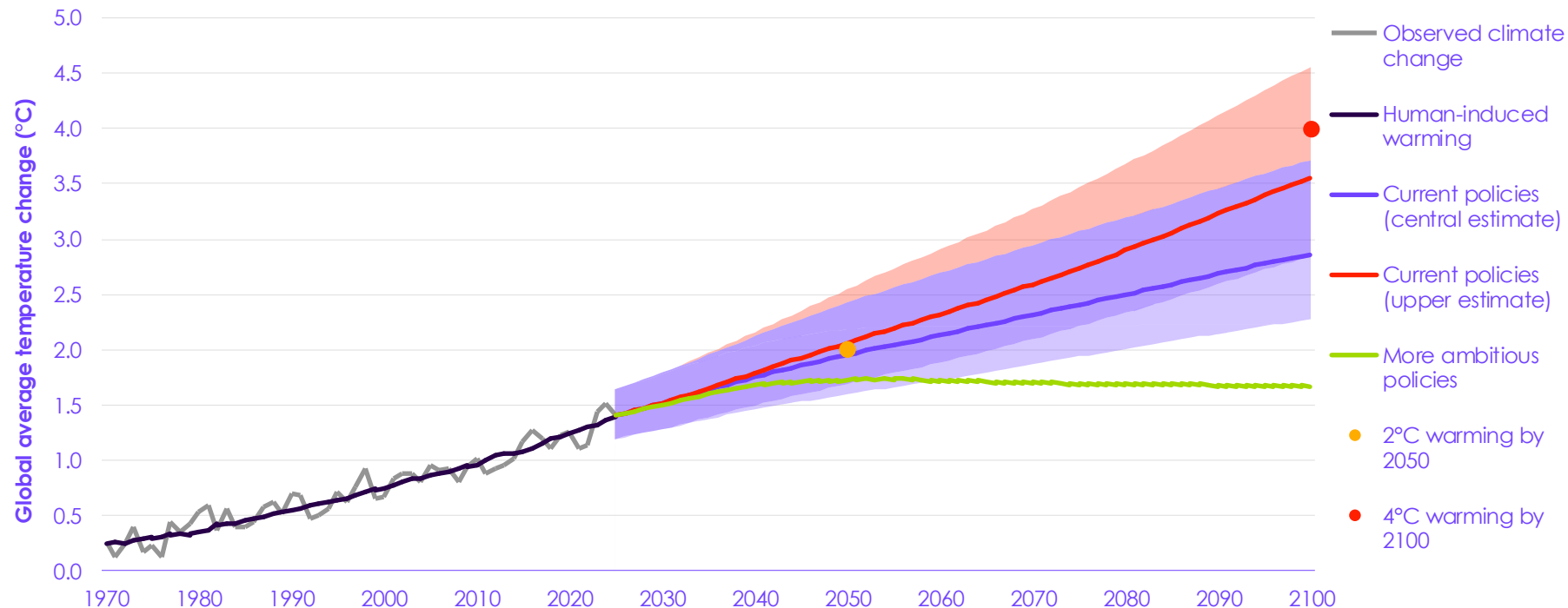


Global average temperatures are continuing to warm at record pace

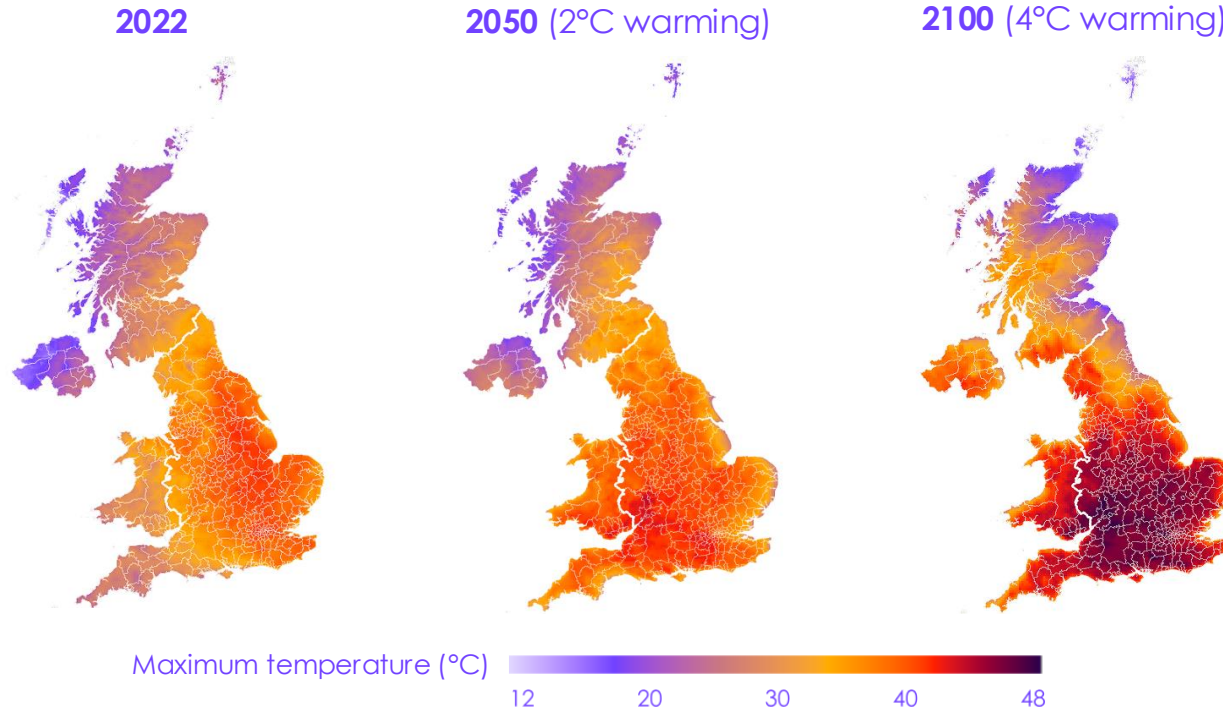
We must plan for 2°C above preindustrial by 2050 and 4°C by 2100



Source: Met Office (2025) *Climate Dashboard – Tracking the Changing Climate with Earth Observations*; Foster, P. et al (2025) *Indicators of Global Climate Change 2024: annual update of key indicators of the state of the climate system and human influence*; Rogelj, J. et al (2023) *Credibility gap in net-zero climate targets leaves world at high risk*; United Nations Environment Programme (2025) *Emissions Gap Report 2025: Off Target – Continued collective inaction puts global temperature goal at risk*.

Heatwaves in the UK will be more frequent, longer, and more intense than they are today

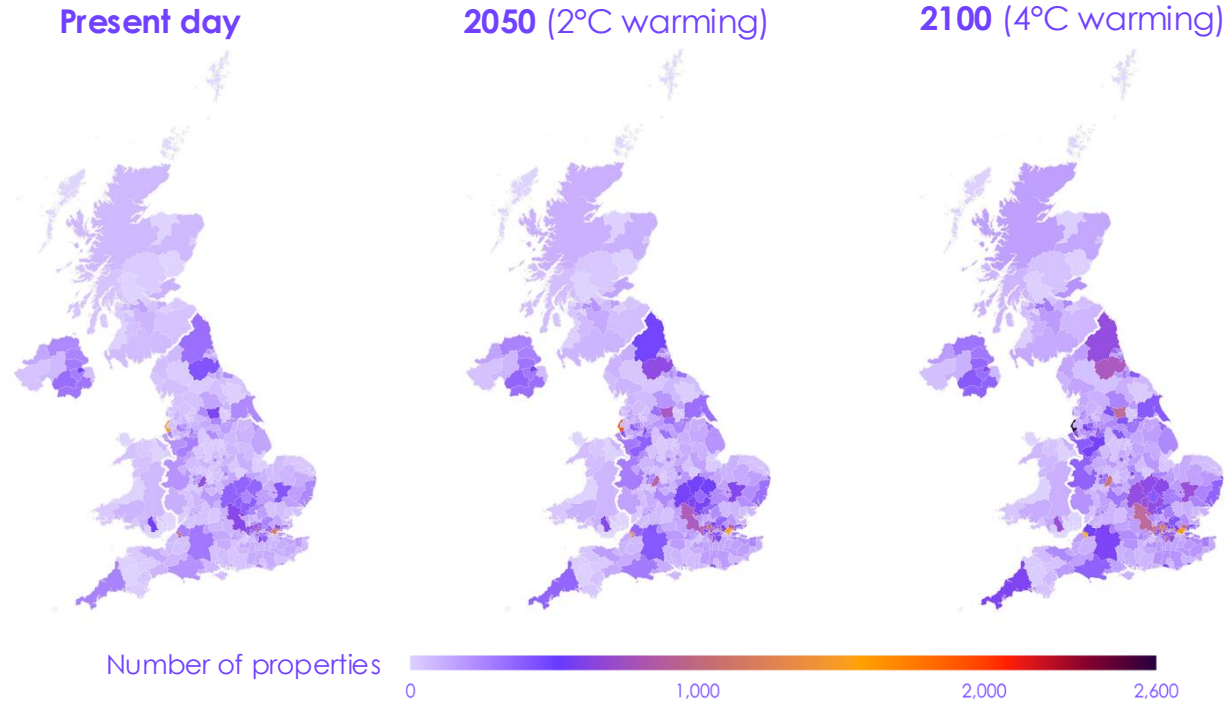
Recent and projected maximum temperatures



Source: Hollis, D. et al (2025) *HadUK-Grid Gridded Climate Observations on a 5km grid over the UK, v1.3.1.ceda (1836–2024)*; Met Office (2025) *UKCP Local Projections on a 5km grid, bias corrected using scaled distribution mapping, over the UK*.

Flood risk will rise from surface water

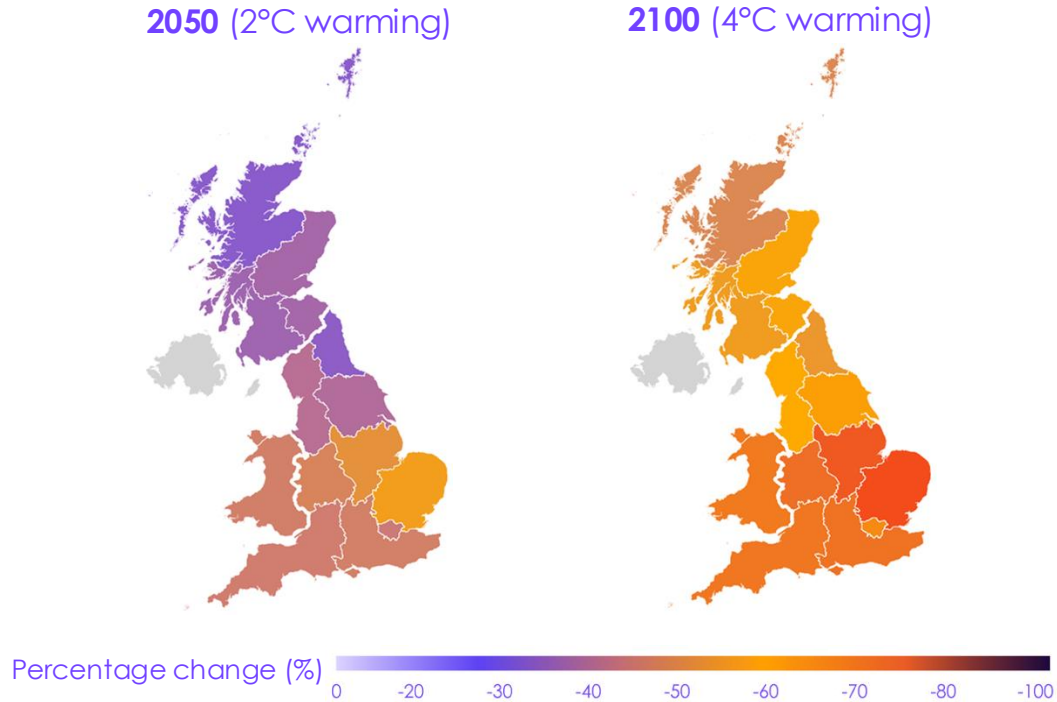
Current and projected properties flooded by surface water



Source: Sayers, P. et al (2026) *Well-Adapted UK - Future Flood Risk*

Higher temperatures and reduced rainfall will contribute to less available water

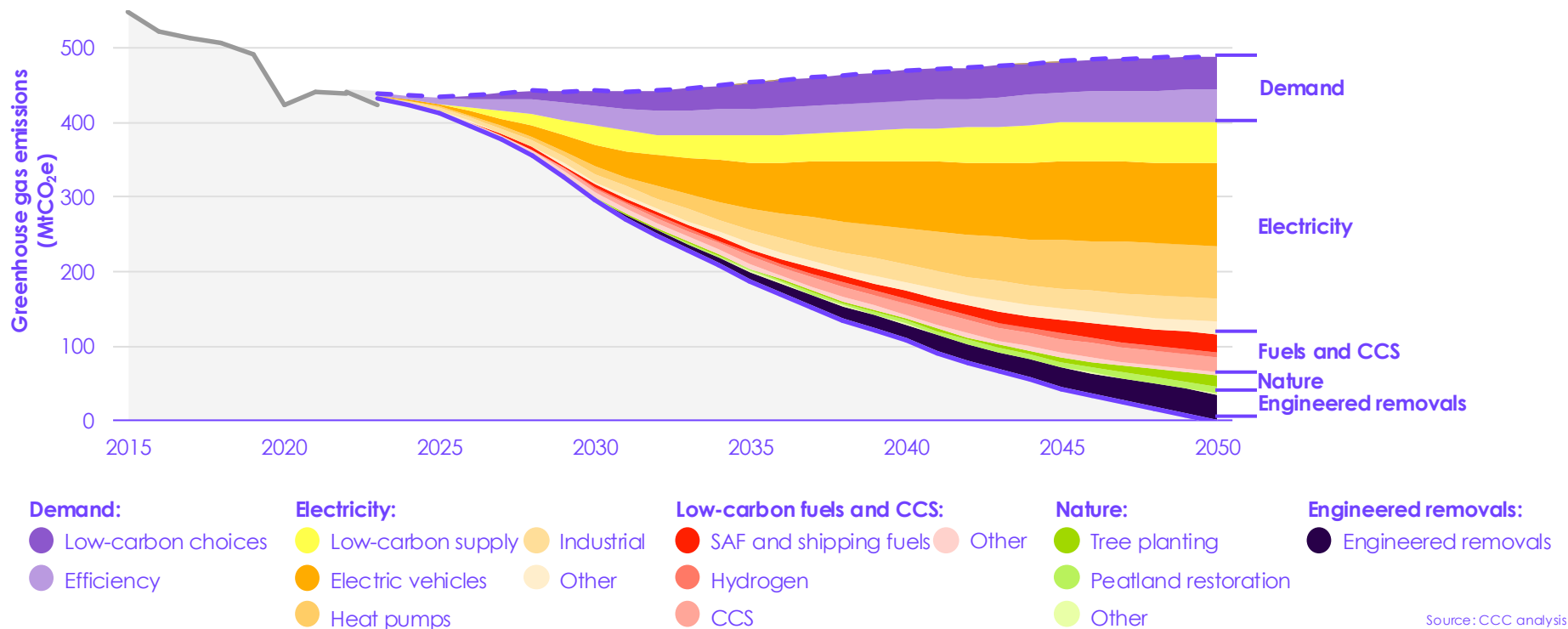
Projected change in water available in rivers during droughts



Source: UK Climate Risk Indicators (2021) *Climate Risk Indicator Explorer*.

Where the emissions reductions are within the Balanced Pathway

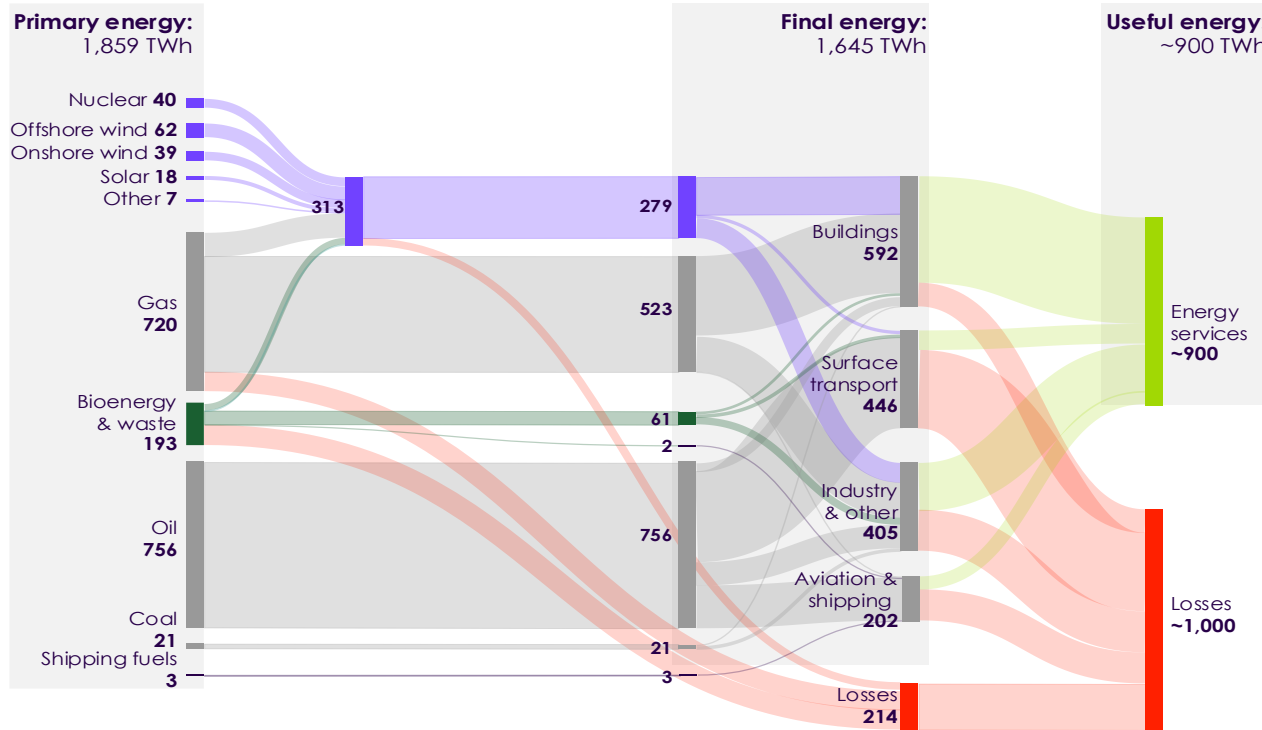
Electrification is key, but not the only action needed



The transformation of the energy system in the Balanced Pathway from 2025 to 2050

2025 energy system

(a) 2025 energy system

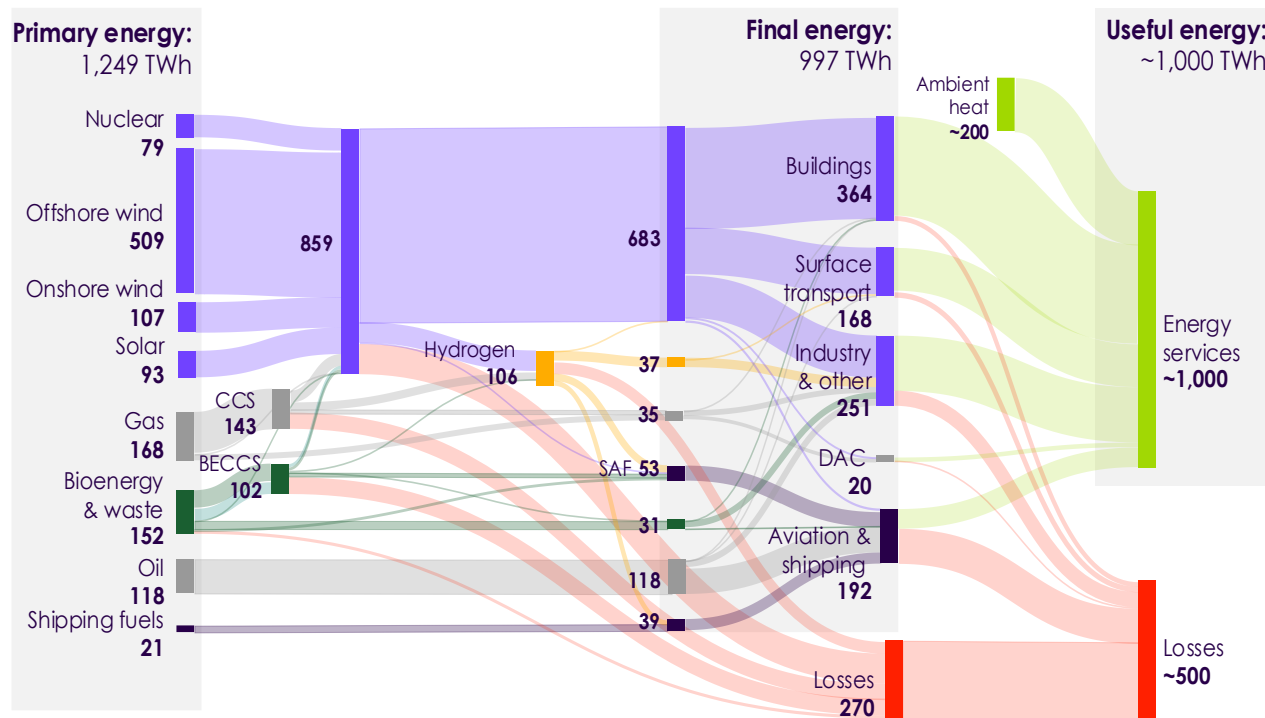


Source: Department for Business, Energy and Industrial Strategy (2019) Experimental statistics on whole UK energy flow incorporating end use energy efficiency; CCC analysis.

The transformation of the energy system in the Balanced Pathway from 2025 to 2050

2050 energy system

(b) 2050 energy system



Source: Department for Business, Energy and Industrial Strategy (2019) Experimental statistics on whole UK energy flow incorporating end use energy efficiency; CCC analysis.

Well-adapted energy system

Risks to the system from climate change: flooding, high winds, heat, and drought impact the energy system.

Objective: the energy system is reliable, minimising climate-related disruption, and maintaining current levels of service.

Actions

Infrastructure and system design: asset siting, appropriate system design such as building redundancy and diversifying supply, infrastructure protection, and asset hardening.
Operation and maintenance: regular inspections and preventative maintenance, and vegetation management.
Emergency preparedness and response: early warning systems, staff training and protection measures, incident management protocols, and backup power for alternative supply.

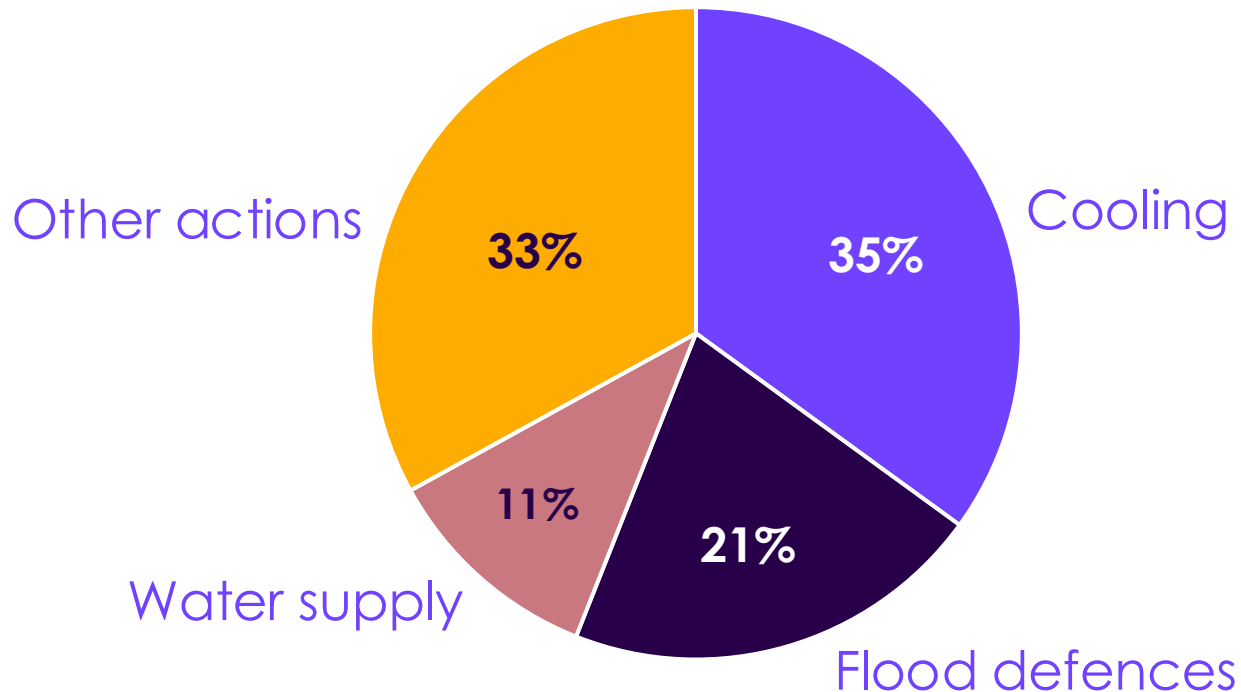
Enablers

Resources: funding for adaptation actions for existing and new infrastructure.
Clear plans, roles, and responsibilities: to facilitate effective co-ordination and delivery, and support the private sector to take informed decisions about adaptation needs.
Technology and innovation: to improve the range and timeliness of adaptation actions.

Policies

Governance: clarity on the future of the gas grid and more structured management of interdependencies.
Resilience targets and standards: to ensure infrastructure is suitable for future climate conditions.
Regulation and strategic planning: including price control requirements for climate resilience strategies, and incorporation of climate resilience into planning and siting decisions.
Reporting and disclosure requirements: for all relevant entities on climate risks and adaptation.

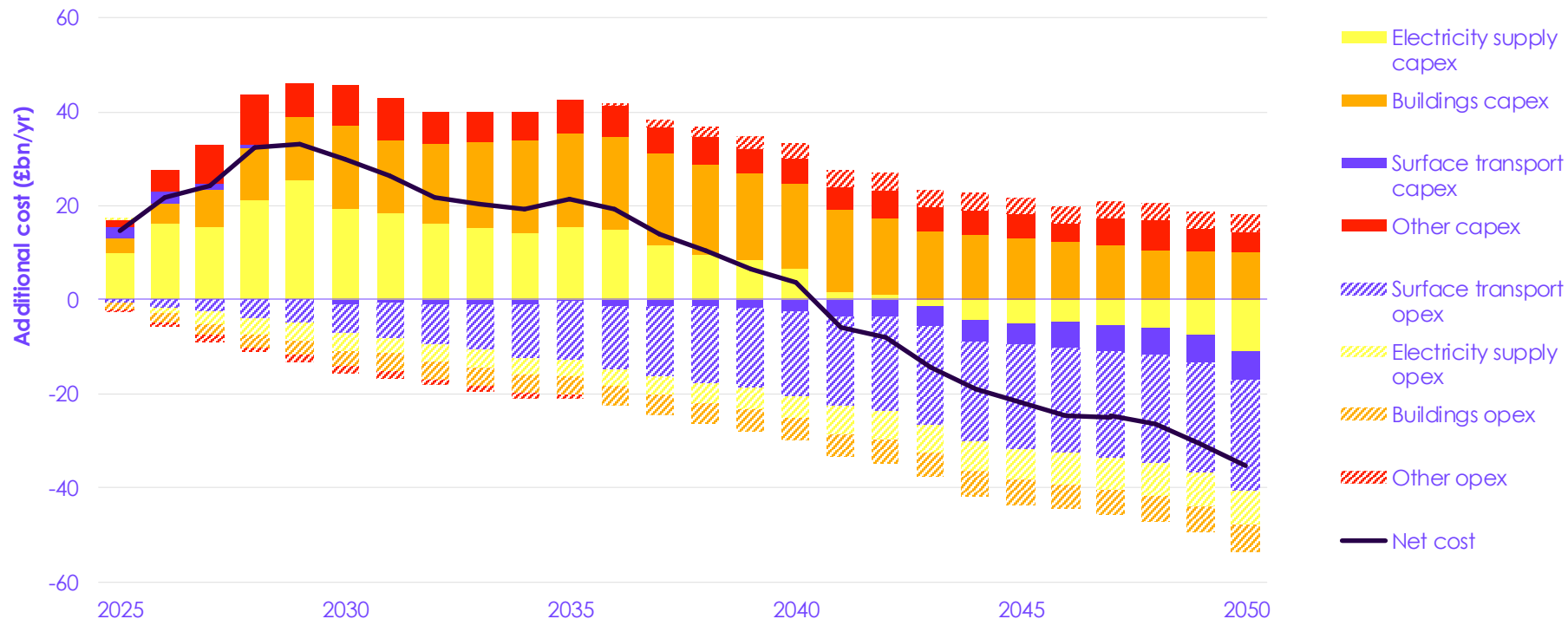
Two-thirds of investment is needed for cooling, flood defences, and water supply
Known investment needs for adaptation



Source: CCC analysis

Whole economy costs, relative to the baseline

Upfront capital provides long-term savings, starting in the Seventh Carbon Budget period

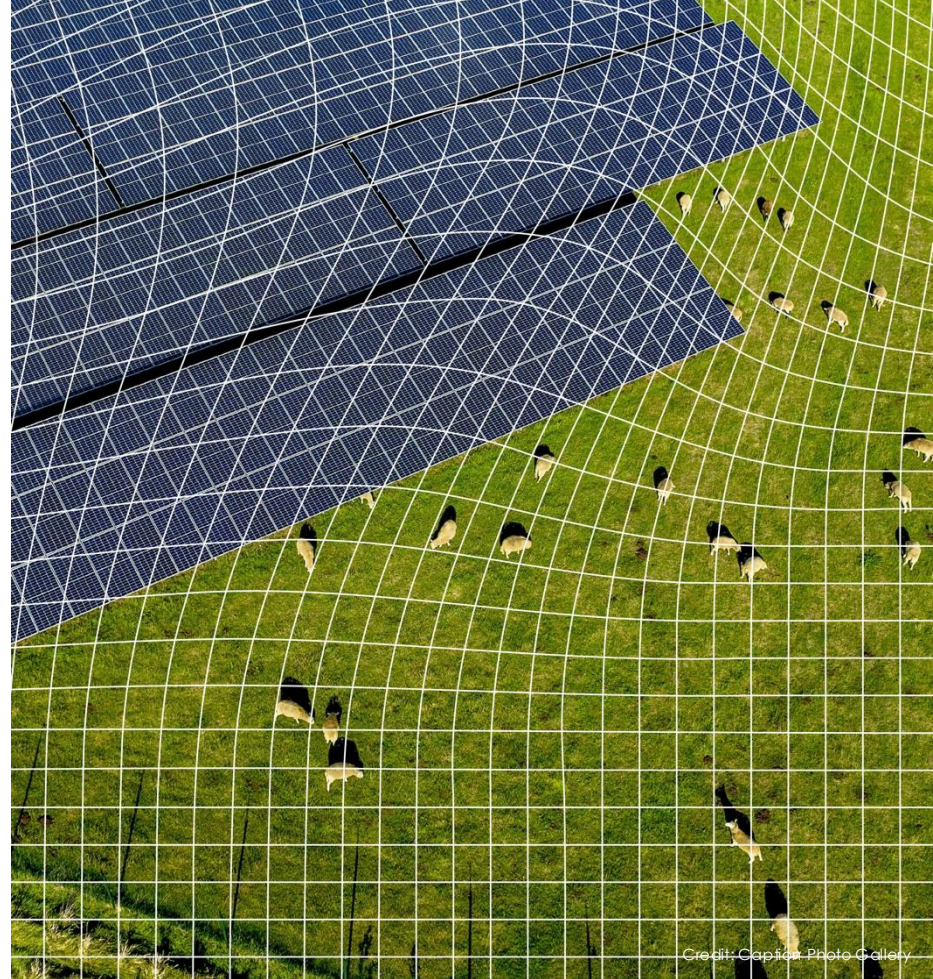


Source: CCC analysis.

Clear policy and strategic direction is needed

Key policies for a well-adapted energy system

- Timely and appropriate targets and standards can ensure that the investments we are making now are fit for the future.
- Clarity from the UK Government on the future of the gas grid would support resilience planning.
- A more structured approach to managing interdependencies can better support resilience.
- Wider mandatory adaptation reporting would provide greater transparency regarding adaptation action in the sector.



Credit: Caption Photo Gallery