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Towards Net Zero: Decarbonising flexible generation

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Abstract ***(approximately 200–300 words in One page)***

RWE has an ambitious “growing green” strategy and invests in Renewables, firm and flexible power supply and energy storage with the target to reach Net Zero in 2040. This requires to follow the best pathway to decarbonize the existing fleet and to consider suitable low or negative carbon emission technologies.

Key aspects of the decarbonization pathway are related to the individual assets, existing and required infrastructure, power generation technology and the market conditions. RWE considers for currently 24 GW of installed flexible generation five technology routes which are Carbon Capture and Storage (CCS), conversion to hydrogen combustion, and conversion to Bio-Energy with CCS (BECCS). Additionally new-builds shall be H2 ready or equipped with CCS or provide reliable back-up power.

For a sustainable future industries have to join forces and team up to make a real impact on CO2 reduction along the Bio-Energy value chain. RWE has the ambition to take a key role in the value chain by providing CO2 free firm capacity using the sustainable biobased feedstock and capturing the green CO2 and storing it in the underground enabling “negative emissions” or Carbon Dioxide Removal (CDR) certificates. RWE aims to capture ~10 Mtpa of green CO2 at power plants in the Netherlands, which shall be converted to BECCS.

Besides others only Direct Air Capture and BECCS offer permanent removal for centuries as both take the CO2 from the atmosphere and gain the negative emissions by storing it in geological formations.

For natural gas fired power plants RWE investigates CCS and H2 conversion options for decarbonizing the flexible power generation. One example is the Pembroke power station in UK, where a dual pathway is considered.

RWE learned a lot about carbon capture from an own pilot facility and in EU and national funded R&D projects. The research priorities are Scouting for alternative decarbonization and Carbon Capture Technologies, clean fuels and flexible power generation and demand technologies.