

05: Decentralised Energy: Power to the People

The old model was simple. Burn fossil fuels in a relatively small number of power stations and send the electricity via a few wires to where it is demanded. Ignoring the catastrophic environmental consequences, this old system worked for over a century. The **physics of renewable power make things different**, and the UK economy is only beginning to reckon with how to replace this outdated system.

Decentralised energy turns the old logic on its proverbial head. Rather than generating electricity in a relatively small number of huge power stations often far away from most consumers, a decentralised energy system places generation (via clean renewables), storage and management as close as possible to where power is consumed. A decentralised energy system will see solar panels on rooftops (as well as balconies, carparks, etc.) batteries in gardens/factories/cars, EVs plugged in (providing power back to the grid/home), heat pumps operating flexibly. Collectively these distributed energy resources will become the backbone of a stable, secure UK electricity system, providing the very flexibility that will allow UK bills to come down over the longer term.



The numbers make a compelling case for increasingly decentralised UK energy markets. The UK must reach at least 95% zero-carbon electricity generation by 2030 under the terms of the government's Clean Power 2030 plan. Electricity demand, meanwhile, having declined for two decades is likely to rise once more, up from around [320 TWh](#) in 2025 to an estimated 360 TWh by 2030 (according to the [Climate Change Committee](#)), an increase collectively driven by the electrification of transport, heating and data centres. Meeting that additional demand with a grid still designed for one-way flows and struggling to build extra capacity fast enough is extremely ambitious.

Flexibility – a key component of decentralised energy is the answer. The government's Clean Power 2030 plan called for total flexible capacity to double (to between 51GW and 66GW) by 2030. Demand-flexibility resources alone must grow fivefold from 2.5GW to an estimated 12GW. Such flexibility will predominantly come from millions of small installations, coordinated through virtual power plants and smart grids, responding in real time to the ebb and flow of renewable generation.



The prize from decentralisation extends beyond decarbonisation. Every unit of demand optimised to match supply, through smart technology, is a unit of costly network infrastructure that does not need to be built. Curtailment (paying all forms of electricity generation, not just renewables, to switch off because the grid cannot get the power to consumers) already costs the UK more than £1 billion a year. Better flexibility reduces this waste. Energy security too looks different with power generated, stored and managed locally, insulated from geopolitical shocks that expose the fragility of a gas-dependent power system. The direction of travel is clear. Britain's energy future will be increasingly decentralised. The question is how quickly, and intelligently, this occurs.