



**Institute for Energy Economics
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STEAG's Uncertain and Slow Decarbonisation Strategy

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Key Findings

STEAG's strategy for phasing out coal is so far non-existent, raising the concern that the current 4.1 GW of coal-fired generation will keep running until 2038—the new proposed coal exit date according to the German *Energiewende*.

It is assumed that STEAG does not have any strategy for phasing out coal yet, and it remains uncertain whether a robust one will be released in spring 2023 as planned by company management.

The announced sale of the company confirms that the management decarbonisation strategy (yet to be stated) will be short-lived. The new buyer is expected to maximize the existing coal fleet lifetime.



Executive Summary

This paper presents the case of a German municipalities owned power utility, Steinkohlen-Elektrizität AG (STEAG), whose generation is almost entirely coal-fired.¹

Since the 1930s, STEAG has been a coal-fired power producer from the industrial heartlands in Germany spread across the Nord Rhein Westphalia, Saarland, and Baden Württemberg regions.

In the recent years STEAG has partially divested one thermal power plant in the Philippines. It still owns and operates coal generation assets in Turkey and Colombia. Despite being awarded decommissioning auction for three plants, only one German coal plant has been decommissioned so far. As of today, STEAG is still operating 4.1 gigawatts (GW) of coal-fired capacity, with no decommissioning dates planned.

The company has recently split into two entities: ICONY GmbH, a branch dedicated to renewables and grid investments, and STEAG Power GmbH, which hosts all the legacy coal generation assets.

The company is preparing a coal phase-out plan which has not yet been published. The phase-out strategy was initiated only in late 2022 and does not seem so far driven by specific decarbonisation targets.

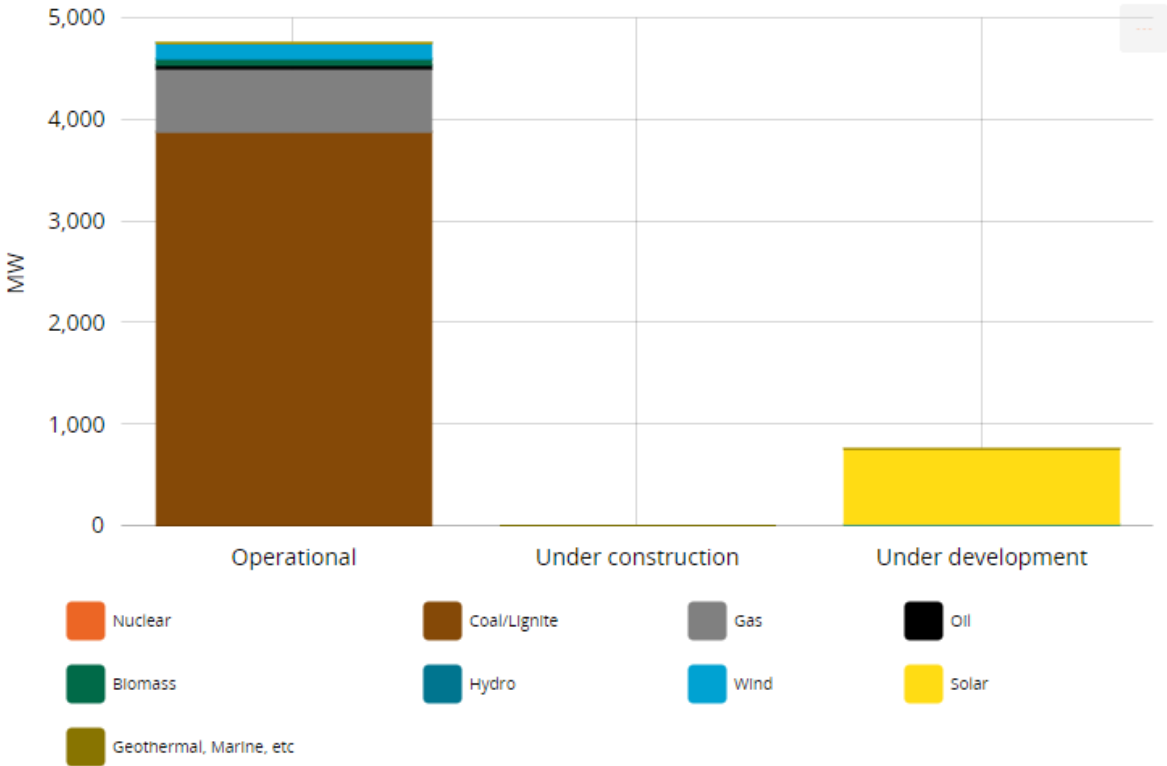
The company has been losing money for most of the past decade. The six municipalities owning STEAG put the company up for sale in late 2022, hoping to take advantage of a high-power price environment that could make it more attractive to buyers. The sale process is expected to start in May 2023.

It is of great concern that the new buyer will not follow a coal phase-out strategy and will maximize the coal fleet lifetime until being compulsorily decommissioned by the Federal Network Agency.

The goal of this paper is to call for a reassessment of the company's sale or raise awareness for a responsible sale that implies a public commitment to implement STEAG's coal exit strategy.

¹ Translates to Hard Coal Electricity.

Figure 1: STEAG Fleet by Technology (megawatts), Including ICONY Assets



Source: Enerdata.

The data above shows the large majority of STEAG fleet is coal-fired (4 GW). The solar development capacity falls under the ICONY portfolio (a separate entity from STEAG Power)

STEAG History and Background

STEAG GmbH is an energy corporation based in western Germany (Saarland and Nord Rhein Westphalia) that also operates internationally. As one of Germany’s main electricity producers, its business focuses on planning, building, acquiring and operating energy facilities and related services. Other capabilities include procurement, marketing, sales, and energy trading.

The company’s headquarters is based in Essen (Nord Rhein Westphalia) and is a wholly owned subsidiary of KSBG KG, a consortium of six German municipal utilities (Stadtwerke Duisburg AG, DSW21, Stadtwerke Bochum GmbH, Stadtwerke Essen AG, Energieversorgung Oberhausen AG, and Stadtwerke Dinslaken GmbH).

KSBG purchased STEAG in 2011 and has been the sole shareholder from 2014; since then, the company financials have mostly resulted in losses, except in periods of high power prices, such as the environment since the start of the war in Ukraine in February 2022.

In 2022, the company was split into two entities: ICONY GmbH for renewables and grid assets, and STEAG Power GmbH for fossil fuel-fired power generation. The latter is meant to shut down once all coal and gas assets have been decommissioned.

In August 2022, STEAG's management announced that the company would be sold by its owners, KSBG KG, with a sale process starting in the second quarter of 2023.

An official company statement was released on Aug. 1, 2022:

"It is the company's declared goal and decision that STEAG should be sold as a whole, divided into two subgroups that are separate in terms of organization, personnel and company law, and not in parts."²

In the wake of its announcement, STEAG decided to release a coal phase-out plan. So far, it has not been published.

It may seem surprising that exiting coal has been considered by STEAG only in late 2022. Part of the reason is that Nord Rhein Westphalia and Saarland have been historical coal regions in Germany since the 1930s and have been strongly tied to the growth of German heavy industries in the 20th century. Culturally, Nord Rhein Westphalia is an area of Germany where the energy transition is harder to implement due to its industrial past and low capacity in renewables. The vast majority of Germany's wind generation capacity is based in the north; most of the electrical load is located in the south.

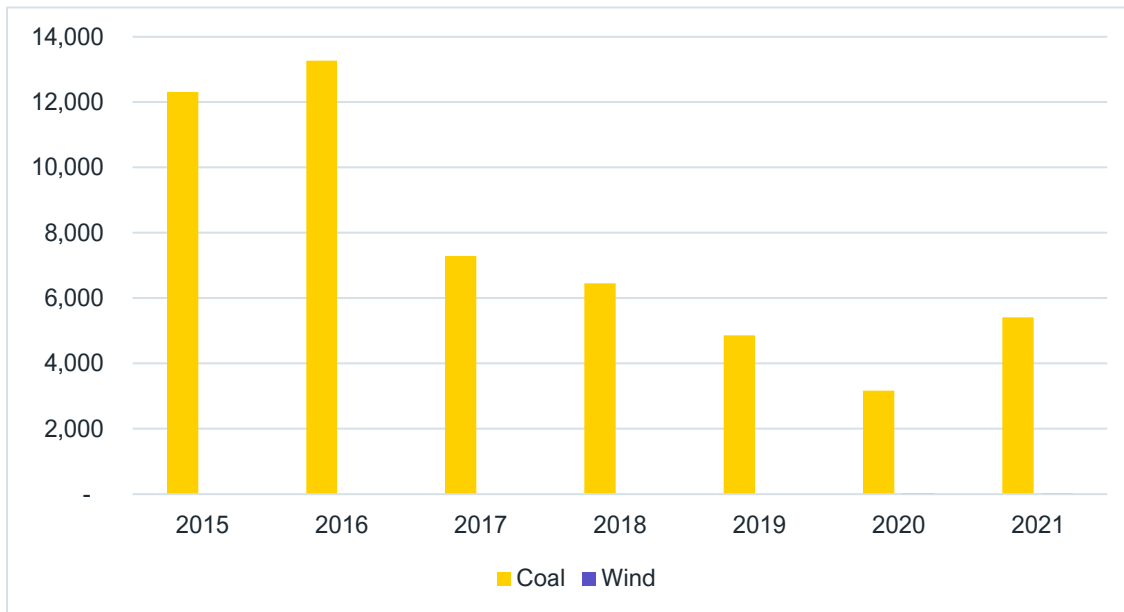
If STEAG commits to phasing out coal, the decision will not be passed on to the new owner after the acquisition. The company's plan has little importance due to the short commitment before its sale.

Given the dominance of coal in STEAG's fleet of power plants, it would make financial sense for an interested party to buy STEAG only under two conditions: (i) A low acquisition price, and (ii) A guarantee to operate the fleet at least until 2038, the coal exit date set out in the German *Energiewende*.

STEAG has so far been awarded decommissioning auctions for three plants: Walsum 9 (built in 1988, 410 megawatts (MW), coal); Bergkamen (built in 1981, 780 MW, coal) and (Völklingen-Fenne, built in 1982, 466 MW, coal).

Walsum 9 was decommissioned in July 2021. Bergkamen and Völklingen-Fenne have been judged relevant to the system by the Federal Network Agency and are still operating.

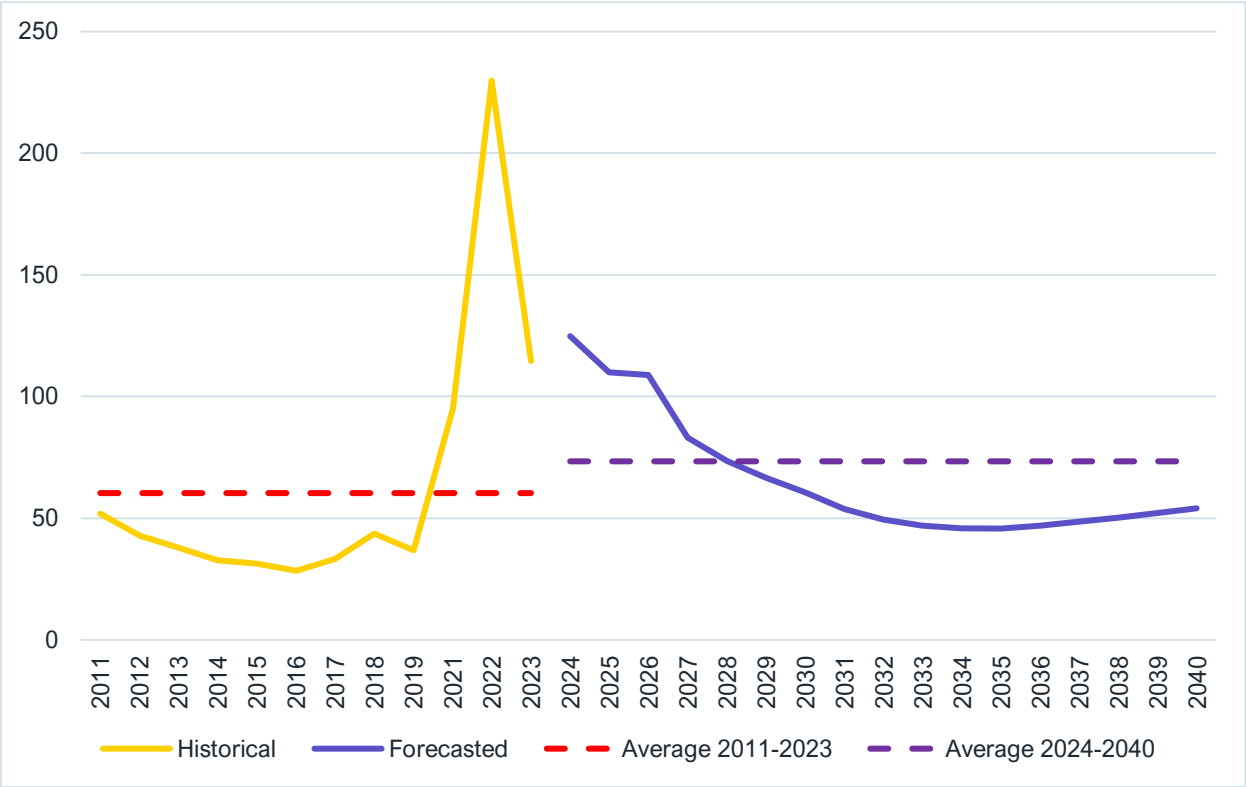
² Handelsblatt (Translated). [Germany's fifth-largest energy company is considering sale of entire business](#). August 1, 2022.

Figure 2: STEAG Annual Power Production (gigawatt-hours), Including ICONY Assets

Source: Enerdata.

The drop in coal power generation after 2016 was driven by multiple factors: Large growth of renewables, low gas prices causing coal-to-gas switching, and high CO₂ prices, resulting in coal being marginally dispatched fewer and fewer hours a year.

Figure 3: Average Historic and Forecast German Power Prices (€/MWh)



Source: IHS (Forecasts), EEX (Historical).

The charts above show the average German spot power price has been on average 60 euros per megawatt-hour (€/MWh) between 2011 and 2022 (since KSBG acquired STEAG) and is expected to be 73 €/MWh on average between 2023 and 2040 according to IHS forecasts (a 21% increase).

Despite rather low wholesale power prices during the past decade, STEAG has been able to operate (albeit with some losses). With the current consensus price forecast, operating STEAG coal-fired plants could be profitable until at least 2038. We would assume that any increase in fixed operation and maintenance (O&M) costs due to aging plants and tighter environmental regulations could at least in part be offset by organisational restructuring of staff costs, which private investors would typically do. Meanwhile, variable O&M costs, driven by coal prices, are unlikely to increase (ample international supply and collapsing demand for coal in Europe should maintain Amsterdam Rotterdam Antwerp (ARA) coal prices at low levels). With these assumptions, **STEAG coal assets could remain profitable until 2038**, making this investment possibly appealing to a private buyer, especially at a low acquisition price (STEAG net debt, as of June 30, 2022, stands at €303 million, which could be considered as the minimum price acceptable by KSBG).

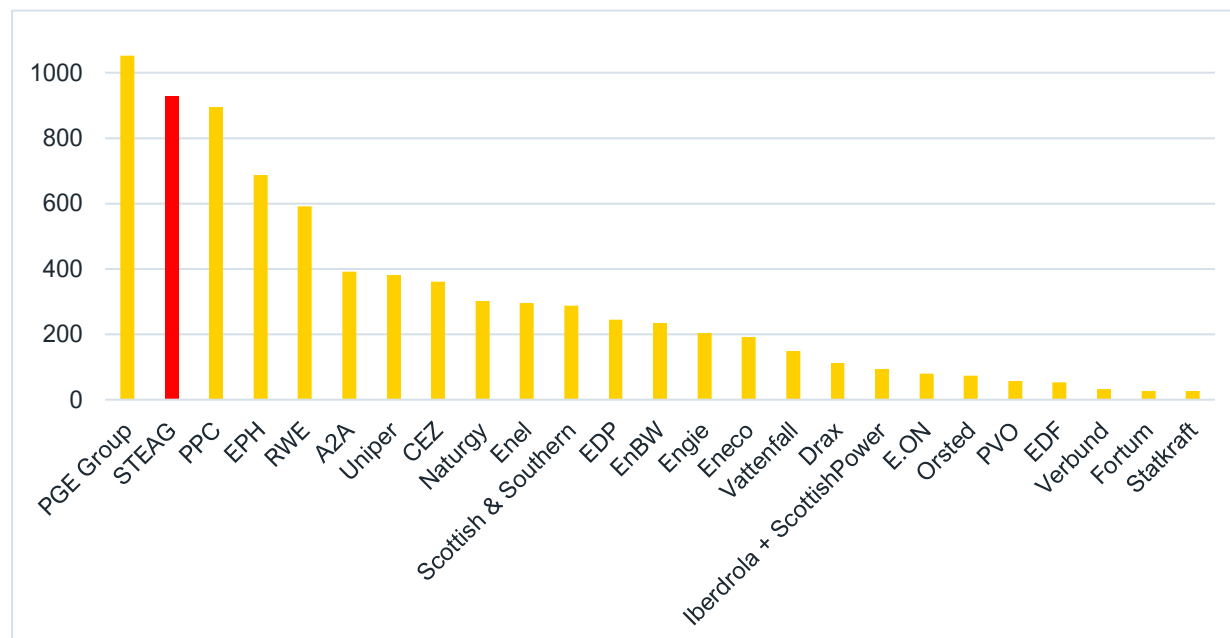
STEAG Current Fleet: Description and CO₂ Emission Factors Benchmarking

Table 1: STEAG Main Coal Fired Power Plants

Plant Name	Unit Name	Status	Year Commissioned	Energy	Net Capacity (MW)	Production 2021 (GWh)	Load Factor 2021 (%)
Bergkamen-A	Bergkamen-A	Operational	1981	Coal	717	914.72	15%
Bexbach-1	Bexbach-1	Operational	1983	Coal	726	227.44	4%
Duisburg-Walsum	Duisburg-Walsum-10	Operational	2013	Coal	725	2399.31	38%
Herne	Herne-4	Operational	1989	Coal	460	1155.13	29%
Weiher	Weiher-3	Operational	1976	Coal	655.6	74.85	1%
Volklingen-Fenne HKV	Volklingen-Fenne HKV	Operational	1989	Coal	211	331.39	18%
Volklingen-Fenne MKV	Volklingen-Fenne MKV	Operational	1982	Coal	179	305.35	19%

Source: Enerdata.

Figure 4: STEAG Average CO₂ Emission Factor and Comparisons Versus European Utilities (kg/MWh)



Source: PWC 2020 Europe large utility report, Enerdata 2021 data for STEAG.

Out of 25 European utilities analysed, STEAG has the **second-highest average CO₂ emission factor** per MWh (927 kg/MWh) over its fleet in 2021.

Uncertainty About Decarbonisation Strategy: Coal Phasing-out Targets Pending and Upcoming Company Sale

There are three main points of concern to address regarding STEAG's decarbonisation plan:

- **The company's strategy to phase out coal is so far nonexistent**
STEAG does not communicate publicly about any target to phase out its coal units. STEAG has been awarded three decommissioning auctions but only Walsum 9 has been decommissioned. Bergkamen and Völklingen-Fenne shutdowns have not been allowed by the Federal Networks Agency due to their relevance to the system. Looking forward, STEAG may episodically apply for decommissioning awards, but this may be more a financially opportunistic approach than a defined decarbonisation plan.
- **STEAG is due to release net-zero emission (NZE) goals in Q2 2023, but it is still very uncertain**
STEAG may publish some form of fossil fuel exit strategy during the second quarter of 2023. Its process was initiated only in late 2022, due to the low company decarbonisation ambitions and to the cultural resistance to exiting coal in a historical industrial heartland of Germany. (Coal has been the main form of power production with STEAG and in these two regions of Germany since the 1930s.) The other worry is that the municipalities owning STEAG are neither steering nor promoting this transition.
- **STEAG owners have decided to sell all parts of the company (including ICONY)**
In August 2022, the company announced it would be sold. The six municipalities owning STEAG do not view it as a strategic asset and probably would like to have the new buyer handling the coal phaseout.

The NZE strategy yet to be released could be very short-lived since there will be no commitment from the new buyer to follow the strategy to be released by current management.

Call for Action to Reconsider Upcoming Sale of the Company

Under the current circumstances:

- STEAG's fleet is almost entirely coal-based, and is the second-biggest utility polluter in Europe
- STEAG's 4.1 GW of coal-fired generation could be operated until at least 2038

It is reasonable to assume selling the company to a private owner with a profit maximization goal is neither timely nor helpful to pave the way for a German coal exit strategy.

Such investment strategies (i.e., the acquisition of thermal power assets at the end of their lifetime for a symbolic low price with the target to extend the plants' operations as much as possible) have been observed in Europe in the recent past:

- In 2015, EPH (a Czech private power utility) acquired 4.5 GW of E.ON Italy's coal and gas generation assets, spread over the Italian peninsula and Sardinia³. EPH still operates 4.1 GW of thermal generation in Italy.
- In 2016, EPH bought Vattenfall's lignite assets in Germany for a price of around €29 million, (Vattenfall incurred a loss estimated between USD \$2.7 billion and \$3.3 billion). The acquisition gave EPH four large German coal-fired power plants with a combined capacity of about 8,000 MW and five brown coal mines in Saxony and Brandenburg, and it transferred the assets to the newly formed LEAG company.⁴ In 2021, LEAG was due to receive (jointly with RWE) €4.35 billion in payments from the German federal state for accelerating the phasing out of the plants acquired in 2016.⁵
- In 2019, Engie sold 2.34 GW of coal-fired generation to Riverstone Holdings (a private equity firm) in the Netherlands and Germany for approximately €200 million⁶. In 2021, Onyx (the company operating these assets and fully owned by Riverstone) was awarded a decommissioning payment of €212.5 million for its Rotterdam coal plant. The remaining plants have yet to be retired, indicating Riverstone's strategy to combine power generation revenues with decommissioning awards.

³ Power Europe. [EPH has completed the transaction for the purchase of E.ON Italia coal and gas generation assets in Italy](#). July 1, 2015.

⁴ Reuters. [Vattenfall sells German lignite assets to Czech EPH](#). April 18, 2016.

⁵ Reuters. [EU to investigate German payout for RWE, LEAG coal phase-out](#). March 2, 2021

⁶ Engie. [ENGIE to sell its German and Dutch coal assets and boosts the implementation of its strategy](#). April 26, 2019.

Alternative strategies, ensuring a defined coal exit, could be:

1) Postponing the company sale until all plants have a binding decommissioning date

This solution would allow KSBG to secure STEAG's coal exit—instead of handing over the responsibility to a private owner—to ensure German national targets set in the *Energiewende* are met.

Below are the government's official goals for ending coal-fired power generation:

“The draft legislation lays down the interim objectives to be achieved along the road to a complete phase-out of the use of coal to generate electricity, following the recommendations of the Coal Commission.

In practice this means that by 2022, the power generated from anthracite and lignite will each be reduced to around 15 GW.

By 2030, this figure is to be reduced further to an output of about 8 GW for anthracite-fired power stations and 9 GW for lignite-fired power stations.

By 2038 at the latest, the use of coal-fired power stations is to be completely ended.”

(Source: German Federal Government Announcement, Bundesregierung)⁷

Since KSBG is owned by municipalities (and therefore by the state), it has the responsibility to implement these targets. If STEAG were sold in 2023, the 2030 goal of having a maximum 9 GW of coal capacity would be unachievable, while STEAG could theoretically still operate 4.1 GW of coal. This capacity, which is less than 2% of the total German capacity mix, would translate into almost half of the buffer left by 2030 to phase out coal. A private investor then would need to be willing to decommission STEAG plants, which for the economic reasons mentioned previously may not make financial sense.

On a more granular level, in the Nord Rhein Westphalia state, there are currently talks to bring coal phase out forward to 2030. This would increase the pressure on STEAG to decommission its plants since it would be the only coal operator left in the state (RWE will have shut down its plants by 2024) and its fleet would be the remaining obstacle to meet the state target.⁸ However, preempting the closure of coal plants is a federal competence rather than a state one, therefore no conclusion can be derived at this stage.

⁷ The Federal Government. [Ending coal-generated power](#).

⁸ Reuters. [Germany's cabinet approves accelerated coal exit by 2030 in western state](#). November 2, 2022.

RWE has already agreed to decommission its lignite-fired plants in Nord Rhein Westphalia where both coal and lignite mining are set to stop in 2030. The German government is in favour of shutting down coal-fired generation by 2030 but no legally binding decision has been made yet.

2) Only selling the company conditional to a public commitment from the buyer to implement STEAG's coal exit strategy

Assuming STEAG publishes its NZE strategy meeting government targets during the second quarter 2023, its coal units should start to be phased out at least to a large extent (less than 1 GW left operating by 2030) before 2030, and totally before 2038.

Another step could be an attempt to make this strategy legally binding, regardless of the company ownership. The potential buyers would then be aware of the assets' very limited remaining operating lifetime, **preventing a strategy of buying at a very low price and maximizing generation until at least 2038.**

Conclusion

STEAG reflects the case of a nonalignment between the German government agenda on exiting coal and the management of coal-fired plants by a municipal (state-owned) utility. If the target to reduce the coal capacity in Germany to 9 GW by 2030 is to be met, STEAG's current operations are a major obstacle.

Power market fundamentals and operational flexibility mean that a private owner with a profit maximization goal could operate STEAG's 4.1-GW coal fleet in a financially profitable manner until 2038.

Economics may therefore not evict coal from the market by default. An external intervention (at federal, state, municipal or company level) is needed to suspend STEAG coal-fired operations. In that context, the most responsible course of action for STEAG's owners is to handle and secure the coal-fired plant decommissioning schedules **before** selling the company to a new private owner.

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Jonathan Bruegel is IEEFA's power sector analyst for Europe. Prior to IEEFA, Jonathan has worked more than 20 years in the energy sector and became an expert on power markets worldwide working for several power generation utilities. His fields of expertise are conventional/renewable power generation, power storage, hydropower optimization, power market ancillary services, green hydrogen, and LNG. He holds a Bachelor of Science in Applied Mathematics from Lyon University (France), a Master of Science in Economics from London Metropolitan University and a Master of Science in Econometrics from University Paris 1 Pantheon Sorbonne.

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