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Energy market design and the impact of decarbonisation – the two market approach

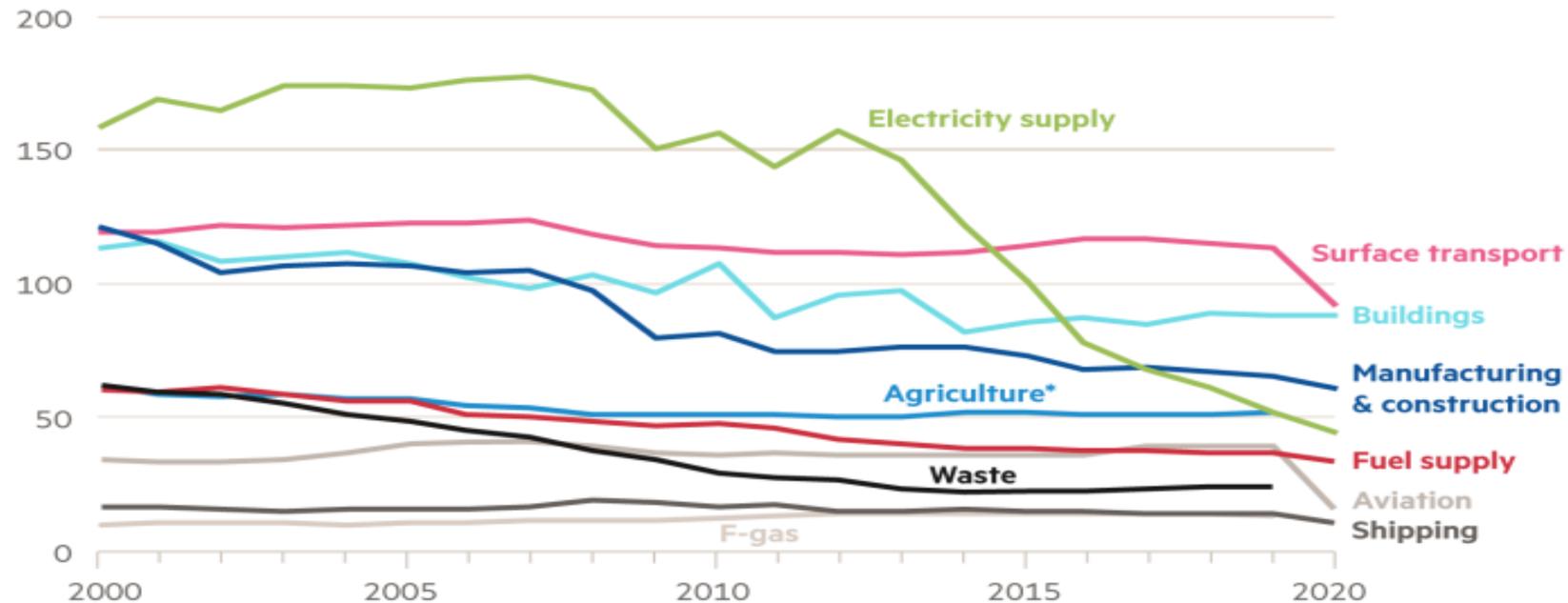
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Emissions reductions by sector: UK

The UK's power industry has taken big steps to decarbonise but other sectors have not

Annual emissions by sector (MtCO₂e)

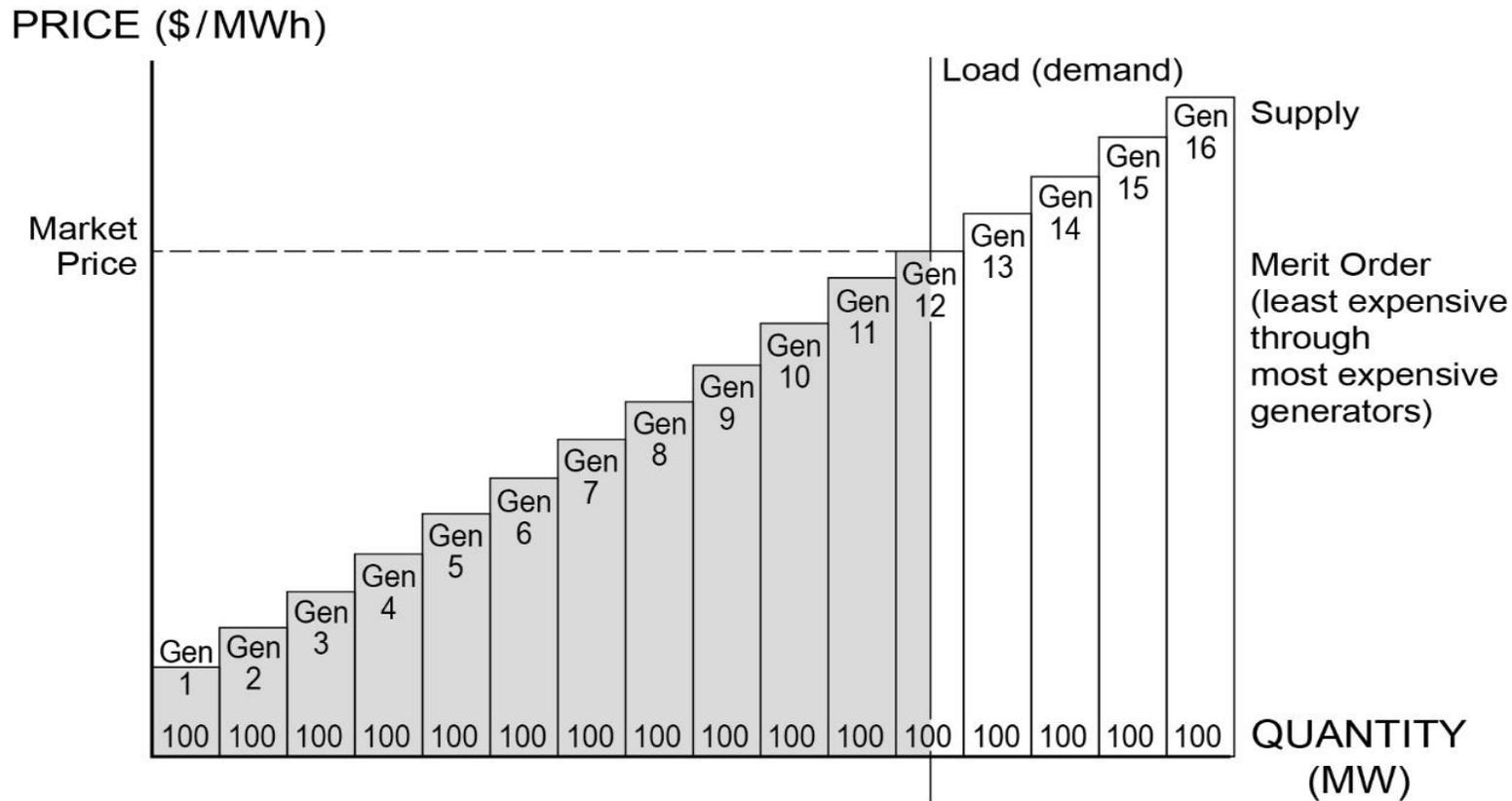


Figures for 2020 are provisional *Includes land use, land use change and forestry

Source: BEIS; Climate Change Committee

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Does srmc pricing still work if the stack looks nothing like this?



The essential problem

- "We need to move quickly to a smart, flexible energy system. By 2035, excess generation will represent around 50% hours, with this rising to above 60% by 2050. "
- "In periods of excess generation the wholesale price is likely to be set by renewables, and therefore will result in very low prices."

REMA 2022

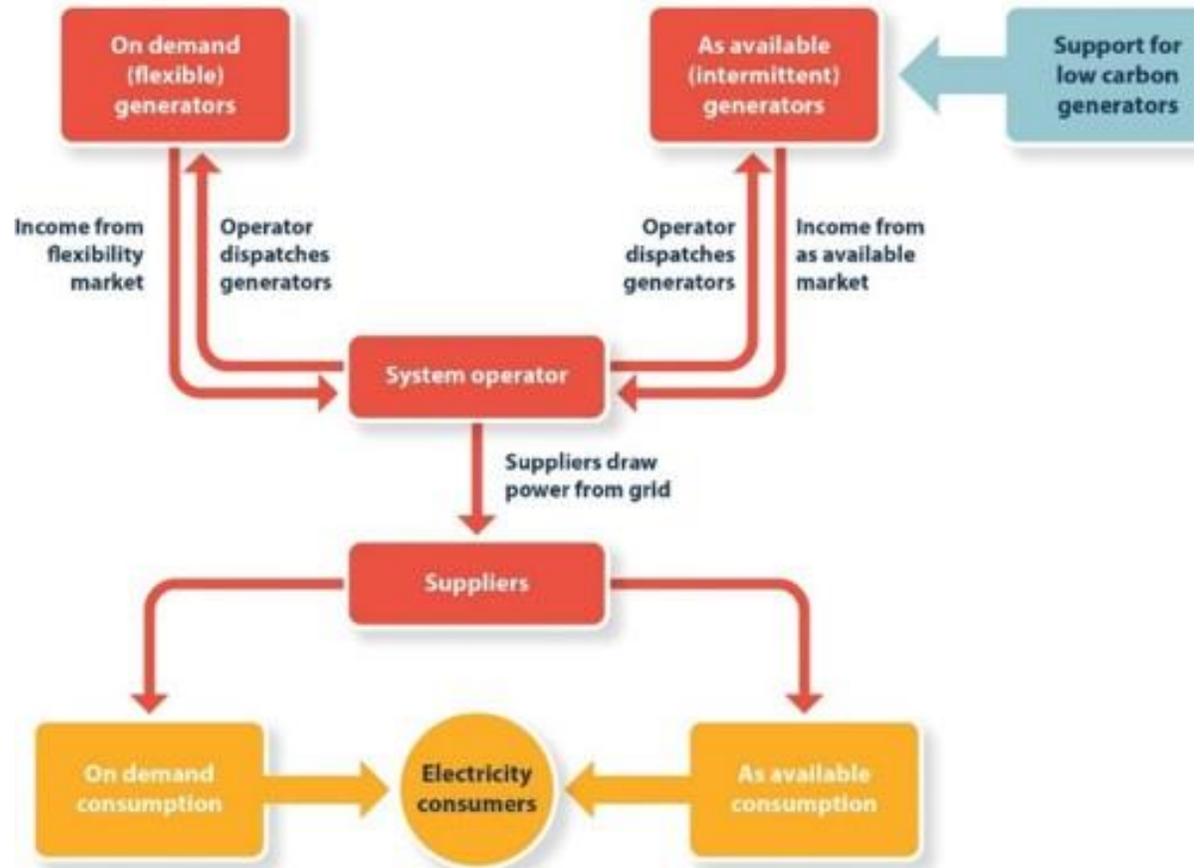
In addition – political problem of declining renewables costs not getting through to consumers.

Electricity markets based on srmc are broken

- Price 'cannibalisation'
- Inadequate incentives for investment
- No useful signals for operation
- No useful signals for consumers
- No exit strategy

The Two Market Approach

- Separate markets ('as available' and 'on demand') at both generation and consumer ends, linked via financial flows.
- Security is 'privatised'. Consumers decide whether and when to access the more reliable 'on demand' market and influence the electricity mix.



Advantage 1: builds on changes underway to anticipate coherent market design for future

- RE penetration: declining spot prices and need to address intermittency
- Decentralised energy resources: increasing role for consumers
- Increased importance of fixed costs: RE prices reflect investment cost
- Growth of AA-type contracting: Renewable CfD, PPA, self-generation

Advantage 2: couples (integrates) upstream and downstream markets

- Consumers see AA and OD price signals and choose AA/OD mix
- Giving them all access to low cost intermittent RE
- Creating incentives to invest in flexibility and electrification
- Leading to new demand-side business models and supply chains
- Resulting in reduced cost of renewables penetration decarbonisation.

Advantage 3: enables different levels of security reflecting consumer preferences

- Clarifies demand for OD system energy (supply security)
- While enabling consumers to put a value on their own supply security
- Stimulating private investment by power users and suppliers
- Reducing the need for government support/intervention in the long term.

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