Background Paper

Economic disadvantages for Greenpeace Energy due to compensation payments for coal-fired power plant operators

Background

Greenpeace Energy (GPE) has concluded long-term supply contracts for almost 100 megawatts (MW of electricity from renewable energy sources. Under these long-term power purchase agreements (PPAs), GPE is obliged to buy all of the electricity generated by the plants concerned over a period of usually three to five years at a predetermined and fixed price (pay-as-produced). Most of the amounts of electricity to be purchased by GPE at a fixed-price had already been contractually agreed in 2018 and 2019—that is, long before the Bundestag adopted the resolution to phase out coal, or the amount of precise compensation to be paid by the state to coal-fired power plant operators had been determined. Moreover, Greenpeace Energy had decided to invest, and purchase a new open-space photovoltaic park with a capacity of nearly 10 MW. GPE will acquire this solar park, which will not receive EEG compensation, through its subsidiary Planet energy and will purchase the electricity generated there at a fixed price. The duration of the contract with the PV plant will be ten years. GPE will source approximately a quarter of all its sales of electricity through long-term, price-fixed supply contracts.

Power generation from renewable energy sources is currently the cheapest way of producing electricity and an important and competitive future market for all forward-looking energy supply companies. Therefore, policymakers see long-term power purchase agreements (PPAs), such as those concluded by GPE, as desirable instruments. That is because they provide sound economic footing for the expansion and continued operation of renewable energy plants, meaning that the plants do not have to claim subsidies. Electricity suppliers such as GPE, which conclude long-term contracts with renewable energy plants, relieve the burden on the general public, but have to shoulder higher risks than electricity supply companies that procure the electricity they supply through standardized products on the electricity exchange. Wholesale prices may develop less strongly than expected during the long-term duration of the contracts, posing a risk to holders of such contracts. In this case, competitors would be able to procure

their electricity at the low exchange price level, while GPE would have to pay the fixed prices stipulated by the long-term supply contracts and consequently suffer financial losses. On the other hand, rising electricity prices would give GPE the opportunity to benefit from fixed prices. Long-term supply contracts with renewable energy plants are an entrepreneurial contribution to achieving the renewable energy targets. **This contribution is financially responsible, provided that future market price developments are carefully evaluated. However, this is only possible if market forces can operate freely without being distorted by unpredictable political intervention.**

GPE concluded the long-term contracts for the purchase of predetermined amounts of renewable electricity assuming that the planned coal and nuclear power phase-out would cause electricity prices to rise. The closure of older coal-fired power plants in particular was to be expected because of excessively high CO2 emissions due to inherent structural issues and their continued operation's lack of economic viability, exacerbated by the rising cost of CO2 certificates. But, on the one hand, the coal phase-out is now being delayed by the design of the Coal Exit Act, and on the other, the highly subsidized transition to natural gas as a fuel means that the expected cutback in power plant overcapacity will not take place, or to a much lesser extent.

However, when making investments and predicting future market conditions in the liberalized European electricity market, GPE must be able to rely on prices that are determined by supply and demand and according to the rules of the market without the distortive effect of direct and massive energy policy intervention. This also applies to GPE's role as plant operator, as the company invests in renewable-energy plants, and does so through its wholly owned subsidiary, Planet energy as well.

The following arguments 1 and 2 explain how GPE in its capacity as power supply company is disadvantaged by compensation payments, which have a distortive effect on the market, to coal-fired power plant operators. Arguments 3 and 4 describe how GPE in its capacity as project developer and renewable energy plant operator is disadvantaged by payments, which have a distortive effect on the market, made to coal-fired power plant operators.

Argument 1: The coal phase out tendering process is delaying the rapid reduction of unprofitable overcapacities on the market. From Greenpeace Energy's point of view, this is not only a serious systemic flaw in the design of a coal exit law, which was originally meant to enable the phase out of fossil fuels as quickly as possible—it also puts carbon-free renewable energies at a disadvantage by reducing proceeds from the sale of electricity generated by these plants.

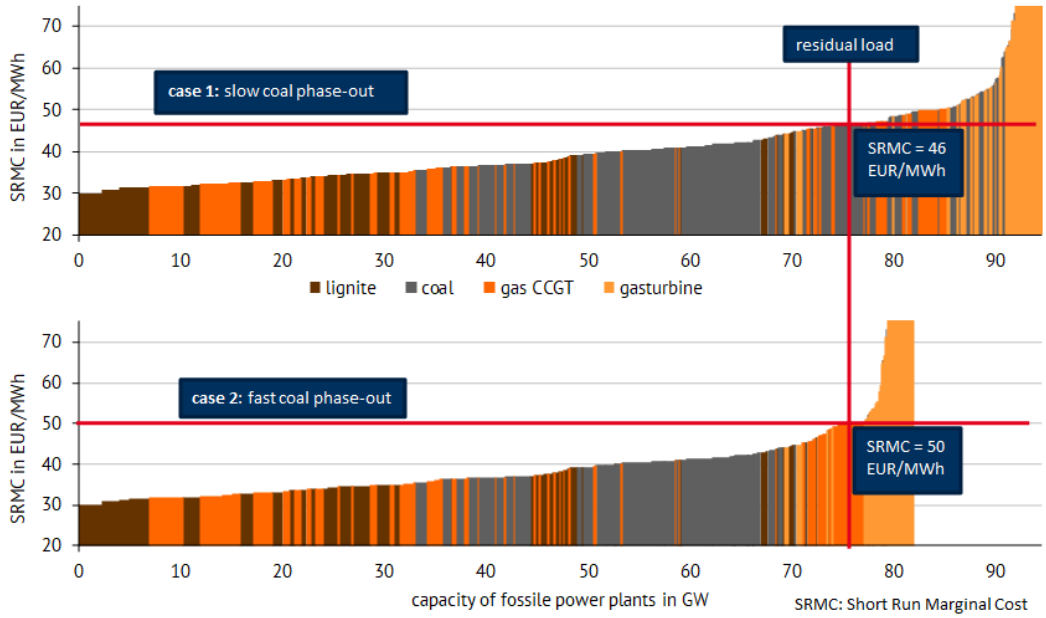
Current coal phase-out measures favour the extended operation of coal-fired power plants that a market-driven phase-out would have rendered unprofitable at an earlier time. As a rule, the prospect of receiving a compensation payment for decommissioning in a tendering process delays an unprofitable plant's exit from the market because power plants that have announced a date of decommissioning and whose date of decommissioning is set earlier than the target closure date are not eligible to participate. But the alleged purpose of the law was supposed to encourage the closure of old hard coal power plants with reduced power plant utilization and high costs for CO2 certificates. Instead the law creates an incentive to keep a power plant operational until the operator has successfully participated in a tender. If a power plant is not awarded a contract in the tendering process, the operator first has the incentive to wait until

the next tendering process before shutting it down, so as not to miss out on compensation for closure. The effect of this delay is to reduce the price of electricity, which directly lowers potential revenues from the sale of renewable energy. There are two main reasons for this:

1. Firstly, the supply of energy increases, which according to the merit order, results in lower electricity prices. The merit order specifies the sequence in which power plants deliver electricity for a given demand. If a power plant is not decommissioned, it can continue to generate electricity in a situation in which the next more expensive power plant would have normally generated the electricity needed. The price-setting power plant is relevant for all players. This is because uniform pricing, the price-setting mechanism used in the relevant day-ahead auction in the electricity market, determines a uniform price per hour for all electricity producers. The profitability of power plants such as renewable energy plants with low short-run marginal costs is therefore highly dependent on the price-setting power plants with higher marginal costs. Consequently, the value of the feed-in profiles for which GPE agreed to pay a fixed price decreases. This system is illustrated in Figure 1. Today, the fossil power plant fleet is tasked with making the residual load available at minimal cost. In the example shown, the power plants which continue to operate, shown in the upper part of the graph, lower the price increase by EUR 4 per MWh. The higher price would have resulted if unprofitable, old coal-fired power plants had been pushed out of the market due to excessively high operating costs.
2. When demand for electricity is low and the feed-in level of renewable energy plants high, the must-run share of power generation is of particular importance to the revenue situation of renewable energies. The must-run share of power generation is the share of the electricity output of a power plant which is in fact controllable; this share—for technical reasons or due to other contractual obligations (heat supply, supply of system services)—is offered on the energy market at prices that are lower than the actual marginal costs. An energy market with a high share of must-run power generation routinely leads to low prices when demand is slow, or the supply of renewable energies is high. Old power plants in particular have a high must-run share. When the operating life of these plants is extended, their high must-run share considerably decreases the revenues of renewable energy plants, as it drives down electricity prices and sometimes even causes them to go negative, precisely at a time when these plants offer a high feed-in capacity.

Figure 1: Merit order of fossil power plants in Germany including (case 1) and excluding (case 2) old coal power-plants with high short run marginal costs [source: Energy Brainpool, commodity-prices: gas EUR 13/MWh, coal EUR 7/MWh, lignite EUR 3/MWh, EUA EUR

27/t_CO2]



Argument 2: The regulations for replacing coal by gas favour the rapid expansion of gas-fired power plants that would not have been profitable without the bonus. However, promoting excess capacities lowers the potential revenues for electricity from renewable energy sources.

If an old coal-fired power plant in the south of Germany converts to gas and feeds into the same heating network, it is granted up to EUR 450/kW in investment subsidies thanks to the coal replacement bonus and the Südbonus. (The Südbonus is paid because new power plant capacity is being created the south of Germany, thus relieving pressure on the expansion of the power grid and on redispatch services.) The provisions of the coal phase out favour the replacement of coal-fired power plants with gas-fired power plants, providing strong financial incentives. The cost of a combined cycle power plant amounts to about EUR 700 /kW[1]. The provisions for the replacement of capacity are so generous that they can lead to a higher capacity of new gas-fired power plants in the future than had expansion been driven by market prices. In the case of a market-driven expansion, the sale of electricity and heat would have resulted in insufficient revenues for a certain proportion of the gas-fired power plants. The lack of profit contribution is however compensated by a state subsidy. The excessive capacity of new gas-fired power plants subsidised by the state changes the balance of supply and demand and lowers the price of electricity.

The fact that the subsidy provides a strong incentive for CHP plants considerably lowers the value of the feed-in profiles for which GPE agreed to pay a fixed price.

Argument 3: The closure bonuses for coal-fired power plants reward the recipients of these bonuses when they invest in electricity generation plants that use renewable energies.

[1] https://www.dena.de/fileadmin/dena/Dokumente/Pdf/9261_dena-Leitstudie_Integrierte_Energiewende_lang.pdf S.370

The planning and construction of renewable energy plants require large amounts of capital and there is intense competition for the limited number of projects. Even an operator of an unprofitable coal-fired power plant can use the EEG tendering system for renewable energies and gain a competitive advantage in their bid for auction-based subsidies through the closure bonus received for their coal-fired power plants: Because if the money from the bonuses is used to reduce the cost of their own renewable energy projects—for instance, in the case of RWE subsidiary RWE Renewables—they have a higher chance of receiving subsidies in the bidding rounds. For this is where renewable energy projects with the lowest costs (and consequently the lowest bids) have the best chance of being granted a subsidy.

Argument 4: **The public law contract for the reduction and termination of lignite-based electricity generation creates disproportionate advantages for energy suppliers with lignite-fired power plants. High compensation amounts granted exclusively to certain energy supply companies have were set without any explanation as to how they were calculated. These sums are far removed from the realities of the market. This is particularly evident in the case of lignite-fired power plants.**

Details: Whether the state is even under any obligation to pay compensation for the closure of coal-fired power plants is a matter of heated debate. The Research Services of the German Bundestag already concluded in October 2018 that multi-billion euro compensation payments to RWE and others were unnecessary.[2]

No detailed justification for the amount of the compensation payments now agreed for operators of coal-fired power plants is given in the public law contract for the reduction and termination of coal-fired power generation. As a result, even experts view the projected payments as excessive. Calculations by the Öko-Institut, for example, demonstrate that RWE and LEAG stand to receive an excess of up to two billion euros from the state.[3]

A study[4] commissioned by Greenpeace Energy suggests that at the time the public law was passed, a competitive market environment no longer existed for a majority of lignite-fired power plants as power plant utilization had decreased while the cost of CO2 certificates had increased: To evaluate the 15 RWE power plant units that had been studied, Energy Brainpool, a Berlin-based analysis institute, calculated their projected costs and proceeds from electricity trading. According to these calculations, the expected profits generated by the power plants in 2020—which equals their market value—is still about EUR 1.3 billion. Over the following years, however, profits generated by the power plant units on the electricity market will decrease continually because operating costs will increase during the same period, in particular due to rising CO2 prices, and will progressively exceed revenues. This means that several power plant

[2] https://rp-online.de/wirtschaft/unternehmen/kohleausstieg-bundestagsjuristen-halten-entschaedigung-fuer-rwe-fuer-unnoetig_aid-37032703

[3] http://p376185.mittwaldserver.info/fileadmin/user_upload/Dateien/Bilder/Content/Presse/%C3%96ko-Institut__2020__-_Einordnung_der_geplanten_Entsch%C3%A4digungszahlungen_f%C3%BCr_deutsche_Braunkohlekraftwerke__final_.pdf

[4] https://www.reinrevierwende.de/fileadmin/reinrevierwende/documents/GPE_Substitution-RWE-BK-durch-eE_Energy-Brainpool_2018-11-25.pdf

units would become unprofitable within just a few years: By 2022, the market value of RWE's power plant fleet would only be approximately EUR 673 million.[5]

Overall, it is not clear why and to what extent losses were incurred and what methodology was used to determine the amount of compensation. Similarly, there is no way of knowing whether the compensation corresponds to real costs at all, or whether the amount of payment is merely the result of bilateral negotiations between the federal government and energy companies. The financial resources granted to energy supply companies such as RWE give them in any case a competitive edge over Greenpeace Energy, for example with respect to investment in electricity generation plants that make use of renewable energy sources. These require large amounts of capital and there is intense competition for the limited number of projects.

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[5] https://www.reinrevierwende.de/aktuelles/artikel/marktwerte-von-rwe-meilern-deutlich-geringer-als-geforderte-entschaedigungssummen-1.html