

Determinants of fuel switching

EU ETS and the Polish and German Electricity Sector

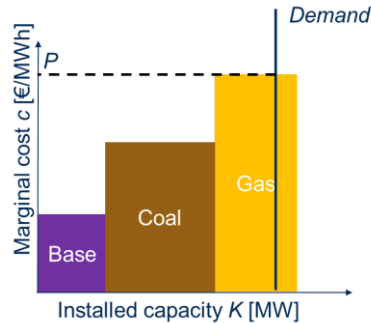


Building Competence. Crossing Borders.

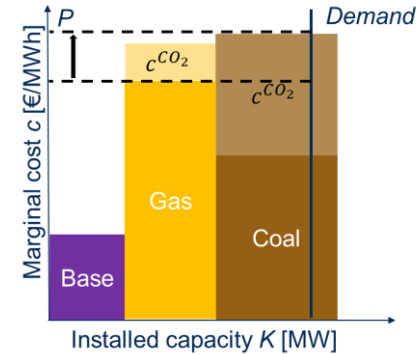
Jan Abrell, Regina Betz, Mirjam Kosch

abre@zhaw.ch, betz@zhaw.ch, kosc@zhaw.ch, 23.06.2020

Determinants of fuel switching



Carbon price: p^{CO_2}



Fuel switching

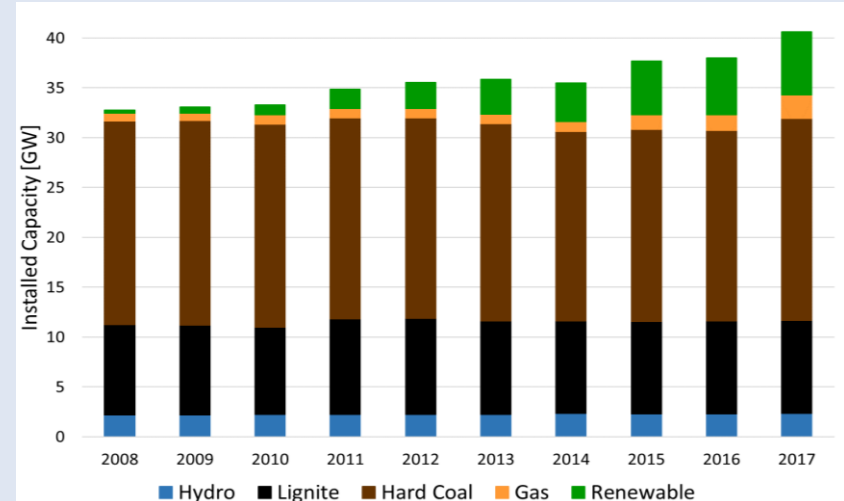
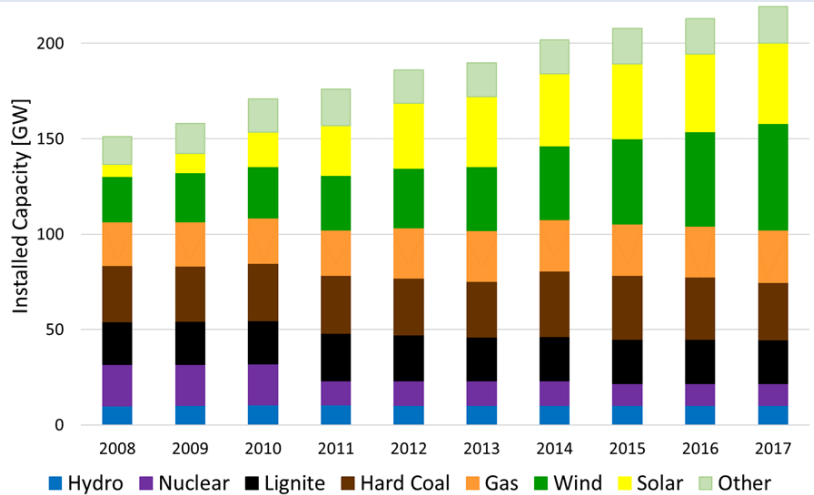
Switching from a high to a low carbon-intensive production facility

→ Short-term carbon abatement in electricity markets

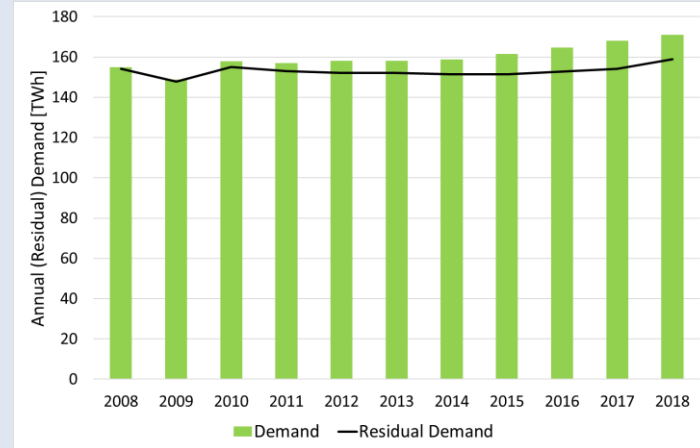
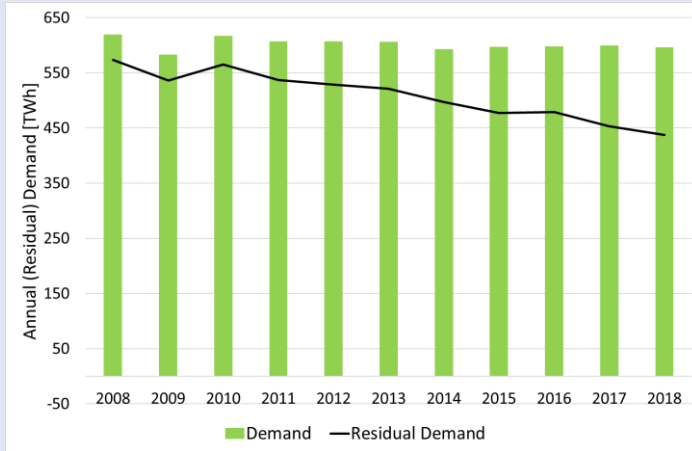
Determinants of

- **fuel switch potential**
 - Installed capacities
 - Residual demand
 - Other (out-of-merit order dispatching)
- **fuel switch**
 - Carbon price
 - Fuel prices

Determinants of Fuel Switch Potential: Installed Capacities



Determinants of Fuel Switch Potential: Residual Demand

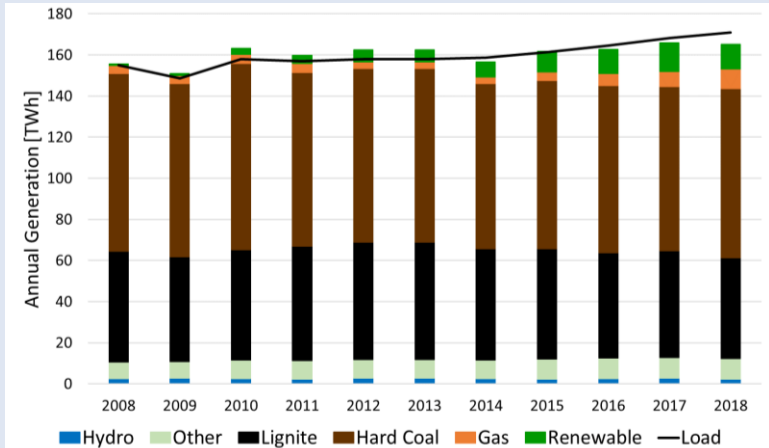
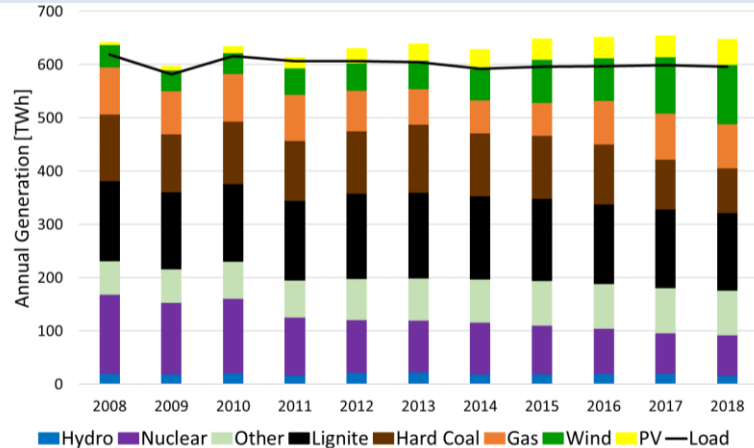


Determinants of Fuel Switch: Carbon Prices and Generation Cost

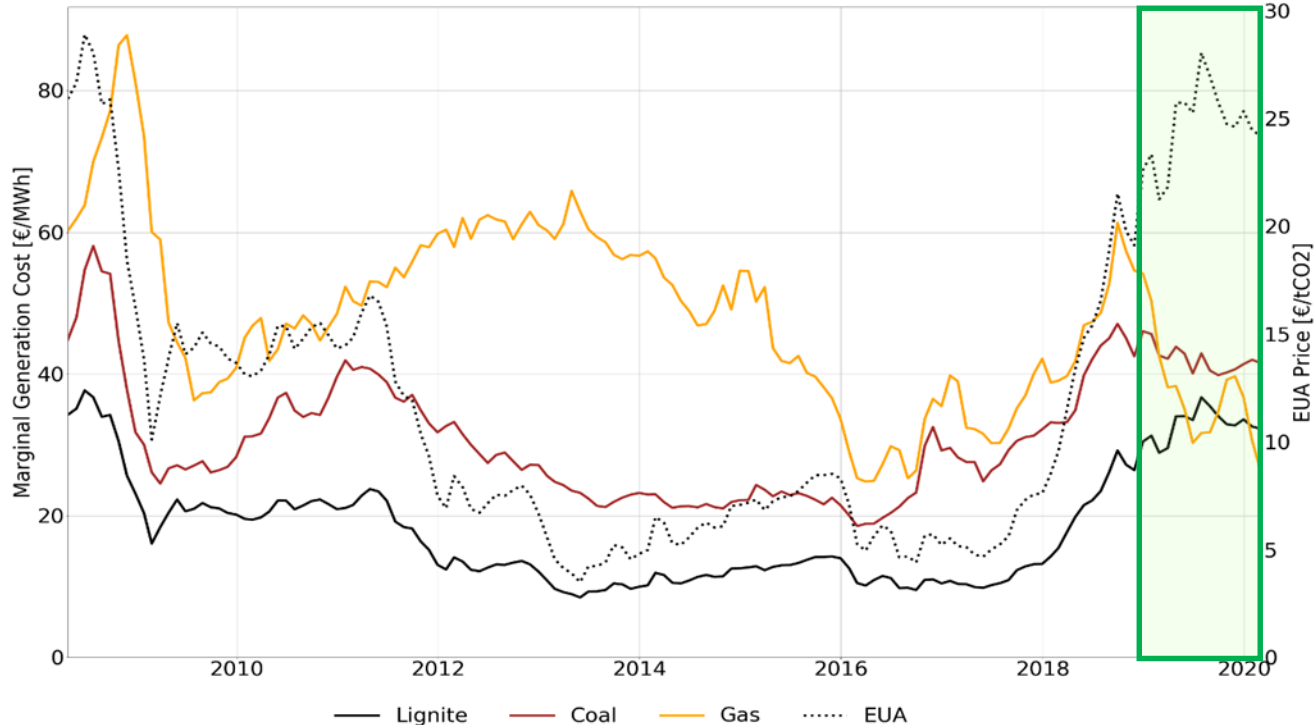


Sources: Fuel price: Worldbank. Lignite assumed to be constant at 1.5 €/MWh_{th} (UBA, 2017). EUA: ICE daily forward prices. Carbon content of fuels UBA (2018): Lignite (Coal, Gas) 0.388 (0.337, 0.201) tCO₂/MWh_{th}. Average heat efficiency of plants UBA (2018): Lignite (Coal, Gas) 34 (40, 53) %.

Generation Development: 2008-2018



What happened in 2019?



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Thank you.

