

# **Can flexible power production from biomass complement the fluctuating feed-in from wind and solar power? Results from a case study for a German region**

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The on-going energy transition in Germany aims at a power system dominated by renewable energy sources (RES) with more than 80% in 2050. With the mainstay of future RES expected to be provided by inherently variable sources like wind and solar photovoltaics (PV), the temporal mismatch in demand and supply is becoming a mayor issue for a secured power supply. Under currently insufficient storage capacity and rapidly increasing power installations from variable renewables like wind and solar PV, options for the integration of increasing shares of vRES are urgently needed.

Biomass as a potentially demand driven source originating from storable energy carriers is seen as a major element to provide power whenever fluctuating wind and solar are insufficient to ensure a balanced power system. On the basis of historic time series data of demand as well as of supply from wind and solar PV of one of the 4 German grid areas, we have modelled future variability from increased installations in wind and solar PV to assess whether fluctuating supply from these sources can be complemented by flexible power generation from biomass. Assuming a flexible operation from power generation from biomass, the ability of today's concepts for the flexible operation are checked against the challenging task to enable a secure power system in the year 2030.