Summary of the study „Bioenergy's contribution to the energy transition"
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Results of the study

- With an increase of variable renewable energy resources and a reduction in use of fossil fuels, the power system must ensure sufficient balancing options to provide a secure electricity supply that features positive and negative residual loads, as well as sufficient ancillary services including frequency control, reactive power and congestion management. Bioenergy is ready to take on these tasks!
- Despite restrictions due to rising demand in foodstuffs and animal feed, as well as efforts to conserve biodiversity through nature reserves, there is no current reason to doubt potential in terms of the availability of biomass as set out in existing scenarios (e.g. BEE, DLR).
- A more effective use of biomass is becoming increasingly possible, as land use, transformation processes as well as the ultimate use of energy becomes more and more efficient.
- Updating the 7,500 currently available biogas units' motors and gas storage units can generate an increase in performance and can be made available on a flexible basis (3.2 GW → 5.8 GW up to a max. 15 GW) using the same substrate amount during shorter periods (16, 12 or 8 hours per day).
- Depending on the technical facilities, mode of operation and expansion scenario, flexibility incurs additional costs, comparable to those of modifying conventional power stations: 1.9 – 5.2 Ct/kWh (150 – 320 million EUR at a flexibility level of 50 % of the inventory, 0.6 –1.2 billion EUR at full flexibility of noncritical biogas potential). In the current power market system these costs cannot be refinanced.
- Aligning bioenergy units' modes of operation with the spot market price only seems appropriate if, from a system-wide and ecological point of view, curtailing renewable fuels over conventional forms is necessary. This could occur only if due to multiple significant VRE surpluses, the replacement of conventional energy resources is no longer a priority.

Recommendations

- Shorten bidding periods and draw trading periods closer to settlement dates
- Synchronise trading periods, kilowatt markets and balancing markets
- Exemption of network charges when negative balancing power is provided
- Stronger functional distinctions between must-run power plants and true ‚peak load power plants'
- Greater operation of biogenic CHP units in the area of ancillary services (taking their contribution towards efficient heat supply into consideration) to replace conventional must-run power stations
- Greater weighting of the revenues from the heating sector to reduce costs of generating electricity using biomass when designing the plant
- Political consideration of the positive contribution using biomass as a fuel makes towards environmental conservation, (as emissions caused by agriculture are reduced), as well as benefits in the fields of circular economy and waste management industry
- In the long term, amending and further developing both the Renewable Energy Sources Act (EEG) and the Combined Heat and Power Act (KWKG)

For a more detailed analysis, please refer to the complete study available at www.bee-ev.de.