13th October 2021

Climate risk and adaptation: Achieving Net Zero

Chaired by: **Baroness Brown**, Adaptation Committee

Panellists:

- **Emma Pinchbeck**, Energy UK
- **Professor Chris Evans**, UK Centre for Ecology and Hydrology
- **Richard Millar**, Climate Change Committee Secretariat
- **Mike Thompson**, Climate Change Committee Secretariat

Climate risk and adaptation: Achieving Net Zero

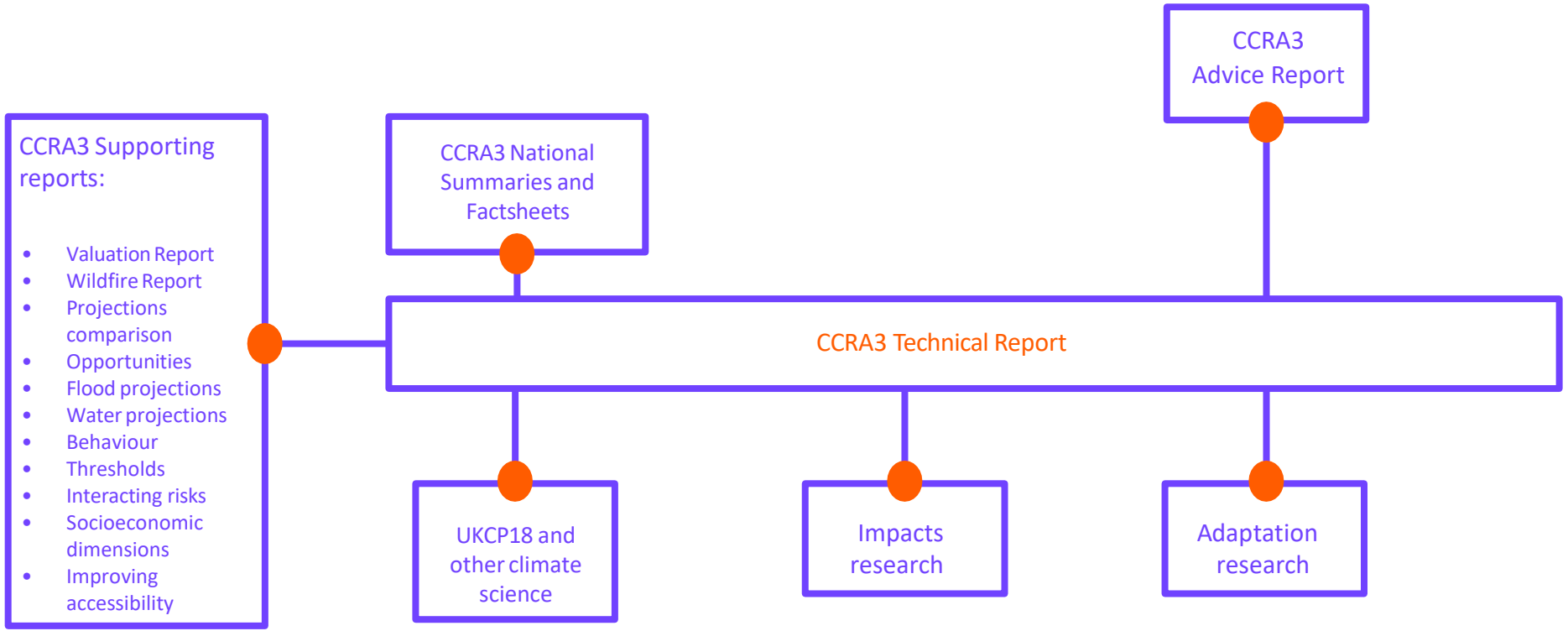
CCC's Independent Assessment

Richard Millar

Climate Change Committee Secretariat

Independent Assessment of UK Climate Risk

A comprehensive assessment of climate risks and opportunities



Independent Assessment of UK Climate Risk

61 risks and opportunities identified – 54 with high urgency scores

N1 Risks to terrestrial species and habitats	**N2** Risks to terrestrial species and habitats from pests, pathogens and INNS	**N4** Risk to soils from changing conditions, including seasonal aridity and wetness	**N5** Risks to natural carbon stores and sequestration from changing conditions	**N6** Risks to and opportunities for agricultural and forestry productivity	**N7** Risks to agriculture from pests, pathogens and INNS	**N8** Risks to forestry from pests, pathogens and INNS	**N11** Risks to freshwater species and habitats
N12 Risks to freshwater species and habitats from pests, pathogens and INNS	**N14** Risks to marine species, habitats and fisheries	**N16** Risks to marine species and habitats from pests, pathogens and INNS	**N17** Risks and opportunities to coastal species and habitats	**I1** Risks to infrastructure networks from cascading failures	**I2** Risks to infrastructure services from river and surface water flooding	**I5** Risks to transport networks from slope and embankment failure	**I8** Risks to public water supplies from reduced water availability
I12 Risks to transport from high and low temperatures, high winds, lightning	**H1** Risks to health and wellbeing from high temperatures	**H3** Risks to people, communities and buildings from flooding	**H4** Risks to people, communities and buildings from sea level rise	**H6** Risks and opportunities from summer and winter household energy demand	**H8** Risks to health from vector-borne diseases	**H11** Risks to cultural heritage	**H12** Risks to health and social care delivery
H13 Risks to education and prison services	**B1** Risks to business sites from flooding	**B2** Risks to business locations and infrastructure from coastal change	**B6** Risks to business from disruption to supply chains and distribution networks	**ID1** Risks to UK food availability, safety, and quality from climate change overseas	**ID5** Risks to international law and governance from climate change overseas that will impact the UK	**ID4** Risks to the UK from international violent conflict resulting from climate change	**ID9** Risk to UK public health from climate change overseas
ID7 Risks from climate change on international trade routes	**ID10** Risk multiplication from the interactions and cascades of named risks across systems and geographies	**N3** Opportunities from new species colonisations in terrestrial habitats	**N9** Opportunities for agricultural and forestry productivity from new species	**N10** Risks to aquifers and agricultural land from sea level rise, saltwater intrusion	**N15** Opportunities for marine species, habitats and fisheries	**N18** Risks and opportunities from climate change to landscape character	**I3** Risks to infrastructure services from coastal flooding and erosion
I4 Risks to bridges and pipelines from flooding and erosion	**I6** Risks to hydroelectric generation from low or high river flows	**I7** Risks to subterranean and surface infrastructure from subsidence	**I9** Risks to energy generation from reduced water availability	**I10** Risks to energy from high and low temperatures, high winds, lightning	**I13** Risks to digital from high and low temperatures, high winds, lightning	**H2** Opportunities for health and wellbeing from higher temperatures	**H5** Risks to building fabric
H7 Risks to health and wellbeing from changes in air quality	**H9** Risks to food safety and food security	**H10** Risks to health from poor water quality and household water supply interruptions	**B3** Risks to businesses from water scarcity	**B5** Risks to business from reduced employee productivity – infrastructure disruption and higher temperatures	**B7** Opportunities for business - changing demand for goods and services	**N13** Opportunities to marine species, habitats and fisheries	**I11** Risks to offshore infrastructure from storms and high waves
B4 Risks to finance, investment, insurance, access to capital	**ID8** Risk to the UK finance sector from climate change overseas	**ID2** Opportunities for UK food availability and exports	**ID3** Risks to the UK from climate-related international human mobility	**ID6** Opportunities (including Arctic ice melt) for international trade routes			

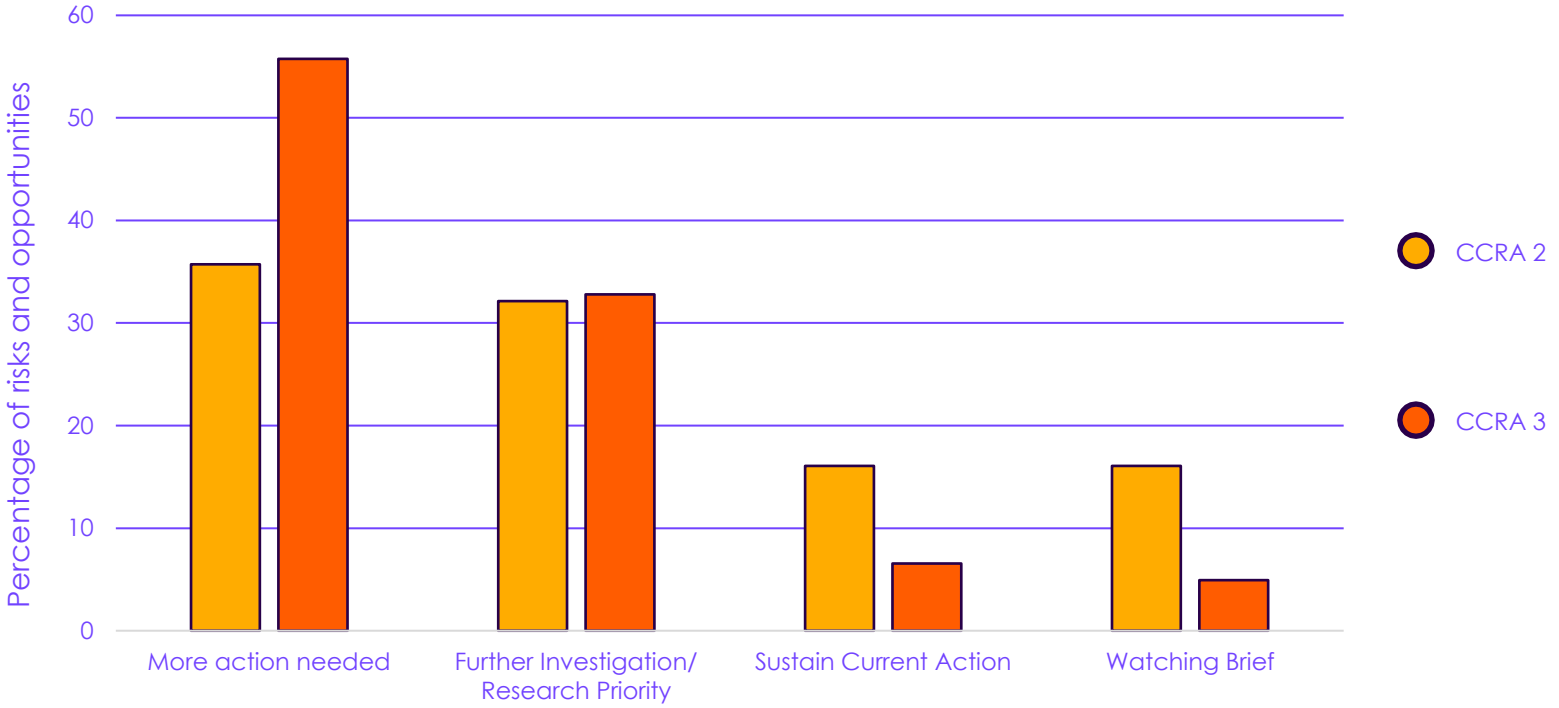
More Action Needed

Further Investigation

Sustain Current Action, Watching Brief

Independent Assessment of UK Climate Risk

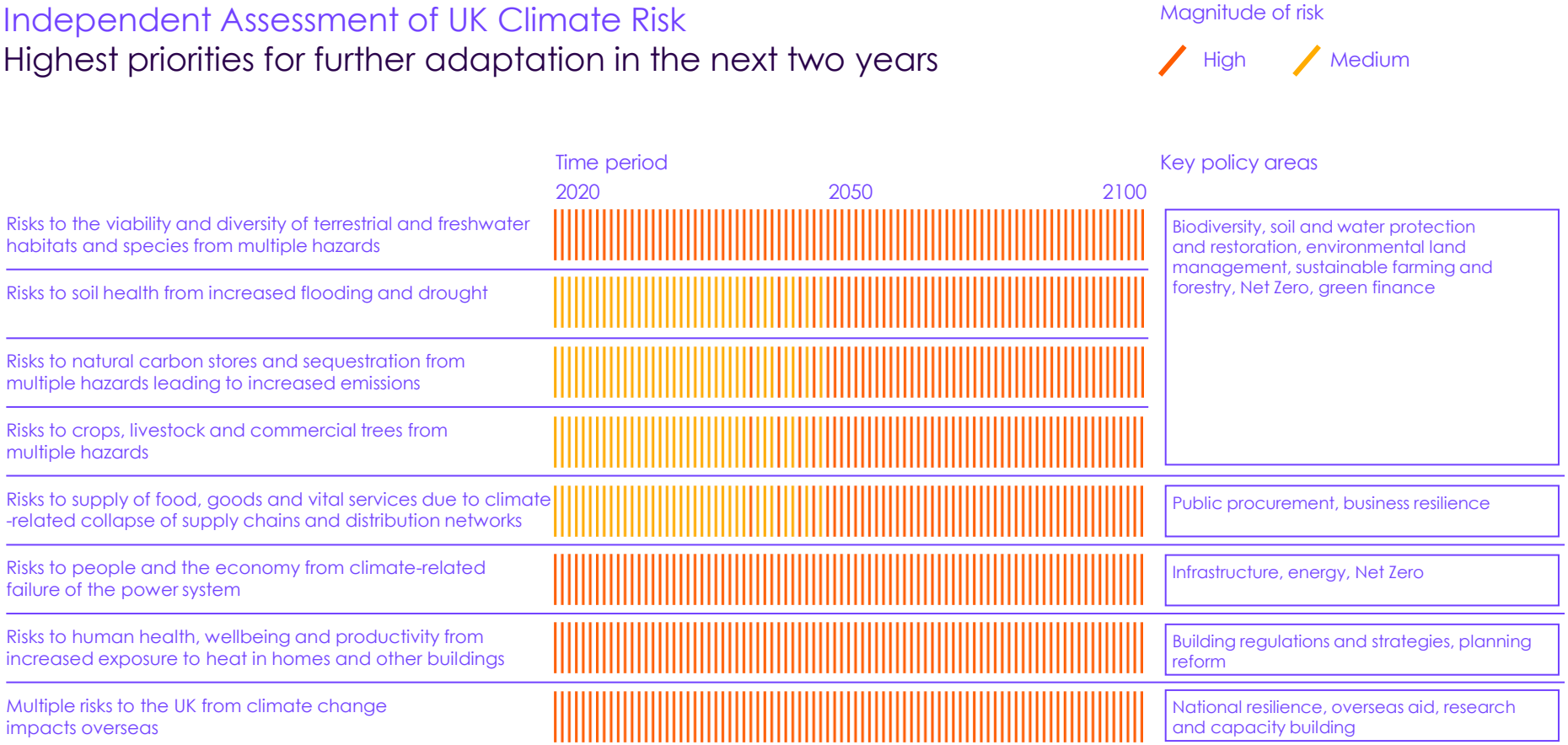
The level of urgency of adaptation has increased over the last five years



Source
CCC Analysis

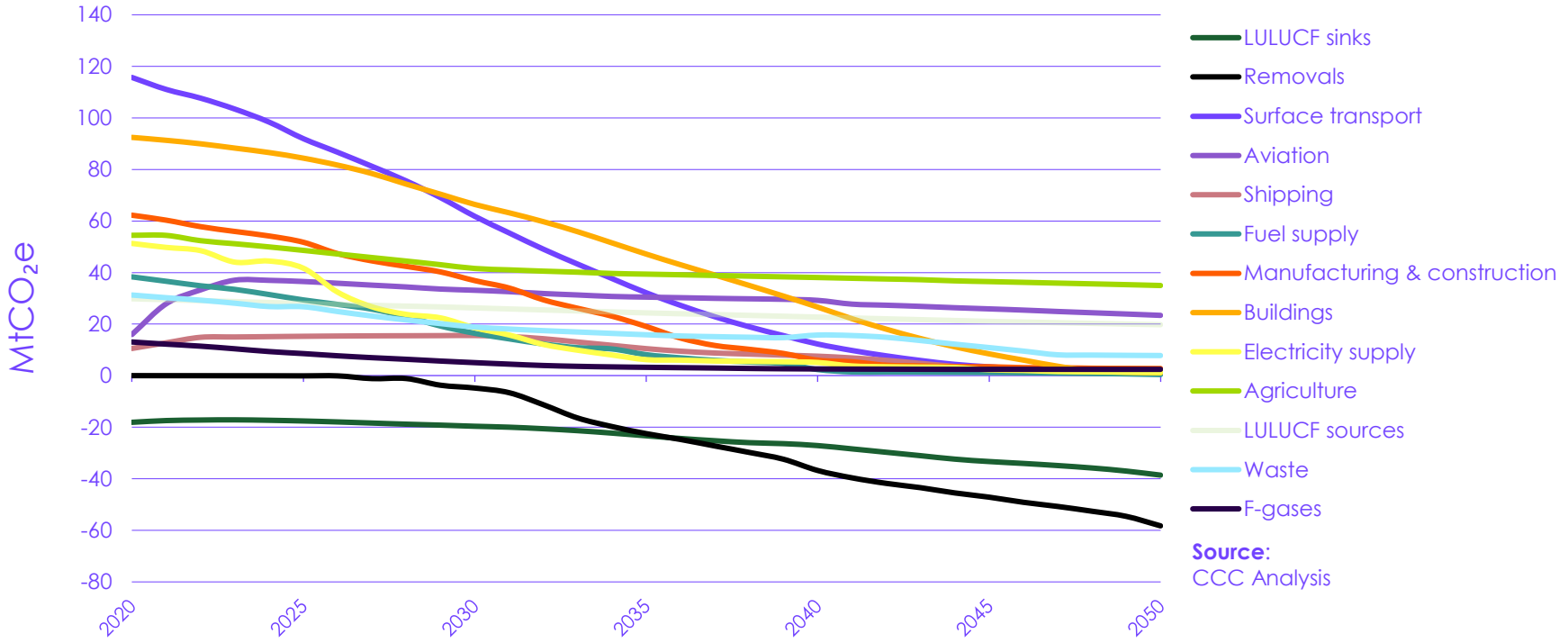
Independent Assessment of UK Climate Risk

Highest priorities for further adaptation in the next two years



Delivering Net Zero

Sectoral contribution to meeting Net Zero UK



Source:
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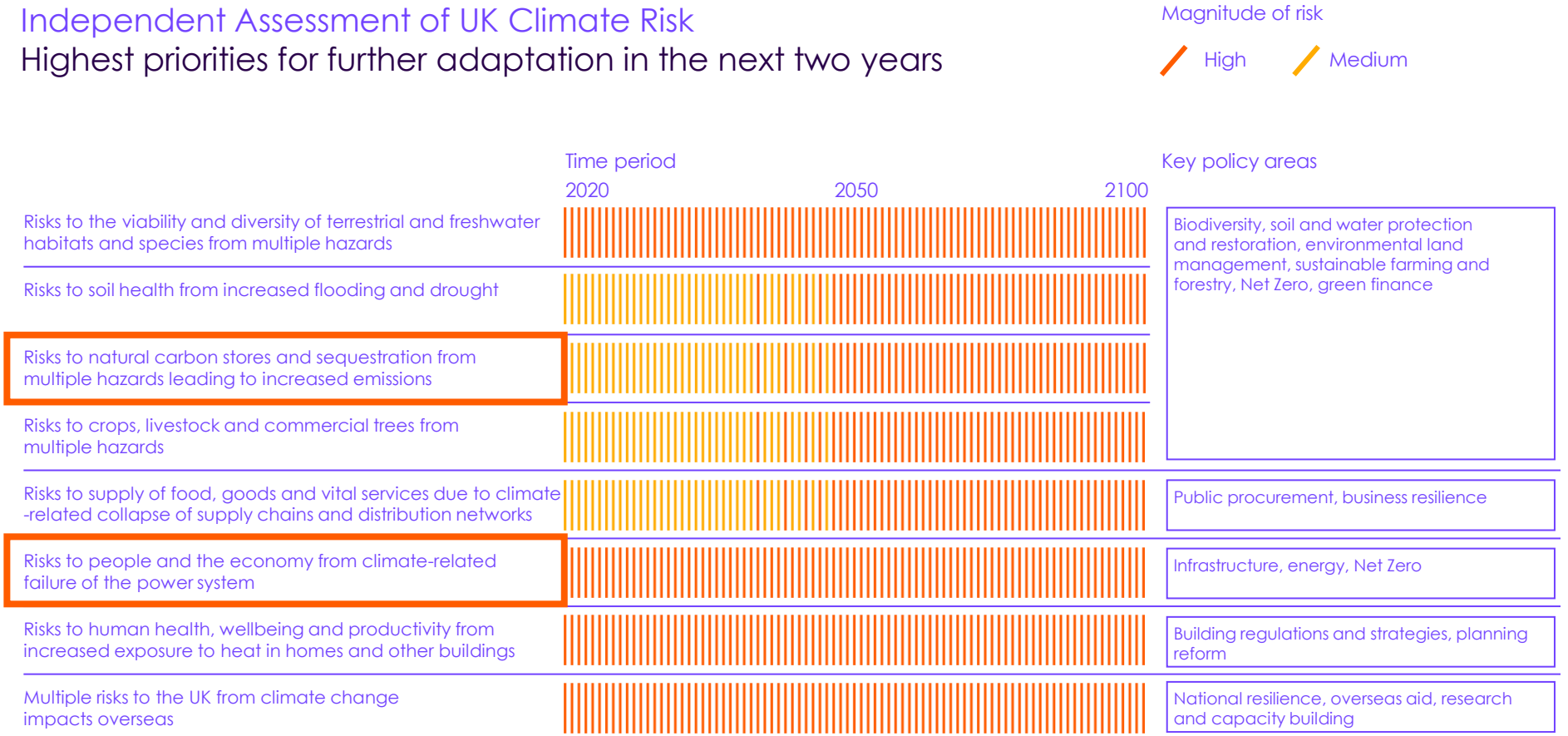
Highest priorities for further adaptation in the next two years



Climate risks to delivering Net Zero

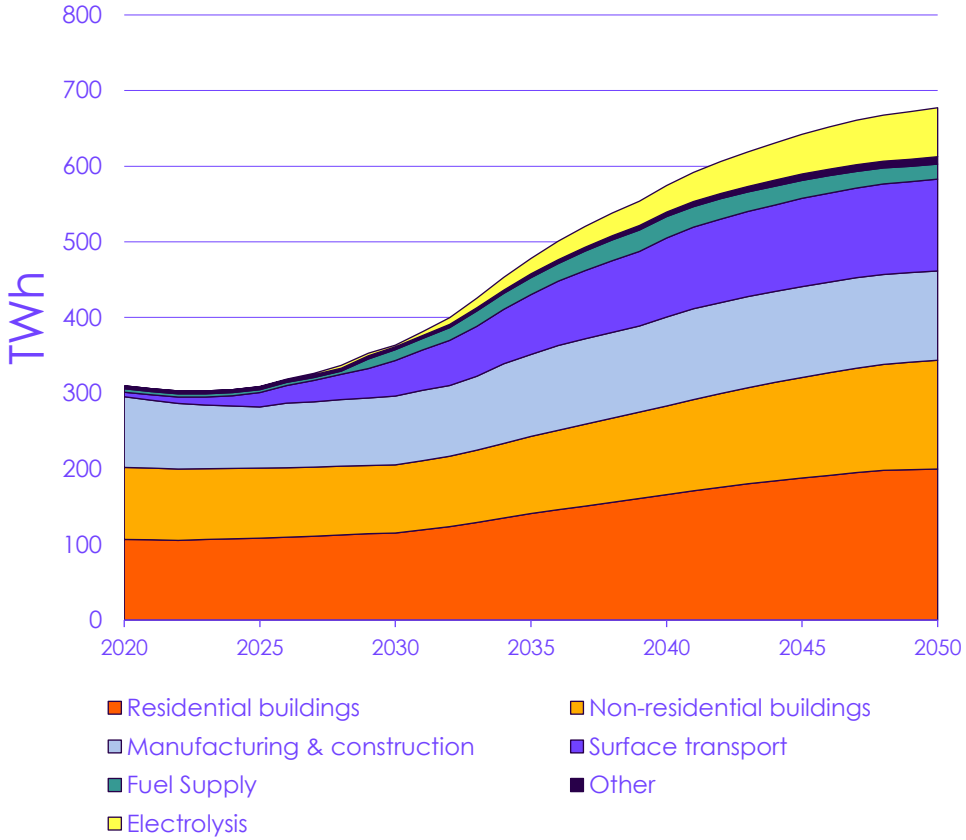
The power system and cascading risks

Decarbonisation is fundamentally changing the role of electricity in our economy:

- Electricity will provide energy for transport, heating, lighting, cooking, and critical services such as communication, water and industrial output
- Electricity demand is expected to more than double by 2050 to meet Net Zero

It will be critical to maintain this system's function despite a changing UK climate:

- Generation will be dominated by more weather dependent sources (e.g. offshore wind) & electricity infrastructure is impacted by many major climate risks
- Failures of electricity infrastructure can have cascading effects

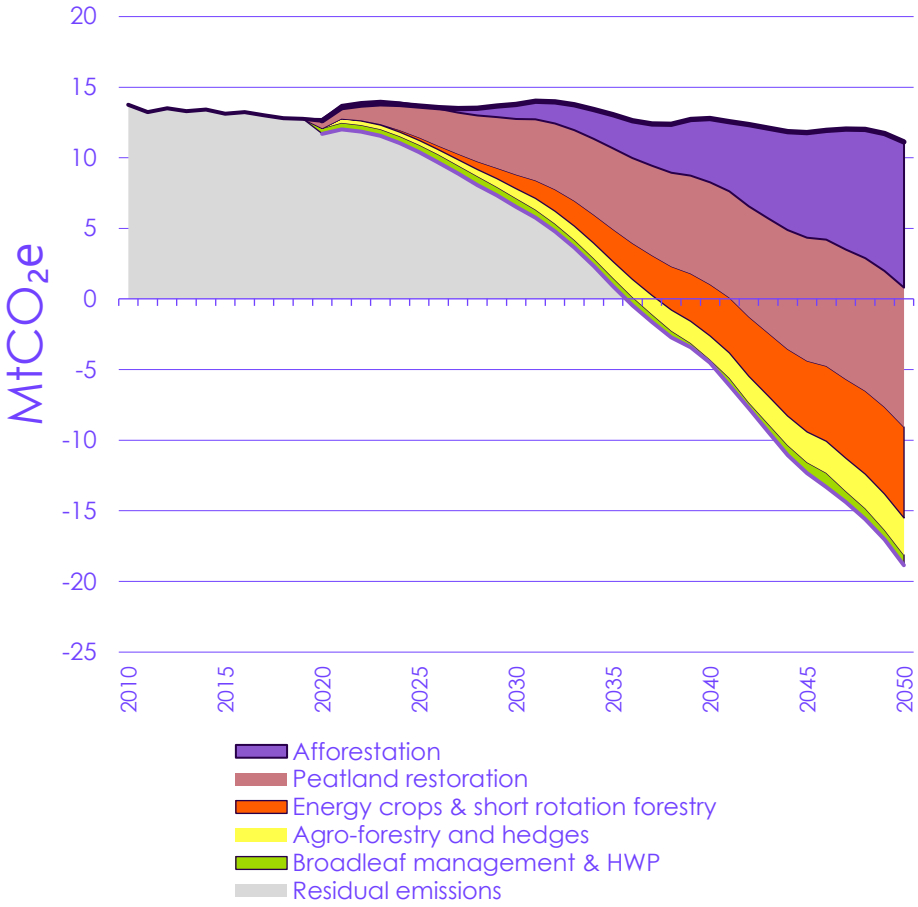


Climate risks to delivering Net Zero
Soils, carbon stores and crops

- Net Zero needs negative emissions from nature: ~20 Mt of net removals by 2050

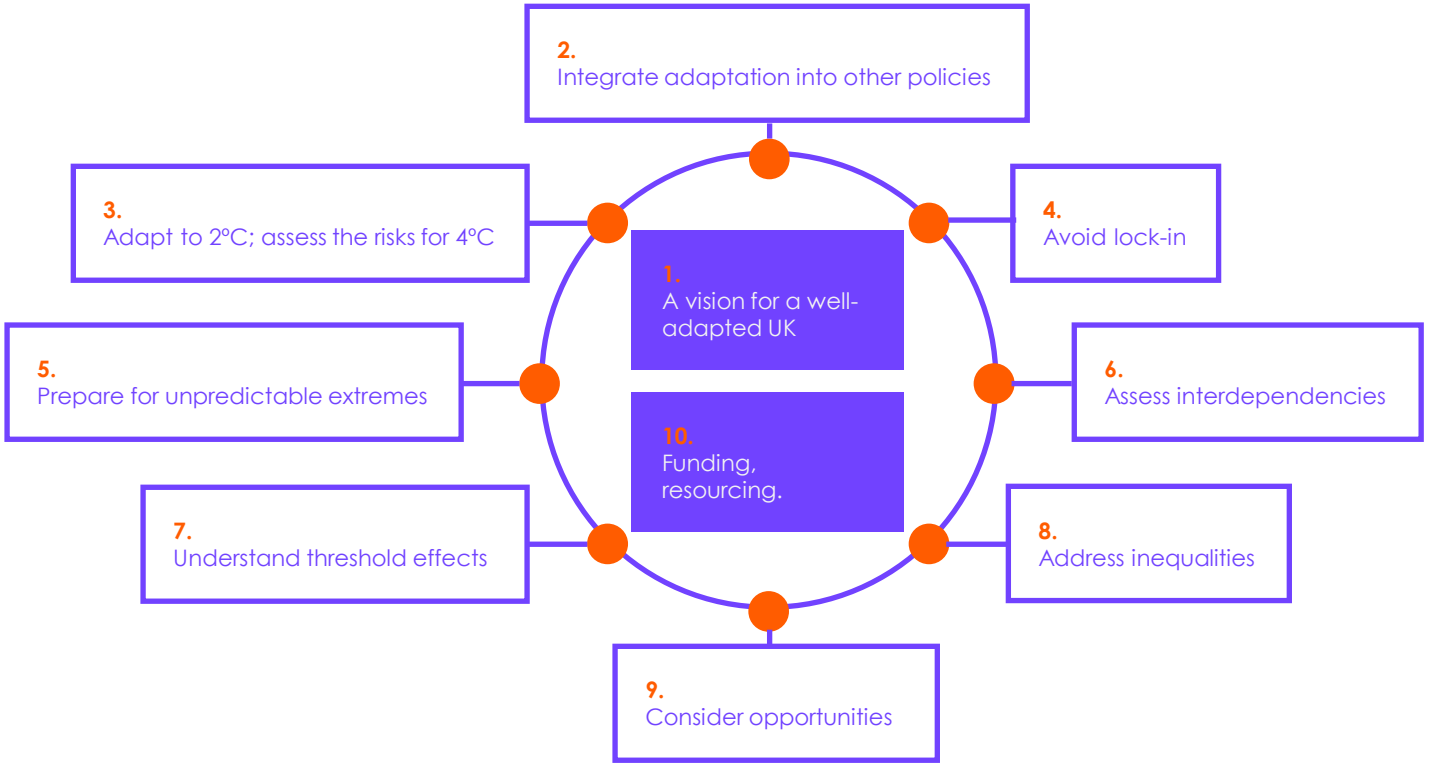
Achieving this will require the changing climate to be taken account of:

- Soils are increasingly impacted by climate including flooding and drought
- Degraded peat is emitting increasing amounts of CO_2
- Wetlands are being lost to coastal flooding and impacted by drought
- Trees are suffering from drought, heat, fire, wind, new pests and diseases



Independent Assessment of UK Climate Risk

Principles for effective adaptation



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