

Germany's power market revenue cap — what does it hold for power generation assets?

18 November 2022



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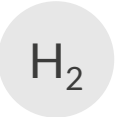
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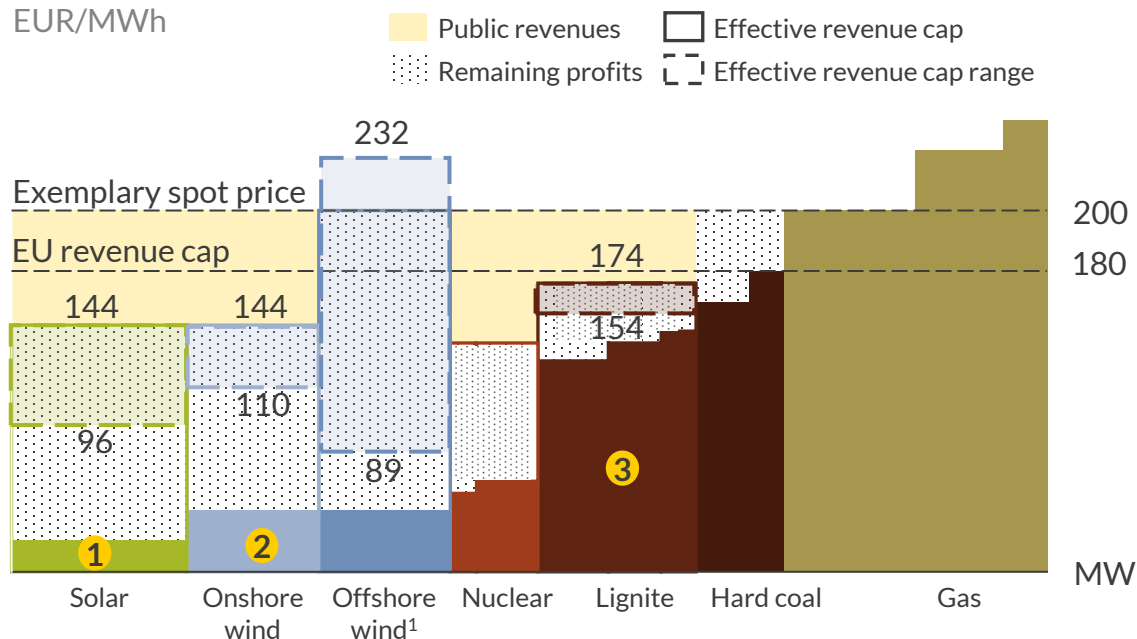
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transactions supported in 2021

The German government plans to introduce stricter revenue caps than foreseen by the EU – and make them technology-specific

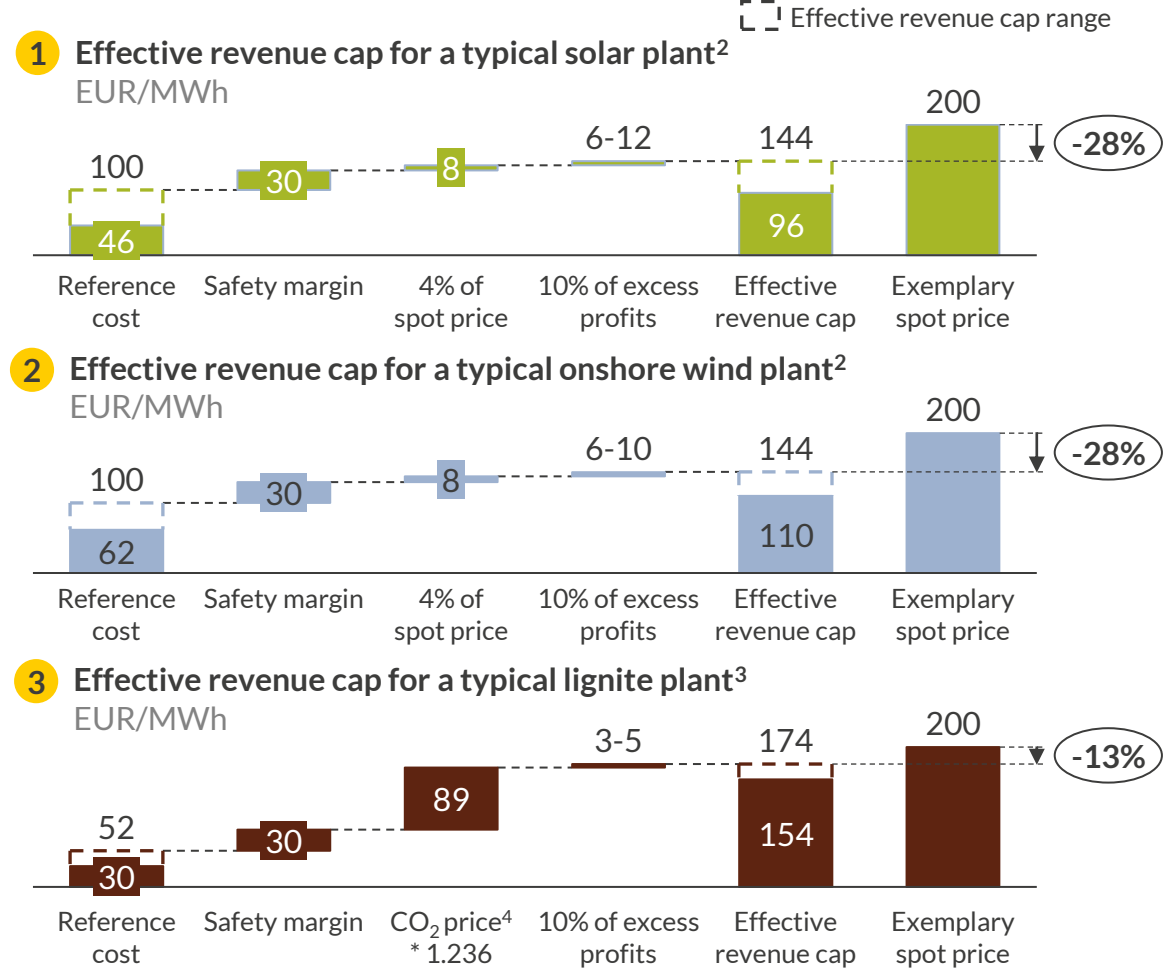
Within the EU framework, Germany aims to set up technology-specific caps mostly below 180 EUR/MWh, above which revenues will be skimmed by 90%

Merit order with effective market revenue caps by technology



- According to a leaked concept paper by the Ministry of Economic Affairs & Climate Action, technology-specific caps will be applied to day-ahead market revenues of power assets, except hard coal and gas plants. Deviating from EU regulation, only 90% (not 100%) of excess profits are skimmed
- We assume the caps to apply from 1st December 2022 to 30th June 2023, and that they apply on an hourly basis (i.e., downside case for operators)
- Final cabinet decision on revenue cap is expected for end of November

The revenue caps are calculated based on various factors, including technology-specific reference costs and safety margins

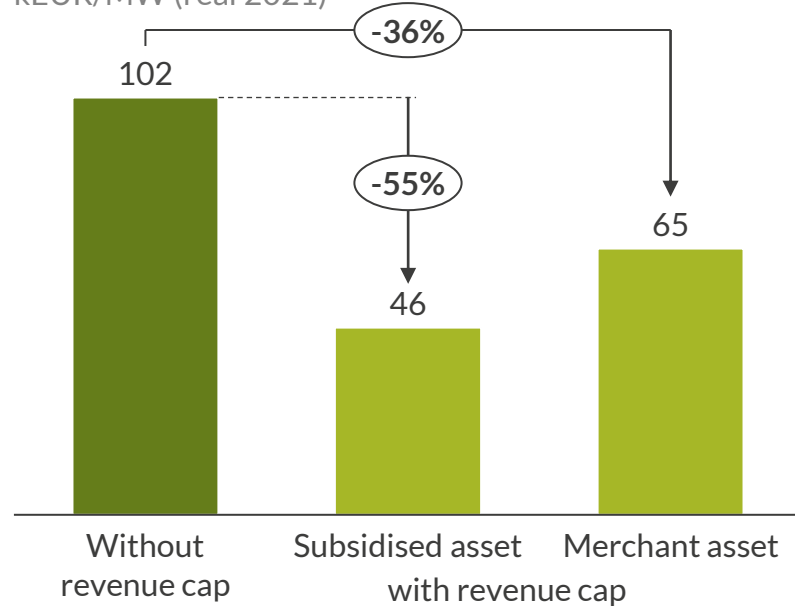


1) The cap is 144 EUR/MWh for offshore wind assets that participated in auctions. For assets that did not participate in auctions, the cap ranges from 89 to 232 EUR/MWh depending on subsidy phase. 2) For subsidised solar and onshore wind, reference costs reflect the 'value to be applied' (anzulegender Wert). For merchant assets, reference costs are 100 EUR/MWh. 3) If a lignite plant closes by 2030, it receives 52 instead of 30 EUR/MWh reference cost. 4) Assuming a CO₂ price of 71.6 EUR/MWh.

Due to the revenue cap, solar revenues decrease by up to 55% in the short term, but impact on long-term profitability is moderate

By June 2023, the revenue cap lowers solar revenues by 36% for merchant and 55% for subsidised assets

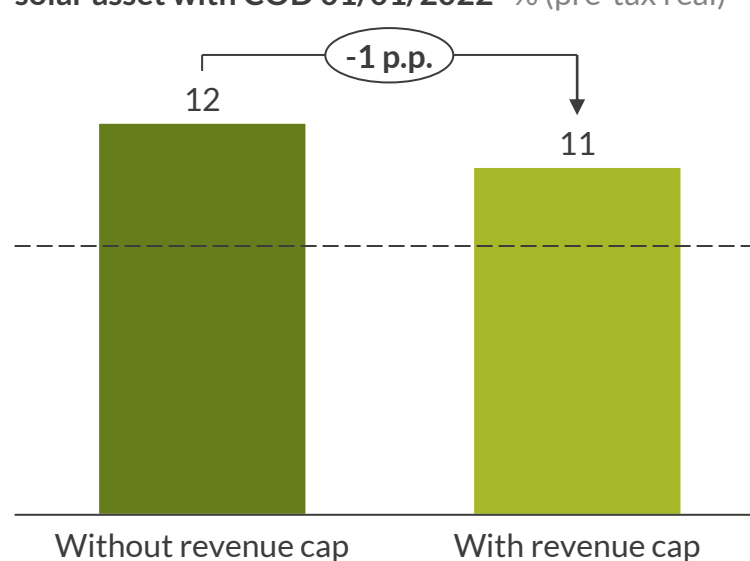
Total wholesale revenues 01/12/2022 – 30/06/2023
kEUR/MW (real 2021)



- Due to tighter caps, the revenue prospects of subsidised assets are impacted more severely by the revenue cap than merchant assets

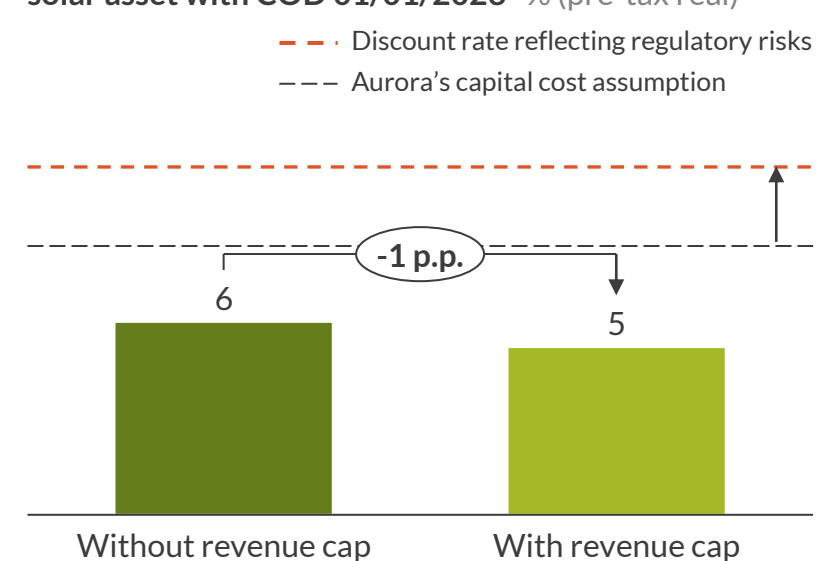
In the long term, the revenue cap itself does not lower profitability of merchant solar assets significantly: existing assets remain highly profitable, new-builds face low profitability even without revenue cap

Internal rate of return of a typical existing merchant solar asset with COD 01/01/2022¹ % (pre-tax real)



- Despite the massive short-term impact, long-term profitability of existing merchant solar assets is not affected strongly – IRRs only go down by 1 p.p.
- Main reasons for the high profitability of existing assets are very high market prices in 2022/23 and CAPEX not affected by inflation yet

Internal rate of return of a typical new-built merchant solar asset with COD 01/01/2023² % (pre-tax real)



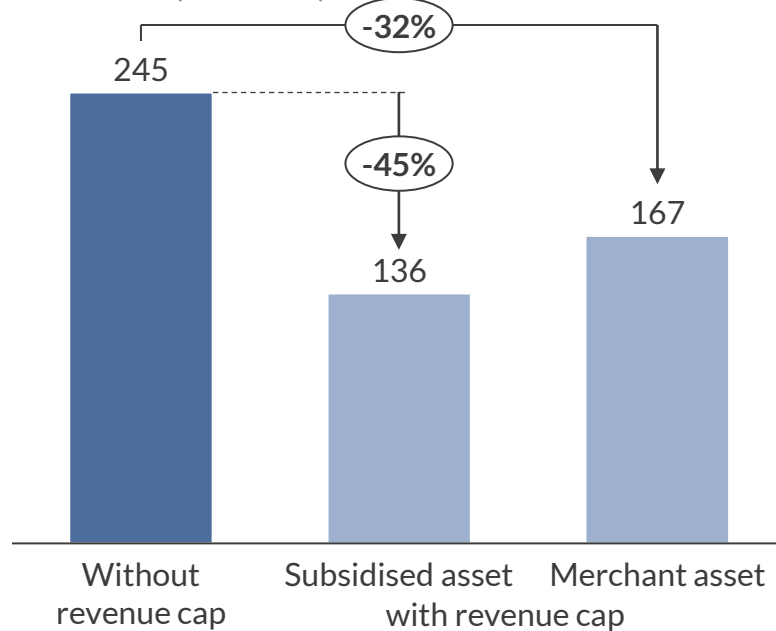
- New-built merchant assets with COD 2023 struggle to meet required hurdle rates – with the revenue cap only adding limited additional pressure on profitability
- Main reasons for the low profitability are foregone profits from high-price year 2022, higher CAPEX due to inflation and increased financing costs

1) Assuming 30-year lifetime, CAPEX of 649 kEUR/MW (real 2021) for a utility-scale, ground-mounted solar PV asset and direct marketing costs equivalent to 6% of capture price. 2) Assuming 30-year lifetime and CAPEX of 740 kEUR/MW (real 2021) for a utility-scale, ground-mounted solar PV asset and direct marketing costs equivalent to 6% of capture price.

Similar as for solar, revenue cap leads to a massive drop in onshore wind revenues in short term, but only has limited impact on long-term returns

By June 2023, the revenue cap lowers onshore wind revenues by 32% to 45% depending on business case

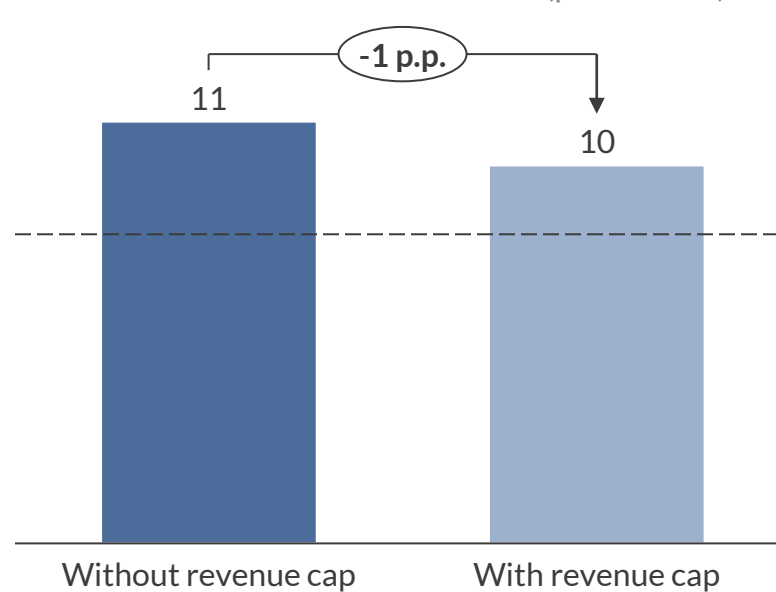
Total wholesale revenues 01/12/2022 – 30/06/2023
kEUR/MW (real 2021)



- Due to tighter caps, the revenue prospects of subsidised assets are impacted more severely by the revenue cap than merchant assets
- Although short-term impacts are still substantial, onshore wind is slightly less affected than solar

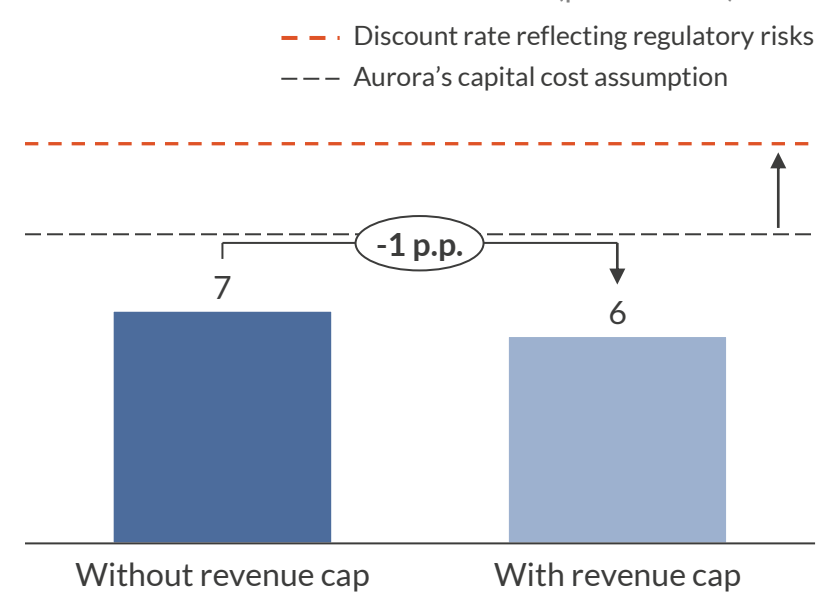
In the long term, the revenue cap itself does not lower profitability of merchant onshore wind assets significantly: existing assets remain highly profitable, new-builds face low profitability even without revenue cap

Internal rate of return of an existing merchant onshore wind asset with COD 01/01/2022¹ % (pre-tax real)



- Despite the massive short-term impact, long-term profitability of existing merchant onshore wind assets is not affected strongly – IRRs only go down by 1 p.p.
- Main reasons for the high profitability of existing assets are very high market prices in 2022/23 and CAPEX not affected too strongly by inflation yet

Internal rate of return of a new-built merchant onshore wind asset with COD 01/01/2023² % (pre-tax real)

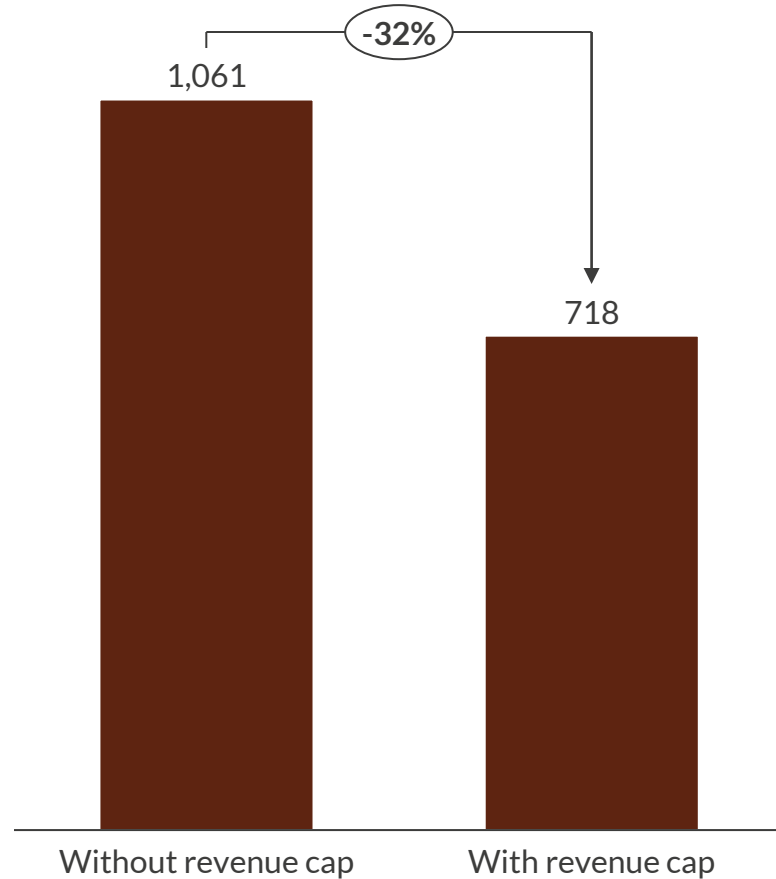


- New-built merchant assets with COD 2023 struggle to meet required hurdle rates – with the revenue cap only adding limited additional pressure on profitability
- Subsidies are needed for new-built assets that do not benefit from high prices in 2022. Even if subsidised, long permitting time creates barriers for buildout

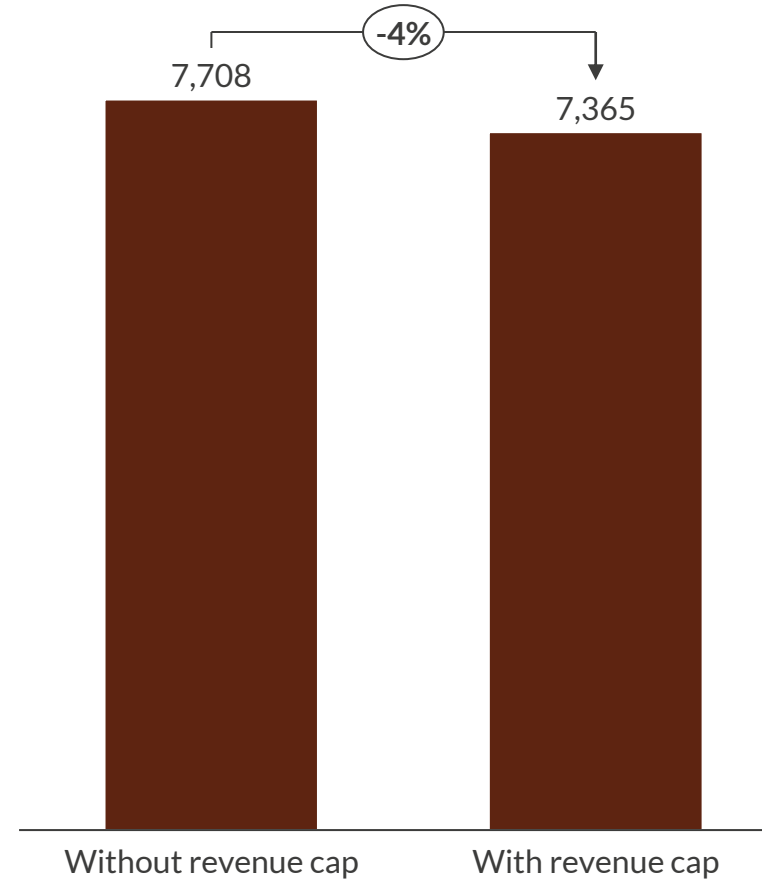
1) Assuming 25-year lifetime, CAPEX of 1,373 kEUR/MW (real 2021) and direct marketing costs equivalent to 6% of capture price. 2) Assuming 25-year lifetime, CAPEX of 1,605 kEUR/MW (real 2021) and direct marketing costs equivalent to 6% of capture price.

While an average lignite plant sees a 32% drop in revenues due to revenue cap until mid-2023, long-term impacts are relatively small

Total wholesale revenues of an exemplary lignite plant¹
between 01/12/2022 and 30/06/2023²
kEUR/MW (real 2021)



Total wholesale revenues of an exemplary lignite plant¹
between 2022 and 2030^{2,3}
kEUR/MW (real 2021)



- In the short run, the revenue cap leads to a significant 32% drop in wholesale revenues for an average lignite plant – with the cap applying in more than 95% of hours during the seven month application period
- In the long term, a temporary revenue cap has moderate impacts on lignite, with revenues only decreasing by 4% between 2022 for an assumed closure date in 2030
- During the current energy crisis, various lignite plants benefit from lifetime extensions reflecting government ambitions to reduce gas demand from the power sector – the revenue cap limits this significant and unexpected upside for lignite plant operators

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1) Assuming efficiency of 37% HHV. 2) Assuming retirement by 2030, a revenue cap of 176 EUR/MWh is assumed. The cap consists of reference costs of 52 EUR/MWh, 1.236 times monthly CO₂ price, which averages at 71.6 EUR/MWh, a 30 EUR/MWh safety margin, and 10% of excess profits. 3) Assuming the revenue cap applies only from 1st December 2022 to 30th June 2023.

- Germany aims to introduce caps for power market revenues in order to refinance financial support for end consumers. Deviating from the EU framework, the government plans to set the **revenue caps at a level below 180 EUR/MWh and make them technology-specific**. The caps are expected to apply to power producers except for hard coal and gas plants **between 1st December 2022 and 30th June 2023** – with the option for further extension. Many details of the intervention still have to be confirmed and the final cabinet decision is expected for end of November.
- In the **short term, we expect the revenue cap to cause significant reductions in revenues for affected technologies**. Between 1st December 2022 and 30th June 2023, subsidised renewables assets see a decline in revenues of 45% (onshore wind) and 55% (solar). For merchant renewables assets, short-term revenue impacts are smaller accounting for 32% (onshore wind) and 36% (solar), as cap levels are higher.
- Despite the massive short-term impacts, the **proposed revenue cap does not affect long-term asset profitability significantly** – with the cap reducing IRRs for merchant solar and onshore wind by only about 1 percentage point respectively.
 - **Existing merchant assets**, who started operations in January 2022 or locked in CAPEX previously through supplier agreements, see **high profitability** as they benefit from very high market prices (even if capped) due to high commodity prices.
 - **New-built assets** starting operations only in January 2023 **struggle to meet their hurdle rates for fully merchant operation** (even without a revenue cap), as they could not benefit from the high-price year 2022 and face cost increases due to inflation, including higher CAPEX, direct marketing costs, financing costs as well as O&M costs.
- While the long-term economic impact of the revenue cap is moderate when considering the measure in isolation, **such unprecedented intervention in the power market creates significant uncertainty**. Market actors are already facing considerable uncertainty caused by volatile power and commodity prices as well as regulatory risk in light of EU plans for a major reform of the European power market design in 2023.
- Further uncertainty around the design of a revenue cap and the risk of a possible extension might **decrease willingness to invest, slowing down the development of renewables** in a time when buildout is urgently needed to reduce fossil fuel import dependency and drive decarbonisation.
- **We will continue to monitor the situation and expect to update these analyses as further details become known.**

Details and disclaimer

Publication

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