignite installations: entry into the deferred closure mechanism and closure dates*

<b>Operator</b>	<b>Name of the installation</b>	<b>MW (net)</b>	<b>Date of transfer to deferred closure mechanism</b>	<b>Closure date</b>
RWE	Niederaußem D	297	-	31.12.2020
RWE	Niederaußem C	295	-	31.12.2021
RWE	Neurath B	294	-	31.12.2021
RWE	Weisweiler E or F	321	-	31.12.2021
RWE	Neurath A	294	-	01.04.2022
RWE	Frechen /Wachtberg (Brikettierung)	120 (out of 176)	-	31.12.2022
RWE	Neurath D	607	-	31.12.2022
RWE	Neurath E	604	-	31.12.2022
RWE	Weisweiler E or F	321	-	01.01.2025
LEAG	Jänschwalde A	465	31.12.2025	31.12.2028
LEAG	Jänschwalde B	465	31.12.2027	31.12.2028
RWE	Weisweiler G or H	663 or 656	-	01.04.2028
LEAG	Jänschwalde C	465	-	31.12.2028
LEAG	Jänschwalde D	465	-	31.12.2028
RWE	Weisweiler G or H	663 or 656	-	01.04.2029
LEAG	Boxberg N	465	-	31.12.2029
LEAG	Boxberg P	465	-	31.12.2029
RWE	Niederaußem G or H	628 or 648	-	31.12.2029
RWE	Niederaußem G or H	628 or 648	31.12.2029	31.12.2033

Saale Energie	Schkopau A	450	-	31.12.2034
Saale Energie	Schkopau B	450	-	31.12.2034
LEAG	Lippendorf R	875	-	31.12.2035
EnBW	Lippendorf S	875	-	31.12.2035
RWE	Niederaußem K	944	-	31.12.2038
RWE	Neurath F (BoA 2)	1060	-	31.12.2038
RWE	Neurath G (BoA 3)	1060	-	31.12.2038
LEAG	Schwarze Pumpe A	750	-	31.12.2038
LEAG	Schwarze Pumpe B	750	-	31.12.2038
LEAG	Boxberg R	640	-	31.12.2038
LEAG	Boxberg Q	857	-	31.12.2038

### 2.2.3. Compensation

- (25) For the closure of lignite installations by the end of 2029, the closure law foresees a compensation of EUR 2.6 billion to RWE for the closure of the lignite installations in Rhineland and EUR 1.75 billion to LEAG for the closure of the installations in Lusatia<sup>18</sup>.
- (26) These amounts do not include the remuneration of RWE and LEAG for the transfer of installations to the deferred closure mechanism or to the network reserve<sup>19</sup>.
- (27) The agreed compensation will be granted in 15 equal annual instalments on the 31 December, starting from the year in which the first installation of the operator closes or is transferred to the deferred closure mechanism<sup>20</sup>. RWE would receive the compensation between 31 December 2020 and 31 December 2034, whilst LEAG would receive its compensation payments between 31 December 2025 and 31 December 2039.
- (28) In accordance with the contract, the compensation is to be used to cover the rehabilitation costs for the opencast mines in a timely manner<sup>21</sup>.
- (29) Germany submitted that the compensation amounts cover part of the operators' foregone profits, because the closure law requires them to close down earlier than they would have done otherwise. It is also of the view that the additional mine rehabilitation costs that RWE and LEAG face following the requirement to cease their activities earlier than envisaged warrant a compensation. The justification for the compensation amounts submitted by Germany is described below.

<sup>18</sup> Article 1, Part 5, para.44 of the closure law.

<sup>19</sup> Para. 22 (3) of the contract.

<sup>20</sup> Article 1, Part 5, para. 45 of the closure law.

<sup>21</sup> Para. 14 – para. 16 of the contract.

### 2.2.3.1. Foregone profits of power generation

#### *(i) Assumptions underlying the calculation*

- (30) Germany described a model in which it assessed the foregone profits of all RWE and LEAG installations. It then compared the foregone profits of the lignite installations with the compensation amounts.
- (31) To establish the foregone profits Germany compared a hypothetical situation without the closure law against the anticipated closure following the adoption of the closure law. It based its projections on various input parameters described below.
- (32) As a first step, Germany relied on a simulation of the European electricity system up to 2040 carried out by r2b energy consulting, called “r2b’s fundamental electricity market model”. The same model is used for national resource adequacy study in Germany. The model then derived hourly power prices for the German bidding zone.
- (33) As a second step, Germany analysed the economic viability of lignite-fired power generation units with the “r2b’s Unit Commitment model”. Foregone operating profits have been estimated from this model following a simulation of the hourly decision of a power plant to operate in order to maximise short-term profits, taking into account the simulated merit order. For lignite plants, this model incorporates fixed operating expenses<sup>22</sup> and fixed costs<sup>23</sup> to determine expected profit margins.
- (34) As a third step, Germany then estimated the foregone profits due to the closure law by aggregating the hourly foregone profits.
- (35) The model is based on several price assumptions for fuel and CO<sub>2</sub>. The price assumptions until 2023 are based on recently observed prices for energy futures traded on derivate markets. The price assumptions over the long-term come from the International Energy Agency in the World Energy Outlook 2018 report (“WEO 2018”) under the “new policies” scenario<sup>24</sup>, using linear interpolation between the data points. The “new policies” scenario incorporates policies and measures that governments have already put in place, and it also takes into account the effects of announced policies, as expressed in official targets and plans.
- (36) The model is also based on several additional assumptions. The decision to start production takes into account parameters such as start-up costs, minimum load requirements and minimum up- and downtimes. The net nominal capacity, electrical efficiencies and heat extraction were established for each installation individually. The model includes a uniform average CO<sub>2</sub> intensity<sup>25</sup> for all plants. Annual fixed costs were defined for different age

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<sup>22</sup> Starting at 1.5 euro per MWh and decreasing over time to 1 euro per MWh.

<sup>23</sup> Estimated at 2.5 euro per MWh.

<sup>24</sup> The assumptions about CO<sub>2</sub> prices are: USD 25 (2017) in 2025 and USD 43 (2017) in 2040.

<sup>25</sup> Uniform average CO<sub>2</sub> intensity of lignite is estimated at 0.401 tonnes of CO<sub>2</sub> per MWh at a 100% efficiency rate. This is then adapted to the actual efficiency rate of the individual installations (e.g. an



groups of installations<sup>26</sup>. The RWE installations were projected to run between 48 and 70 years and the LEAG installations were projected to run between 48 and 54 years in the scenario without the closure law.

- (37) For LEAG, Germany took into consideration a situation in which LEAG would – in the absence of the closure law – have expanded its mining activities in two additional subsections of mining sites (Welzow-Süd TA 2 and Mühlrose, which is a subsection of the mining site Nochten) to cater for the volume of lignite required for the projected lifespans. For these two subsections, LEAG currently does not have the required approvals (see recital 48).
- (38) Then, the impact of the closure law was estimated by calculating the net present value (“NPV”) of foregone profits. The NPV of the foregone profits and of the compensation amount were both established using a discount rate of 7.5%. Germany considers that 7.5% is a relatively high discount rate, which is justified by the uncertainties surrounding the future market developments.

*(ii) Outcome of the compensation calculation*

- (39) Based on the above modelling, Germany calculated that for RWE, the NPV of foregone profits would amount to EUR 1.525 billion in a base case scenario. Therefore, Germany reaches the conclusion that the NPV of total foregone profits of RWE lignite installations would exceed the NPV of the compensation amount – valued at EUR 1.337 billion. Without the closure law, RWE’s installations would need to run until 2051 for the expected foregone profits to exceed the compensation amount.
- (40) Germany reaches this conclusion by taking into account also expected foregone profits for four installations<sup>27</sup> closing after 2030. These four installations are modelled with an expected lifetime of up to 2061 and constitute a significant part of the expected foregone profits. Without taking into account these four installations, the NPV of RWE’s expected foregone profits would amount to EUR 0.64 billion.
- (41) For LEAG, the NPV of foregone profits would amount to EUR 1.291 billion in a base case scenario. Therefore, Germany concludes that LEAG’s foregone profits exceed the NPV of the compensation amount – valued at EUR 0.565 billion. In the scenario without the closure law, LEAG’s installations would need to run until 2040 for the expected foregone profits to exceed the compensation amount.

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installation with an efficiency rate of 40% would be estimated to have a CO<sub>2</sub> intensity of 1.0025 tonnes of CO<sub>2</sub> per MWh).

<sup>26</sup> Average annual fixed costs of lignite power plants are: 60 000 euro per MW for older units, 50 000 euro per MW for middle-aged units and 40 000 euro per MW for younger units.

<sup>27</sup> These four installations are Niederaußem G (with expected closure date end 2033), Niederaußem K and BoA 2 Neurath F and G (with expected closure date end 2038).

- (42) Germany reaches this conclusion by taking into account also the expected foregone profits of six LEAG installations<sup>28</sup> closing after 2030. These six installations are modelled with an expected lifetime of up to 2061 and constitute a significant part to expected foregone profits. The NPV of expected foregone profits for installations closing up to 2030 amounts to EUR 0.37 billion.

*(iii) Plausibility studies submitted by Germany*

- (43) In recognition of the dependence of the running time of the generation facilities on the volumes of lignite extracted from the mines, Germany shared two plausibility studies that were carried out by consultants.
- (44) For RWE, Germany submitted a plausibility study by EY and BET (“RWE plausibility study”) examining whether the closure law leads to an earlier closure of the generating plants<sup>29</sup>. This is examined on the basis of the required volumes of lignite that need to be extracted from the mines and does not take economic considerations into account. RWE planned its lignite extractions on the basis of a decision by the Land of North Rhine-Westphalia of 2016<sup>30</sup>. According to this decision, lignite extraction in the site of Inden was envisaged until 2030 – 2032 and the lignite extraction in the sites Hambach and Garzweiler until 2045/2050. According to internal company documents, RWE did not plan to close lignite installations within the next ten years and no detailed plans beyond this period were made.
- (45) The RWE plausibility study comes to the conclusion that the closure law leads to lower extraction volumes and an earlier closure of the installations. According to their estimations, the amount of lignite required is 388 to 605 million tonnes lower than in a scenario without the closure law and the capacity years<sup>31</sup> of the installations are reduced by between 49.8 and 79.2 GWa. Should the installations close earlier than indicated in Table 2 above, these numbers would further increase.
- (46) The closure dates of the RWE installations taken into account by the consultants differ from the closure dates that Germany considered in its foregone profits calculations. Germany was more conservative regarding some of the earlier closure dates but foresaw longer running times for the installations that would close down last.
- (47) Also for LEAG, Germany submitted a plausibility study by EY and BET (“LEAG plausibility study”) regarding the volumes of coal that LEAG was expected to extract before the announcement of the coal phase-out and what

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<sup>28</sup> These six installations are Schwarze Pumpe A, Schwarze Pumpe B, Lippendorf S, Lippendorf R, Boxberg Q and Boxberg R.

<sup>29</sup> *Plausibilisierung der Unternehmensplanung der RWE Power AG hinsichtlich der Nutzung von Braunkohle* by EY and BET, June 2020.

<sup>30</sup> Leitentscheidung NRW “Rheinisches Revier”.

<sup>31</sup> This sum of capacity years is calculated as the sum of the capacity years of each power plant, which is the result of multiplying the net performance of each power plant by the sum of the years of early closure.

the closure law meant for the closure dates of the generation installations<sup>32</sup>. It does not include an economic assessment, but focuses on the implications of the extraction volumes on the closure dates.

- (48) LEAG adopted a planning for its lignite installations on 30 March 2017 (“Revierkonzept 2017”) after taking over these installations from Vattenfall. The Revierkonzept 2017 replaced Vattenfall’s earlier planning (“Vattenfall Verkaufsszenario”). The Revierkonzept 2017 included a final investment decision for the expansion to the subsection Mühlrose, which is part of the mining site Nochten and the decision to initiate the relevant administrative approval procedures. The Revierkonzept 2017 also stipulated that the final investment decision regarding the expansion to Welzow-Süd TA 2 would be taken in 2020. Following the adoption of the Revierkonzept 2017, LEAG initiated the procedure to obtain the regional authorities’ approval for Mühlrose’s *Rahmenbetriebsplan*.
- (49) The LEAG plausibility study comes to the conclusion that the amount of lignite required following the closure law is 139 million tonnes lower than would have been required for the Revierkonzept 2017, which corresponds to a change in capacity years<sup>33</sup> of the power installations of 19 GWa. The analysis also shows that, when comparing the closure law scenario with a scenario without an expansion to Mühlrose, the expected extraction volume would only be 13 million tonnes lower.

*(iv) Alternative scenarios*

- (50) Considering the plausibility studies mentioned above and the possibility for anticipated closure of installations scheduled to cease operations after 2030 (the so-called frontloading decommissioning option described in recital (24)), Germany carried out additional calculations regarding the potential foregone profits of the lignite installations.
- (51) For plants closing after 2030, the frontloading decommissioning option represents three additional years of foregone profits compared to Germany’s base case scenario. Germany calculates that for RWE, the NPV of the foregone profits would increase by EUR 365 million to amount to EUR 1.890 billion under this scenario. For LEAG, the NPV of the foregone profits would increase by EUR 403 million and amount to EUR 1.694 billion under this scenario.
- (52) In the base case scenario (see recital (39)), Germany had considered that LEAG would have expanded its mining activities to the subsections Mühlrose and Welzow-Süd TA 2. Based on the plausibility studies, Germany also simulated LEAG’s foregone profits taking into account various extraction scenarios. It simulated the foregone profits in a scenario in which LEAG would expand only to the subsection of Mühlrose and a scenario without any expansion. For both extraction scenarios, it also

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<sup>32</sup> *Plausibilisierung der Unternehmensplanung der LEAG hinsichtlich der Nutzung von Braunkohle* by EY and BET, June 2020.

<sup>33</sup> This sum of capacity years is calculated as the sum of the capacity years of each power plant, which is the result of multiplying the net performance of each power plant by the sum of the years of early closure.

distinguished between a frontloading option and the regular phase-out in accordance with the dates in Table 2 above.

- (53) Germany explains that the NPV of the expected foregone profits would still exceed the NPV of compensation amount in all these scenarios for LEAG, except under the Vattenfall Verkaufsszenario without the frontloading decommissioning option. There, the NPV of foregone profits would amount to EUR 0.371 billion, compared to a NPV of the compensation of EUR 0.565 billion.
- (54) For RWE, all alternative scenarios presented by Germany show that the NPV of foregone profits exceeds the NPV of the compensation of EUR 1.337 billion.

#### 2.2.3.2. Additional mine rehabilitation costs

- (55) In Germany's view, not only the foregone profits of the electricity generation facilities should be taken into account when determining a proportionate compensation, but also the additional mine rehabilitation costs that operators face due to the earlier closure of the lignite installations. Such additional mine rehabilitation costs result from the fact that companies need to adapt their mining and rehabilitation plans, following the adoption of the closure law<sup>34</sup>. It covers costs that would not have occurred if the closure law would not have been adopted and are therefore referred to as additional costs. Germany considers that covering such additional costs does not relieve the undertakings of obligations they would have in any event.
- (56) To quantify these additional mine rehabilitation costs, Germany commissioned a study (the "additional mining cost study")<sup>35</sup>, which compared the rehabilitation costs of the opencast mines without the closure law against the rehabilitation costs resulting from an anticipated closure of the installations. The study finds that early closure leads to additional costs resulting from the need to adapt the rehabilitation of the mining sites and the additional financing costs resulting from the anticipated use of provisions (interest effect).
- (57) The additional mining cost study develops a baseline scenario without the closure law. In this scenario, it takes into account the extraction of mining sites, which have been authorised in the context of so-called *Rahmenbetriebsplänen*. It also considers that in such a scenario no additional generation installations would be built. The study concedes that there are many varying projections regarding the lifetime of lignite installations in a scenario without the closure law and chooses to take into consideration different technical and economic lifespans for different categories of lignite

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<sup>34</sup> As described below, Germany estimates that the preservation of the Hambacher Forst results in the highest additional costs (estimated at EUR 1.5 to 1.6 billion). Even if less lignite is mined, significant movements of soil are required to ensure steady embankments (estimated at around EUR 1 to 1.1 billion) and also requires considerable water management efforts (estimated at around EUR 550 million).

<sup>35</sup> Gutachten. Ermittlung von Folgekosten des Braunkohletagebaus bei einem gegenüber aktuellen Braunkohle- bzw. Revierplänen veränderten Abbau und Bestimmung der entsprechenden Ruckstellungen. Authors: BET, EY, ahu, FUMINCO, ZAI, EMCP. 15 April 2020.

installations ranging between 40 and 55 years. Larger lignite installations situated in western Germany that started operating before 1990 are projected to run for up to 55 years. Modern lignite installations that started operating after 1990 are projected to run for 40 years. Lignite installations situated in eastern Germany that have undergone retrofits are considered to run for 45 years and smaller lignite installations with a capacity of less than 100 MW are projected to run for 40 years. These lifespans would have led to the phase-out of lignite generation by 2051 without the closure law.

- (58) The consultants consider that under this baseline scenario not all lignite would need to be extracted from all mining sites to meet the demand of the installations. This is the case of RWE's site Garzweiler II and LEAG's site Reichwalde. The consultants also find no need for LEAG to expand its mining extraction activities to Mühlrose and Welzow-Süd TA 2 to meet the required lignite volumes in the baseline scenario.
- (59) The consultants compare this baseline scenario to two scenarios with the closure law. At the time the additional mining cost study was elaborated, the precise closure dates agreed between the operators and the government were not yet known. The consultants therefore based themselves on the recommendations of the Coal Commission. In a first scenario the installations would close gradually until 2038 according to their age and in a second scenario the consultants included some optimisations in the closure dates to take into account the link of the installations to the mining sites. Both scenarios presume the preservation of the Hambacher Forst, as well as five villages at the mining site of Garzweiler II. The preservation of the Hambacher Forst requires significant movements of soil to ensure steady embankments and requires considerable water management efforts.
- (60) In order to estimate the additional rehabilitation costs the consultants relied on publicly available information and acknowledge the existence of an information asymmetry with the operators. Cost elements include the removal of waste material, recultivation and landscaping, geotechnical securing, and renaturation. The costs can vary significantly from one mining site to another depending on their specific configuration.
- (61) Also, for the calculation of the additional mine rehabilitation costs in the Rheinisches Revier, the study does not take into account the current extraction levels and the consultants did not dispose of the required information to assess in how far the fact that the lakes to be created following the rehabilitation of the opencast mines will be 40 to 45 meters less deep impacts the cost estimates.
- (62) The extra rehabilitation costs are discounted to a NPV of 31 December 2018. Depending on the precise closure path of the installations and the inflation rate used<sup>36</sup>, the additional costs for RWE were estimated to be between around EUR 1.9 billion and EUR 2.3 billion. The largest part of the costs results from the replanning of the mining site Hambach (between EUR 1.5 billion and EUR 1.65 billion). The additional financing costs were estimated at between EUR 35 million and EUR 210 million. For LEAG, the additional

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<sup>36</sup> The costs were simulated using inflation rates of 1.5%, 2% and 2.5%.

financing and mining costs were estimated to represent between EUR 14 million and EUR 35 million for the Lausitzer Revier and between EUR 1 million and EUR 117 million for the Mitteldeutsches Revier<sup>37</sup>.

- (63) Germany also brings forward that RWE's annual report of 2019 specifies the provisions for mining were increased from EUR 2.5 billion at the end of 2018 to EUR 4.6 billion by the end of 2019: "*We have transferred €2 022 million to our mining provisions to cover the additional operating costs and the earlier rehabilitation (including interest effects). Impairments of our lignite power stations and opencast mines have resulted in burdens totalling €527 million.*" RWE concedes in its annual report that the provisions also depend on the underlying discount factor and that excluding the interest accretion EUR 1.384 billion was added to the provisions for mining damage.

#### 2.2.4. *Deferred closure mechanism*

- (64) In addition to the compensation for foregone profits described above, Germany also intends to compensate three installations for their deferred closure<sup>38</sup>.
- (65) This concerns the following LEAG installations: Jänschwalde A would enter the deferred closure mechanism on 31 December 2025 and Jänschwalde B on 31 December 2027. Both installations are scheduled to close down on a permanent basis by the end of 2028 (see table 2 above). One RWE installation<sup>39</sup> is eligible for the deferred closure compensation as of 31 December 2029 and is scheduled to close down permanently by the end of 2033 (see also Table 2 above). Diverging from the time periods, Jänschwalde A and the RWE installation may close after 18 months already, which would not affect their compensation.
- (66) An installation which is part of the deferred closure mechanism can no longer operate commercially on the electricity market, but might be asked by the Transmission System Operator ("TSO") to generate electricity, if all other appropriate measures pursuant to Section 13 (1) of the Energy Industry Act have been exhausted.
- (67) The remuneration of the operators is based on a formula contained in the closure law<sup>40</sup>. It is based primarily on the foregone profits that the plants would have made if they were allowed to continue to operate commercially on the electricity wholesale market.
- (68) In the context of its regular reviews of the closure law mentioned in recital (15), Germany will also assess whether the closure of the RWE installation<sup>41</sup>, which is scheduled to enter the deferred closure mechanism on 31 December 2029 can be anticipated, without shortening the number of years the installation is scheduled to stay in the deferred closure mechanism. Furthermore, in 2026 Germany will assess whether there is still need to

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<sup>37</sup> The Mitteldeutsches Revier being operated by MIBRAG.

<sup>38</sup> Article 22, para. 50 of the renewable energy law.

<sup>39</sup> Either Niederaußem G or Niederaußem H.

<sup>40</sup> Annex 3.

<sup>41</sup> Either Niederaußem G or Niederaußem H.

transfer this RWE installation to the deferred closure mechanism from the perspective of the energy economy. If that is not the case, the installation shall close by the end of 2029<sup>42</sup>.

### **2.3. Further relevant provisions of the closure law**

- (69) The provisions of the closure law regarding the cancellation of ETS emission allowances are not part of the measure described above, but are relevant in the context of the State aid assessment.
- (70) Article 2 of the closure law amends the national ETS legislation to include a provision on the cancellation of CO<sub>2</sub> emission allowances in the context of the coal phase-out<sup>43</sup>. These allowances will be subtracted from the allowances allocated to Germany.
- (71) Germany will cancel CO<sub>2</sub> emission allowances amounting to the additional emission reductions caused by the closure of coal-fired power installations after taking into account the intervention of the Market Stability Reserve.
- (72) The number of CO<sub>2</sub> emission allowances to be cancelled will be determined by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety under participation of the Federal Ministry of Economic Affairs and Energy and the Federal Ministry of Finance, on the basis of at least two assessments carried out by independent experts.

### **2.4. Third party submissions**

- (73) The Commission received a number of third party spontaneous submissions, including submissions from Greenpeace Energy and an anonymous party. It also received observations from one of the two potential beneficiaries, namely LEAG. The main observations from the third parties are summarised below.

#### *2.4.1. LEAG's observations*

- (74) LEAG brings forward the argument that the early closure of lignite-fired power plants following the adoption of the closure law does not only lead to foregone profits for its installations. It also leads to damages and disadvantages of around EUR 2 billion. These break down as follows:

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<sup>42</sup> Article 1, Part 5, para. 47 of the closure law.

<sup>43</sup> It amends para. 8, section 1 of the *Treibhausgas-Emissionshandelsgesetz*.

Table 3: Damages and disadvantages encountered by LEAG

Item	Damage (EUR million)
Costs for socially acceptable personnel adjustments	[...]
Additional mine rehabilitation costs	[...]
Additional financing costs resulting from the anticipated use of provisions for the mining costs	[...]
Required investments at the lignite plant of Jänschwalde	[...]
Devaluation of mining property	[...]
Loss of cash-flow related to the production of briquettes	[...]
<b>Total</b>	<b>2 017</b>

- (75) The costs for socially acceptable personnel adjustments include costs related to elderly employees approaching the retirement age and the reorientation of younger employees.
- (76) LEAG considers that without the closure law it would have expanded its extraction activities to Mühlrose and Welzow-Süd TA2. As a result of the early closure of its lignite-fired installations it considers that the additional costs for mine rehabilitation amount to EUR [...]: EUR [...] for the site of Jänschwalde, EUR [...] for the site of Nochten (which includes Mühlrose), EUR [...] for the site of Reichwalde and EUR [...] for the site of Welzow-Süd (including Welzow-Süd TA2).
- (77) According to LEAG, it will be faced with additional financing costs, as the provisions will be due earlier than initially foreseen. LEAG applies an interest rate of [...] % and considers that the mining sites in Sachsen would close in 2038 instead of 2042, whilst the sites in Brandenburg would close in 2030 rather than 2033.
- (78) The gradual closure of individual blocks of the Jänschwalde power plant requires the installation of heat generators, which can enable the start-up of individual blocks.
- (79) LEAG also considers that the closure law leads to a devaluation of its mining property, as it will extract lower amounts of lignite.



Table 4: Devaluation of LEAG's mining sites

<b>Mining site</b>	<b>Approx. reduction of lignite extraction volume (million tonnes)</b>	<b>Devaluation (million euros)</b>
<b>Welzow-Süd TA2</b>	[...]	[...]
<b>Welzow-Süd TA1</b>	[...]	[...]
<b>Nochten (Mühlrose)</b>	[...]	[...]
<b>Reichwalde</b>	[...]	[...]
<b>Total</b>	[...]	[...]

- (80) Finally, LEAG considers that it will be faced with a considerable loss of cash-flow related to the production of briquettes for the final consumer. The production depends on the mining sites. The briquette production will decrease as of 2029 compared to a situation without the closure law and will be obliged to cease in 2038.

#### 2.4.2. Observations submitted by other third parties

- (81) Third parties claim that there is no need for State intervention and the measure has no incentive effect, at least for older plants, which are loss-making. They estimate that approximately 90% of the plants scheduled to close on the basis of the closure law will be 25 years or older at the time of closure and can therefore be expected to be fully amortised<sup>44</sup>. In their view, most lignite-fired plants are unprofitable and would in any event terminate their operations earlier than foreseen in the closure law. In order to limit losses, the plants are incentivised to postpone their closure and benefit from the compensation. They also see in this regard a risk of counterproductive effects to the objective of common interest to reduce CO<sub>2</sub> emissions, by maintaining polluting plants in the market longer than necessary and longer than under normal market conditions. They refer in particular to certain LEAG installations, which will close down one year later than what had been anticipated in the Vattenfall Verkaufsszenario<sup>45</sup>. Third parties concede that State aid may be necessary only for some newer plants, but the German government should demonstrate for each of them that they would have closed later if no aid were forthcoming.
- (82) The appropriateness of the measure is questioned, pointing to alternative measures taken in other Member States, for instance in the UK or the Netherlands, to phase-out coal. Several measures are mentioned, such as the

<sup>44</sup> ClientEarth, *Kein Geld für alte Braunkohlekraftwerke*, October 2019: <https://www.documents.clientearth.org/wp-content/uploads/library/2019-10-28-kein-geld-fuer-alte-braunkohlekraftwerke-ce-de.pdf>.

<sup>45</sup> ClientEarth, "Coal phase-out compensation for LEAG", May 2020: <https://www.documents.clientearth.org/wp-content/uploads/library/2020-06-16-legality-of-compensation-for-leag-under-german-coal-phase-out-ce-en.pdf>.

introduction of an emission intensity limit, the tightening of efficiency requirements for the plants, or the successive closure of lignite plants by 2030 without a compensation. Some highlight that in their view many plants would not have the right to any compensation under German law, if the government required the installations to close without any financial recompense.

- (83) Some third parties also bring forward that the compensation to be used for covering rehabilitation costs of opencast mines may violate the polluter pays principle. They note that it is necessary that the compensation is calculated without reference to rehabilitation costs that would anyway be applicable, and that any compensation granted is actually used for the specific purposes related directly to the closure of the lignite plants.
- (84) As regards the proportionality of the compensation and the process for determining the compensation amounts, third parties point to the absence of a transparent formula. It is not clear how the amounts were determined and what variables were taken into account. The closure law only mentions the two components of the compensation (i) lost profits of the power plants and ii) rehabilitation costs of the opencast mines, but it does not clarify how the compensation amounts were determined. The absence of a transparent calculation method makes it difficult to verify, whether the amounts lead to overcompensation.
- (85) Based on independent studies carried out by third parties using publicly available information, third parties argue that the compensation amounts exceed the minimum required. They also note that the compensation amounts are higher than those granted in the context of the *Sicherheitsbereitschaft*<sup>46</sup>. The lack of profitability of the German lignite industry, the age of the plants concerned, the evolution of the electricity market together with the developments in production costs (including CO<sub>2</sub> certificates) make it questionable whether such high level of compensation would be compatible with the internal market.
- (86) Based notably on a study carried out by the Öko-Institut, third parties concede that the closure law would lead to significant replanning of the mining activities for RWE<sup>47</sup>. For LEAG, however, third parties note that in the Vattenfall Verkaufsszenario the closure of certain units had been planned for dates close to the dates established by the closure law<sup>48</sup>. In view of this, the amount of compensation would appear to go well beyond any notion of net extra cost.
- (87) Regarding the impact on competition and trade, claims are made that continuing to rely on lignite for the next 18 years could prevent the entry of new renewable generation, not only within Germany but also from abroad,

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<sup>46</sup> As approved by the Commission decision of 27 May 2016: Closure of German lignite-fired power plants (SA.42536).

<sup>47</sup> Öko-Institut: Einordnung der geplanten Entschädigungszahlungen für die Stilllegungen deutscher Braunkohlekraftwerke im Kontext aktueller Entwicklungen, 29 June 2020.

<sup>48</sup> Öko-Institut: Analyse von Kraftwerks-Stilllegungspfaden für das Lausitzer Revier, 22 January 2020.

as the prolonged use of lignite might reduce German imports of electricity if lignite plants are inflexible and running as baseload.

## **2.5. Replies from the German authorities to third party observations**

- (88) Germany considers the concerns raised by the third parties to be unfounded. First, it reacts to the allegations that the compensation amounts are higher than for the *Sicherheitsbereitschaft*, contradict the polluter pays principle and prolong the lifetime of unprofitable installations. It points out that the eight installations (2.7 GW) which received a compensation in the framework of the *Sicherheitsbereitschaft* approved by the Commission in 2016 were paid to remain available. They received a compensation of EUR 1.6 billion, which amounts to EUR 600 million per GW, whilst the average compensation under the measure subject to the current decision amount to EUR 483 million per GW to close down. A compensation does not contradict the polluter pays principle as the proposed measure would be a breach of the property rights of the operators if not sufficiently compensated. In addition, the law only stipulates the latest possible closure dates. If installations close before that date, this does not affect the compensation amounts received by the operators. There is no incentive therefore, to prolong the operation of an installation.
- (89) Secondly, Germany reacts to the allegations that alternative policy instruments would have been more appropriate, such as a regulatory closure path without a compensation and the government taking over the rehabilitation of the mining sites rather than compensating the operators. In view of the legal uncertainty around the possible compensation amounts for lignite operators following potential claims for damages, Germany considers that the current approach is more appropriate. Legal certainty has an intrinsic value and is important for Germany as a business location. Germany also expresses the view that the operators should remain responsible for the rehabilitation of the mines, as they have the necessary know-how and there is no evidence that the State would be able to carry out the task in a more effective manner.
- (90) Thirdly, Germany reacts to the allegations around the closure path and the operating time foreseen in the law. It does not support the view that the timing of the lignite closure impedes the energy transition and expects that the lignite installations will operate more flexibly with lowering annual load going forward. Germany does not consider that LEAG would have ceased its operations around the time foreseen in the closure law anyway. These allegations are based on a business scenario of Vattenfall, the former owner of the installations. When taking over the installations LEAG adapted its business forecasts envisaging the exploitation of Mühlrose, which is a subsection of the mining site Nochten. Following the introduction of the closure law, LEAG has to lower the amount of lignite extracted and the running time of its installations compared to its business planning. Germany points to the fact that business plans are adapted frequently, especially if they reach far into the future.

### 3. ASSESSMENT OF THE MEASURE

#### 3.1. Existence of State aid

- (91) By virtue of Article 107(1) of the 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 shall, in so far as it affects trade between Member States, be incompatible with the internal market.*"
- (92) The criteria laid down in Article 107(1) TFEU are cumulative. Therefore, for a measure to constitute State aid within the meaning of Article 107(1) TFEU all of the following conditions need to be fulfilled. The financial support must:
- be granted by the State or through State resources,
  - favour certain undertakings or the production of certain goods,
  - distort or threaten to distort competition, and
  - affect trade between Member States.
- (93) In the following sections the Commission will assess whether the measure consisting in the closure of RWE's and LEAG's lignite installations against a compensation meets these cumulative criteria and thus constitutes State aid in the meaning of Article 107 (1) TFEU.

##### 3.1.1. Imputability and the involvement of State resources

- (94) In order for a measure to be found as being granted by a Member State or through State resources in any form whatsoever, it must (i) be given directly or indirectly through State resources and (ii) be imputable to the State.
- (95) In this case, the compensation amount will be paid out of the State budget to the lignite operators in accordance with the provisions of the closure law and the contract. The Commission is therefore of the preliminary view that the measure is imputable to the State and involves State resources.

##### 3.1.2. Existence of a selective advantage

- (96) An advantage, within the meaning of Article 107(1) TFEU, is any economic benefit, which an undertaking could not have obtained under normal market conditions, that is to say in the absence of State intervention<sup>49</sup>. Article 107(1) TFEU also requires that a measure, in order to be defined as State aid, is selective in the sense that it favours "*certain undertakings or the production of certain goods*".
- (97) In the current case, the question arises whether the lignite installations would have received a compensation for damages under German law, if the State

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<sup>49</sup> Judgment of the Court of Justice of 11 July 1996, SFEI and Others, C-39/94, ECLI:EU:C:1996:285, paragraph 60; Judgment of the Court of Justice of 29 April 1999, Spain v Commission, C-342/96, ECLI:EU:C:1999:210, paragraph 41.

had ordered their early closure in accordance with Annex 2 of the closure law without granting any financial recompense.

- (98) The Court of Justice found in its judgment in joined cases C-106 to C-120/87 (*Astéris*)<sup>50</sup> that compensation for damages incurred as a result of State action does not confer an advantage on the recipients of the compensation:

*(23) "(...) that State aid, that is to say measures of the public authorities favouring certain undertakings or certain products, is fundamentally different in its legal nature from damages which the competent national authorities may be ordered to pay to individuals in compensation for the damage they have caused to those individuals."*

- (99) In order to conclude that the measure does not provide an advantage to RWE and LEAG, it would therefore need to be established that the German expropriation rules give rise to an obligation to pay a compensation to the lignite operators and that the level of the compensation granted to RWE and LEAG is equivalent to what would have been granted as damage compensation under German law.
- (100) In accordance with Article 14 of the German constitution, natural and legal persons are guaranteed protection of their property, including the use thereof. The content and limits of this protection are determined by more specific legislation. German law provides rules on both compensation for unlawful and for lawful State measures. As a general principle, expropriations generally give rise to an obligation to compensate.
- (101) Interventions that do not expropriate but only limit the exercise of property rights can in principle be proportionate also without any financial compensation awarded to the property owner whose property rights are affected by the intervention of the State. However, this does not preclude specific circumstances in which financial compensation may be warranted following limitations of the exercise of property rights. This is for instance the case when the limitation of the exercise of the property rights is particularly intrusive and results in exceptional hardship or unreasonable burden on the owner. While the measures are taken in the general interest, the negative effects are borne by certain entities only, which can be disproportionate. In these cases, general legal principles of German law require the State to include in the measure from the outset a compensation mechanism in order to ensure the proportionality of the measure<sup>51</sup>.
- (102) To determine whether such exceptional circumstances are applicable to a particular case, the severity, intensity and duration of the State intervention must be taken into consideration. It must furthermore be determined whether an 'exceptional burden to provide a public good' (*Sonderopfer*) has been imposed on the affected party. It also needs to be considered whether instead of a financial compensation, the proportionality of the measure could not

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<sup>50</sup> Judgment of the Court of 27 September 1988 in joined cases C-106 to 120/87 *Astéris* AE and others v Greece and European Economic Community [1988] ECR 05515, paragraphs 23 and 24.

<sup>51</sup> Referred to in German law as the principle of 'ausgleichspflichtige Inhalts- und Schrankenbestimmung'.

have been achieved via alternative measures, such as for instance transitional arrangements.

- (103) Under German law, the legal title to a claim for expropriation or '*Sonderopfer*' is not a classic legal remedy based on statutory law, but rather an extraordinary instrument, which can only be awarded by the judiciary, which must furthermore set the limits of the compensation.
- (104) As mentioned above, the limitation of the exercise of property rights can in principle be accepted without compensation. There is namely no right, under German law, to be shielded from legal changes until the investment costs have been amortised and that installations that have been written-off<sup>52</sup>. Case law also stipulates that the protection of property rights does not cover turnover and profitability prospects<sup>53</sup>.
- (105) The research facility of the German Bundestag carried out a study to examine the constitutional requirements for the statutory decommissioning of coal-fired power plants. In this study, the research facility considered that in particular in the case of older plants that have already been written off, decommissioning without a compensation can be possible and that a compensation scheme would have to be provided for those individual installations, which, despite the transitional and exceptional arrangements are faced with an unreasonable economic burden<sup>54</sup>.
- (106) Under the current measure more than half of the lignite installations will receive a compensation. It includes all installations phasing-out until the end of 2029 and installations that have amortised their investments, rather than a few installations facing an exceptionally high burden. Considering also the transition periods certain installations have, it seems that installations which are the least likely to be granted a compensation by a German court receive a compensation under the current measure.
- (107) In addition, the compensation amounts that Germany grants to LEAG and RWE in the context of the current measure seem to go beyond a compensation of unamortised investment costs. The compensation amounts were justified as compensating the operators' foregone profits until 2040 for LEAG and 2051 for RWE. Given that there is no right under German law to be shielded from legal changes – not even until investment costs have been amortised – and that the protection of property rights does not cover turnover and profitability prospects, the Commission also considers it very likely that the compensation granted by Germany goes beyond appropriate expropriation compensation that could be justified under the applicable national law.
- (108) On a preliminary basis, the Commission therefore concludes that RWE and LEAG are granted an advantage they would not have been able to attain

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<sup>52</sup> BVerwG NVwZ 2009, S. 1443.

<sup>53</sup> BVerfGE 74, 129 (148).

<sup>54</sup> Stilllegung von Kraftwerken, Ausarbeitung, Wissenschaftliche Dienste, Deutscher Bundestag (WD 3 – 3000 – 360/18).

through a compensation claim at a national court or under normal market conditions.

- (109) The measure will only confer an advantage onto two operators in the electricity market, which generate electricity from lignite. The law specifies specific compensation amounts only for RWE and LEAG. The Commission, therefore, considers the measure to be selective at this stage of the procedure.

### *3.1.3. Impact on competition and on trade between Member States*

- (110) In accordance with settled case law<sup>55</sup>, for a measure to impact competition and trade it is sufficient that the recipient of the aid competes with other undertakings on markets open to competition.
- (111) In view of the fact that the German electricity market is part of a liberalised market which is connected and coupled with the bidding areas of neighbouring countries, the operators of the lignite-fired power plants are in direct competition with other power generators.
- (112) In addition, the phase-out of lignite fired electricity generation means that the electricity that would have been produced by these installations will now have to be produced by other generators, which is likely to affect the merit order and hence the electricity wholesale price.
- (113) The Commission therefore considers, at this stage of the procedure and on preliminary basis, that the measure impacts competition and trade between Member States.

### *3.1.4. Conclusion regarding existence of State aid*

- (114) On a preliminary basis, as the cumulative criteria for the existence of State aid are likely to be met, the Commission concludes, at this stage of the procedure, that the measure constitutes State aid.

## **3.2. Legality of the potential aid**

- (115) The closure law contains a suspensive clause, which makes the payment of the compensation amounts to LEAG and RWE subject to the Commission's State aid approval (see recital (18)). Therefore, Germany has notified the measure before granting it and fulfilled the notification and standstill obligation of Article 108(3) TFEU .

## **3.3. Compatibility assessment**

- (116) On the basis of Article 107(3)(c) TFEU, the Commission may consider compatible with the internal market State aid to facilitate the development of certain economic activities within the European Union, where such aid does not adversely affect trading conditions to an extent contrary to the common interest.

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<sup>55</sup> Case T-214/95 *Het Vlaamse Gewest v Commission* [1998] ECR II-717.

- (117) In the present case, the Commission will assess the compatibility of the measure directly under Article 107(3)(c) TFEU, as there are no specific provisions in the Guidelines on State aid for environmental protection and energy 2014-2020 (“EEAG”) or other specific Guidelines for aid compensating for the closure of electricity generation plants.
- (118) To assess whether an aid measure can be considered compatible with the internal market, the Commission generally analyses whether the design of the aid measure ensures that the positive effect of the aid on the development of an economic activity exceeds its potential negative effects on trade and competition.
- (119) In order to assess whether the aid adversely affects trading conditions to an extent contrary to the common interest, the Commission assesses whether the aid is needed, and also its appropriateness and proportionality. At this stage of the procedure, the Commission has doubts about the compatibility of the measure with the internal market and in particular about the proportionality of the measure.

### 3.3.1. *Proportionality of the measure*

- (120) The Communication on the Sustainable Europe Investment Plan has highlighted that the Commission would examine the proportionality of support for coal closures in particular<sup>56</sup>. Under Article 107(3)(c) TFEU the aid amount must be limited to the minimum needed to incentivise the desired outcome. In the present case, it therefore needs to be assessed whether there is a risk of overcompensating the beneficiaries LEAG and RWE.
- (121) What determines the proportionality of the aid is whether the foregone profits and any additional mine rehabilitation costs are calculated in a way that ensures that the compensation is kept to the minimum necessary and excludes overcompensation. Germany has provided explanations on the way it established the foregone profits of LEAG’s and RWE’s lignite power plants, as well as additional mine rehabilitation costs resulting from the early closure of the associated lignite plants (see recitals (29) et seq.).
- (122) At the current stage of the procedure the Commission has the following doubts with regard to the justifications provided by Germany for the compensation amounts:

#### *(i) Foregone profits reach far into the future*

- (123) The Commission doubts whether compensating operators for profits they would have made until 2040 in the case of LEAG and 2051 in the case of RWE corresponds to the minimum required, also considering the shorter compensation periods in the *Sicherheitsbereitschaft* approved by the Commission in 2016. The Commission has a number of doubts regarding the assumptions feeding into Germany’s foregone profits calculation described in recitals (30) et seq.

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<sup>56</sup> Commission’s Communication Sustainable Europe Investment Plan dated 14 January 2020, COM(2020) 21 final, Section 4.3.4., p. 14.



- (124) Duration of the operation of lignite installations absent the closure law: Germany's model considers that installations would have run for 48 to 70 years in the absence of the closure law. The last LEAG and RWE installations would have closed in 2061 according to the model used by Germany. The Commission has doubts regarding these lifespans from a technical and an economic perspective.
- (125) On the basis of multiple studies, the "additional mining cost study" takes into account lifetimes between 40 and 55 years and considers that in a scenario without the closure law the last lignite installation would have closed in 2051 (see recital 57). Also, the installations that closed in the context of the *Sicherheitsbereitschaft* had shorter lifetimes than the ones on which Germany relies in its model. It is not clear, therefore, why Germany takes into consideration lifespans that go far beyond this.
- (126) Also, it is questionable whether the model has taken into consideration sufficient investment costs for the upgrade of the installations to possibly allow them to reach such long lifespans.
- (127) Such investments may also be required to meet mandatory environmental standards. In view of this, the Commission has doubts with regard to the foregone profits calculated for installations that are being closed during 2020-2021 and for Niederaußem D in particular. Niederaußem D closed at the end of 2020 and Germany foresees 14 years of foregone profits for this installation, as it considers that it would have closed in 2034 without the closure law. However, Germany was not able to confirm that the installation complied with the Industrial Emissions Directive (2010/75/EU) and the upcoming standards for Large Combustion Plants concerning core power plant processes, which will apply as of 17 August 2021. As such compliance can require significant investments, the Commission doubts that the plant would have run beyond August 2021 in a scenario in which the closure law would not have been adopted.
- (128) Finally, the lifespans taken into account for LEAG depend on the expansion of its mining activities to Mühlrose and Welzow-Süd TA 2. At the time of the introduction of the closure law, LEAG had not yet obtained the approvals required under mining law for these two expansions nor had it made a final investment decision to expand to Welzow-Süd TA 2. LEAG envisaged to take this decision in 2020. This is why the Commission doubts that taking into account the expansion to the two mining sites and the lifespans deriving from this for the lignite generation facilities is the correct counterfactual.
- (129) Uncertainties surrounding future projections: The Commission further notes that the foregone profits calculation covers a long time horizon, which introduces many uncertainties. Germany claims that the discount rate of 7.5% was chosen to reflect these uncertainties. It is questionable whether this discount rate is adequate or whether additional correction mechanisms would have to be foreseen to account for the high risks and uncertainties linked to the forecasts.
- (130) Fuel and CO<sub>2</sub> prices: Germany based its calculation of foregone profits on fuel and CO<sub>2</sub> price forecasts published in 2018, while the merit order and profit margins for lignite power plants changed dramatically following CO<sub>2</sub>

price increase that occurred in 2019. The Commission therefore expresses doubts whether the assessment of foregone profits for power plants is adequate considering that the model does not seem to incorporate recent climate ambitions agreed at EU-level and recent developments in the power sector.

- (131) Data at the level of individual installations: Furthermore, the Commission has not obtained specific data and calculations for each of the lignite plants scheduled for closure, as Germany submitted such information only for two lignite plants as an example of the model outcome. As a result, the Commission cannot reach a firm conclusion about the validity of Germany's calculations.
- (132) Sensitivities: The Commission also notes that Germany did not share the sensitivities of the model with the Commission. The Commission is therefore not in a position to evaluate the impact of the input parameters on the output of the model. In the absence of this information, it is difficult for the Commission to come to a firm view about the validity of the model used by Germany.

*(ii) Deferred closure mechanism*

- (133) The Commission notes that the undertakings also receive compensation for the installations when they enter into the deferred closure mechanism. These compensation amounts are inextricably linked to the closure compensation, as the payment of the closure compensation for LEAG is triggered by the entry of its Jänschwalde A installation into the deferred closure mechanism. The Commission, therefore, considers that these payments need to be taken into account when assessing the proportionality of the measure and doubts that this additional compensation is required for the installations to close down.

*(iii) Alternative scenarios submitted by Germany*

- (134) Germany also provided alternative scenarios to justify the compensation amounts, including the frontloading decommissioning option described in recitals (50) et seq.. The Commission wonders whether the frontloading decommissioning scenarios are relevant for the proportionality assessment. The decision regarding a possible frontloading will be taken as part of the regular reviews of the closure law that Germany envisages (see recital (15)). It is currently uncertain that the frontloading will materialise and if it does, it is uncertain that the frontloading would be applied for three years and whether it would be applied to all plants closing after 2030, as is assumed in Germany's scenario.
- (135) The Commission further notes that according to Germany's calculations the NPV of the expected foregone profits would not exceed the NPV of compensation amount in a scenario in which LEAG would not expand its mining activities to Mühlrose and Welzow-Süd TA 2 (see recital (52)). The Commission therefore doubts that the compensation amount is proportionate.

*(iv) Additional mine rehabilitation costs*

- (136) With regard to the additional mine rehabilitation costs (i.e. the mining costs in addition to the costs that these undertakings would have incurred in any case without the closure law), the Commission considers that this could in principle constitute a justification for compensation payments, but notes that these are subject to considerable uncertainties due to the long time horizon and information asymmetries.
- (137) The Commission notes that the additional mining cost study that Germany brings forward to quantify the additional mine rehabilitation costs is based on the gradual phase-out of lignite installations as proposed by the Coal Commission, which differs from the closure dates agreed in the closure law. The results of the study may therefore lead to a different result than an alternative study examining the additional mine rehabilitation costs based on the closure law dates.
- (138) The study is based on publically available information and concedes that the costs can vary considerably from one extraction site to another. For the calculation of the additional mine rehabilitation costs in the Rheinisches Revier, the study does not take into account the current extraction levels and the consultants did not dispose of the required information to assess in how far the fact that the lakes to be created following the rehabilitation of the opencast mines will be 40 to 45 meters less deep impacts the cost estimates. These elements could significantly influence the level of the additional mine rehabilitation costs.
- (139) The Commission also notes that the additional mining cost study does not consider an extension to the mining subsections Mühlrose and Welzow-Süd TA 2 necessary in order for LEAG to meet its demand in a scenario without the closure law. The Commission equally notes that LEAG brings forward additional mine rehabilitation costs departing from a scenario in which it would have extended its mining activities to the mining subsections Mühlrose and Welzow-Süd TA 2. Given that LEAG had not taken the final investment decision for the expansion of its mining activities to Welzow-Süd TA 2 the Commission is doubtful whether this is the correct counterfactual to establish the additional mine rehabilitation costs.

### **3.4. Conclusion**

- (140) In view of the above considerations, the Commission has doubts about the way in which the compensation amounts to RWE and LEAG have been justified by Germany. As a consequence, it doubts that the compensation is kept to the minimum required and that the amounts are proportionate.

In the light of the foregoing considerations, the Commission, acting under the procedure laid down in Article 108(2) of the Treaty on the Functioning of the European Union, requests Germany to submit its comments and to provide all such information as may help to assess the measure, within one month of the date of receipt of this letter. It requests your authorities to forward a copy of this letter to the potential recipients of the aid immediately.

The Commission wishes to remind Germany that Article 108(3) of the Treaty on the Functioning of the European Union has suspensory effect, and would draw your attention

to Article 16 of Council Regulation (EU) 2015/1589, which provides that all unlawful aid may be recovered from the recipient.

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

Yours faithfully,

For the Commission

Margrethe VESTAGER  
Executive Vice-President