

Policy & Markets for Offshore Energy Storage

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OUR MISSION

**Unleashing innovation and open
new markets to capture the clean
growth opportunity**

About Energy Systems Catapult

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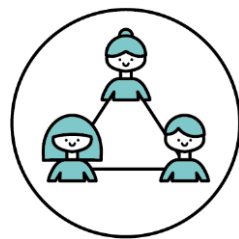
Innovation experts



Based in Birmingham



Established, overseen and part-funded by Innovate UK. Independent from Government. Not for profit



Bridge the gap between stakeholders in the sector



Supporting innovators



Research



Trials



Engineering



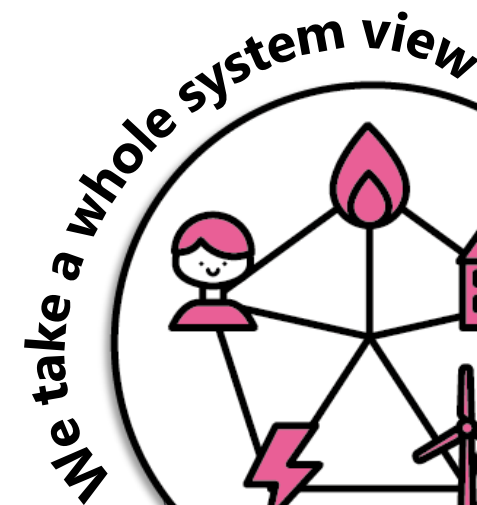
Digital & Data



Modelling and simulation

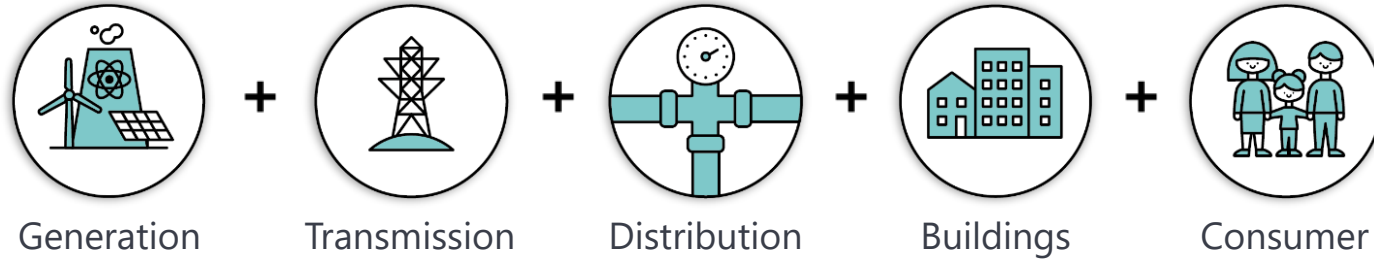


Markets, Policy & Regulation

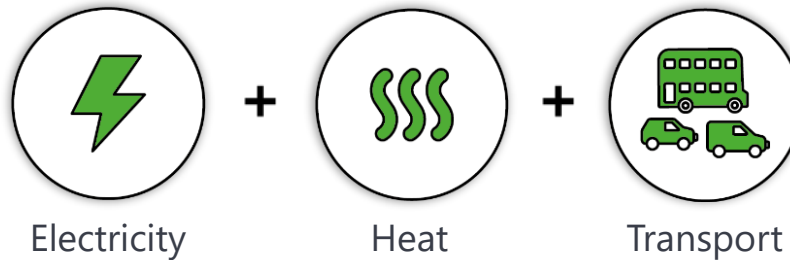


Our expertise: whole systems thinking

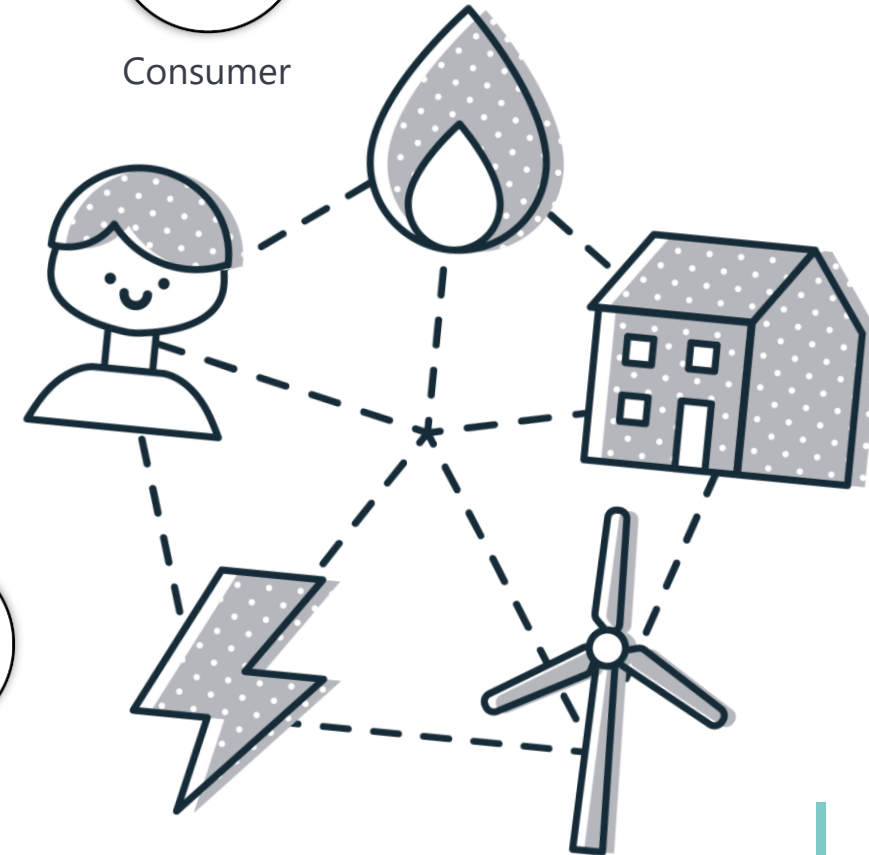
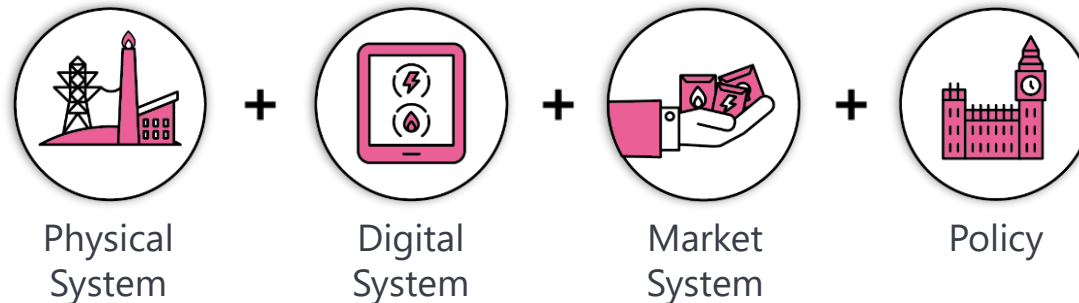
JOINING UP THE SYSTEM FROM SOURCES OF ENERGY TO THE CONSUMER



BREAKING DOWN SILOS BETWEEN DIFFERENT PARTS OF THE ENERGY SYSTEM



JOINING UP PHYSICAL REQUIREMENTS OF THE SYSTEM, WITH POLICY, MARKET AND DIGITAL ARRANGEMENTS



New policy & market concepts needed to get to net zero

Different types of storage needed at scale...

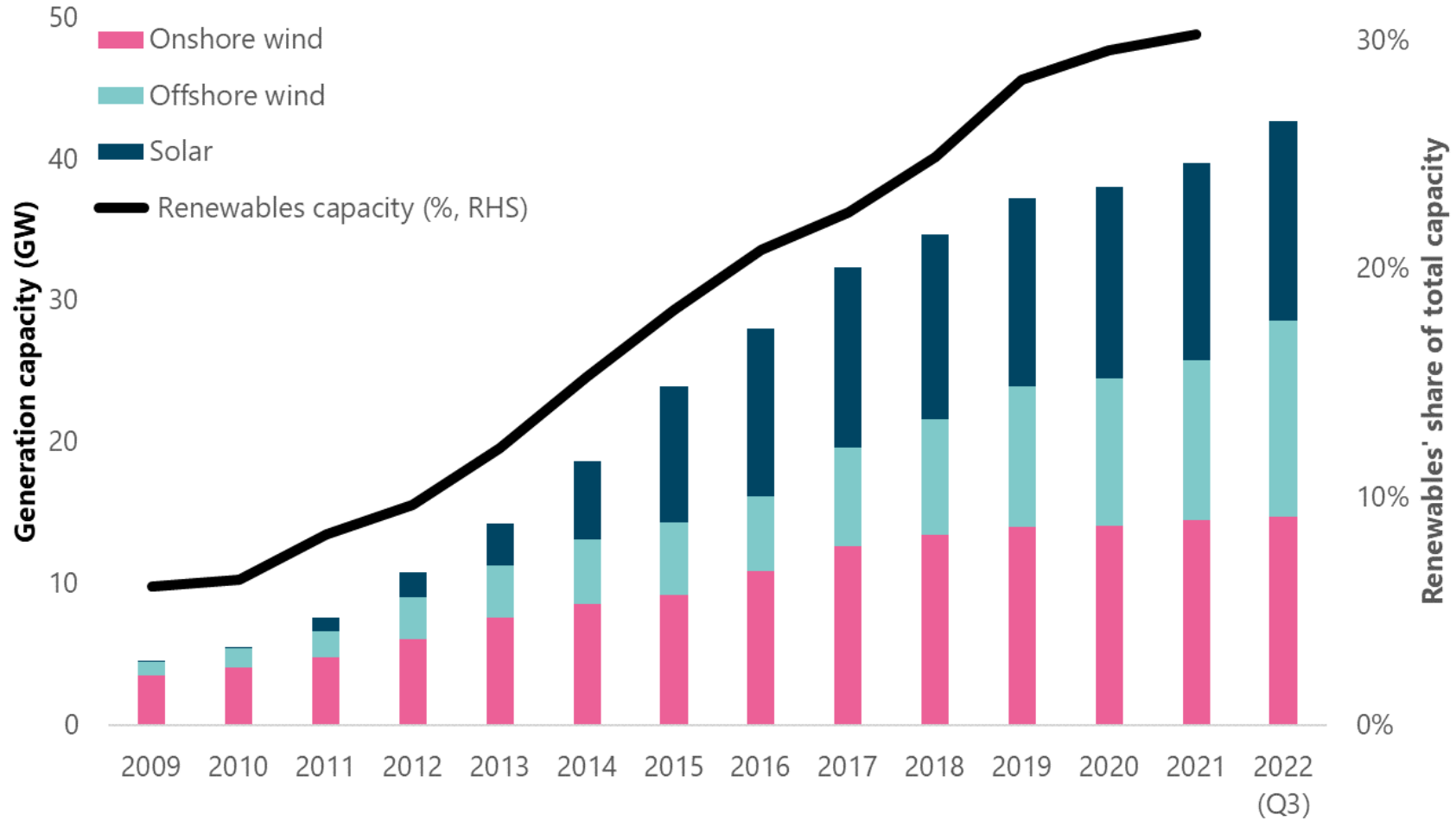
...Means we're entering a new stage of the energy transition...

...Focus on systems integration, not technology-specific contracting



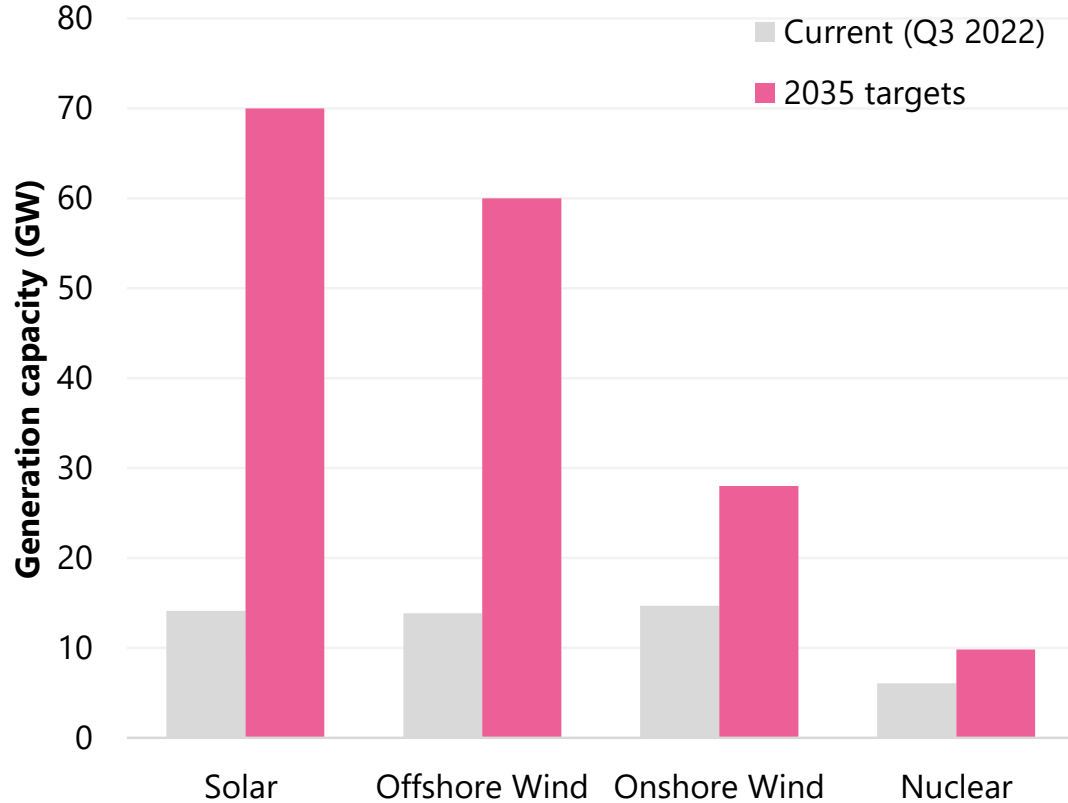
Granular price signals & outcomes-based policy mandates

Renewables rollout has been a success story

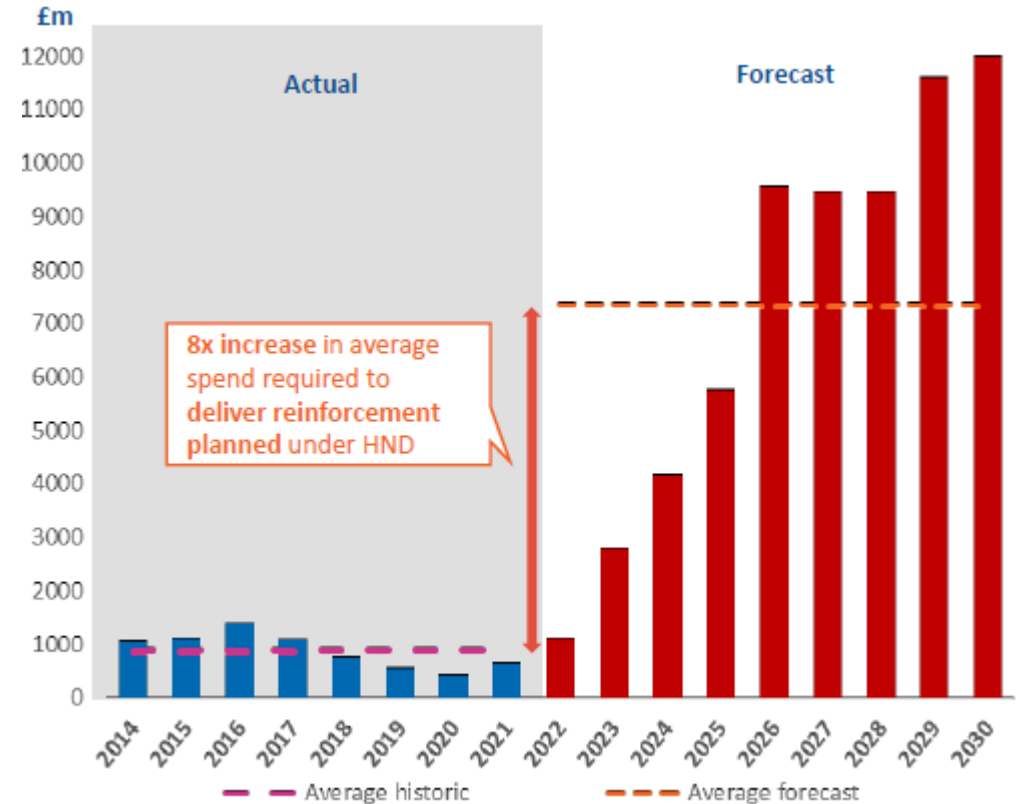


Source: BEIS Energy Trends (December 2022), DUKES (July 2022)

Huge uptick in investment to meet Carbon Budget 6

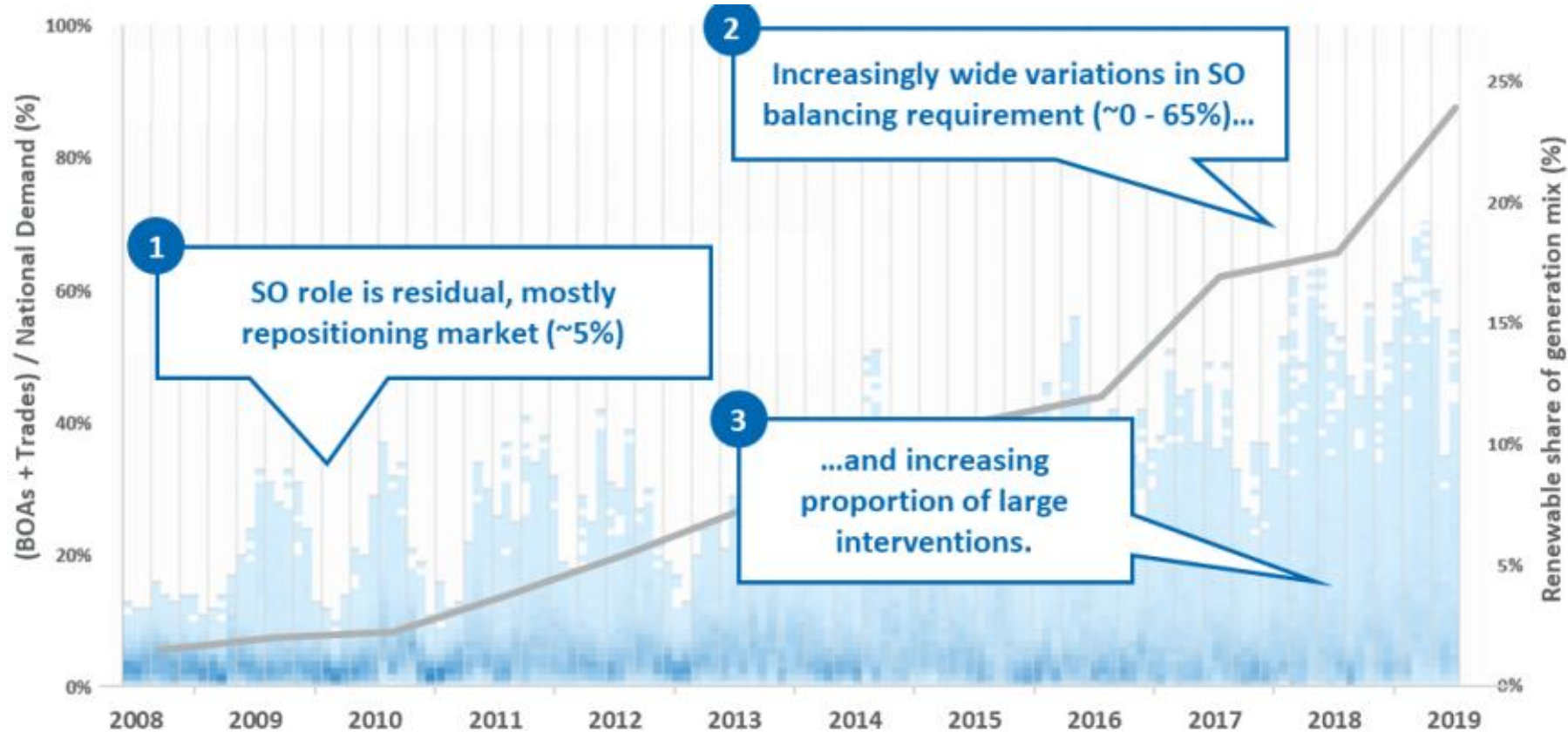


Solar and offshore wind targets are from the British Energy Security Strategy, onshore wind and nuclear targets are from the 6th Carbon Budget.
Source: BEIS Energy Trends (December 2022)



Source: FTI Consulting presentation at Ofgem workshop (20/10/2022), based on data from Ofgem and National Grid ESO

...And the system is starting to creak



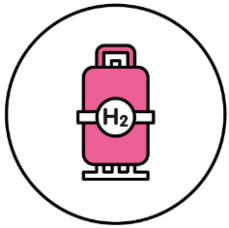
1) ESO balancing actions shown as a heatmap, with darker areas representing a higher frequency of actions of a given size.

Source: National Grid ESO (22/3/2022)

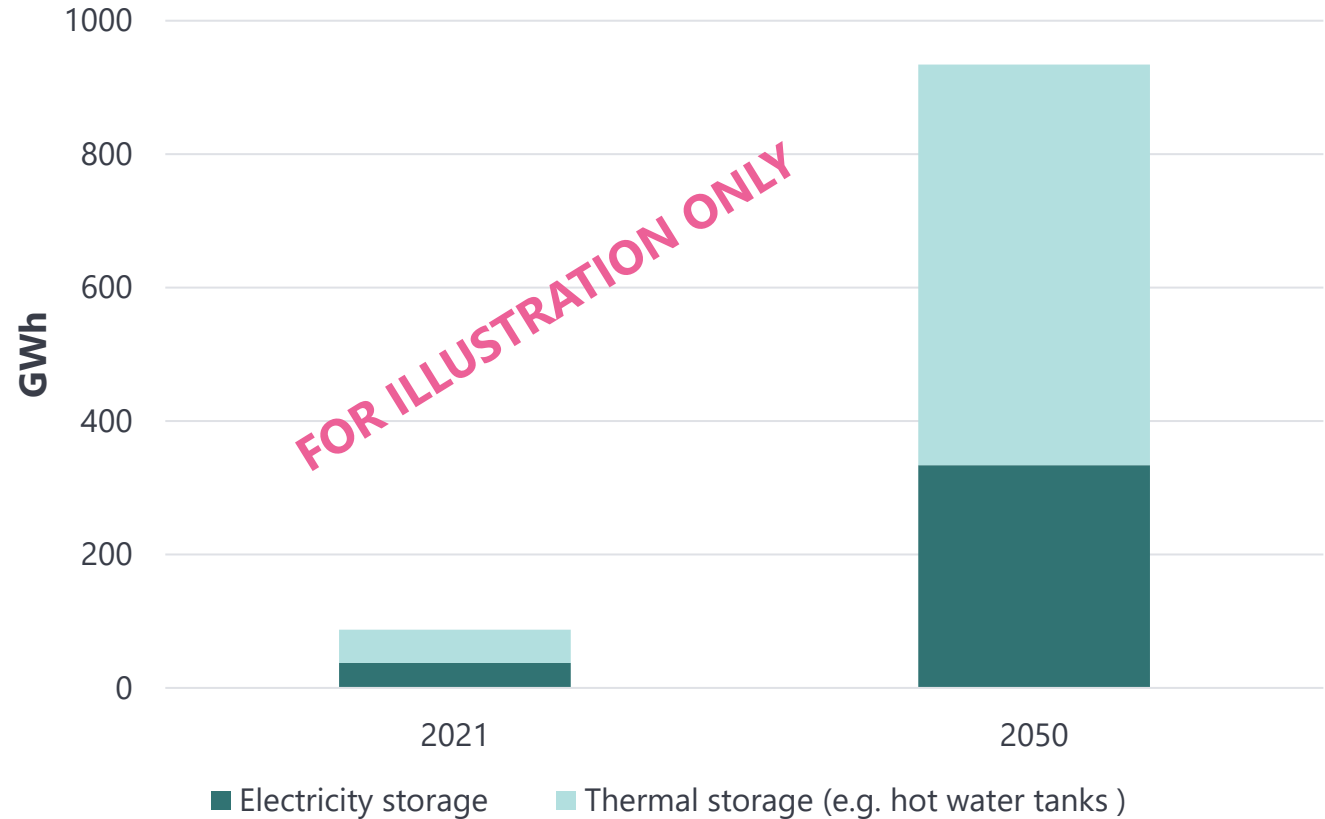
Tomorrow's system requires different solutions



Net zero means a much bigger electricity system (electrification of heat & transport) and based largely on wind



So will need a lot more different types of storage to replace the role gas is currently in providing system flexibility

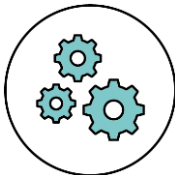


Source: the Catapult's ESME modeling suite

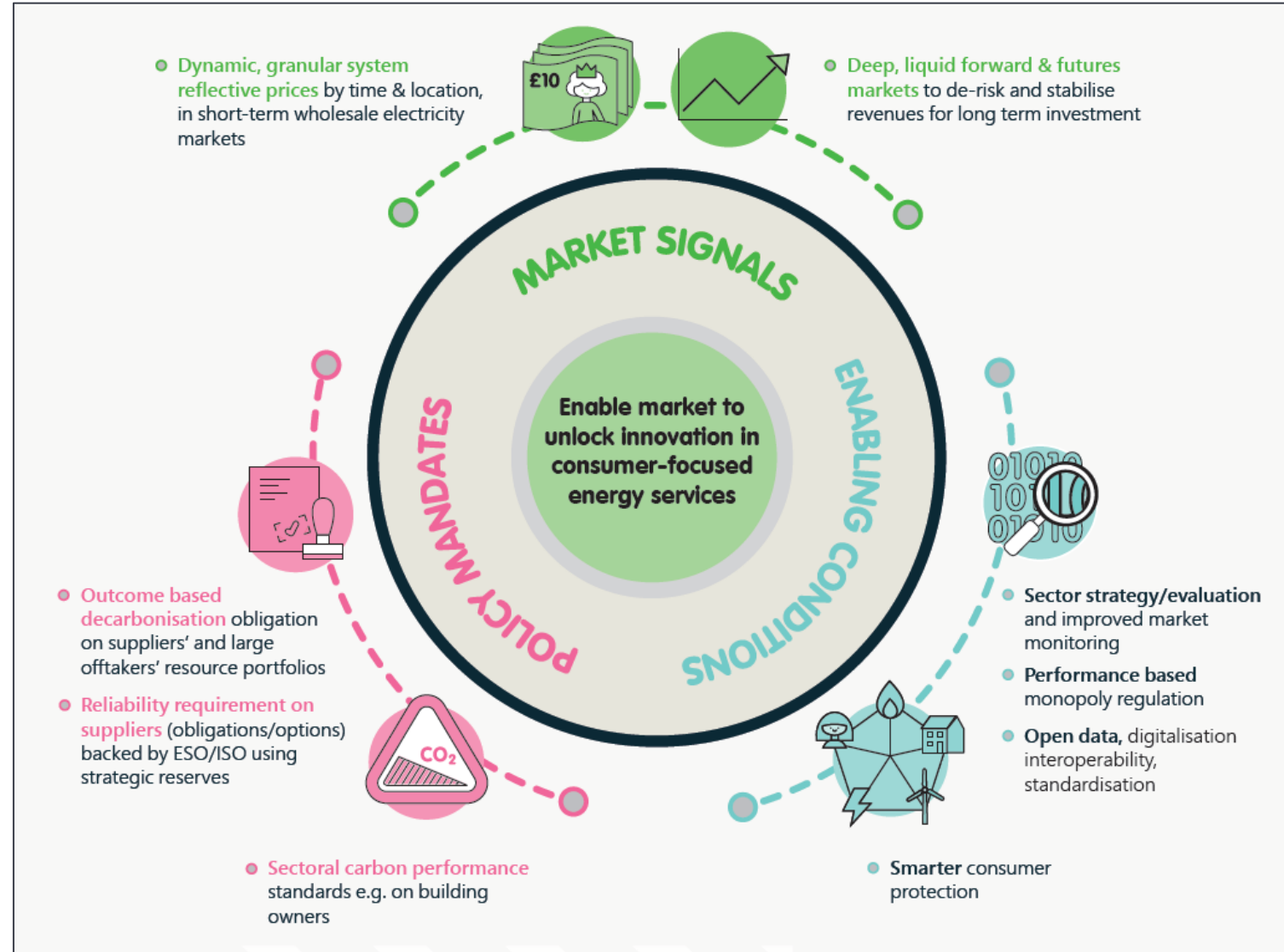
Our market framework for cost-effective decarbonisation



Locational marginal pricing to reflect the physics of the new energy system – guiding investment to where it is most valuable



Outcomes-based policy mandates on suppliers, replacing technology-focused CfD / CM approach



Locational pricing would influence some investment siting

Wind



Solar



Storage



Increase in capacity



Reduction in capacity

Source: FTI Consulting analysis for Ofgem

Thank you!



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