DIW BERLIN

Stiftung Mercator

Workshop II - Prospective Electricity Generation Costs until 2050

Topic 3: Gas, Coal, and Flexibility

Discussion

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Motivation

- Complex analyses are required to provide answers for current and future challenges, e.g.
  - How to complement intermittent renewable generation?
  - Do we need a capacity market?
- Numerical models are widely used, but results (highly) depend on underlying data and assumptions

- Our aim is
  - to provide a review of electricity generation costs and parameters based on recent studies and literature
  - to propose a consistent set of electricity generation costs

Investment costs and efficiency

- Investment costs decline whereas efficiencies go up
- Coal IGCC > Lignite > Coal > Gas CC > Gas T
- w CCTS > w/o CCTS

	InvCosts 2010	InvCosts 2050	Efficiency 2010	Efficiency 2050
Coal – IGCC w/o CCTS	1800	1531	48.0	52.0
Coal – IGCC w CCTS	3200*	2447	38.0	41.1
Coal – PC w/o CCTS (Advanced/SuperC)	1300	1023	46.0	46.7
Coal – PC w CCTS (Advanced/SuperC)	2700*	1984	31.0	33.6
Coal – PC w/o CCTS (Subcritical)	1200	944	39.0	39.0
Coal - PC w CCTS (Subcritical)	2600*	1910	28.0	30.3
Lignite – Advanced (BoA) w/o CCTS	1700	1338	43.0	46.6
Lignite – Advanced (BoA) w CCTS	3100*	2278	30.0	32.5
Gas CC w/o CCTS	800	664	60.0	61.9
Gas CC w CCTS	1400*	1062	48.0	52.0
Gas Combustion Turbine w/o CCTS	400	400	45.0	45.7
Gas Combustion Turbine w CCTS	1000*	758	31.0	33.6
Gas Steam Turbine w/o CCTS	400	400	41.0	41.7

Discussion

- As we look into the future, the absolute numbers are wrong! → How to deal with the uncertainty?
- Development of future investment costs?
  - Increasing? Decreasing? Constant?
  - Interaction with efficiencies?
- Retrofit vs. investment? Costs?
- Flexibility of conventional generation
  - What currently limits the flexibility? How can flexibility be increased?
  - Currently gas is more flexible than coal/lignite? Future?

Vielen Dank für Ihre Aufmerksamkeit.

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