Inflection Point
ENERGY CONSULTING

# Renewables in Europe: The path to power?

Dr Gordon Edge

Director

Inflection Point Energy Consulting

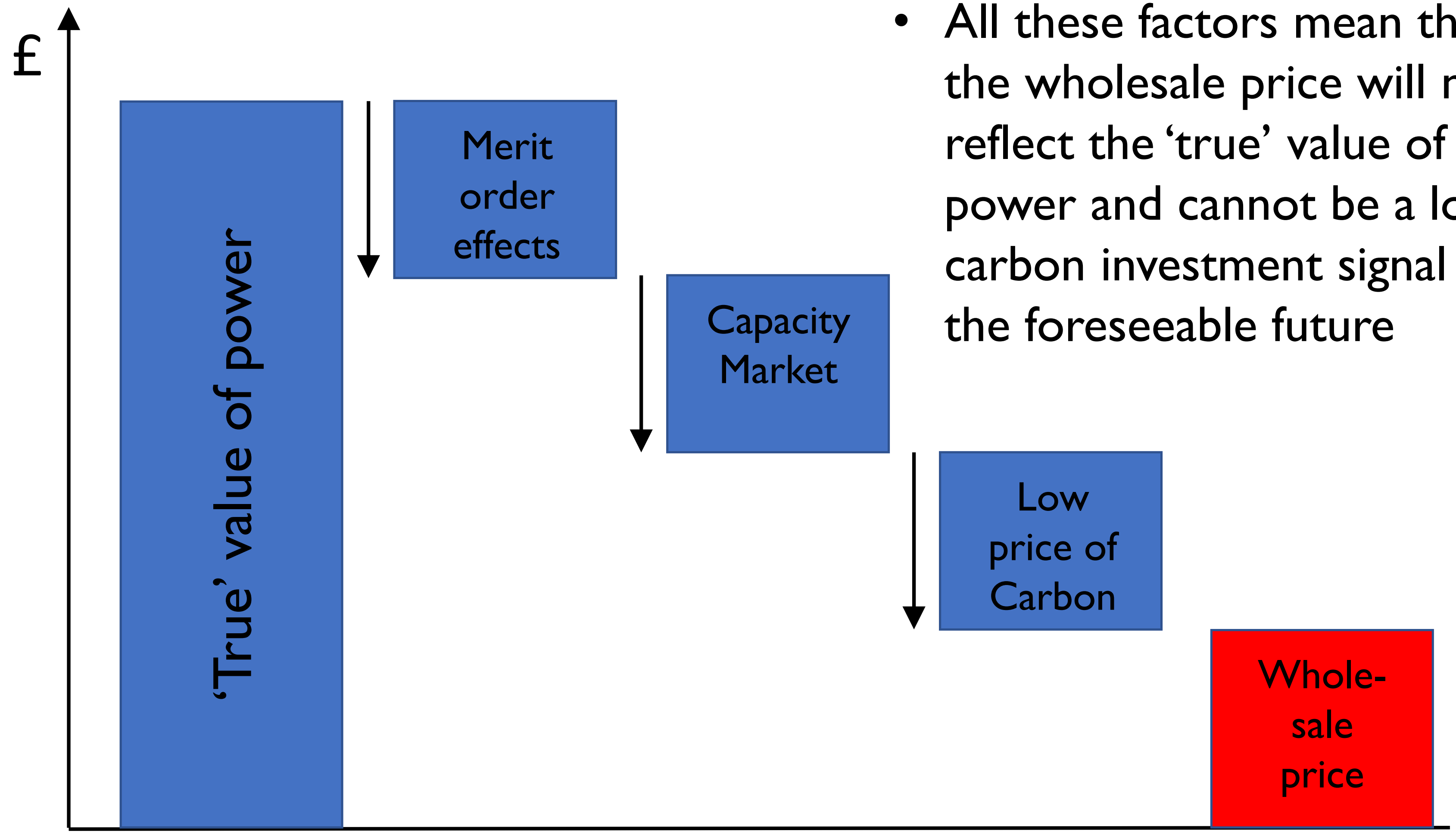
# Agenda

- The renewable investment challenge
- What role does the market price have in a high-renewables world?
- Who takes price risk?
- Legislative action at the European level
- Where next for projects? The future of auctions

# The puzzle

- Renewables are now, or soon will be, the cheapest options available for new supply of power
- **But:** some form of Government-backed instrument will still be required to facilitate investment in the medium term at least
- This is because renewables in general (and nuclear) are high-capex, low-opex price takers
- To ensure capital costs can be funded at lowest WACC, someone needs to take the price risk away
  - And that is currently Government

# What's wrong with the market price?

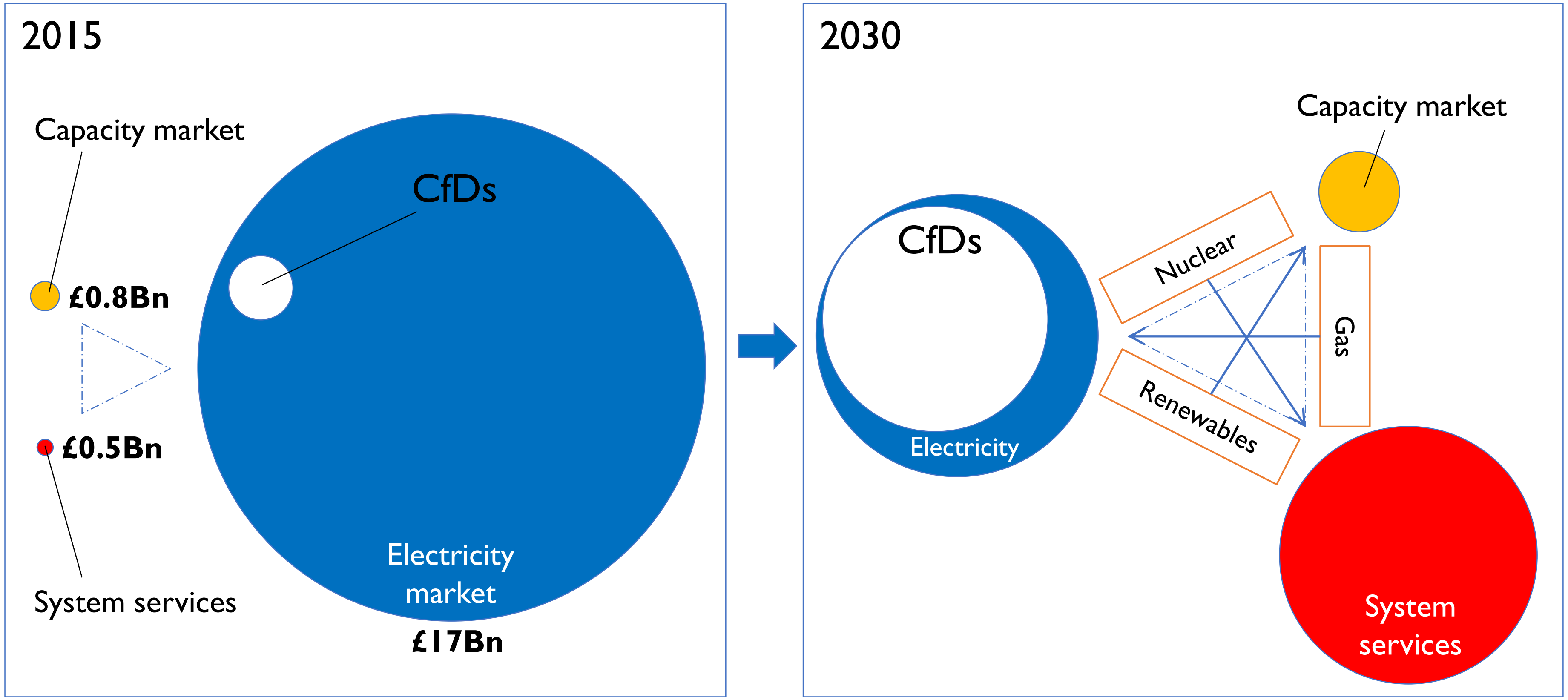



- All these factors mean that the wholesale price will not reflect the 'true' value of power and cannot be a low-carbon investment signal for the foreseeable future

# Income in the future

- Three income streams of comparable magnitude
  - Energy-related – Merchant or CfD related to energy price
  - Capacity-related – Capacity Market contract
  - Ancillary services – Balancing services or system services e.g. frequency response, reactive power provision

# …From a changing market




*With thanks to RWE Innogy*

# A new steady state?

- The energy-only wholesale price will become increasingly just a dispatch signal for the market
  - Renewable supply high, price low ⟶ Batteries charge, demand shifts in
  - Renewable supply low, price high ⟶ Batteries discharge, demand shifts away
- Flexibility options (storage, DSR, interconnection) provide a physical cap-and-collar to the market
- Once track record has been established, commercial CfDs priced against the wholesale price, and within the range provided by the flexibility options, should be possible
  - Until then, some form of Government-backed price stabilisation is necessary

# What about the politics?

- In general, as prices continue to drop and employment increases, political support is steady across the EU
- In most countries, there is backing to a greater or lesser extent
  - France bullish under Macron, GroKo will continue the Energiewende in Germany, development possible again in Spain
  - Eastern countries less enthusiastic, and some throwing up obstacles, but the economics should win out in the end
- UK a bit of a special case
  - For political reasons, onshore wind and solar can't be seen to be supported
  - Offshore wind regarded as a success and will be protected
- This support being translated into EU-level action

# EU legislative action

- The EU institutions are legislating on the ‘Clean Energy Package’:
  - Renewable Energy Directive II
  - Market Design Directive
  - Energy Efficiency Directive
  - Governance of the Energy Union Regulation
- Plus ongoing work on related policy
  - EU-ETS
  - Network Codes
  - State Aid Guidelines

# Renewable Energy Directive II

- To replace the original RED, which runs until 2020
  - Set the 20% renewables in final demand objective, with mandatory targets for each member state
- New Directive sets objective for 2030
  - Overall target, but binding only at EU level, i.e. no mandatory country targets
    - Enforcement of target if not being met still not clear
  - Commission proposed 27%, Council accepted this but Parliament wants 35%
    - 27% based on old modelling with much higher costs assumed for renewables than has turned out
  - Institutions about to enter trilogue to settle differences
    - Final Directive likely in second half of 2018

# Market Design Directive

- A more technical measure, this legislation should however set important parameters that affect project economics
- Currently bogged down in arguments about capacity mechanisms
  - If not designed appropriately, these could hinder rather than help deployment of flexible resources that will help renewables – UK CM guilty of this to an extent
- Priority dispatch for renewables under threat
- Could lead to more flexible energy market e.g. through bringing gate closure to only 15 minutes ahead of real time

# So what's happening now?

- Auctions are springing up across Europe, driven by the Commission's state aid guidelines
- Germany has had four onshore wind auctions so far, awarding 3.5GW of contracts; prices varied from c.€20/MWh to c.€50/MWh, with average in the €40-50/MWh range, also auctioning for solar
- France has run one tender for 500MW with weighted average price of the winning bids coming in at €65.40/MWh
- Spain has held three auctions, awarding 9GW of wind, solar and biomass; the two auctions in 2017 saw 3GW of wind receive €43/MWh, and then 4GW of solar and 1GW of wind receive market price with only a limited floor price of €21-24/MWh

# Offshore wind – a special case

- Offshore wind has seen precipitous drops in price in the last two years
  - Partially this has to do with some countries auctioning the rights to build already consented projects (Denmark, the Netherlands), with prices of €50-70/MWh
    - Next Dutch auction likely to result in 'no subsidy' winner
  - But even where different projects have competed against each other, some remarkable prices have resulted
    - £57.50/MWh in the last UK auction
    - 'No subsidy' bids in Germany

# Is merchant really possible?

- ‘No subsidy’ bids mean reliance on variable wholesale price revenue
- Price risk is going to mean low gearing (if any)
- Equity will want a return commensurate with the risk
- Over the longer term, price cannibalisation is going to impact revenue
- Unless storage rides to the rescue, there may be a few lost shirts or uncalled options
    - I expect there to be calls for a floor price to be put in place before ‘no subsidy’ projects are built

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Dr Gordon Edge
Director
Inflection Point Energy Consulting

gordon@inflectionpointenergy.co.uk

www.inflectionpointenergy.co.uk

+44 7468 614 029

@Inflect_Pt_Ener