

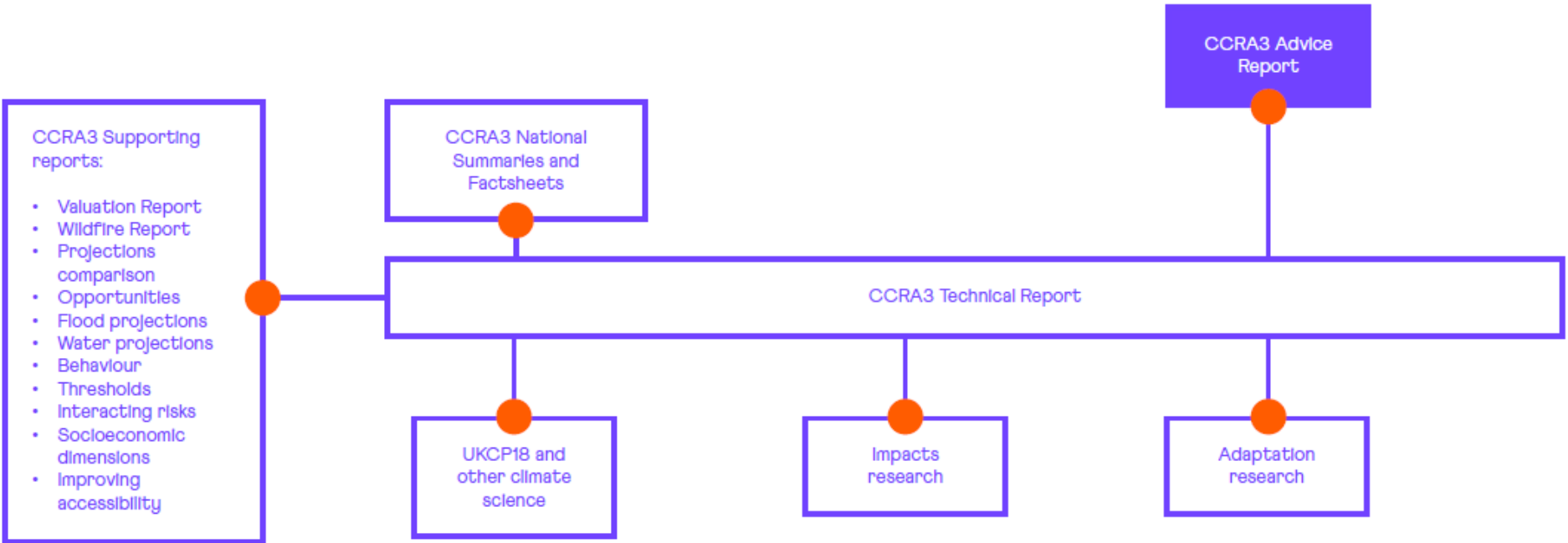
Climate
Change
Committee

CCRA3 Advice Report

Kathryn Brown, Head of Adaptation

Climate Change Committee

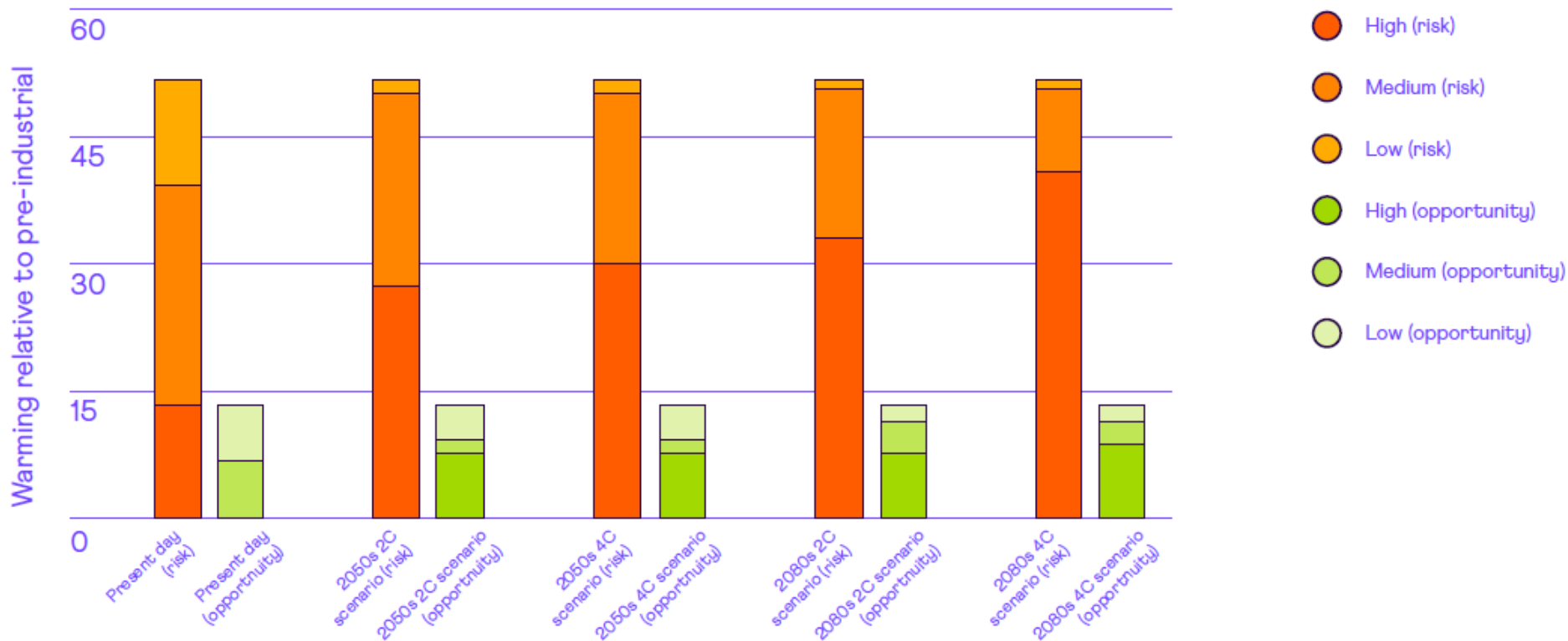
Components of the CCRA3 Independent Assessment



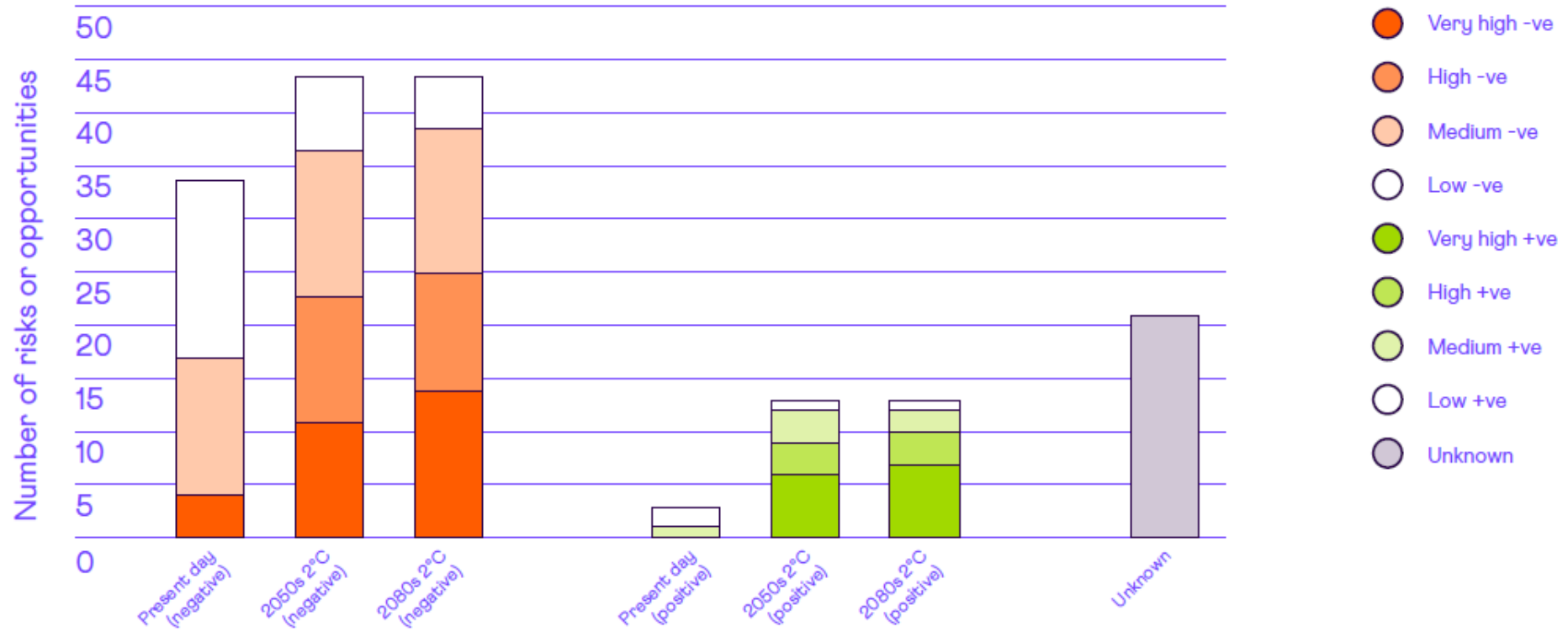
The majority (54 out of 61) risks and opportunities have high urgency scores at the UK level, meaning they must be acted on in the next five-year national adaptation plans

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	I6 Risks to public water supplies from reduced water availability
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 Risk 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 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 (SCA)	I11 Risks to offshore infrastructure from storms and high waves (SCA)	B4 Risks to finance, investment, insurance, access to capital (SCA)	ID6 Risk to the UK finance sector from climate change overseas (SCA)	ID2 Opportunities for UK food availability and exports (WB)	ID3 Risks to the UK from climate-related international human mobility (WB)	ID6 Opportunities (including arctic ice melt) on international trade routes (WB)	

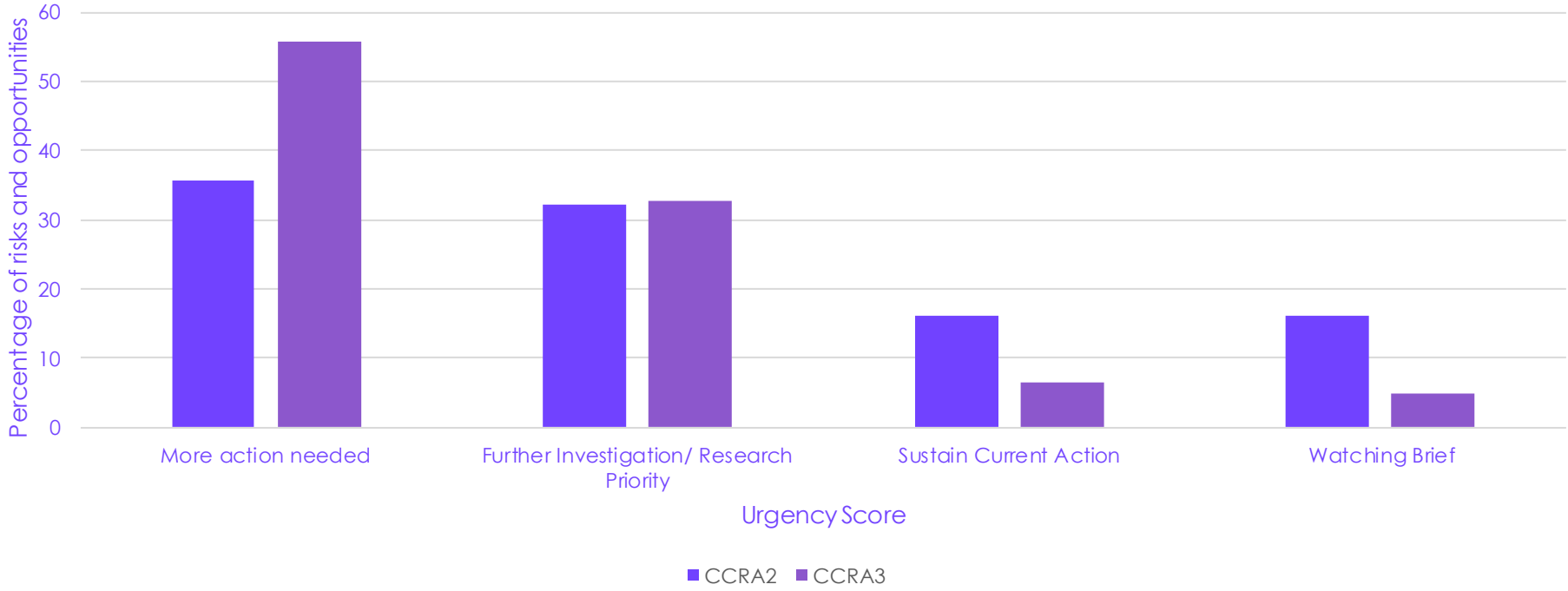
The magnitude of climate risk increases significantly in the future in all scenarios



The number of risks with annual costs in the £billions/year triples by the 2080s in a 2C scenario



The level of urgency of adaptation has increased since CCRA2 was published in 2017



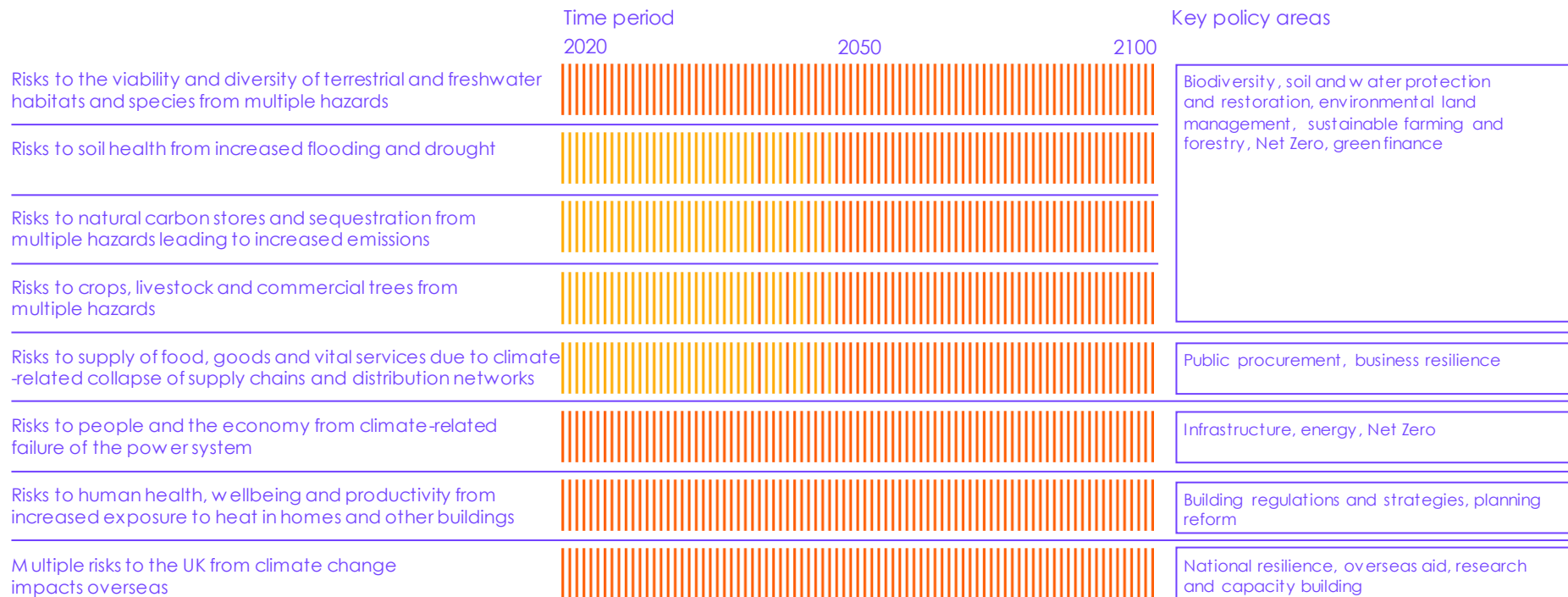
Priority risks for urgent further action

Highest priorities for further adaptation in the next two years

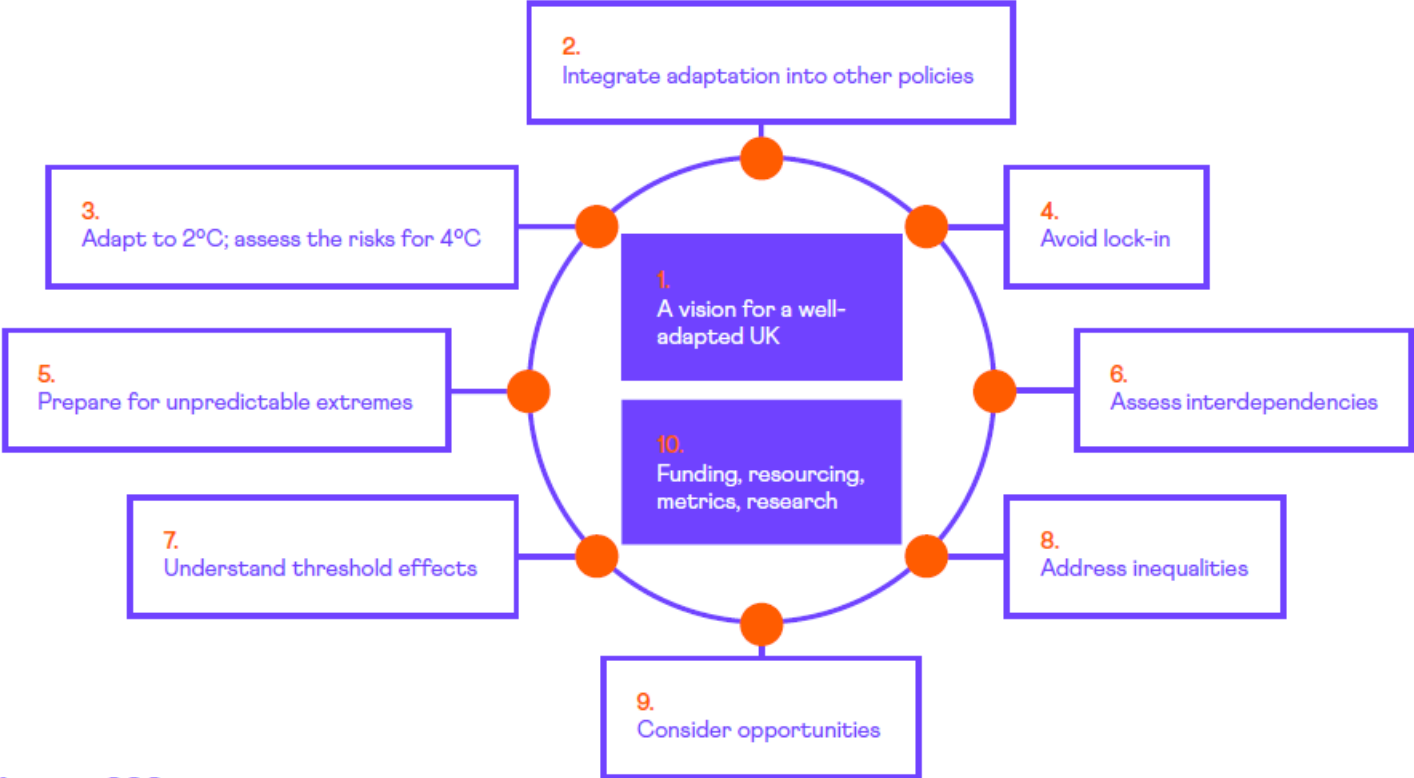
Magnitude of risk

High

Medium



Adaptation principles for future National Adaptation Programmes



Source: CCC

Adaptation principles

Integrate adaptation into other policies

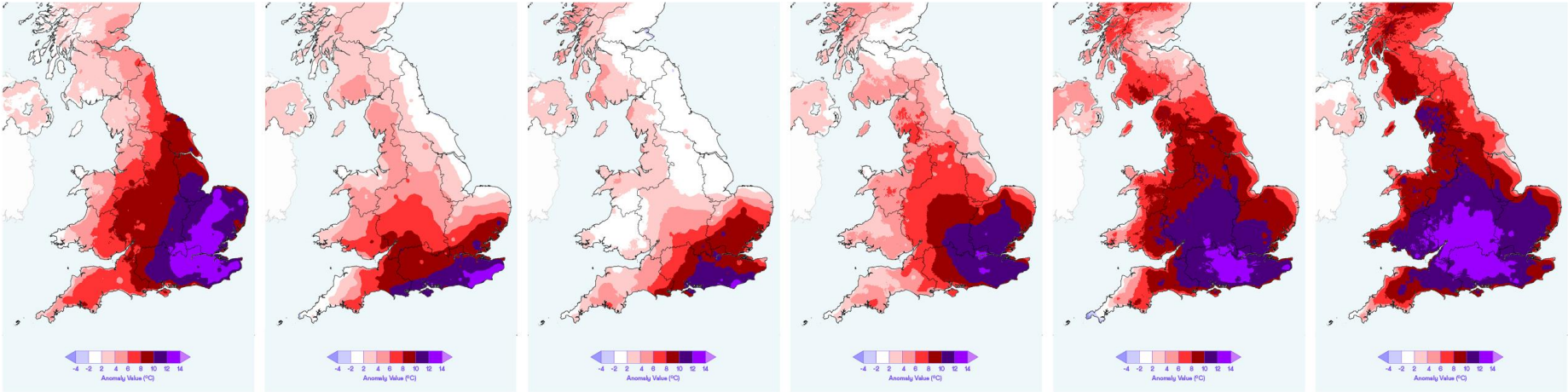
Relevant announcements without adaptation
1. UK's updated Nationally Determined Contribution (2020)
2. UK Treasury cost review of transitioning to a green economy (2020)
3. Green Homes Grant (2020)
4. Future Homes Standard Consultation (2020)
5. UK Climate Assemblies (2019-20)
6. Industrial Strategy (2017)

Relevant announcements with adaptation mentioned but not integrated
7. 25-Year Environment Plan for England (2018)
8. Ten-point plan for a Green Industrial Revolution (2019-20)
9. Environmental Land Management Scheme for England (2020)
10. Infrastructure Strategy (2020)
11. Planning White Paper (2020)

Relevant announcements with adaptation integrated
12. Flood and Coastal Erosion Risk Management Strategy for England (2020)
13. Taskforce on Climate-related Financial Disclosure Reporting Requirements (2020)
14. Green Book Supplementary Guidance on Climate Change (2020)
15. UKRI Strategic Priorities Fund (2018)

Adaptation principles

Avoid lock-in



Six days during August 2020, showing the temperature anomaly relative to the 1981-2010 average. Dark blue/purple areas were 10°C or more above average.

Source: Met Office

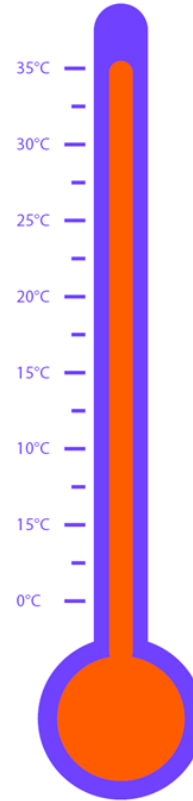
Adaptation principles

Understand threshold effects

27°C
Increased risk of rail buckling

18°C
Declines in vendace (cold water fish species). No change to today (2°C), tripling of risk of loss (4°C)

14.5°C
(average temperature of warmest month per year). Peatland degradation. Annual economic losses £318million (2°C), £1.3 billion (4°C)



35°C
(3 days or more exceedance). Winter wheat grain filling declines. No change to today (2°C), annual economic damages of £42 million (4°C)

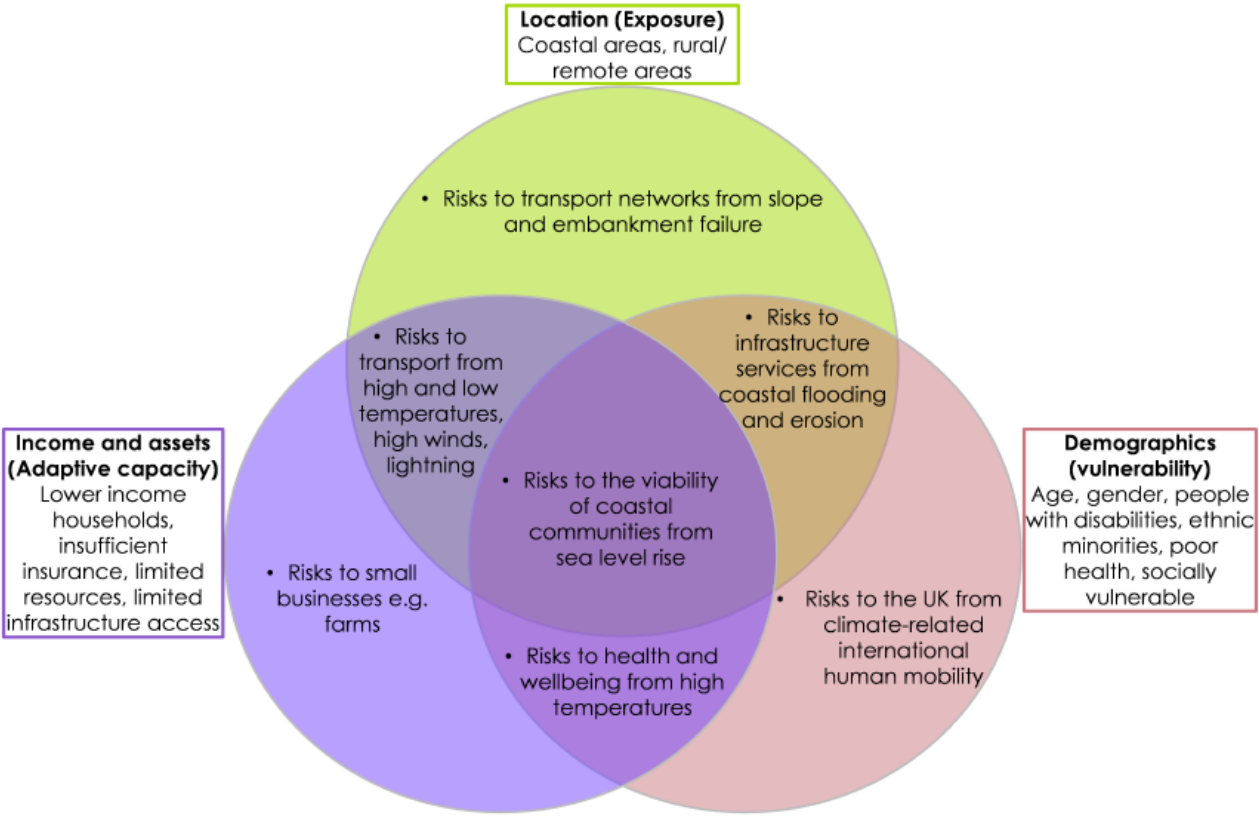
23°C
Increased heat stress in cattle. Annual economics damages of £3.8 million (2°C), £15.9 million (4°C)

17°C
(Daily max). Algal blooms in lakes and rivers. Annual economic losses of £295 million (2°C), £481 million (4°C)

9°C
(daily mean) Increases in sheep parasite *Haemonchus contortus*. Increase in development season by 30 days (2°C), 60 days (4°C)

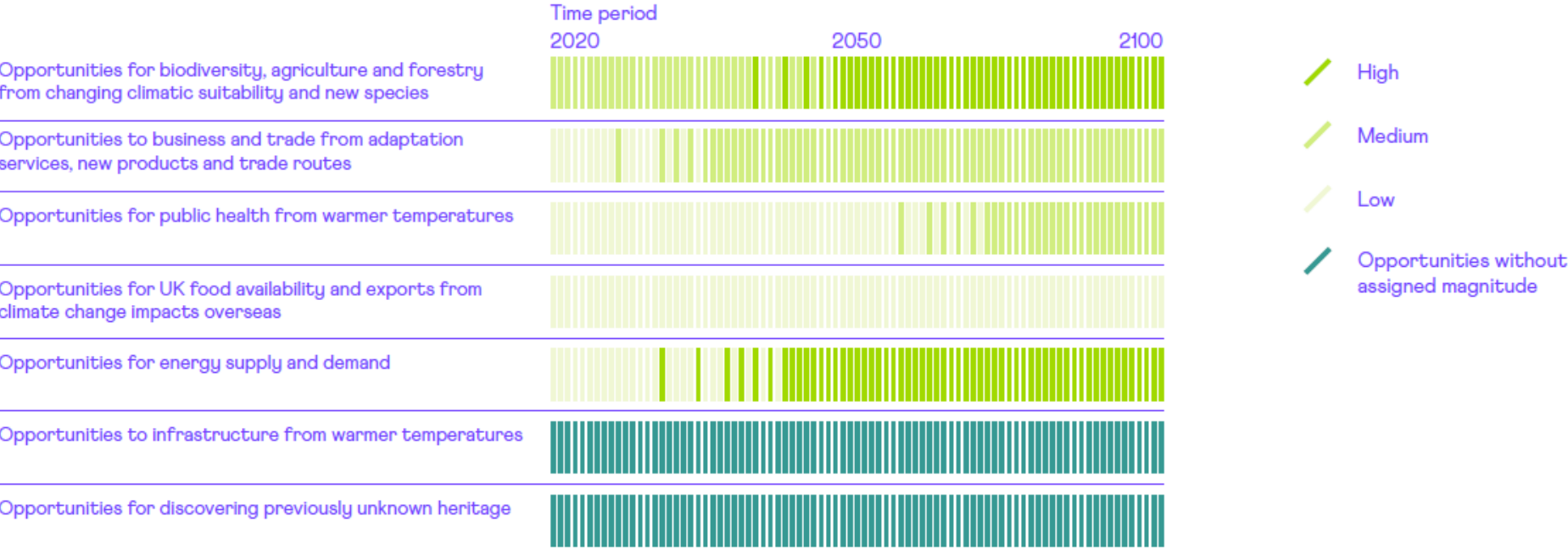
Adaptation principles

Address inequalities

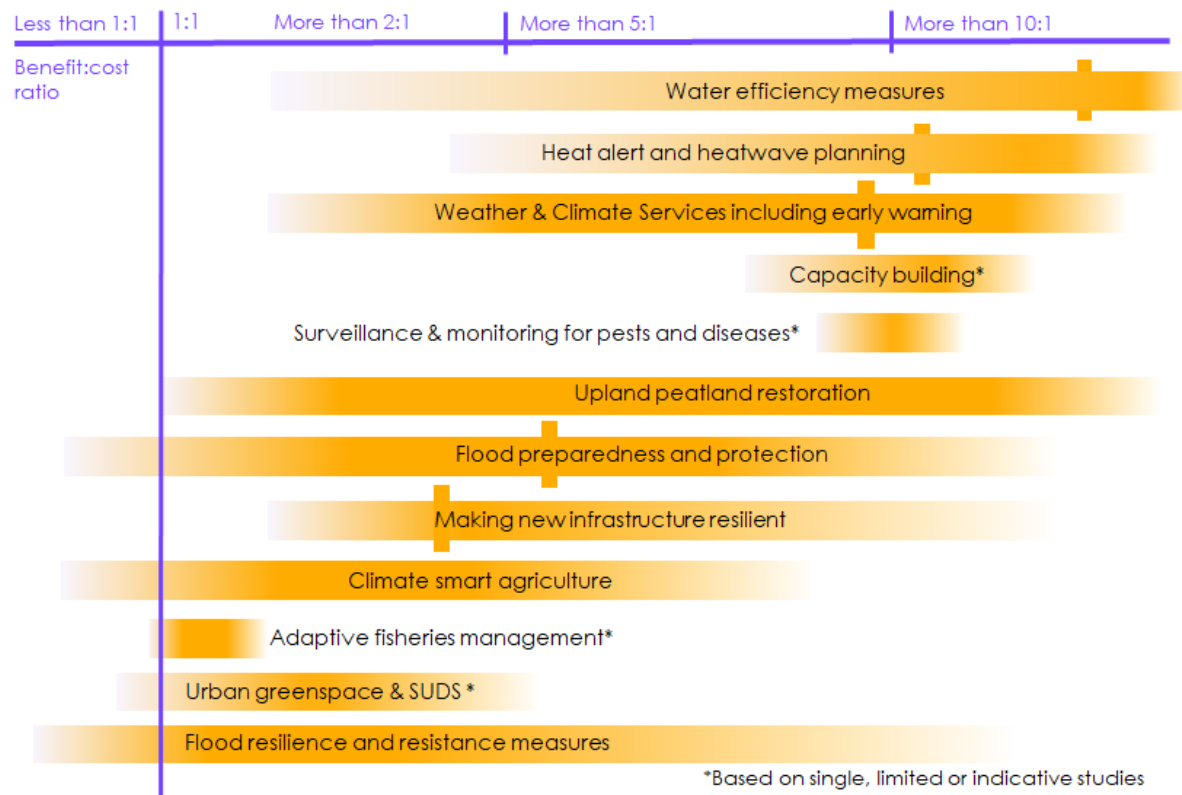


Adaptation principles

Consider any opportunities



The net benefits of adaptation are high



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