April 2025

Progress in adapting to climate change

2025 report to Parliament

Climate Change Committee

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Presented to Parliament pursuant to Section 59 (1) of the Climate Change Act 2008.

ISBN: 978-1-5286-5637-5
E03340174

Contents

The Adaptation Committee

The Climate Change Committee (CCC) is an independent, statutory body established under the Climate Change Act 2008. Our purpose is to advise the UK and devolved governments on emissions targets and to report to Parliament on progress made in reducing greenhouse gas emissions and preparing for and adapting to the impacts of climate change.

Members of the Adaptation Committee include:

Baroness Brown of Cambridge, Chair
Baroness Brown of Cambridge DBE FREng FRS (Julia King) is an engineer, with a career spanning senior engineering and leadership roles in industry and academia. She currently serves as Chair of the CCC's Adaptation Committee; non-executive director of Ceres Power, Ørsted and Frontier IP; Chair of the Carbon Trust; and Chair of the House of Lords Science and Technology Select Committee.

Dr Ben Caldecott
Ben Caldecott is the founding Director of the Oxford Sustainable Finance Group and the inaugural Lombard Odier Associate Professor of Sustainable Finance at the University of Oxford. Ben is also the founding Director and Principal Investigator of the UK Centre for Greening Finance & Investment (CGFI), established by UK Research and Innovation in 2021 as the national centre to accelerate the adoption and use of climate and environmental data and analytics by financial institutions internationally.

Professor Chris Evans
Chris Evans is a biogeochemist studying the impacts of land-use and other environmental drivers on the terrestrial and aquatic carbon and nutrient cycles. He currently leads UKRI, Defra and DESNZ projects with a value exceeding £10m on mitigating GHG emissions from peatlands, and managing them for carbon capture and storage.

Professor Hayley Fowler
Hayley Fowler is a Professor of Climate Change Impacts at Newcastle University and Director of the Centre for Climate and Environmental Resilience. Her research focuses on improved physical understanding of changing precipitation extremes, floods and droughts, and providing better projections and guidance for climate adaptation of infrastructure systems.

Dr Marina Romanello
Marina Romanello is the Executive Director of the Lancet Countdown: Tracking Progress on Health and Climate Change, an independent and multi-disciplinary research collaboration of almost 300 researchers around the world, and headquartered at University College London's Institute for Global Health.

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Nathalie Seddon is Professor of Biodiversity and Founding Director of the Nature-based Solutions Initiative in the Department of Biology at the University of Oxford. Nathalie trained as an ecologist at Cambridge University and has over 25 years of research experience in a range of ecosystems across the globe. As a University Research Fellow of the Royal Society, she developed broad research interests in the origins and maintenance of biodiversity and its relationship with global change.

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Swenja Surminski is Chair of the Munich Climate Insurance Initiative, Managing Director Climate and Sustainability at Marsh McLennan and Professor in Practice at the Grantham Research Institute at the London School of Economics (LSE). Her work focuses on capacity building and knowledge transfer between science, policy and industry, building on her work in industry and as advisor to governments, private sector and civil society, including as Visiting Academic at the Bank of England.

Acknowledgements

The Committee would like to thank:

The team that prepared this report and its analysis. This was led by Emma Pinchbeck, James Richardson, Richard Millar, and Hannah Williams; and included Florence Bates, Owen Bellamy, Marili Boufounou, Louise Brett, Selina Dagless, Bianca de Farias Letti, Ramesh Deonarine, Caitlin Douglas, Kim Dowsett, Francesco Maria Giacomini, Gemma Holmes, Ariana Jessa, Miriam Kennedy, Bea Natzler, Chris Parker, Andrew Romang, Elena Saggioro, Miranda Schroder, Vivian Scott, Olivia Shears, Rachael Steller, Indra Thillainathan, Sophie Vipond, Eveline White, Kate Williamson, Louis Worthington.

Our previous Committee members and expert advisers, Professor Michael Davies and Professor Richard Dawson.

Our expert adviser Professor Richard Betts.

Executive summary

The increasing impacts of climate change are clear, both globally and in the UK. Adaptation is needed now to ensure that the UK is prepared for today's extreme weather as well as the rapidly increasing severity of future risks. The costs of these impacts are already being felt, and the risks will continue to grow even if international targets to limit global warming are met. Action is needed now whilst we still have the opportunity to address these risks in a way that is both cost-effective and timely. This report assesses the extent to which the UK's Third National Adaptation Programme (NAP3) and its implementation are preparing the UK for climate change. It is the Committee's first statutory progress report on NAP3 and builds on our initial Independent Assessment of the Third National Adaptation Programme, published in March 2024. It is also the Committee's first statutory progress report on NAP3 for the new UK Government.

The key messages of our assessment are:

- **The UK's preparations for climate change are inadequate.** Delivery of effective adaptation remains limited and, despite some progress, planning for adaptation continues to be piecemeal and disjointed. The vast majority of our assessment outcomes have the same low scores as in 2023. In terms of adaptation delivery, we do not find evidence to score a single outcome as 'good'. Adaptation progress is either too slow, has stalled, or is heading in the wrong direction. Whilst there is some evidence of policies and plans improving, it is clear that NAP3 has been ineffective in driving the critical shift towards effective delivery of adaptation highlighted in our previous progress report in 2023.

- **The Government has yet to change the UK's inadequate approach to tackling climate risks.** The current government's manifesto promised to 'improve resilience and preparation across central government, local authorities, local communities, and emergency services'. It inherited a NAP that fell short of the task of preparing the UK for the climate change we are experiencing today, let alone that coming in the future. Our assessment finds little evidence of a change of course. The slow pace of change indicates that adaptation is not yet a top priority across government.

- **The Government must act without further delay to improve the national approach to climate resilience.** A new approach is still possible. We recommend four key areas of action to raise the profile of adaptation across government and drive a more effective response to the UK's changing climate.

  - **Improve objectives and targets.** This is the vital first step to provide an actionable and measurable framework for the rest of government and beyond. As part of this, the Government must communicate clearly the respective roles of government, the private sector and households in delivering and funding adaptation.

  - **Improve coordination across government.** Adaptation and climate risks are still only weakly integrated with wider government resilience efforts and other key policy agendas. Greater coordination across activities, spending decisions, sectors, and departments is required. Government adaptation efforts must be better linked with wider resilience planning to ensure that adaptation becomes a true cross-government priority.

- **Integrate adaptation into all relevant policies.** The next Spending Review needs to ensure that climate adaptation planning is supported with sufficient resources across government. Public assets, and critical public services such as the NHS, need to be resilient to current and future weather so that they can operate effectively, and in the case of new infrastructure, without costly retrofitting. The Government's policy agenda can help to close key policy gaps identified in this report, but only if climate resilience is adequately incorporated into their forthcoming strategies and plans.

- **Implement monitoring, evaluation and learning across all sectors.** Adequate monitoring and evaluation, underpinned by regular data collection and reporting, is essential to track climate impacts and the effect of adaptation measures at a national level. It is also needed to ensure future planning learns from what is effective. The long-standing gap of an effective monitoring and evaluation framework for adaptation must finally be closed.

The rest of this executive summary is organised in three sections:

1. Climate change in the UK
2. Progress on adaptation under the Third National Adaptation Programme
3. Sectoral priorities for adaptation

1. Climate change in the UK

There is now unequivocal evidence that climate change is making extreme weather in UK, such as heatwaves, heavy rainfall, and wildfire-conducive conditions, more likely and more extreme.

The period between October 2022 to March 2024 was the wettest 18-months on record for England. Large amounts of farmland were underwater for long periods, which led to the second worst arable harvest in England since modern harvest records began. This came on the back of record-breaking heatwaves in summer 2022, which saw temperatures exceeding 40°C for the first time in many places and resulted in a record level of nearly 3,000 heat-related deaths recorded in England. Simultaneously, the hot and dry conditions in summer 2022 led to an unprecedented number of wildfires, with many fire and rescue services declaring major incidents in July 2022 following a 500% increase in 999 calls.

The world (at least temporarily) exceeded 1.5°C above pre-industrial levels in 2024 and is rapidly approaching the lower end of the Paris Agreement's long-term temperature goal. The current record pace of human-induced climate change will mean that the UK's weather and climate will continue to change faster than ever over the decades ahead. The UK will experience warmer and wetter winters – raising flood risk for properties, agriculture, and infrastructure. Continued shifts towards drier and hotter summers will increase the intensity of summer heatwaves and droughts, with rising risks of surface water flooding when rainfall does occur. Sea levels around the UK will continue to rise for centuries to come.

These changes will create risks across society that will reach unacceptable levels and therefore require proactive adaptation now. These risks include:

- **Increasing threats to nature and challenges to food production from extreme weather.** Extreme weather across the year, including heat, drought, and flooding, will make agricultural planning more difficult. Over half of the UK's top quality agricultural land is at risk of flooding today, with a further increase expected by 2050. Climate change (from multiple hazards) poses a major threat to UK biodiversity, at a time when it is degrading rapidly, as well as to the ability of land to sequester carbon - a key part of the UK's Net Zero pathway.

- **Extreme weather will more frequently disrupt the functioning of key infrastructure**. Over a third of railway and road kilometres are currently at flood risk, predicted to rise to around half by 2050. Extreme heat can disrupt infrastructure systems via rail buckling and power line sagging. The cascading effects of failures can amplify impacts. Rising drought risk will increasingly put water supplies under pressure in the summer.

- **An increasing number of properties will be at risk of flooding or overheating.** Currently 6.3 million properties in England are in areas at risk of flooding from rivers, the sea, and surface water. This is predicted to rise to around 8 million (25% of all properties) by 2050. Steadily rising sea levels at the UK's coasts will increase the risk of coastal flooding and exacerbate coastal erosion. Between 5,000 to 45,000 properties could be in areas at risk of coastal erosion by 2050, depending on how coastlines are managed. Towns and cities will become increasingly hot, with a large fraction of current buildings at risk of reaching uncomfortable and potentially dangerous temperatures in summer heatwaves.

- **Future heat will risk the health and lives of vulnerable people.** Heat-related deaths already occur in the thousands each year but could rise several times over to exceed 10,000 in an average year by 2050. This increase is driven by both climate change and an increasingly vulnerable, ageing population. In heatwaves, many of our existing hospitals already struggle to operate effectively, with impacts such as unusable operating theatres and reduced staff productivity.

- **Climate change will create challenges to economic prosperity.** Estimates suggest that unchecked climate change could impact UK economic output by up to 7% of GDP by 2050, creating challenges for driving sustainable long-term growth across the country.

Without additional adaptation now, UK policy will increasingly lock-in future climate risks or make these risks worse. It is now critical that good quality adaptation is undertaken at scale and at speed. This is vital to ensure that these risks are managed most efficiently and at least cost.

2. Progress under the Third National Adaptation Programme

The UK Government has an obligation to prepare the country for the effects of climate change under the Climate Change Act (2008). The National Adaptation Programme (NAP) is the Government's strategy for this, covering devolved policy areas for England and reserved policy areas for the UK. It is coordinated by the UK's Department for Environment, Food, and Rural Affairs (Defra) but contains actions from all government departments. The third NAP, NAP3, was published by the previous government in July 2023 and is now nearly two years old. Our Independent Assessment of the Third National Adaptation Programme, published in March 2024, found that whilst it was a step forward on past NAPs, significant work was needed across its lifetime to address long-standing issues holding back adaptation in the UK.

In this report, we update this assessment with the latest evidence on the delivery of NAP3. Our assessment focuses on a set of outcomes needed for a well-adapted UK. We look for evidence of delivery and implementation of adaptation to achieve these outcomes, and for high-quality government policies and plans to support this adaptation across society. Our overall assessment is summarised in Table 1 and Figure 1.

Table 1
Summary of our assessment of progress in preparing for climate change

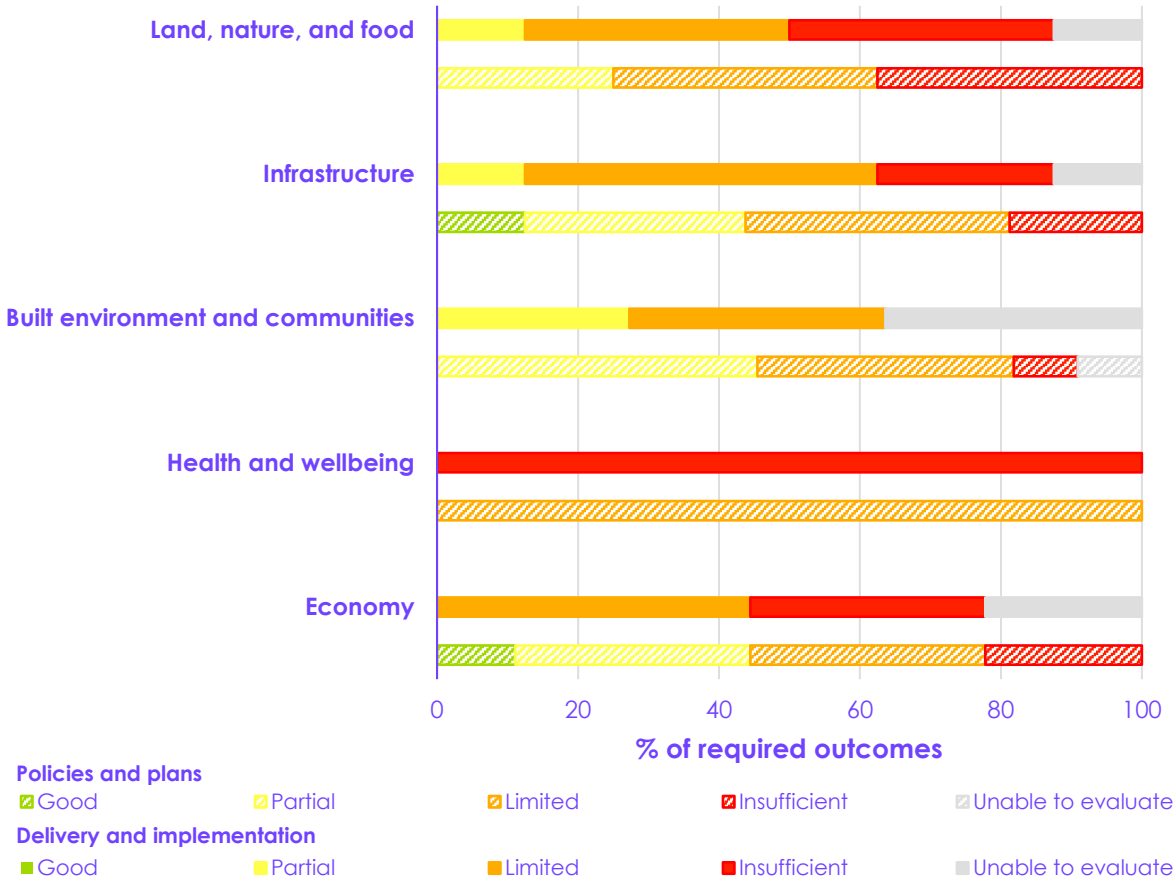
Outcome area	Thematic area	Outcome	Delivery and implementation	Policies and plans
Land, nature and food	Nature	Terrestrial habitats are in good ecological health.	Insufficient	Limited
		Freshwater habitats are in good ecological health.	Insufficient	Limited
		Marine and coastal habitats are in good ecological health.	Limited	Insufficient
	Working land and seas	Climate resilient agricultural production.	Limited	Insufficient
		Climate resilient commercial forestry sector.	Limited	Partial
		Climate resilient commercial fisheries and aquaculture sector.	Partial	Partial
	Food security	Disruption to food and feed import supply chains due to climate change is minimised.	Unable to evaluate	Insufficient
		Vulnerability to food price shocks is reduced.	Insufficient	Limited
Infrastructure	Water supply	Reduce demand.	Insufficient	Partial
		Improve system performance.	Insufficient	Partial
		Increase supply.	Partial	Partial
		Interdependencies identified and managed.	Limited	Limited
	Energy	Reduced vulnerability of energy assets to extreme weather.	Limited	Partial
		Climate-resilient supply.	Limited	Limited
		Interdependencies identified and managed.	Partial	Insufficient
		Vulnerability of assets reduced.	Unable to evaluate	Limited

	Tele-communications and ICT	System level resilience.	Unable to evaluate	Limited
		Interdependencies identified and managed.	Insufficient	Insufficient
	Transport	Asset and system level reliability of rail network.	Limited	Good
		Asset and system level reliability of strategic road network.	Limited	Good
		Asset and system level reliability of local roads.	Limited	Insufficient
		Asset and system level reliability of airport operations.	Limited	Partial
		Asset and system level reliability of port operations.	Insufficient	Limited
		Interdependencies identified and managed.	Limited	Limited
Built environment and communities	Towns and cities	Places are resilient to river and coastal flooding.	Partial	Partial
		Places are resilient to surface water and groundwater flooding.	Limited	Limited
		Sustainable coastal management in place.	Limited	Partial
		Urban heat risks are managed.	Unable to evaluate	Limited
		Planning system prioritises climate resilience.	Unable to evaluate	Insufficient
	Buildings	Buildings do not overheat.	Unable to evaluate	Limited
		Buildings are prepared for flooding.	Partial	Partial
		Buildings are resilient to other climate risks.	Unable to evaluate	Unable to evaluate
	Community prepared-ness and response	Communities are prepared for climate shocks.	Partial	Partial
		Communities can respond to climate shocks.	Limited	Partial
		Local cultural heritage is conserved.	Limited	Limited
Health and wellbeing	Health	Protect population health from the impacts of climate change and utilise potential benefits.	Insufficient	Limited

		Quality and accessible healthcare delivery during extreme weather.	Insufficient	Limited
Economy	Business	Public and private adaptation measures are implemented to minimise risks to business sites.	Insufficient	Limited
		Businesses have access to capital and insurance including for adaptation.	Unable to evaluate	Limited
		Productivity losses due to physical climate risks are minimised.	Insufficient	Insufficient
		Supply chain risks are identified and managed.	Insufficient	Partial
		Risks and actions are disclosed and managed by businesses.	Limited	Partial
	Finance	All financial institutions incorporate physical risks into financial decision-making.	Limited	Partial
		UK financial services are a global leader in adaptation.	Limited	Limited
		No viable adaptation project fails for lack of finance.	Unable to evaluate	Insufficient
		Risks and actions are disclosed and managed by financial institutions.	Limited	Good

Source: Climate Change Committee (CCC) analysis

Figure 1 Summary of our assessment of progress in preparing for climate change



Description: Of the 46 required outcomes, three have had good progress on policies and plans. We are unable to evaluate delivery progress for nine outcomes. For the remaining required outcomes, there has been mostly limited or insufficient progress across delivery and policies and plans.
Source: CCC analysis.
Notes: The number of required outcomes varies between outcome areas. There are eight required outcomes in land, nature and food, 16 in infrastructure, eight in built environment, two in health and wellbeing and nine in economy.

Progress in delivery and implementation

Adaptation implementation remains inadequate in the UK. While we have seen progress in some areas, there is also evidence of delivery challenges in other areas. Data to monitor adaptation action remain difficult to collect. It is clear that NAP3 has not yet led to the required shift beyond adaptation planning to the urgently needed focus on delivery and implementation of effective actions.

- **There is still inadequate overall progress on delivering adaptation outcomes.** We do not find a single outcome with evidence of 'good' delivery on adaptation. Progress is either too slow, has stalled, or is heading in the wrong direction, based on the available indicators, with 12 out of 46 outcomes scored as insufficient.

- **Delivery has not significantly moved on in the last two years.** NAP3 has been ineffective in driving a shift towards adaptation delivery. The vast majority of our outcomes have received the same score as in 2023. A small number of improved scores (Table 2) come from the fourth round of the Adaptation Reporting Power (ARP) – which allows the Government to require key organisations, such as infrastructure operators, to disclose how they manage climate risks. These reports provide new evidence on how organisations are starting to understand interdependencies with other sectors – although further steps are needed to manage these interdependencies effectively. Conversely the score for water system performance has reduced because the observed rate of change of leakages from the public water system is clearly inconsistent with the sector's target.

- **Inadequate monitoring and evaluation remain a barrier to effective progress monitoring.** Tracking progress on adaptation remains challenging due to limited national-scale, up-to-date, and relevant data. For nine outcomes, there aren't enough indicators to assess overall progress accurately. In many cases, we have to rely on proxy indicators as substitutes for direct measurements of adaptation or climate risk. For nearly all outcomes, there is a lack of clarity from government on what it sees as key indicators and on what levels indicators need to reach.

Table 2
Changes in delivery and implementation scores since our 2023 Progress Report

Thematic area	Outcome	Change	Details
Water supply	Improved system performance.	Worsened	The continued slow rate of leakage reduction is now clearly inconsistent with meeting the sector's targets.
	Interdependencies identified and managed.	Improved	New evidence of identification of interdependencies and some management of them via the Adaptation Reporting Power reports.
Energy	Interdependencies identified and managed.	Improved	
Transport	Interdependencies identified and managed.	Improved	

Source: CCC analysis
Notes: Only delivery and implementation scores that have changed since our 2023 report are included in this table. Changes in outcomes that were evaluated as 'unable to evaluate' in 2023 Progress Report are not included here. Changes from a 'mixed' score in 2023 to a 'partial' or 'limited' score in this report are also not included.

Progress in policies and plans

Our overall conclusion is that NAP3 is not adequately preparing the country for the effects of climate extremes today or in the future. Government planning on adaptation is slowly progressing but remains variable and requires improvement in nearly all areas.

- **Only a few areas have good adaptation planning.** Adaptation planning is lacking in most areas, with only three out of 46 outcomes achieving a 'good' policy and planning score. Nearly all areas need further development, with higher scores mainly limited to regulated infrastructure sectors or publicly funded areas like flood and coastal erosion risk management. Twenty-seven outcomes (60%) show limited or insufficient progress, highlighting major gaps in adaptation efforts across policies and plans.

- **The pace of change in policies and plans remains slow.** The majority of policies and plans scores have not changed since our previous 2023 progress report. This reflects the fact that NAP3 has struggled to make adaptation a key priority for policy development in many government departments. We do not find evidence for a step-change in the pace of policy development since the 2024 General Election.

- **Changes since our last progress report have moved scores in both directions.** Since our 2023 assessment, 11 policies and plans scores have improved across water supply, telecommunications, transport, finance and business (Table 3). However, four others have worsened as plans no longer align with their stated objectives, including in water demand, water system performance, and protection from river and coastal flooding, whilst missed statutory deadlines have degraded the overall quality of policies and plans for marine environments. These downgrades reflect an inability to keep plans updated and aligned with their stated goals despite demonstrated delivery failures.

International risks, and actions to address them, are included for the first time in NAP3. This is a welcome expansion of the scope of the NAP, recognising the critical role of the UK working with other countries and domestically as part of a fully-fledged response to global climate risk.

Table 3
Changes in policies and plans scores since our 2023 Progress Report

Thematic area	Outcome	Change	Details
Nature	Marine and coastal habitats are in good ecological health.	Worsened	Delays to Marine Plan Monitoring Reports with plans missing statutory deadlines.
Water supply	Reduce demand.	Worsened	Ofwat's 2024 Price Review does not bring forward sufficient credible options for delivering demand and leakage reduction targets despite demonstrated shortfalls of plans.
	Improve system performance.	Worsened	
	Increase supply.	Improved	Updated Water Resource Management Plans include more interconnections and plans for additional supply options.
	Interdependencies identified and managed.	Improved	All draft Regional Plans for Water Resources consider other sectors, although planning for these interdependencies remains limited.
Telecommunications and ICT	System level resilience.	Improved	Ofcom guidance on network resilience includes measures which ensure public networks are designed to avoid or reduce single points of failure.
Transport	Interdependencies identified and managed.	Improved	ARP returns and the Department for Transport's (DfT) consultation on adapting the transport system to climate change highlights importance of interdependencies, while making multiple key commitments.

Towns and cities	Places are resilient to river and coastal flooding.	Worsened	Reduced overall projected targets for the Flood and Coastal Erosion Risk Management investment programme, despite recent funding announcements.
Buildings	Buildings are prepared for flooding.	Improved	Ministry of Justice (MoJ) Climate Change Adaptation Strategy published, including key steps for adapting justice facilities. Improved process for Property Flood Resilience (PFR) projects through Environment Agency funding and Defra commitment to work with Flood Re on insurance and PFR market.
Community preparedness and response	Communities are prepared for climate shocks.	Improved	Adaptation Reporting Power has been extended to include local authorities in climate adaptation reporting and the Met Office have launched their Local Authority Climate Service.
Business	Supply chain risks are identified and managed.	Improved	The UK Critical Imports and Supply Chains Strategy has a focus on addressing potential bottlenecks in supply chains linked to long-term trends, including impacts of climate change.
	Risks and actions are disclosed and managed by businesses.	Improved	The 2023 Green Finance Strategy has set out an ambition to coordinate more effective adaptation disclosure across the economy and to build better tools to inform private sector decision making.
Finance	All financial institutions incorporate physical risks into financial decision-making.	Improved	
	UK financial services are a global leader in adaptation.	Improved	
	Risks and actions are disclosed and managed by financial institutions.	Improved	

Source: CCC analysis.
Notes: Only scores that have changed since our 2023 report are included in this table. Changes in outcomes that were evaluated as 'unable to evaluate' in 2023 Progress Report are not included here.

Improving the national adaptation programme

The UK's current approach to adaptation policy making is not working. Adaptation is not the cross-government priority that it needs to be, which is holding back delivery. A refreshed cross-government approach is needed to streamline and simplify how adaptation is considered in all departments and to make policy more joined up and efficient.

We recommend four key areas of action to prepare the ground for a much stronger NAP that can drive real change:

- **Improve objectives and targets.** A clear vision for a well-adapted UK, underpinned by a set of specific and measurable sectoral targets is vital to give focus to what adaptation policy is seeking to achieve (Box 1). The Government has recently signalled its desire to strengthen objectives on adaptation.[1] This must now be taken forward with urgency.

  – A set of clear overarching adaptation objectives in key areas must be developed in 2025. These objectives must describe succinctly what 'climate-resilient' means for government departments and their different risk areas, with guidance for departments to formulate a set of quantitative sectoral targets consistent with national adaptation objectives.

Box 1
Features of a high-quality national adaptation objective

A set of strengthened overarching adaptation objectives in key areas need to have the following essential characteristics:

- A time-bound horizon (e.g. 2050) that can serve as a focal point for long-term climate adaptation efforts.
- A clear and operational definition of what climate-resilience means, identifying specific climate scenarios and associated hazards that the UK should be resilient to.
- Clarity on how measurable climate-resilience sectoral goals can be developed consistently with the national objective, and how these goals will be monitored.
- Clarity on the roles of government, the private sector, and households in delivering the objective.
- A process for how the objective and associated sector-specific targets will be reviewed and updated over time as necessary.

- **Improve coordination across government.** Adaptation remains coordinated by Defra, while wider resilience matters are largely coordinated by the Cabinet Office. In general, adaptation and climate risks are still only weakly integrated with wider government efforts. Greater coordination is required across different activities, spending decisions, sectors, and departments. The new Climate Resilience Board of senior officials created under NAP3 should be a useful cross-government forum on adaptation, but we cannot yet assess its effectiveness.

  – Building upon the ongoing Cabinet Office Resilience Review, the Government should set out how it will better integrate adaptation and climate change risk assessments with other resilience activities such as future editions of the National Risk Register. This should include stress-testing using a standardised set of extreme weather events (both those that are possible today and those possible in future climates) and a coordinated and coherent policy response framework to tackle acute and chronic climate change risks.

- **Integrate adaptation within all relevant policies.** The next Spending Review is vital to drive adaptation forward over the next three-year period, and for ensuring that adaptation is integrated into all relevant policies and plans. Department spending needs to ensure that it is not locking in additional and costly climate risk, as well as ensuring that climate resilience planning is supported with sufficient people and research resources right across government.

  - The spending review needs to ensure sufficient funding is available to meet the Government's climate resilience objectives over the relevant period. The Government must communicate clearly the respective roles of government, the private sector, and households in delivering and funding adaptation. Clear budget tagging should allow the Government to estimate the baseline level of spend on climate resilience as well as the future path.

- **Implement monitoring, evaluation and learning across all sectors.** Monitoring and evaluation of adaptation is still not treated with sufficient urgency despite commitments in NAP3. Almost every indicator available to track adaptation progress lacks a target to measure progress against. Data collection to inform adaptation is essential. This must go beyond simply tracking of actions under the NAP to a coordinated process to collect key datasets across sectors annually and at a national scale.

  - Government should coordinate relevant delivery and statistics agencies to collect the key indicators needed to track delivery of adaptation and evolution of climate risks. These efforts should be focused on areas where our assessment has highlighted a lower quality of indicator evidence and areas with significant data gaps (Box 2), and coordinate collection of data with the private sector where appropriate.

Box 2
Priorities for closing data gaps

Our assessment finds many areas where the quality of indicator evidence to track delivery and implementation of adaptation is low. Priorities for closing data gaps include:

- Moving beyond proxy indicators for measuring adaptation in land, nature and food.
- Collecting and publishing a much wider set of infrastructure indicators, particularly for energy and telecoms.
- Collecting indicators to measure climate resilience to a range of hazards including surface water flooding and tracking overheating in both the existing built environment and new developments.
- Tracking a much wider range of public health impacts beyond heat-related mortality and tracking impacts of climate events on healthcare delivery beyond the NHS estate, such as in social care settings.
- Collecting indicators specific to climate risks for critical supply chains (e.g. food) and making better use of private sector data to monitor business risk and adaptation across the economy.

This progress report comes near to the halfway point of the NAP3 lifetime (from 2023 to 2028). It must serve as the turning point for government to take a fresh approach to improving the nation's climate resilience. Progress in the four areas highlighted above is needed urgently. Without these changes, sectoral planning and delivery of adaptation will remain constrained and will not drive the changes needed to prepare the country for climate extremes.

3. Sectoral priorities for progressing adaptation

Whilst programme-level improvements are critical, the Government's policy agenda can help close key policy gaps identified in this report, but only if climate resilience is adequately incorporated into forthcoming strategies and plans. The policy actions that we recommend in this section should proceed alongside efforts to improve the NAP. Failure to do so risks missing the opportunity to take actions that will improve the country's climate resilience.

Land, nature, food

The state of the UK's natural environment, a proxy for its overall resilience to climate extremes, continues to decline despite environmental improvement goals. The roll-out of the Environmental Land Management schemes (which support farmers and land managers to deliver public goods alongside food production) is underway, but specific adaptation guidance is lacking within the Environmental Land Management schemes – as is sufficiently granular reporting to judge its effects on climate resilience.

Key policies that will influence adaptation for nature, working lands and seas, and food security have been delayed. The Government is currently conducting a review and refresh of the approach to agricultural and environmental policies in England and key decisions on budgets for adaptation-relevant actions on land depend on the spending review.

Government should:

- **Integrate its approach to adapting to climate change across Defra's forthcoming foundational strategies.** These include the Land-Use Framework, Environmental Improvement Plan, 25-year farming road map, and food strategy. These strategies should recognise the need for adaptation measures to ensure their goals are met. They should set out how these adaptations will be funded, have clear objectives, delivery targets, responsibilities and milestones.

- **Clarify budgets and address non-financial barriers for the deployment of specific adaptation measures through the Environmental Land Management schemes.** Following the spending review, there should be certainty about how farmers and land managers will be supported to adapt their land for production, nature and wider resilience. Government should ensure low-regret and low-cost measures are taken up through regulations or minimum requirements in agricultural support mechanisms.

Infrastructure

The UK has experienced significant infrastructure disruption due to extreme weather in recent years. Disruptions from heat and flooding on rail and road networks are rising. In the public water system, some parts of the country are facing more acute drought challenges. Examples of damaging cascading infrastructure failures have been seen, particularly in the record heat of 2022.

A number of periodic settlements for regulated infrastructure are due to be finalised in 2025, alongside development of government strategies in several infrastructure areas. The effectiveness of mandates for climate resilience across regulated infrastructure sectors is currently variable, and improving these mandates should be a priority to strengthen the resilience of infrastructure to a wide range of hazards.

Government should:

- **Set out in the 10-year infrastructure strategy how it intends to mainstream climate adaptation into the delivery of infrastructure across sectors.** This includes setting out clear resilience standards for infrastructure systems. Government should establish the mechanisms to address infrastructure interdependencies where most effective to do so, including through standardised scenarios for stress-testing infrastructure resilience.

- **Ensure key regulated funding agreements provide incentives for adaptation deployment.** These include the next Road Investment Strategy and the RIIO-3 price control final determinations (for gas distribution, gas transmission and electricity transmission) – both due in 2025. The funding agreements should ensure that adaptation measures are deployed at-scale and for a broad range of climate hazards.

Water companies remain off track to deliver the water demand and leakage reduction targets needed to prepare for a drier future despite new plans. The lack of new actions to meet the targets for demand reduction and leakage improvement means that we no longer judge there to be fully credible plans in these areas. Reviews of governance and regulation in this sector should seek to address these gaps.

Government should:

- **Ensure that the next water regulatory settlement can fund and encourage more ambitious adaptation action.** Through the reforms to the public water sector, currently being considered by Defra and Ofwat, the next water regulatory settlement (due in 2029) should fund and encourage more ambitious options to get the sector back on track for its demand and leakage reduction targets, considering the potential impacts on vulnerable customers.

Adaptation action to reduce the vulnerability of energy sector assets is underway, principally focussing on flooding and storms, with ongoing research and analysis regarding vulnerability to other climate-related hazards. The National Energy System Operator (NESO) was launched in 2024 as the single body responsible for the strategic planning and design of Great Britain's energy network (electricity and gas). NESO has a resilience remit – which it must now flow through its activities, including the planning of the UK's Net Zero electricity system.

Government should:

- **Include consideration of resilience to a range of climate scenarios and hazards in NESO's Strategic Spatial Energy Plan.** This should include consideration of differing levels of exposure to flood, water scarcity and heat hazards in different locations, to ensure generation and network assets are sited to minimise risk of systems-level impacts during future extreme weather. It should also include consideration of high impact, low likelihood events.

Built environment and communities

The large-scale flood defence programme in England, led by the Environment Agency, continues to protect more homes, but its budget in real terms is shrinking as risks are escalating, meaning delivery is falling short of targets, and the condition of flood defence assets is declining. Adaptation efforts to combat urban overheating remains weak and poorly monitored. There are no regularly produced national datasets recording changing risks and the delivery of measures such as urban greening or building-level adaptations.

The current period of the Environment Agency's Flood and Coastal Erosion Risk Management investment programme is ending a year early, with the next programme due to start aligned with the new government spending settlement. Beyond flooding, a key policy gap is the lack of a coherent cross-government strategy to help coordinate action on tackling urban heat nationally and at local level.

Government should:

- **Include long-term targets on net change in flood risk in the next flood and coastal erosion risk management investment programme.** These need to be supported with sufficient levels of funding and a clear delivery plan to ensure these targets are met.

- **Set out a long-term cross-sector plan to manage future heat risk and drive joined up action.** This should bring together relevant government departments and agencies, and involve regional and local government, to ensure that adaptation delivery for future extreme heat is coordinated across the built environment, the health system, and community response nationally and locally.

Health and wellbeing

Heat-related deaths are rising in the UK. A rise in reported incidences of overheating and flooding have also been seen within the National Health Service (NHS) estate, but a full picture of disruption to health care delivery from extreme weather is not available. Beyond the NHS, there are no routinely collected data on extreme weather disruption or adaptation implementation in other health care settings such as care homes, domiciliary care and GP surgeries.

The UK Health Security Agency's Adverse Weather and Health Plan is a useful step in improving the coordination of the health response to extreme weather by clearly defining roles and responsibilities across national, regional, and local levels. However, it needs to go further to address fully all climate risks and provide an approach to health adaptation that can be effectively monitored. The Government has set out a process to develop a 10-year plan to build an NHS fit for the future. This needs to ensure that upgrades to NHS planning and assets can make it more resilient to climate extremes today and in the future.

Government should:

- **Develop an improved climate and public health adaptation plan, building upon the current Adverse Weather and Health Plan.** This should cover a greater range of hazards and responses. This needs to be an action-oriented plan that provides improved quantitative targets and associated indicators to monitor progress related to health adaptation across sectors.

- **Strengthen the Green Plan guidance and NHS Climate Adaptation Framework.** This should be done by defining outcomes and targets for implementation and accountability, monitoring, and linkages with Net Zero. Integrated care systems and partnerships should also include adaptation within their integrated care strategies.

Economy

Businesses across the economy are impacted by climate risk. Recent years have seen high levels of insurance claims from extreme weather and productivity impacts are being recorded. Climate-related disruption to key supply chains is already having important implications for businesses, households, and governments.

Businesses and financial institutions can take action to enhance their resilience, but barriers remain to effective action across the economy, including provision of appropriate information and access to finance for adaptation measures. The 2023 Green Finance Strategy set out ambitions to improve disclosure on adaptation and to drive forward investment into climate resilience across the economy. However, adaptation progress under the strategy has been limited. Disclosure is only one way of encouraging private sector action and it is not clear that it is driving adaptation investments. Adaptation finance remains nascent. Government has a key role to enable private sector action by removing barriers, correcting market failures, and ensuring that high-quality information is available to understand climate risk management across the economy.

Government should:

- **Ensure that businesses have access to appropriate adaptation information to help manage their own risks.** In part, this requires coordination of the emerging analytics and metrics resources across government into a portal accessible to companies, especially small and medium-sized enterprises (SMEs).

- **Ensure that the commitments outlined in the Sustainable Disclosure Requirements integrate and streamline requirements for robust adaptation-related disclosure.** This should ensure that reporting burdens for companies are minimised whilst providing effective disclosure of information to help the private sector monitor and manage corporate climate risks.

- **Deliver on the 2023 Green Finance Strategy commitments to set out an adaptation finance action plan.** This should seek to include adaptation within transition plan disclosure requirements and guidance, as well as how the Government intends to mobilise private investment towards adaptation actions.

International collaboration

It is in the UK national interest to support adaptation outcomes globally. Many of the most impactful risks to the UK come from its links to other parts of the world as part of a highly connected global economy. NAP3 recognises the critical role of the UK working with other countries and domestically as part of a fully-fledged response to global climate risk.

The UK's contribution to international adaptation outcomes encompasses public, private and third sectors. The Government has a key coordinating role to help maximise the UK's overall international adaptation impact, setting out how aid, trade policy, and diplomacy can be mobilised effectively and help leverage further private and third sector contributions.

Government should:

- **Develop and implement a cross-government strategy to address climate-driven risks to migration, conflict, and international cascading risks.** This should include setting out its International Climate Finance contribution to the New Collective Quantified Goal as part of UK international leadership but also extend to how government can help maximise the impact of the UK's private and third sectors.

Endnotes

[1] HM Government (2025) *New guide to research and innovation challenges for climate adaptation released.* https://www.gov.uk/government/news/new-guide-to-research-and-innovation-challenges-for-climate-adaptation-released. (Accessed: 9 April 2025).

Chapter 1: Climate change in the UK

In this chapter, we review both the observed and projected climate change in the UK and globally.

Our key messages are:

- **Evidence of climate change impacts continues to accumulate.** 2024 was the warmest year on record globally with annual anomalies reaching over 1.5°C above pre-industrial levels for the first time. In the UK, since our last progress report in early 2023, we have seen the wettest 18 months on record for England, an extreme consistent with a climate-change-driven shift to wetter winters and more intense heavy rainfall. This followed extreme heat in 2022, with UK temperatures crossing 40°C for the first time, widespread drought and record wildfire instances.

- **Continued climate change is inevitable.** Current projections for global greenhouse gas emissions indicate that warming is expected to exceed 1.5°C above pre-industrial levels in the early 2030s. Global warming is currently on track for around 2°C by the 2050s with the possibility of significant further warming by the end of the century. However, the potential for strengthened global mitigation ambition means that maintaining warming to well-below 2°C remains plausible. In the UK, further global warming is expected to bring rising sea-levels, warmer and wetter winters, and drier and hotter summers with more intense heatwaves and localised extreme rainfall.

- **Climate change will increasingly threaten society.** Projected changes in climate will pose risks across society. Flood risks for homes, infrastructure and businesses will rise without better defences and response planning. Heatwaves will pose risks to the health and lives of vulnerable people and stress the functioning of key infrastructure systems. Agriculture and ecosystems will increasingly be stressed by weather extremes throughout the year. Without action, climate risks will increasingly threaten the delivery of key government and societal objectives. Acting now to adapt to current and future climate change will reduce the risk of locking in climate impacts through poorly adapted new infrastructure and will limit the overall costs of tackling climate change risk.

This chapter is set out in three sections:

- Observed climate change.
- Projected climate change.
- Climate change impacts on the UK.

1.1 Observed climate change

Observed global climate change

Concentrations of key greenhouse gases have continued to rise, driving continuing global climate change.

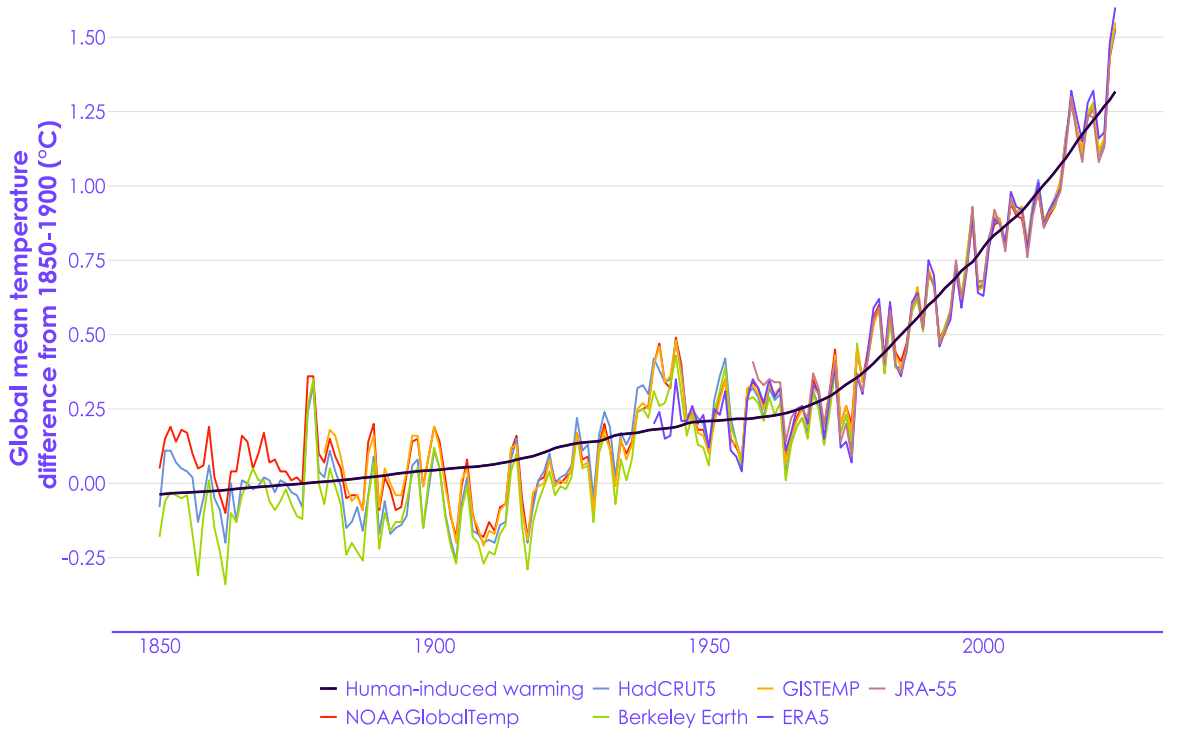
- **Global temperatures continue to increase.** 2024 was the warmest year on record, for the first time exceeding 1.5°C above preindustrial levels, in part due to the long-term human-induced warming being temporarily boosted by natural climate variability (Figure 1.1).[1] Human-induced global warming in 2023 was estimated to have risen to around 1.3°C above pre-industrial average levels.[2] The rate of increase is unprecedented, currently rising at around 0.26°C per decade.

- **Other indicators show accelerating change.**[3] Global sea levels are rising at accelerating rates and the global rate of ice loss from glaciers is at record levels.[4;5]

- **Records for climate and weather extremes continue to be broken across the globe.** Since we published our most recent progress report in March 2023, climate and weather records have continued to be broken around the world. Over 100 countries saw their warmest year on record in 2024. Climate science is increasingly able to demonstrate how the severity and frequency of such extreme events is aggravated by the warmer climate. Many aspects of weather and climate are already being demonstrably altered by climate change today, including in the UK.

This record global warmth has led to damaging impacts from extreme weather highlighting the critical importance of adaptation globally to reduce the impacts on societies and ecosystems (Box 1.1).

Figure 1.1 Global average temperature rise



Description: The chart shows rising global temperatures across multiple datasets. This current rate of warming is rapidly approaching 1.5°C above pre-industrial levels due to human influence.
Source: Met Office (2025) *Climate Dashboard – Tracking the Changing Climate with Earth Observations*; Smith, C. et al (2024) *Climate indicator data: indicators of global climate change 2023 revision*; Climate Change Committee (CCC) analysis.
Notes: (1) Each thin line represents a different global temperature dataset. (2) All datasets are expressed relative to 1850–1900, regularly used as a proxy for pre-industrial conditions. (3) The human-induced warming line uses the best estimate for total anthropogenetic forced warming from Smith et al. (2024) up until 2023 with data for 2024 derived using linear extrapolation.

Box 1.1
Significant global weather and climate impacts over recent years

The last few years have seen exceptionally strong hurricanes, rainfall events, wildfires, and heat waves causing widespread damage around the world, including in Europe. These weather extremes are becoming more intense (e.g. heatwaves are hotter, floods are deeper and more widespread) or more frequent due to climate change. Reducing exposure and vulnerability through better adaptation and disaster risk preparedness could largely reduce impacts and save lives. Notable examples of extreme weather from the last two years are listed below, in chronological order, and are chosen to show the variety of affected regions and sectors.

- Storm Daniel and resulting floods in September 2023 caused the death of more than 5,900 people in Libya, with the bursting of two dams releasing a flood wave that swept through the city of Derna.[6] A World Weather Attribution study showed that climate change made such storms 50 times more likely and up to 50% more intense.[7]
- Many regions of Asia experienced devastating heatwaves in spring 2024, with approximately 1,500 heat stroke fatalities in Myanmar alone.[8] India experienced its longest heatwave on record, with areas reaching 50°C during the six-week general election.[9] Climate change made the April 2024 extreme temperatures in South Asia about 45 times more likely and 0.85°C hotter.[10]
- Devastating wildfires in June 2024 burned roughly 440,000 hectares in the Brazilian Pantanal wetlands, threatening economic activities and killing many wild animals.[11] Hot, dry, and windy conditions that drove these wildfires were 40% more intense and up to five more likely due to climate change.[12]
- At least 1,170 pilgrims visiting Mecca, in Saudi Arabia, died during a severe heatwave in June 2024, with temperatures exceeding 50°C.[13] Climate change made such heatwaves more intense.[14]
- Hurricane Helene in September 2024 caused 219 deaths on the east coast of the United States of America, predominantly in North Carolina.[15] Climate change is enhancing conditions conducive to the most powerful hurricanes like Helene, with more intense rainfall and higher wind speeds.[16]
- The October 2024 DANA storm brought a year's worth of rain in a few hours in the province of Valencia in Spain. The resulting floodwaters caused at least 220 fatalities in the province, including drivers becoming trapped in cars and elderly people unable to escape in time from ground floors.[17] Based on observational records, the rainfall during this storm was about 12% heavier and twice as likely compared to the 1.3°C cooler pre-industrial climate.[18]
- In January 2025 in California, unseasonal wildfires driven by drought and strong, dry winds burned over 57,000 acres, destroyed over 16,000 structures, and killed 29 people.[19] The peak January Fire Weather Index was 6% higher and reaching that value was 35% more probable due to climate change.[20] The timing of the dry season and the dry Santa Ana winds are also increasingly overlapping.[21]

Observed changes in UK weather and climate

Climate change in the UK is continuing.

- Average temperatures are increasing (Figure 1.2). The UK is warming at a rate similar to global land temperatures, and faster than global average temperatures (which combine land and sea).[22] 2023 was the second warmest year on record for the UK, with only 2022 being warmer. The UK's 10 warmest years on record have all been in the 21st century. 2024 was the UK's fourth warmest year on record.[23] Probabilities of seeing years this warm have increased by over 150 times due to human-induced climate change.[24]

- Weather extremes are changing. The number of days exceeding 28°C ('hot days') and 30°C ('very hot days') have more than doubled and trebled respectively (when averaged across the country) between 1961 to1990 and 2014 to 2023.[25] Extreme cold is less frequent than in the past but does still occur. Heavy rainfall metrics generally show an increase in

very wet days across the UK, despite seasonal rainfall trends still being dominated by interannual variability (Figure 1.3).

- Sea levels are rising (Figure 1.4). The annual increase has risen to 4.6 mm per year at Newlyn, one of the longest available records around the UK, compared to the long-term average of 2.1 mm per year since 1916.[26]

These changes are consistent with the well-established scientific evidence documenting the detection of changes in both UK average conditions and extremes and the attribution of those changes to past and ongoing global greenhouse gas emissions.[27] Recent years have seen several weather extremes that have emphasised the impact that changing climate conditions can already have on the UK and the need for adaptation to prepare for today's climate extremes as well as those coming in future decades (Box 1.2).

Box 1.2
Significant UK weather and climate impacts over recent years

Recent years have seen significant extreme weather impacts on the UK – highlighting the vulnerability of our society and ecosystems to climate impacts.

Drought in 2022

Drier than normal conditions across parts of the country in spring 2022 were exacerbated by the dry and very hot conditions in summer 2022 to create a severe and widespread drought. In some places, this drought was the worst since the 1976 drought.[28] Impacts from the drought included six water companies introducing hosepipe bans affecting around 20 million people, low crop and milk yields in UK agriculture, and exacerbated wildfire conditions. Climate change is robustly linked to increasing the risk of droughts, like the one in 2022, which are largely caused by in-year dry and warm conditions.

Wildfires in 2022

The hot and dry conditions in summer 2022 led to an unprecedented number of UK wildfires. These occurred in urban as well as rural areas and posed significant challenges to emergency services responding to fire instances. Air quality was impacted for large numbers of people. On 19 July 2022 (the hottest day on record in the UK) a large wildfire in East London destroyed 16 homes. Several fire and rescue services (14) declared major incidents following a 500% increase in 999 calls.[29] Recent research suggests that climate change could have made wildfire conditions in the UK at least six times more likely.[30]

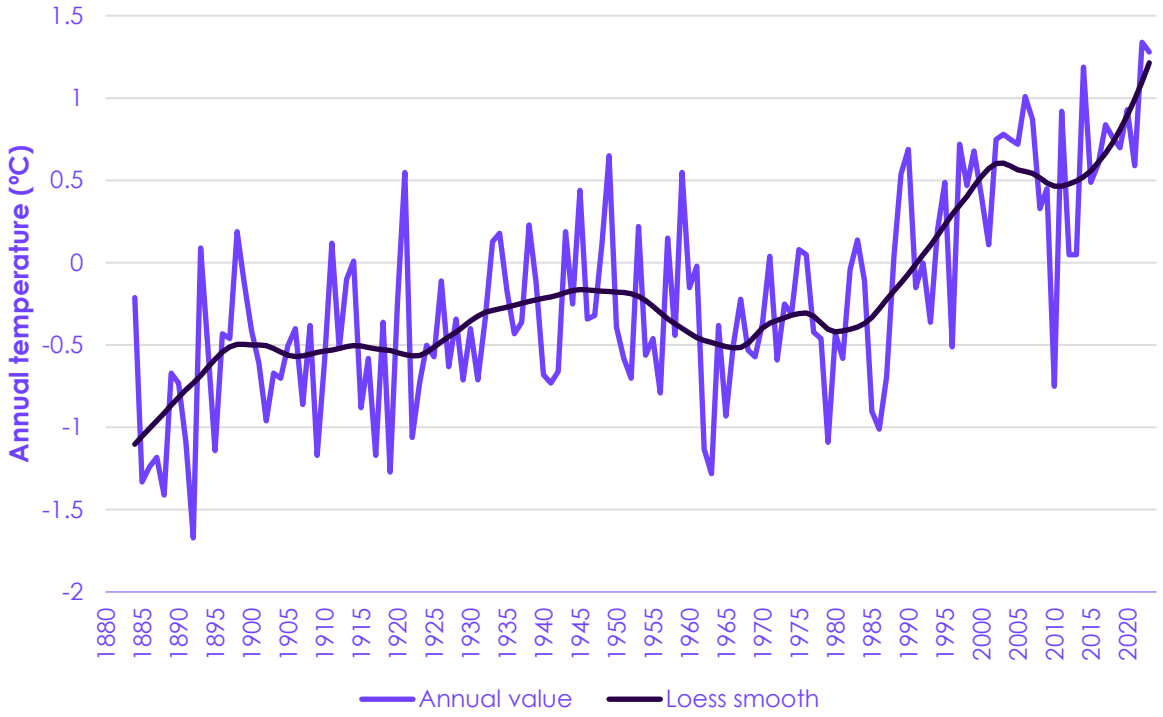
Summer heat in 2022

In 2022 temperatures exceeded 40°C for the first time in the UK, with large areas of the country seeking peak temperature above this level on 19 July 2022. Nearly 3,000 heat-related deaths in England, largely in over 65-year-olds, were linked with this record heat, and other hot periods across the summer.[31] This is the highest level of heat-related mortality recorded in the country. One in five doctors reported cancellations of surgeries due to extreme heat – primarily due to staff and bed shortages and overheating in surgical theatres.[32] Healthcare delivery was disrupted by an IT failure at Guys and St Thomas' trust in London in which a heat-related failure of a data centre caused IT outages across both hospitals.[33] Estimates suggest that climate change made the record UK heat in July 2022 at least 10 times more likely and 2°C hotter.[34]

Wettest 18 months on record for England over 2022 to 2024

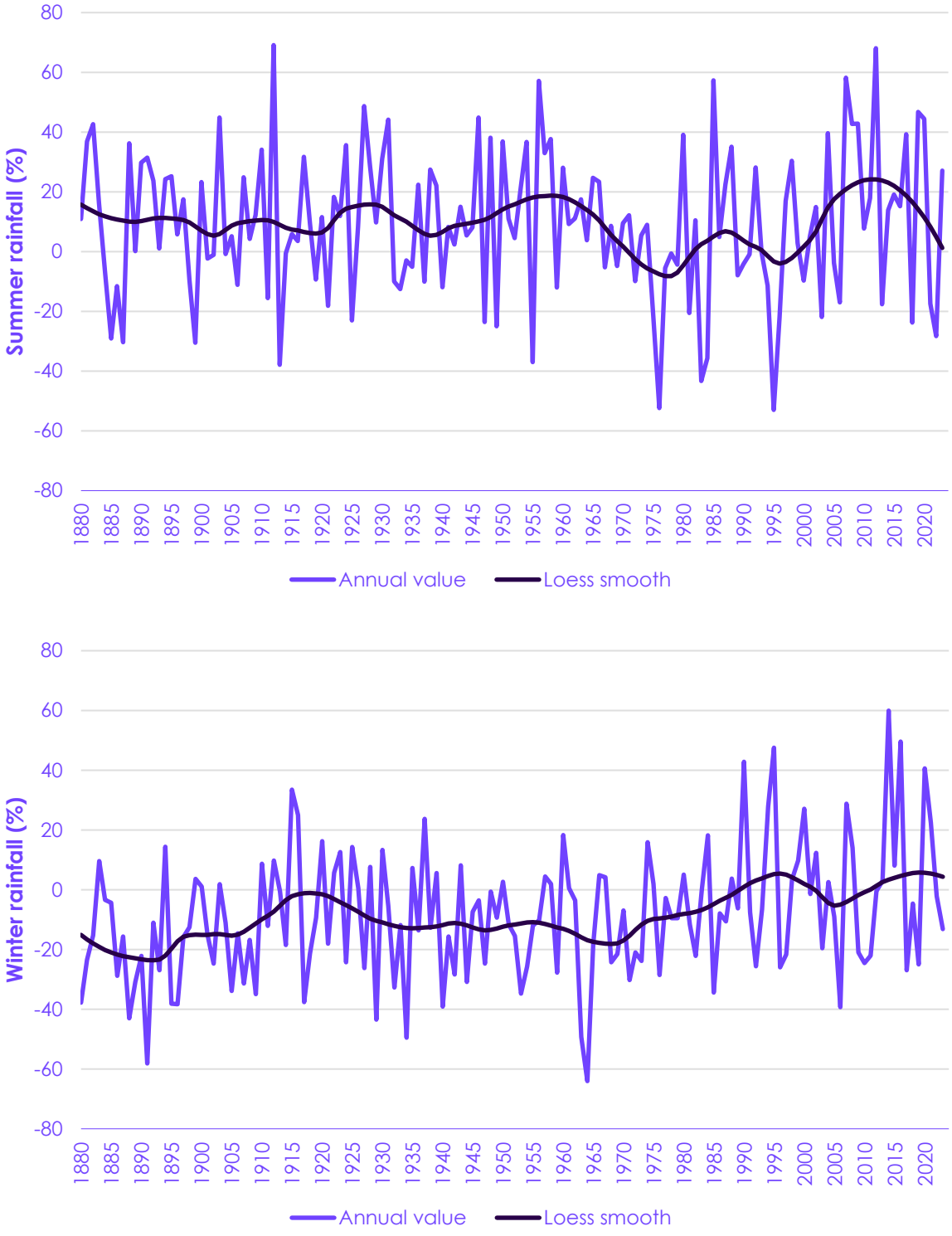
October 2022 to March 2024 saw the wettest 18-month period on record for England since records began. It was particularly wet in southern England with around 1.5 times the average rainfall falling in this period.[35] This record-breaking rainfall and associated prevalence of flooding had large effects on farmers across the UK and led to the second worst arable harvest in England since modern harvest records began.[36] The flooding caused by the rainfall falling over the winter of 2023/24 was made more severe by a sequence of storms hitting in rapid succession. This meant that rain fell on already saturated ground increasing the likelihood and extent of flooding. An attribution study on the UK floods in the 2023/24 winter estimated that the rate of rainfall on stormy days in the UK has increased by around 30% due to the effects of human-induced climate change to date.[37]

Figure 1.2 Changes in UK annual temperature relative to 1981–2000



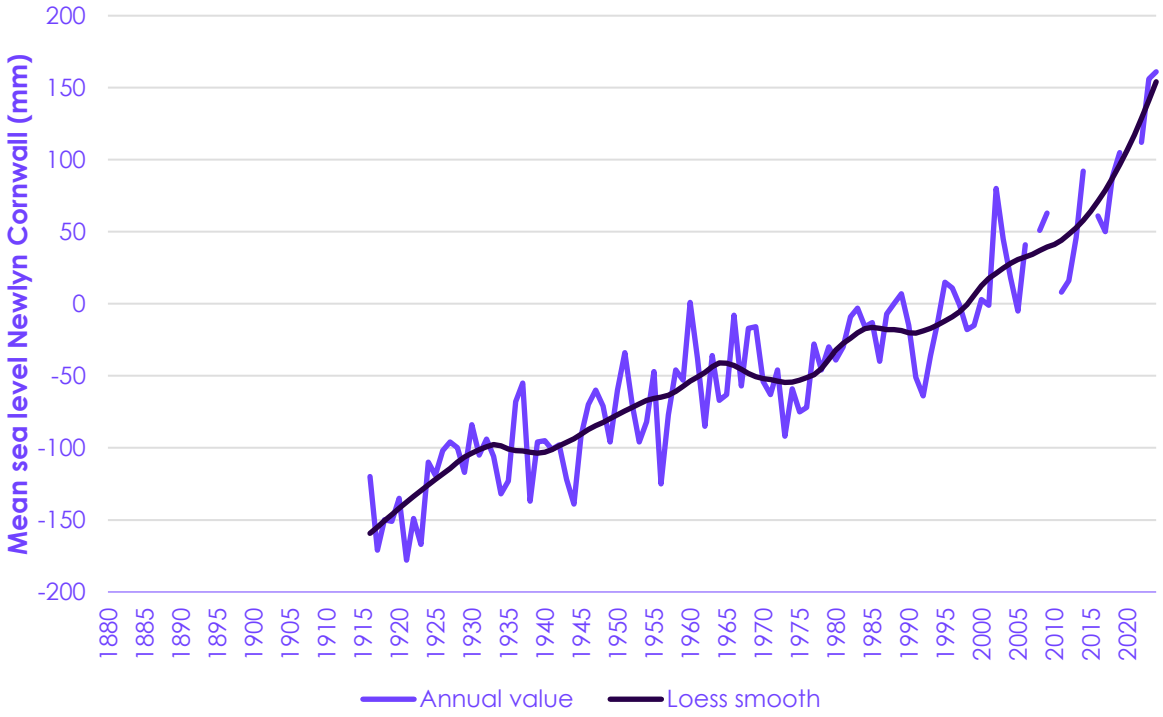
Description: The UK's annual temperature is changing. Since 1990 the annual temperature relative to 1981–2000 has been increasing.
Source: Kendon, M. et al. (2024) *State of the UK Climate 2023*.
Notes: Annual data expressed relative to 1981–2000 is shown in vibrant purple. The dark purple line is a 30-year loess smooth that reveals the general trend in the data over a 30-year period.

Figure 1.3 Changes in UK rainfall relative to 1981–2000



Description: Year-to-year variability dominates any trends in winter or summer average rainfall.
Source: Kendon, M. et al. (2024) *State of the UK Climate 2023*.
Notes: (1) Annual data expressed relative to 1981–2000 is shown in the vibrant purple lines. The dark-purple lines are a 30-year loess smooth that reveals the general trend in the data over a 30-year period. (2) For rainfall, changes are expressed as a percentage change from the reference period instead of absolute anomalies consistent with standard scientific practice.

Figure 1.4 Changes in UK mean sea level relative to 1981–2000



Description: Sea-levels around the coasts have been rising at an accelerating rate.
Source: Kendon, M. et al. (2024) *State of the UK Climate 2023*.
Notes: Annual data expressed relative to 1981–2000 is shown in the vibrant purple line. The dark-purple line is a 30-year loess smooth that reveals the general trend in the data over a 30-year period.

1.2 Projected climate change

It is inevitable that global warming will continue in the near-term. Global temperatures will continue to rise until the point when the world reaches Net Zero carbon dioxide (CO_2) emissions and is making significant and sustained cuts in non-CO_2 greenhouse gases.[*;38] As global emissions have not yet peaked, warming will continue for several more decades, at least until the middle of the century (Figure 1.5). This continued global warming means that the world is rapidly approaching the lower end of the Paris Agreement long-term temperature goal and is currently expected to exceed 1.5°C above pre-industrial levels in the early 2030s, and around 2°C above pre-industrial levels by the 2050s, on any plausible pathway of global greenhouse gas emissions.[†;39]

[*] Net Zero is defined as the point when the total amount of emissions into the atmosphere are balanced by an equivalent amount of active removals of CO_2 from the atmosphere through enhanced natural sinks or engineered removals.

[†] Global warming levels referred to in the Paris Agreement typically are interpreted as long-term average changes, conventionally defined as 20- or 30-year periods. They do not refer to anomalies seen over shorter periods, for example one of two years which can be substantially influenced by natural variability.

The effects of continued global warming on UK weather and climate is well understood.[*;40]

- **Warmer and wetter winters.** Winters in the UK will on average be both warmer and wetter than the recent past. By 2050, the UK's average winter is projected to be around 1.2°C warmer than it was on average over 1981 to 2000 and around 5% wetter.[†] Individual winters could be both significantly warmer and wetter than this in individual years, whilst cold and dry winters will remain possible. An increase in both the intensity of winter rainfall and the number of wet days is expected – driving up winter river and surface water flood risks across the UK.

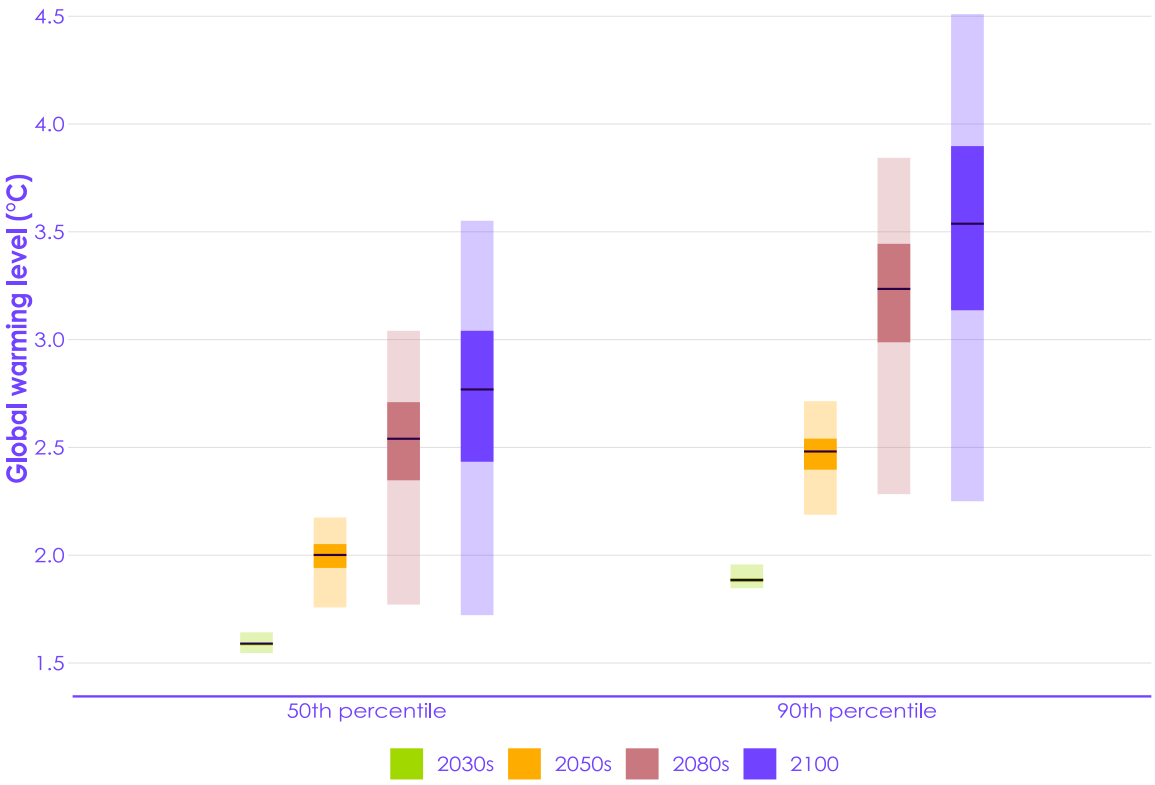
- **Drier and hotter summers.** UK summers will likely become hotter and drier in all parts of the country. By 2050, the UK's average summer is projected to be around 1.6°C warmer than it was on average over 1981 to 2000 and around 13% drier. Warming of summer will be strongest in the southeast of England.[41] A summer as hot as 2018 (the UK's joint hottest average summer on record) will become an average summer by 2050. Summers are expected to have less rainfall overall, raising drought risks for both the public water system and other water users. Despite this, the intensity of summer rainfall, when it occurs, will increase – a key driver for surface water flood risks.

- **Continued sea-level rise.** Sea-levels will continue to rise all around the UK coastline, mostly likely for centuries to come even if global temperatures are stabilised. This creates risks of coastal flooding and accelerating coastal erosion endangering coastal property, infrastructure, ecosystems, and agriculture. The rate of sea-level rise will be greatest around coasts in the south of the UK. By 2050, sea levels are projected to be around 10–30 cm higher than over 1981 to 2000, depending on the specific location in the UK.

[*] Projections in this section are given using the RCP4.5 scenario – which approximately corresponds to an emissions trajectory consistent with current global emissions reduction ambition.

[†] The base period of 1981 to 2000 is used here as the base period of the UKCP18 projections, corresponding to a recently observed period where the statistics for UK weather and climate are well-known.

Figure 1.5 Projections of global average warming under current policy scenarios for global greenhouse gas emissions



Description: A range of global warming levels remain possible based on current global plans to reduce emissions. Warming is expected to be around 2°C above pre-industrial levels in the 2050s and between 2.5°C to 3°C by the end of the century. Global warming reaching as high as 4°C above pre-industrial by the end of the century cannot be ruled out.
Source: Rogelj, J. et al. (2023) *Credibility gap in net-zero climate targets leaves world at high risk*.
Notes: Current policies here is based on scenarios estimated to be consistent with current global policy ambition (based on polies in implementation) out to 2030 – and extrapolated thereafter. Delivery of currently pledged Nationally Determined Contributions (NDCs) and longer-term Net Zero targets are not assumed. The darker colouring (central in each bar) marks the interquartile range and median across emissions scenarios, with the paler colouring indicating the maximum and minimum from the scenario range. Global warming levels are expressed relative to 1850 to 1900.

Beyond the middle of the century, global climate change and its effects in the UK depend on the future trajectory for global greenhouse gas emissions. Central estimates under trajectories consistent with current policy indicate around 2.5–3°C of warming above pre-industrial levels. If current Nationally Determined Contributions and Net Zero targets are delivered, central estimates suggest late-century warming would keep to between 1.5–2°C above preindustrial levels.[42] At the high-end of plausible climate responses, global warming of around 3.5°C above pre-industrial levels in the 2080s remains possible. Some current policy scenarios exceed 4°C above pre-industrial levels by 2100 (Figure 1.5).

In the UK, further global warming beyond mid-century would drive further changes towards warmer and wetter winters, hotter and drier summers. UK sea-levels will keep rising for centuries to come in all futures, but the rate of rise will be lower if emissions are limited.

1.3 Impacts of climate change on the UK

The climate changes currently being experienced and projected over future decades will pose numerous impacts on the UK, across society. The most recent Climate Change Risk Assessment identifies 61 named risks and opportunities to the UK, with over half of these scoring as 'more action needed' for government efforts over the next five years.[43]

- **Land, nature, and food:** shifts in average climate conditions will mean changing crop suitability in parts of the country and changing risks of pests, diseases, and invasive species. Extreme weather across the year, including heat, drought, and flooding will all make agricultural planning more difficult. Over half (59%) of the UK's top quality agricultural land (Grade 1) is at risk of flooding today, with a small increase in total agricultural land at flood risk by 2050.[44] Climate change (from multiple hazards) poses a major threat to UK biodiversity, at a time when it is degrading rapidly, as well as to the ability of land to sequester carbon, which is needed for the UK's decarbonisation targets. Climate change abroad can cause disruption that can impact on the price and availability of imported food.

- **Infrastructure:** rising flood risks (associated with wetter winters and more intense summer rainfall) will put infrastructure systems, including electricity, transport, and water, at risk of failure without sufficient defences. Over a third of railway and road kilometres are currently at flood risk, which could rise to around half by 2050.[45] Extreme heat can cause disruption on the transport systems with risks of rail buckling and associated speed restrictions. Demand for electricity for cooling increases alongside reduced efficiency of electricity distribution due to power line sagging. Increasing drought risk, alongside population growth means that water will have to be managed more efficiently. Infrastructure systems are increasingly electrified and climate impacts and failures in one system can have cascading impacts across many others.

- **Built environment and communities:** changes in rainfall mean that risks of flooding from rivers, the sea, and surface water are both expected to rise. Currently 6.3 million properties in England are in areas at risk of flooding from rivers, the sea, and surface water, which could rise to around 8 million (25% of all properties) by 2050.[46] Steadily rising sea-levels at the UK's coasts will raise the risk of coastal flooding and exacerbate coastal erosion. From 5,000 to 45,000 properties could be in areas at risk of coastal erosion by 2050 depending on how coastlines are managed.[47] Future heatwaves could raise temperatures in towns and cities to levels where indoor temperatures can have impacts on health, productivity, and comfort. Urban nighttime temperatures are projected to rise faster than in rural areas, raising urban heat islands by 0.01–0.05°C per decade.[48] In public buildings, such as schools and prisons, these temperatures could impact key public services. Wildfire risks will continue to grow with around one-quarter of days in the height of summer seeing 'very high' wildfire-conducive conditions in a world 2°C warmer than pre-industrial levels – which could occur around 2050.[49]

- **Health and wellbeing:** high temperatures will lead to both increases in heat-related deaths and illness, and emergency service disruption from longer response times. Heat-related deaths currently number in the thousands each year and could rise to over 10,000 in an average year by 2050 without additional adaptation, driven by both climate change and an aging population.[50] Some diseases transmitted by insects and ticks (vectors) are likely to change in prevalence in the future due to warmer temperatures contributing to increasing numbers and changing locations of vectors in the UK.

- **Economy:** climate risks from many extreme weather hazards need to be managed by businesses of all sizes across the economy. Estimates from the Office for Budget Responsibility suggest that unchecked climate change could impact UK economic output by between 3% and 5% of Gross Domestic Product (GDP) by 2075, while other estimates suggest up to 7% GDP impacts by 2050.[51;52] The UK's economy is connected to the global economy via international supply chains and global markets – meaning that impacts from climate change overseas can have impacts in the UK.

Without proactive adaptation now to address these risks, significant impacts will continue to occur in the UK, undermining key government and societal objectives. However, with well-planned proactive adaptation from businesses, households and government, the extent of these impacts can be significantly reduced.[53] Early action will help avoid locking in climate risks with poorly designed infrastructure and will minimise the overall costs of tackling climate change to both the Government and society.

Endnotes

[1] World Meteorological Organisation (2025) *WMO confirms 2024 as warmest year on record at about 1.55°C above pre-industrial level.* https://wmo.int/news/media-centre/wmo-confirms-2024-warmest-year-record-about-155degc-above-pre-industrial-level. (Accessed: March 2025).

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[7] Zachariah, M. et al. (2023) *Interplay of climate change-exacerbated rainfall, exposure and vulnerability led to widespread impacts in the Mediterranean region, World Weather Attribution. https://www.worldweatherattribution.org/interplay-of-climate-change-exacerbated-rainfall-exposure-and-vulnerability-led-to-widespread-impacts-in-the-mediterranean-region/.*

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[9] Ripple, W.J. (2024) *The 2024 state of the climate report: Perilous times on planet Earth.* BioScience, 74 (12). 812-824. https://doi.org/10.1093/biosci/biae087.

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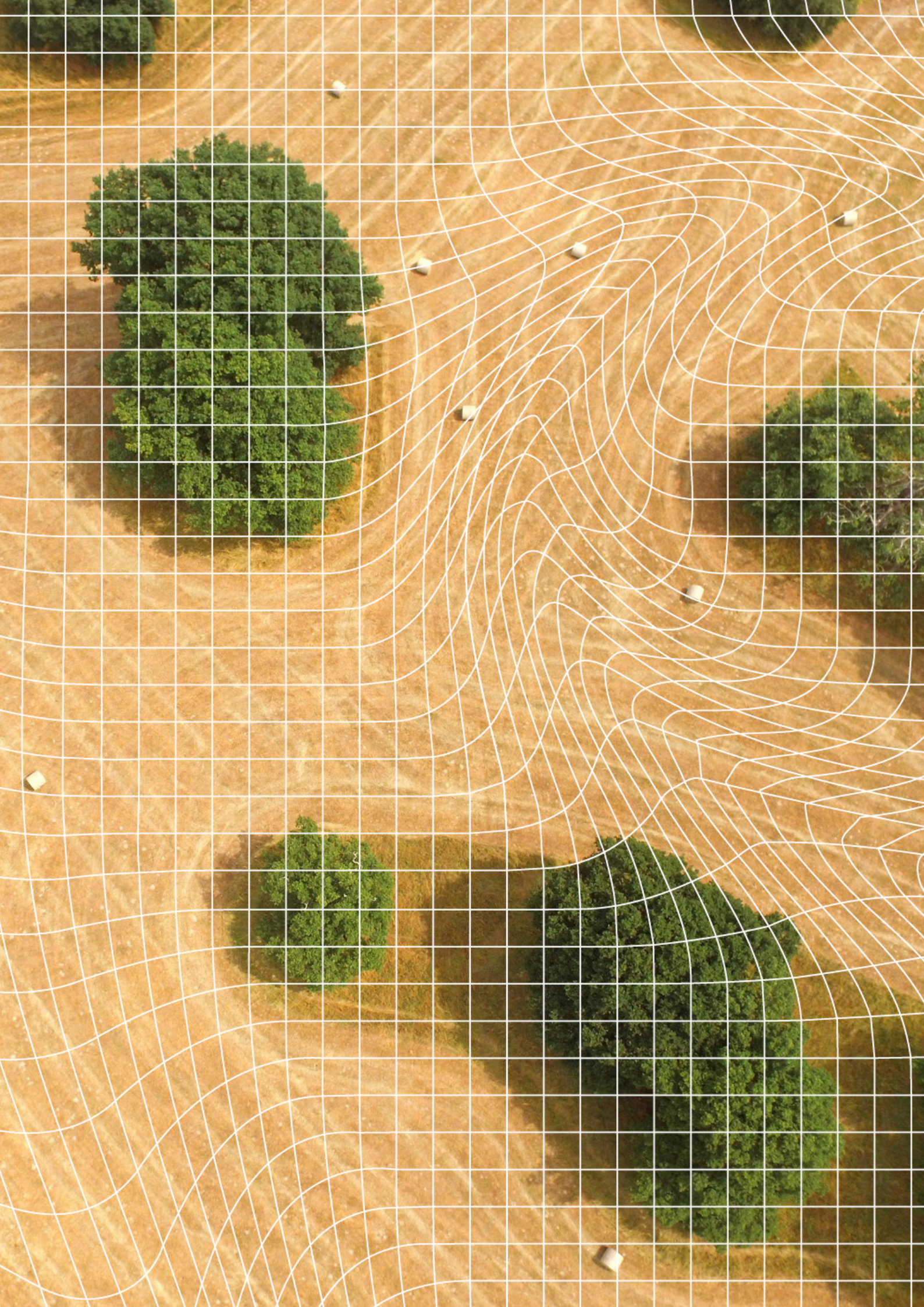


Chapter 2: Assessment of delivery and implementation

In this chapter, we outline our assessment framework for delivery and implementation before assessing progress against a range of delivery indicators. These indicators monitor the actions and outcomes that will be required to adapt the UK to a changing climate.

Our key messages are:

- **There is still inadequate overall progress on delivering adaptation outcomes.** We do not find a single outcome with evidence of 'good' delivery on adaptation. Progress is either too slow, has stalled, or is heading in the wrong direction, based on the available indicators, with 12 out of 46 outcomes scored as insufficient.

- **Delivery has not significantly moved on in the last two years.** The vast majority of our outcomes have received the same score as in 2023, most at low levels. A small number of improved scores come from the fourth round of the Adaptation Reporting Power (ARP) – which allows the Government to require key organisations, such as infrastructure operators, to disclose how they manage climate risks. These reports provide new evidence on how organisations are starting to understand interdependencies with other sectors – although further steps are needed to manage these interdependencies effectively. Conversely, the score for water system performance has reduced because the observed rate of change of leakages from the public water system is clearly inconsistent with the sector's target.

- **Inadequate monitoring and evaluation remain a barrier to effective progress monitoring.** Tracking progress on adaptation remains challenging due to limited national-scale, up-to-date, and relevant data. For nine outcomes, there aren't enough indicators to assess overall progress accurately. In many cases, we have to rely on proxy indicators as substitutes for direct measurements of adaptation or climate risk. For nearly all outcomes, there is a lack of clarity from government on what it sees as key indicators and on what levels indicators need to reach.

  Priorities for closing data gaps include:

  - Moving beyond proxy indicators for measuring adaptation in land, nature, and food.

  - Collecting and publishing a much wider set of infrastructure indicators, particularly for energy and telecoms.

  - Collecting indicators to measure climate resilience to a range of hazards including surface water flooding and tracking overheating in both the existing built environment and new developments.

  - Tracking a much wider range of public health impacts beyond heat-related mortality and tracking impacts of climate events on healthcare delivery beyond the NHS estate, such as in social care settings.

  - Collecting indicators specific to climate risks for critical supply chains (for example food) and making better use of private sector data to monitor business risk and adaptation across the economy.

This chapter is laid out in two sections, covering:

- Assessment framework for delivery and implementation
- Assessment of adaptation delivery and implementation

2.1 Assessment framework for delivery and implementation

In this Progress Report we use the same adaptation monitoring framework used in our 2023 Progress Report (Table 2.1).[1] This framework evaluates progress on delivery and implementation, using indicator-based evidence, supported by wider qualitative and quantitative contextual information.

Table 2.1
Scores and criteria for delivery and implementation

Good delivery	Performance across most indicators is at a high-level (either in relation to an industry or government commitment or target, or based on judgement from the Adaptation Committee), with performance either being maintained or improving over time.
Partial delivery	Performance across most indicators has not yet reached a high-level. However, most indicators are moving in the right direction. There may be some indicators which are being maintained at a high level, or some indicators where progress is moving in the wrong direction.
Limited delivery	Performance across most indicators has not yet reached a high-level and progress is mixed, or performance across most indicators has reached a high-level but indicators are moving in the wrong direction.
Insufficient delivery	Performance across most indicators has not yet reached a high-level and progress is stagnant or moving in the wrong direction.
Unable to evaluate	Limited or no available data.

Notes: (1) Where there are no indicators available a score may be applied if there is substantive published qualitative evidence available. (2) For this progress report, we have broken down the 'mixed' score from our 2023 assessment to 'partial' and 'limited' to improve the specificity of our assessment. (3) A high-level of indicator performance is defined relative to an industry or government commitment or target, where available, or based on judgement from the Adaptation Committee.

In this report we concentrate on indicators which meaningfully track progress across multiple aspects of adaptation or climate resilience, including, where necessary, proxy indicators. Across nearly all indicators, assessing progress is made more challenging by the lack of targets to compare observed progress against. Only six indicators used to measure progress in this report, within infrastructure and the built environment, have formalised targets or commitments.

The coverage of indicators across sectors is variable, with no or very few indicators available for nine required outcomes. For some outcomes, only proxy indicators of the required outcome are available. To account for the variability in available evidence, we indicate whether we have high, medium or low confidence in the quality of evidence informing our delivery and implementation score.

2.2 Assessment of adaptation delivery and implementation

In this section, we provide an updated assessment of the overall state of adaptation delivery for each required outcome across our 13 thematic areas (Table 2.2). We summarise our analysis under five different areas, considering the same set of nested thematic areas (and their required outcomes) as in our 2023 Progress Report and Adaptation Monitoring Framework - which sets out detailed monitoring maps for each.[2;3]

Table 2.2
Summary of assessment areas

Outcome area	Thematic area	Number of outcomes
Land, nature, and food	Nature	3
	Working land and seas	3
	Food security	2
Infrastructure	Water supply	4
	Energy	3
	Telecommunications and ICT	3
	Transport	6
Built environment and communities	Towns and cities	5
	Buildings	2
	Community preparedness and response	3
Health and wellbeing	Health	2
Economy	Business	5
	Finance	4

Notes: The 13 thematic areas cover adaptation outcomes to address the set of risks identified in our Third Climate Change Risk Assessment. [4]

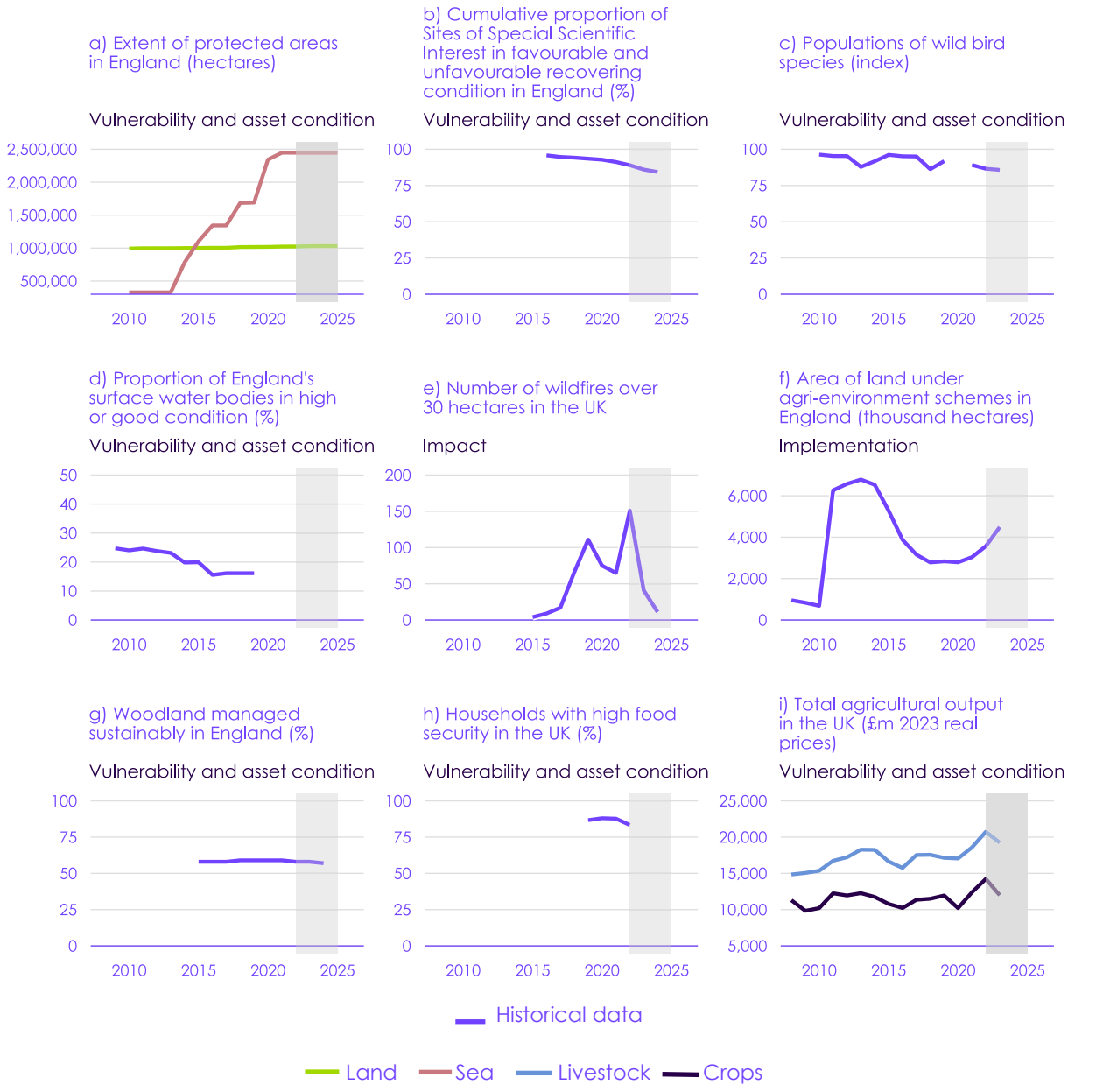
2.2.1 Land, nature, and food

Table 2.3
Land, nature, and food outcome scores

Thematic area	Outcome ID	Outcome	Delivery and implementation score	Quality of evidence to assess score	Change from 2023 Progress Report
Nature	O-N1	Terrestrial habitats are in good ecological health.	Insufficient	Medium	No change
	O-N2	Freshwater habitats are in good ecological health.	Insufficient	Medium	No change
	O-N3	Marine and coastal habitats are in good ecological health.	Limited	Medium	No change
Working land and seas	O-WLS1	Climate resilient agricultural production.	Limited	Medium	N/A
	O-WLS2	Climate resilient commercial forestry sector.	Limited	High	No change
	O-WLS3	Climate resilient commercial fisheries and aquaculture sector.	Partial	Medium	No change
Food security	O-FS1	Disruption to food and feed import supply chains due to climate change is minimised.	Unable to evaluate	N/A	No change
	O-FS2	Vulnerability to food price shocks is reduced.	Insufficient	Low	No change

Notes: (1) Where there are no indicators available, a score may be applied if there is substantive published qualitative evidence available. (2) For this progress report, we have broken down the 'mixed' score from our 2023 assessment to 'partial' and 'limited' to improve the specificity of our assessment. (3) To account for the variability in available evidence to assign a score, we indicate whether we have high, medium, or low confidence in the quality of available evidence. (4) The 'change from APR 2023' is N/A where a score was previously 'unable to evaluate' in our 2023 assessment of progress.

Figure 2.1 Indicators monitoring progress in land, nature, and food



Description: There is a decline in the proportion of Sites of Special Scientific Interest (SSSIs) in favourable condition in England, the number of wildfires over 30 hectares in the UK, the index population of wild bird species, the proportion of waterbodies in high or good ecological condition, and total agricultural output in the UK. There has been an increase in the area of land under agri-environmental schemes. The proportion of woodland managed sustainably in England, extent of areas protected on land and at sea, and households with high food security in the UK have remained broadly stable.
Source: Historical data from Defra, Forestry Commission (FC), and RSK ADAS Limited (ADAS).
Notes: (1) All indicators for land, nature and food cover England, recognising that policy is devolved for this sector, except for (e), (h) and (i) that show data at a UK scale due to data availability. (2) The shaded area on the indicator charts identifies the period 2022 to 2025, highlighting the change in indicator performance since our last progress report assessment. (d) Since 2016, the reporting has changed from annual to every three years with the most recent data available updated in 2019.

Nature

There is little or no evidence of progress in the climate resilience of nature since our last progress report. The Office for Environmental Protection have a similar finding (Box 3.2). Available indicators showing the health of terrestrial, freshwater and coastal environments (a proxy for their overall resilience to climate change and extreme weather) are generally declining, or indicating a slowing of past improvements in recent years. There remains a lack of indicators to directly measure climate impacts or uptake of relevant adaptation interventions for nature.

- **Terrestrial habitats (O-N1: Insufficient).** Available indicators of the ecological health of terrestrial habitats show a continued decline (for example, condition of Sites of Special Scientific Interest (SSSIs) abundance of priority species, populations of wild bird and woodland bird species, alongside a small increase in invasive non-native species (INNS) in terrestrial habitats - a sign of deterioration) (Figure 2.1b and Figure 2.1c).[5;6;7;8] There has been little change in the extent of protected areas on land in the last five years (Figure 2.1a).[9] The number of large (over 30 hectares) wildfires was highest in 2022, which coincided with a very dry and hot summer (Figure 2.1e).[10;11]

  - Dedicated funding in support of biodiversity can help unlock actions to improve ecological health (and therefore resilience). There has been an increase in public funding for biodiversity in 2022/23 (a real term increase of 198% compared to 2000/01) to complement growing NGO funding over the same period.[12]

- **Freshwater habitats (O-N2: Insufficient).** The proportion of waterbodies achieving 'high' or 'good' ecological status is still low, 16% for the last data point in 2019 compared to a target of 75% of water bodies in good ecological status in the Environmental Improvement Plan (EIP) (Figure 2.1d) .[13;14] A few indicators show a long-term reduction in pressures, which helps freshwater habitats be more resilient to climate change (e.g. the number of low flow incidents and the number of harmful algal blooms).[*;†;15] However, these pressures have both increased in the last reporting year (2024). Recent Environment Agency data show an increase in the number of serious pollution incidents to water in 2023 compared to the number recorded in the previous five years.[16]

- **Marine and coastal habitats (O-N3: Limited).** Available data shows a slight reduction in some pressures that the marine environment faces (for example a long-term decrease in the input of hazardous substances to the marine environment (1990 to 2019)).[17] There has been a long-term increase in the extent of protected sites at sea (a weak proxy for adequate environmental protection), increasing by 45% in the three years up to 2021, but with little change since then (Figure 2.1a).[18] However, there a has been a decline in breeding seabird populations.[19] The most recent data (2020 to 2023) for the number of INNS in the marine environment (which can be exacerbated by climate change) has only increased by one species since 2019.[20]

Working land and seas

There is little change since our last progress report for most available adaptation indicators. However, new data on proxies for adaptation in agriculture show that some enablers of actions have started to move in the right direction. This could help support greater climate resilience in future.

[*] The number of low-flow incidents has been decreasing since 2019 apart from a big spike in 2022.

[†] The number of harmful algal blooms has decreased or remained stable between 2019 and 2023.

- **Climate resilient agricultural production (O-WLS1: Limited).** Domestic food production fluctuates from year to year with weather being a significant driver for this (Figure 2.1i). However, the proportion of food consumed that is produced in the UK has remained relatively stable in recent years.[21] Newly available data has allowed our score to change from 'unable to evaluate' to 'limited' due to an increase in the number of indicators which are showing some (albeit proxy) progress towards a more climate resilient agriculture sector.

  - There has been an increase in the total area of land under higher level or targeted agri-environment schemes from 4.5 million hectares in 2023 to an estimated 5.6 million hectares in 2024 (Figure 2.1f).[22;23] The uptake of types of adaptation-relevant measures that would support climate resilient agriculture under Environmental Land Management (ELM), show some positive trends in the last two years.[*;24] However, records are not yet long enough for a robust assessment.

  - Other positive developments include an increase in hedgerow length, and an increase in water licenced for reservoir storage since 2010 (15%).[25;26] Products that are likely to benefit from changing climate conditions have also increased in prevalence (for example the area for wine production has increased from 2010 to 2023).[27]

  - Continued adaptation challenges include an increase in water abstracted for irrigation since 2010 (16%) and a decrease in the distribution of pollinating insects (key for agricultural production in the UK).[28] Flood risk to farmland remains a challenge to this sector with updated data from the Environment Agency showing that nearly 60% of Grade 1 agricultural land is in areas at risk of flooding from rivers and the sea (Box 2.1).[†;29]

- **Commercial forestry (O-WLS2: Limited).** There has been a 52% increase in tree planting and woodland creation in 2023/24 compared to the previous year.[30] However, despite long-term increasing trends in the diversity of tree species planted in forest restocking, the last reporting year (2024) shows a slight decline in planting diversity.[31] There has also been a small decrease in the proportion and area of woodland managed sustainably up to 2024 (Figure 2.1g).[32] Updated indicators show a positive trend towards a decreasing number of tree pests and diseases becoming established in England.[33]

- **Fisheries and aquaculture (O-WLS3: Partial).** Sea temperatures are rising, with UK fisheries landing more warm-affinity fish and shellfish than in the 1980s.[34] While there are some available data to show the status and sustainability of fisheries and aquaculture, there are limited indicators bespoke to adaptation or climate resilience. Indicators are also not being updated regularly, with no new data available in key proxy indicators since the publication of our 2023 Progress Report.

[*] New analysis shows an increase in the uptake of agreements under ELMs for measures such as riparian buffer strips, natural flood management, and soil health measures, but a reduction in uptake of other measures such as wetland and coastal habitat restoration.

[†] Grade 1: Excellent quality agricultural land with no or very minor limitations to agricultural use.

Box 2.1
Impact of record-breaking rainfall in England over 2022 to 2024 on agriculture

October 2022 to March 2024 saw the wettest 18-month period on record for England.[35] It was particularly wet in southern England with around 150% of the average rainfall falling in this period.[36] This record-breaking rainfall and associated prevalence of flooding had large effects on farmers across the UK and led to the second worst arable harvest in England since modern harvest records began in 1983.[37]

Flooding, saturated soil and prolonged sustained rainfall led to impacts on livestock and resulted in lower levels of planting of winter and spring crops. There was an increased frequency of low-quality yields and crop failures.

The Agriculture and Horticulture Development Board (AHDB) 'early bird' survey in March 2024 – which asks farmers what their cropping plans are – suggested a marked reduction in many key winter crops, with wheat production down 15%, oilseed rape down 28%, winter barley down 22%.[38]

Wine harvests were also hit, with 2024 production projected to be down by 30–40% on the 10-year average.[39] In 2023 there was a decrease in the volume of domestic production of fruit and vegetables compared to the previous year.[40]

Adjustments to agricultural policy and payments were provided to cope with the significant impacts to farmers and food production. In May 2024, Defra introduced temporary adjustments and easements within the Sustainable Farming Incentive (SFI), the SFI Pilot, Countryside Stewardship (CS) and Environmental Stewardship (ES) to support farmers and land managers dealing with the impacts of severe weather and expanded the Farming Recovery Fund to include flooding from Storm Babet (October 2023).[41;42]

In November 2024, Defra also confirmed payments to farmers impacted by the severe wet weather in 2023/24 through a one-off recovery payment through the Farming Recovery Fund. A total of £60 million was distributed to eligible farmers, via recovery payments of between £2,895 to £25,000 to around 13,000 farm businesses.[43]

Food security

Food security, defined in the UK Food Security Report as 'when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life' can be impacted by climate change in multiple ways.[44] We do not have good ways to track climate-specific resilience of food supply chains but there is evidence that the UK can be vulnerable to food price shocks.

- **Food and feed imports (O-FS1: Unable to evaluate).** The inclusion of climate change in key reporting on UK Food Security has progressed, but there are still no climate-specific indicators to track how climate resilience of food imports is changing over time.[45]

  - The UK continues to have a diverse range of sources of food imports. Approximately 40% of food consumed is imported, with particularly high proportions for fruit and vegetables.[46] Top sources are Europe, Africa, and North America, with the amount of imports from each being relatively stable in the past decade. Domestic food production fluctuates from year to year, with weather being a significant driver for this (Figure 2.1i). However, the proportion of food consumed that is produced in the UK has remained relatively stable in recent years.[47]

  - Fruits and legumes have significant shares of imports coming from countries with relatively higher climate vulnerability indices.[48] The UK currently largely imports from a few key countries for its supply of fresh fruits and vegetables. Impacts from extreme weather on food productions in these regions have been seen over the past two years. Recent catastrophic floods in Europe, and widespread drought and rising temperatures in northern Africa have resulted in temporary reductions in the availability of fruit and vegetables (Box 2.2).

- **Vulnerability to food price shocks (O-FS2: Insufficient).** Climate impacts globally affect UK food supply chains. The overall vulnerability of the UK to food price shocks (due to climate and weather extremes or otherwise) is not tracked as part of the UK Food Security Report.

  – High levels of household food insecurity can indicate increased vulnerability in those parts of society, if climate-related (or other) food price shocks were to occur. Data collected by the UK Government on household food security shows that households experiencing high levels of food security made up approximately 83% of UK households monitored in 2023, a decrease of four percentage points since 2019 (Figure 2.1h).[49]

Box 2.2
2023 UK food supply disruption in the UK due to extreme weather events in Spain

Spain is an important supplier of fruit and vegetables to the UK. In 2023, Spain supplied 84% of total imports of lettuce; over 30% of lemon, lime, and oranges; and 30% of total fresh or chilled vegetables.[50]

Agricultural production in Spain has come under pressure following a series of extreme weather events. A long winter drought led to fruit and vegetable exports being around 40% lower in 2022 compared to each of the previous three years. The southeast of Spain in particular is vulnerable to drought, with climate projections indicating a reduction in rainfall and increase in temperature in the area.

The UK's exposure to extreme weather impacts in Spain was felt directly in February 2023 when there were shortages of certain foods in the UK following a period of cold weather. Supermarkets Asda, Morrisons, Aldi, and Tesco introduced rationing due to shortages of tomato, pepper, and other fresh salad, which lasted several weeks.[51;52;53;54] Alternative suppliers such as Italy, Morocco, Tunisia, and Egypt also experienced adverse weather in the preceding weeks meaning they could not make up the demand.[55]

Increasing temperatures are predicted to impact other fruit and vegetables imported from Spain. For example, days reaching a maximum daily temperature above 40°C - historically occurring less than five days per year - are an important threshold for fresh grapes.[56]
However, by the 2050s this is projected to increase to more than 20 days per year in parts of Andalusia. Top fruit crops such as apples and peaches rely on vernalisation, requiring a cold period to emerge from dormancy and produce fruit. This process could be put at risk by higher temperatures, impacting the viability and yield of the crops.[57]

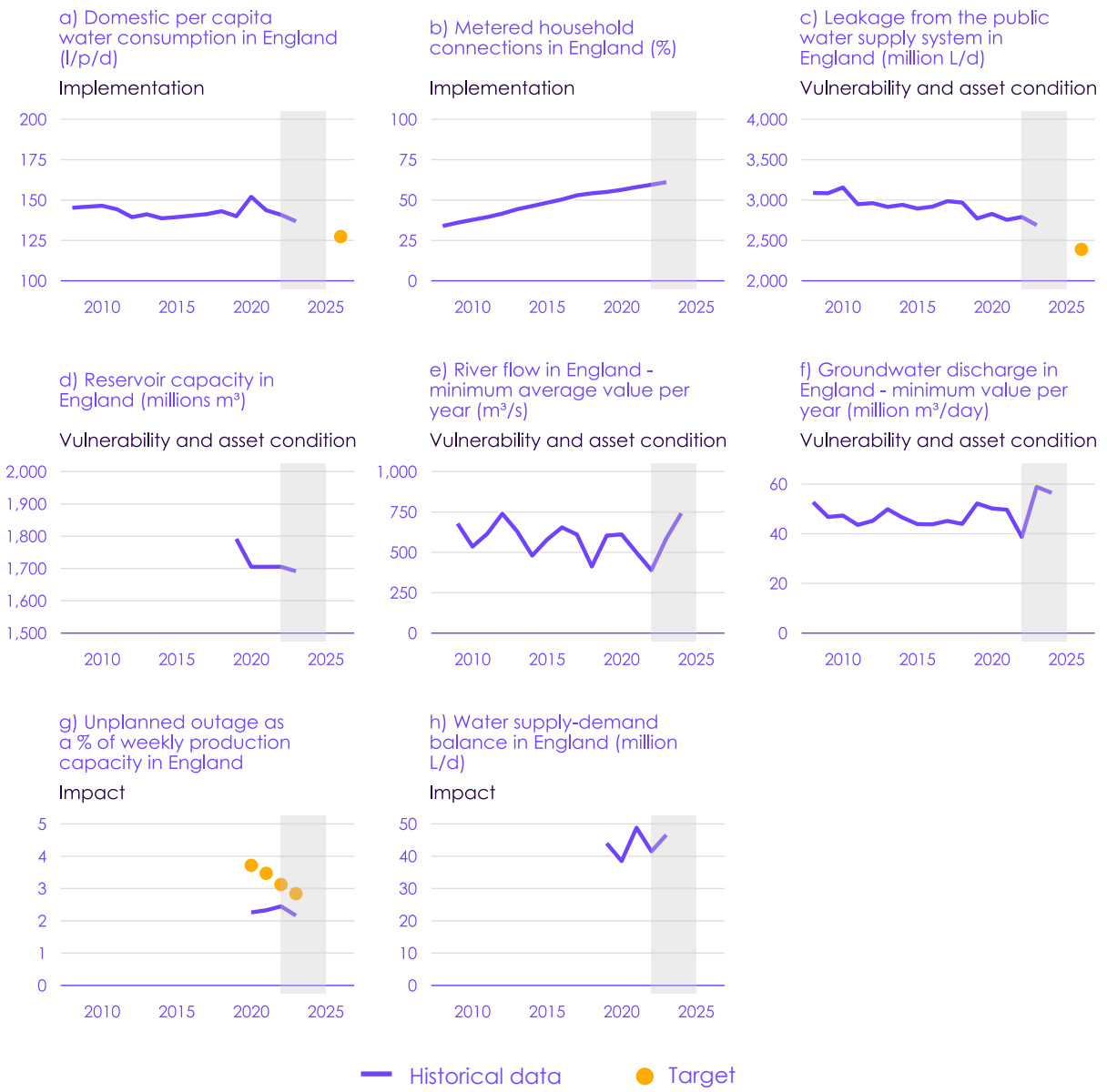
2.2.2 Infrastructure

Table 2.4
Infrastructure outcome scores

Thematic area	Outcome ID	Outcome	Delivery and implementation score	Quality of evidence to assess score	Change from 2023 progress report
Water supply	O-WS1	Reduce demand.	Insufficient	High	No change
	O-WS2	Improve system performance.	Insufficient	High	Worsened
	O-WS3	Increase supply.	Partial	High	No change
	O-WS4	Interdependencies identified and managed.	Limited	Low	Improved
Energy	O-E1	Reduced vulnerability of energy assets to extreme weather.	Limited	Medium	No change
	O-E2	Climate-resilient supply.	Limited	Medium	No change
	O-E3	Interdependencies identified and managed.	Partial	Low	Improved
Telecommunications and ICT	O-ICT1	Vulnerability of assets reduced.	Unable to evaluate	N/A	No change
	O-ICT2	System level resilience.	Unable to evaluate	N/A	No change
	O-ICT3	Interdependencies identified and managed.	Insufficient	Low	Improved
Transport	O-T1	Asset and system level reliability of rail network.	Limited	Medium	No change
	O-T2	Asset and system level reliability of strategic road network.	Limited	Medium	No change
	O-T3	Asset and system level reliability of local roads.	Limited	Medium	No change
	O-T4	Asset and system level reliability of airport operations.	Limited	Low	N/A
	O-T5	Asset and system level reliability of port operations.	Insufficient	Low	N/A
	O-T6	Interdependencies identified and managed.	Limited	Low	Improved

Notes: (1) Where there are no indicators available a score may be applied if there is substantive published qualitative evidence available. (2) For this progress report, we have broken down the 'mixed' score from our 2023 assessment to 'partial' and 'limited' to improve the specificity of our assessment. (3) To account for the variability in available evidence to assign a score, we indicate whether we have high, medium, or low confidence in the quality of available evidence. (4) The 'Change from APR 2023' is N/A where a score was previously 'unable to evaluate' in our 2023 assessment of progress.

Figure 2.2 Indicators monitoring adaptation progress in infrastructure – water supply



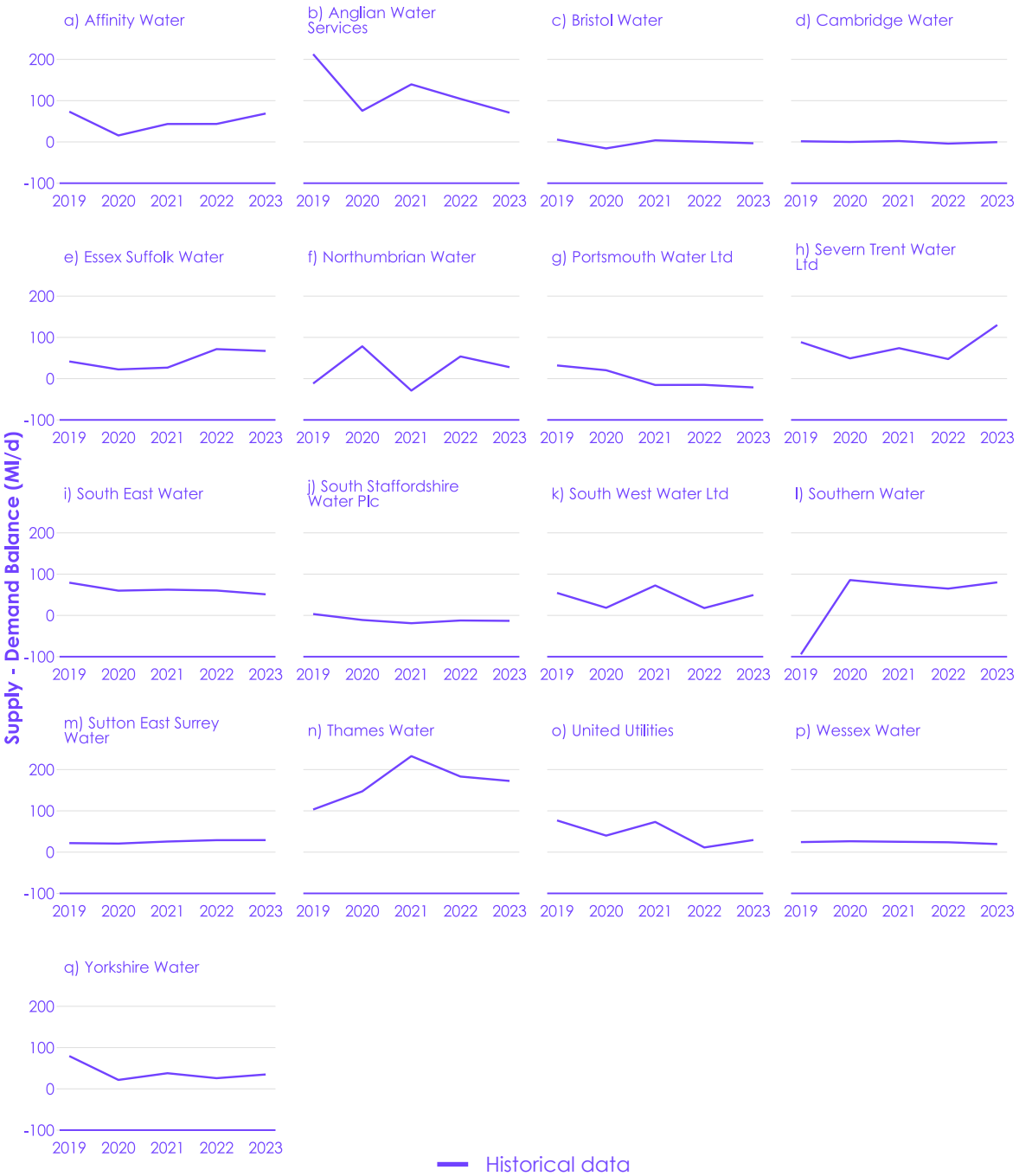
Description: There has been a steady increase in the proportion of households with a water meter since 2022. Per capita consumption and leakage from the public water supply are decreasing over time, but remain higher than the 2026 target level. There is a less clear trend for reservoir capacity, river flow, groundwater discharge, unplanned outages, and observed water supply-demand balance in England due to the number of data points available or the variability in the historical data.
Source: Historical data from Environment Agency, Ofwat, UK Centre for Ecology and Hydrology and British Geological Survey.
Notes: (1) The shaded area on the indicator charts identifies the period 2022-2025, highlighting the change in indicator performance since our last progress report assessment. (2) All indicators measuring adaptation progress in water supply are for England only, recognising this is a devolved policy area.

Water supply

Despite some year-on-year variation, the average observed supply-demand balance across England's public water systems is at nearly the same level now as it was in 2019/20, when comparable data was first recorded (Figure 2.2h).[*] However, at the local level there is significant variation that is masked by this national picture, with some areas facing more acute challenges than others (Figure 2.3). Evidence on the speed of delivery and implementation of necessary adaptation continues to lag behind targets.

[*] 'Observed supply demand balance' compares available resources with customer demand and identifies if there was enough water available (either in the outturn year or in a forecast dry year). If the number is positive, then there was enough, if it is negative, then there were likely to be supply issues.

Figure 2.3 Observed water supply-demand balance (million L/d) per water company in England



Description: This chart shows changes in observed supply-demand balance for each water company in England from 2019/20–2023/24. It shows high variability, both between water companies and year-on-year.
Source: Environment Agency (2025) *Water Resource Management Plan Annual Review Data*.
Notes: The observed supply-demand balance is calculated by subtracting each water company's distribution input (total household and non-household consumption, plus total leakage) and target headroom (the minimum buffer that each water company needs to include in their supply-demand balance calculation) from the water company's total water available for use. Target headroom is calculated based on: *An Improved Methodology for Assessing Headroom*, UKWIR (2002).[58] The methodology for calculating observed supply-demand balance is set out in the "Technical guidance for completion of WRMP19 annual review data template for water companies in England" (March 2024), available on request from the Environment Agency.

- **Household water demand (O-WS1: Insufficient).** Per capita household water consumption continues to decline (Figure 2.2a). However, the long-term rate of decline is below the rate needed to meet the target of 110 litres per capita per day by 2050, and the interim target set for March 2027 (a 9% reduction on 2019/20 levels) in the Environmental Improvement Programme.[59]

  - Uptake of water meters, a key adaptation measure to support demand reduction, is increasing but at a slower rate in recent years (Figure 2.2b). The rate of increase every year since 2018/19 is lower than the rate of increase every year from 2006/07 to 2017/18. Approximately 61% of households have a meter, and approximately 12.4% of households have a smart meter.[60]

- **System performance (O-WS2: Insufficient).** Unplanned outages have declined slightly in 2023/24 compared to 2022/23, from 2.45% to 2.16% (Figure 2.2g). Leakage has also declined slightly, from 2.79 billion litres per day in 2022/23 to 2.69 billion litres per day in 2023/24 (Figure 2.2c). However, this decline is below the rate needed to meet the interim target set for March 2027 via the Environmental Improvement Programme (a 20% reduction on 2017/18 levels).

  - Pockets of innovation show that improved leakage reduction can be achieved but need to be rolled out more widely (Box 2.3). As a result of this slow rate of leakage reduction, and the distance from the 2027 target, we have downgraded the score to 'insufficient'.

Box 2.3
Water companies using innovative technology to detect and address leaks

Sutton and East Surrey (SES) Water has installed sensors throughout its network to monitor flow and pressure in near real time. This generates alerts within minutes of a leak occurring, so that engineers can be deployed quickly to repair the leak.[61] This required collaboration with telecoms providers and other actors outside of the sector.[62] In 2023/24, SES Water achieved a 14.7% reduction in leakage compared to the 2019/20 baseline (above the 8.2% sector average).

Supported by the Ofwat innovation fund, Severn Trent Water is utilising unused fibre strands in existing cable networks to monitor physical characteristics and identify leaks, acting as an early warning system and helping to pinpoint issues. In 2023/24, Severn Trent Water achieved a 10.8% reduction in leakage compared to the 2019/20 baseline.[63]

Essex and Suffolk Water has introduced nighttime leakage detection activities for busy areas. It is also implementing no-dig repair technology, enabling quicker and less disruptive repairs.[64] In 2023/24, Essex and Suffolk Water achieved a 15.3% reduction in leakage compared to the 2019/20 baseline.

- **Increased supply (O-WS3: Partial).** Construction of the first new large-scale public water supply reservoir in the UK in over 30 years has begun.[65] As a result we have upgraded this score to 'partial'. However, the total volume of water company reservoir (excluding service reservoir) capacity available declined very slightly, from 1,890 million cubic metres in 2019/20 to 1,804 million cubic metres in 2023/24 (Figure 2.2d).* Groundwater and river flow (the two other key sources of public water supply) have remained stable, beyond expected temporal variability due to greater precipitation in the winter (Figure 2.2e and Figure 2.2f).

* Service reservoirs are defined in Statutory Instrument (SI) 1985 No. 1086 as 'a non-impounding reservoir which is constructed of brickwork, masonry, concrete or reinforced concrete'. In contrast, non-service reservoirs are generally large, open-air water company reservoirs, which will later flow into service reservoirs.

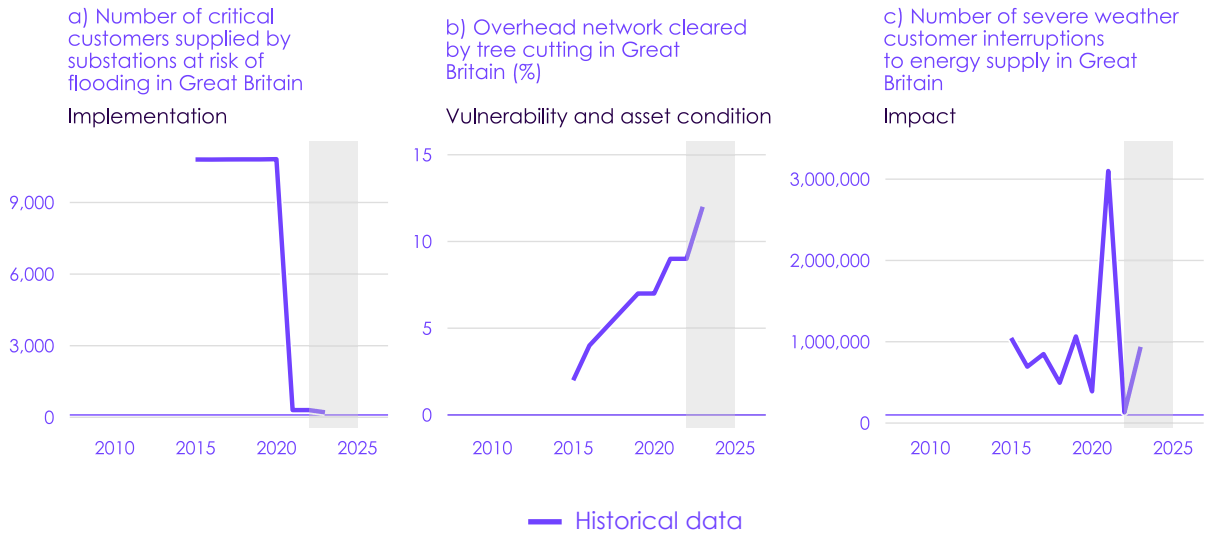
- **Identifying and managing interdependencies (O-WS4: Limited).** There is no quantitative data to assess interdependencies with other infrastructure sectors. However, the 14 Fourth Round Adaptation Reporting Power (ARP4) reports submitted by water companies all set out how they have identified interdependencies (to varying degrees), and some set out how they are managing these interdependencies.* This supports an improved score.

  - Some companies undertook system mapping exercises to systematically identify interdependencies. Others mentioned interdependencies in passing, with less clarity on how interdependencies were assessed or managed.

  - All companies mentioned interdependencies with the energy sector. Implemented adaptation actions in these reports generally focused on the use of back-up generators and on-site generation.

  - Other key interdependencies identified included transport (for example, ensuring access to sites is maintained), telecommunications and ICT (for communication to manage incident response and provide information), and supply chains (for essential parts and equipment).

Figure 2.4 Indicators monitoring adaptation progress in infrastructure - energy



Description: There has been an increase in the proportion of the overhead network cleared by tree cutting. Since 2020 there has been a decrease in the number of critical customers supplied by substations at risk of flooding. There is a less clear trend in the number of customer interruptions to energy supply from severe weather.
Source: Historical data provided by Ofgem.
Notes: (1) The shaded area on the indicator charts identifies the period 2022 to 2025, highlighting the change in indicator performance since our last progress report assessment. (2) All the indicator graphs measuring adaptation progress in energy show data coverage for Great Britain as this is a reserved policy area, except for Northern Ireland where energy policy is devolved (except for nuclear energy).

* As of 20 March 2025.

Energy

Adaptation action to reduce the vulnerability of energy sector assets is underway, principally focussing on flooding and storms, with research and analysis ongoing regarding vulnerability to other climate-related hazards, including extreme heat and heatwaves. However, data on adaptation action in relation to these other hazards is currently lacking. Data on the climate resilience of energy supply is highly volatile and largely driven by weather trends. Efforts to address interdependencies with the water sector have improved, but a more comprehensive approach to addressing interdependencies is needed.

- **Vulnerability of assets (O-E1: Limited).** There is still little publicly available data regarding the impact of adaptation action in the sector to reduce climate vulnerability of energy assets. For example, data on asset health and criticality, flood protection works, and tree clearing are collected but not collated and published (except on request – for example, for this report). Data on heat and drought impacts are not collected centrally. While it may not be possible to share certain data (such as data on individual assets and locations) due to security concerns and commercial or competition law considerations, options to make aggregated or redacted data available would enable more transparency and a better understanding of progress in the sector.

  - Currently only adaptation action data on flooding protection works and tree cutting (which can help make the distribution network more resilient to storm impacts) is reported by Distribution Network Operators (DNOs) to the regulator, Ofgem. More data is needed on the impact of efforts across the sector to reduce vulnerability to other key climate-related hazards (for example, via tools that consider a broader range of climate-related hazards – Box 2.4). This includes heatwaves, drought, and other wind/storm related adaptation action beyond tree clearing.[66]

  - Clearing the overhead network through tree cutting helps reduce the likelihood of power lines being knocked down by falling trees during extreme weather events. A cumulative total of 12% of the overhead network length has been cleared through tree cutting to meet the requirements of industry guidance (ETR132) (Figure 2.4c). This represents a small year on year increase.[*;67]

  - Currently a small proportion of energy assets that have been identified as vulnerable to climate-related hazards are reported by DNOs to be in the worst two (of five) health categories, and the highest (of four) criticality categories (Table 2.5).[†;68] Due to a methodology change in criticality reporting, it is not possible to compare this data to previous years.

[*] The explanatory memorandum to the Electricity Safety, Quality and Continuity (Amendment) Regulations 2006 states that: "It is envisaged that the ETR132 standard will be applied on a modest yet progressive basis (circa 0.8% of 11kV and 33kV overhead line networks per annum, leading to 20% of those networks meeting the ETR132 standard after 25 years)."

[†] The definitions of these categories, and the methodology by which assets are categorised, is set out in Ofgem's DNO Common Network Asset Indices Methodology (April 2021). Assets in the worst health category are generally in imminent need of replacing, whereas assets in the second worst health category are generally in short to medium term need of replacement. Criticality is assessed based on the consequences of the loss of that asset in terms of the number of customers impacted, safety implications, environmental impact, and cost (including cost of repair).

Table 2.5

Energy assets most vulnerable to climate-related hazards that are both highly critical and in poor health, in 2023/24 in Great Britain

Asset type	Proportion of assets that are both highly critical and in poor health
Poles	1.31%
Fittings	1.93%
Overhead lines (circuit km)	0.24%
Transformers	0.05%

Source: Data provided by Ofgem.
Notes: This data includes assets in the highest of four criticality categories and the worst two of five health categories.

Box 2.4
National Grid's Climate Change Risk Tool

To better understand the potential impacts of climate change on its assets, National Grid has developed a Climate Change Risk Tool. The tool assesses the vulnerability and exposure of National Grid's energy transmission assets under baseline and 4°C (RCP8.5) scenarios by decade from 2030 to 2070, across the following climate-related hazards: coastal flooding, river flooding, freeze thaw, low temperatures, heatwaves, high temperatures, high winds, and lightning. [69]

By combining these components into a single dashboard, the Climate Change Risk Tool enables National Grid to make better asset management decisions in the face of a changing climate. The tool also provides a geo-spatial view of assets and their levels of climate risk.

- **Climate-resilient supply (O-E2: Limited).** The number of customers impacted by supply interruptions due to severe weather events in 2023/24 was higher than the number interrupted in 2022/23, when our last adaptation progress report was published (Figure 2.7d). However, this is likely at least in part due to differences in weather between each year. No systems or processes are currently in place to systematically capture weather conditions across the distribution and transmission networks. Stress testing to understand and prepare for potential impacts of extreme weather events before they happen is currently not undertaken consistently throughout the sector.

- **Identifying and managing interdependencies (O-E3: Partial).** The number of critical customers supplied by substations at risk of flooding has reduced substantially, from 10,800 in 2015/16 to 210 in 2023/24 (Figure 2.4b). For the purposes of this reporting, "critical customers" are defined as: "connected customers that provide a vital service to the community, where the loss of supply to these sites is likely to lead to mass evacuation".*

  – The risk assessment and prioritisation of flood protection for substations puts particular priority on critical customers, encouraging DNOs to address this interdependency.

* During a 1 in 100 year, 1 in 200 year, or 1 in 1,000 year flooding event.

- Most DNO ARP4 reports provide only high-level assessments of interdependencies and evidence of effective adaptation is largely limited to research and participation in regional and local resilience forums.[*]

Telecommunications and ICT

Although there is some data on the vulnerability of the telecommunications sector, there remains limited evidence of adaptation. There is limited data relating to the climate resilience of datacentres.

- **Vulnerability of assets (O-ICT1: Unable to evaluate).** The lack of data results in a score of 'unable to evaluate'.
  - In the telecommunications sector, there was a 45% increase in the number of resilience incidents from weather and other causes reported on the Public Switched Telephone Network (PSTN) system in the year 2023/24 relative to 2022/23.[†;70] The switch from PSTN to a digital system is improving day-to-day reliability but as of July 2024, 5.2 million (27%) residential landline customers still relied on the PSTN.[71]
  - The rollout of fibre to the premises (FTTP) is reducing asset-level vulnerability, as fibre cables are less susceptible to environmental fluctuations such as temperature and are water resistant.[‡;72] As of July 2024, full fibre is now available to 69% UK households, an increase from 57% in September 2023.[73]
  - In the data centre sector, an ARP4 report from TechUK suggests co-location and cloud data centres are broadly resilient to climate risks, but highlighted limited transparency as to whether on-premises data centres have introduced equivalent resilience measures, such as cooling continuity and workload redirection.[§;74] An example of a serious resilience incident involving on-premise data centres was the failure of two data centres operated by Guy's and St Thomas' NHS Foundation Trust in July 2022. This resulted in the Trust declaring a critical site incident and moving to a paper-based operating model, as well as costing £1.4 million in unexpected ICT costs.[75]
- **System level resilience (O-ICT2: Unable to evaluate).** There is no data on system level resilience to climate-related hazards for either the telecommunications or data centre sectors, resulting in a score of 'unable to evaluate'. However, there are examples of systems-level impacts occurring. One example of a system-level incident in the telecommunications sector was the disruption of broadband provision to 5,200 Fibrus customers following storms Isha and Jocelyn in January 2024, largely in Northern Ireland.[76]

[*] An exception to this rule is Northern Powergrid, which uses a model of its value chain to identify interdependencies in a systematic way.

[†] Resilience incidents are defined as: "anything that compromises the availability, performance or functionality of the network or service", and "anything that causes signals conveyed by means of the network or service to be lost".

[‡] Data from Openreach, published in Ofcom Connected Nations 2023, suggests that the 'in life' fault rate for its copper network is more than twice as high as for its fibre network after accounting for early life failures.

[§] The TechUK ARP4 report defines three types of data centres: (1) on-premise, or enterprise, data centres which are owned and operated to meet an organisation's internal IT needs; (2) colocation data centres which rent out space for other organisations to house their own servers and networking equipment; (3) cloud data centres, where both the building and servers are managed by a third party who provide on-demand IT resources as a service.

- **Identifying and managing interdependencies (O-ICT3: Insufficient).** In light of improved evidence, we assess that there is insufficient delivery on managing interdependencies, particularly dependency on the power sector.

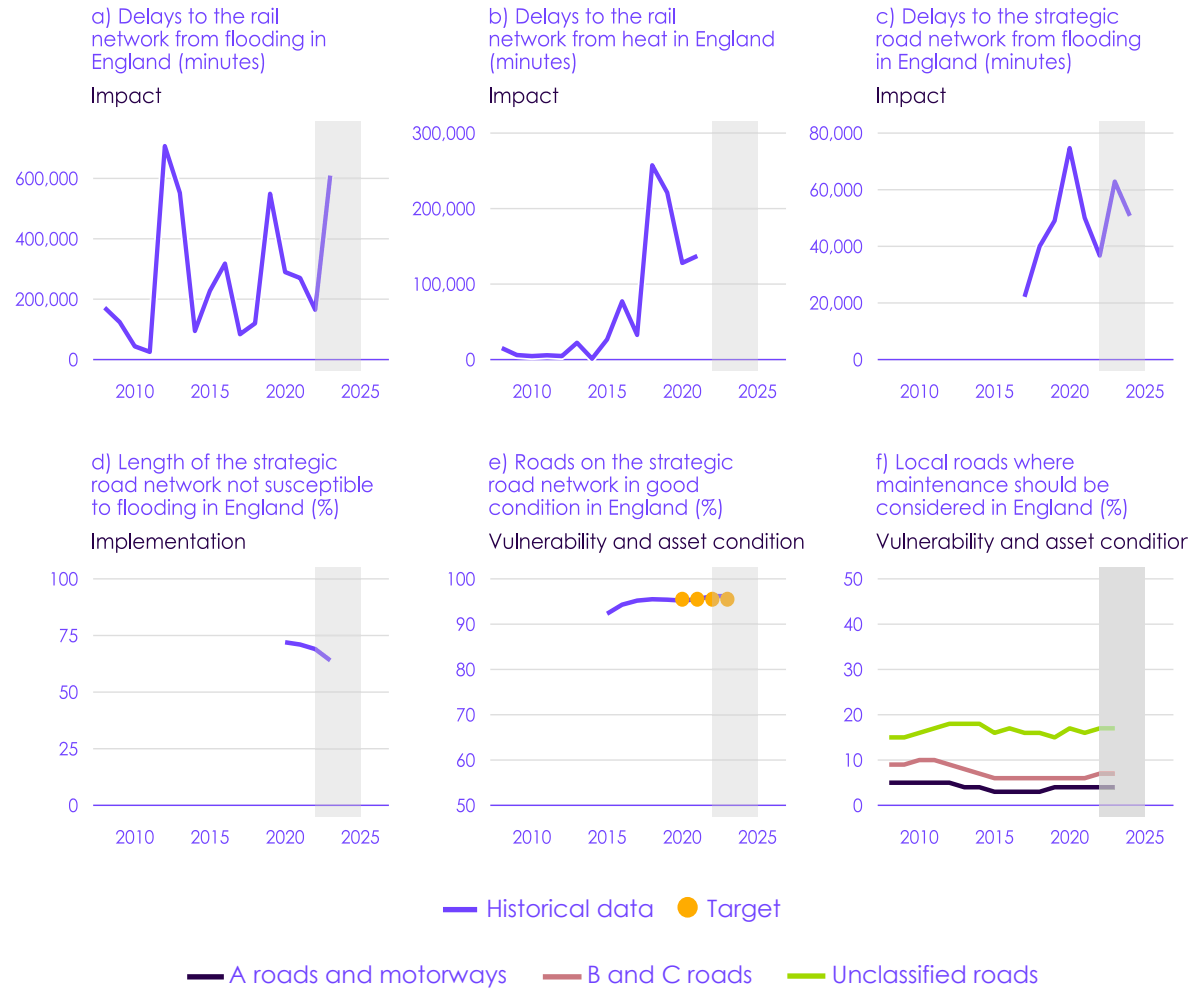
  - In the telecommunications sector, the share of significant resilience incidents with a power-related root cause (either power cuts or power surges) in the year 2023/24 was 20%, resulting in 21 million lost user hours.[77]

  - On the mobile network, new evidence highlights asset-level vulnerabilities, with only 20% of mobile radio sites able to maintain 15 minutes of functionality during a power outage (broadly unchanged from the 2022/23 reporting year).[78] Currently, distribution network operators do not prioritise restoring power to affected mobile phone masts, although there have been trials to pilot this.[79]

  - On fixed (landline and broadband) networks, the technology transition is significantly changing the nature of interdependency risk. Customers still on the PSTN can use their landlines even if the mains power at their premises is cut, as the lines are electrified by the telephone exchange. As customers transition off the PSTN they become more vulnerable to mains electricity outages, particularly customers with telecare devices or those without mobile phones (although these risks can be mitigated, for example through at-premises battery backup).[80]

  - In addition to requiring electricity at the customer premises, older broadband technologies require power in street network cabinets which further increases interdependency risk – given that these typically have four hours or less battery backup capacity.[81] Fibre cables are not electrified, and so the rollout of FTTP reduces this risk.

Figure 2.5 Indicators monitoring adaptation progress in infrastructure - transport



Description: Delays to the rail network from heat have been increasing over a time with a peak observed in 2022. The proportion of the strategic road network in good condition has been slowly increasing over time, exceeding the industry target in 2022 and 2023. The proportion of the strategic road network unsusceptible to flooding has decreased over time. The proportion of local roads where maintenance should be considered has remained stable for all three types of roads. There is no clear trend for delays to the strategic road network and delays to the rail network from flooding, due to variation in weather events and insufficient data availability to observe the change over time.
Source: Historical data provided by Department for Transport, Network Rail, and National Highways.
Notes: (1) The shaded area on the indicator charts identifies the period 2022-2025, highlighting the change in indicator performance since our last progress report assessment. (2) All transport indicators are for England only, recognising this is a devolved policy area.

Transport

Indicators of resilience for the rail and road network are variable. Most are stagnant at a low level or moving in the wrong direction. There is still no quantitative data available to assess progress for airports, ports, or interdependencies.

- **Rail (O-T1: Limited).** The rail network reported increased delays in 2023/24 compared to 2022/23 – particularly as a result of flooding (Figure 2.5a).[82] This is likely at least in part related to differences in weather between the two years. Year-to-year weather variability makes it difficult to discern the impact of adaptation actions directly in this time series. However, delays due to heat seem to be showing an increasing trend (Figure 2.5b).

- **Roads (O-T2, O-T3: Limited).** Minutes of delay on the strategic road network due to weather-related incidents have decreased since 2023 but are highly variable year-on-year.[83] However, the share of roads susceptible to flooding has gone up, due to flooding events in 2022/23 exceeding road design capacity (Figure 2.5c and Figure 2.5d).

  - National Highways met its target for the condition of pavements in the strategic road network (O-T2), which provides a partial picture of vulnerability to weather extremes. Roads with poor pavements are more difficult to navigate in extreme weather, and roads in poor condition are likely to be more at risk of damage during extreme weather events (Figure 2.5e).[*;84]

  - The condition of local roads (O-T3) has not changed in the last two years, but there have been modest improvements in the condition of some types of roads (B and C roads and unclassified roads) in the past ten years (Figure 2.5f).

- **Airports and ports (O-T4: Limited, O-T5: Insufficient).** Quantitative data to assess progress for airports or ports is still not available.

  - However, ARP4 submissions for eight airports across the UK, as well as the National Air Traffic Control Services and the Civil Aviation Authority, provide some evidence of action to address key risks in the aviation sector.[†] This includes upgrades to infrastructure and detection to reduce flood risk at a number of airports - including some evidence of climate risk assessments driving pre-emptive action. Other submissions point to more limited action and a 'watching brief' approach.

  - Six port operators published ARP reports and evidence of delivery was lower, with most limited to light touch actions such as monitoring and maintenance.[‡] However, the Port of Dover stood out by providing a more comprehensive update on actions which included capital upgrades and contingency planning in addition to monitoring and governance improvements.[85]

- **Interdependencies identified and managed (O-T6: Limited).** There is no quantitative data available to assess interdependencies. Most transport ARP4 submissions across all modes qualitatively identify interdependencies with other infrastructure sectors, particularly the energy, water, and telecoms and ICT sectors, as well as interdependencies on other modes within the transport sector. However, evidence of adaptation action to manage these risks was limited to isolated examples of installing backup power generation and collaboration with relevant stakeholders.

[*] The strategic road network (all trunk motorways and trunk 'A' roads) is approximately 4,600 miles long and makes up 2.4% of the total length of road in England.

[†] As of 18 March 2025, AGS Airports, Birmingham Airports, Edinburgh Airports, Gatwick Airport, Highlands and Islands Airports, Luton Airport, Manchester Airports Group, and Newcastle Airport have submitted ARP4 reports.

[‡] As of 18 March 2025, PD Ports, Port of Dover, Port of London Authority, Peel Ports, Milford Haven Port Authority, and Port of Felixstowe, Harwich International Port and London Thamesport have published ARP4 reports.

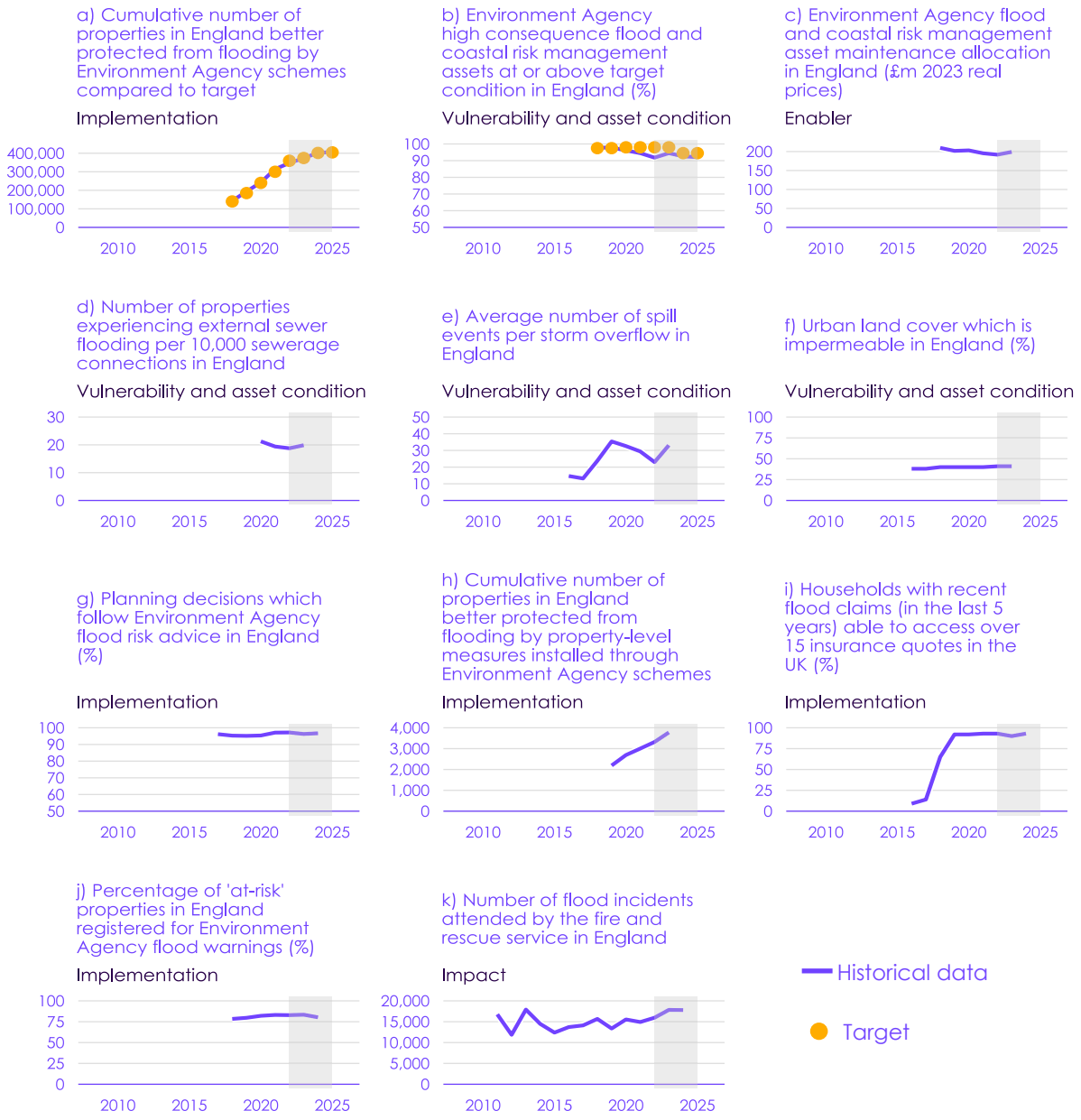
2.2.3 Built environment and communities

Table 2.6
Built environment and communities outcome scores

Thematic area	Outcome ID	Outcome	Delivery and implementation score	Quality of evidence to assess score	Change from 2023 Progress Report
Towns and cities	O-TC1	Places are resilient to river and coastal flooding.	Partial	High	No change
	O-TC2	Places are resilient to surface water and groundwater flooding.	Limited	Medium	No change
	O-TC3	Sustainable coastal management in place.	Limited	Medium	No change
	O-TC4	Urban heat risks are managed.	Unable to evaluate	N/A	No change
	O-TC5	Planning system prioritises climate resilience.	Unable to evaluate	Medium	N/A
Buildings	O-B1	Buildings do not overheat.	Unable to evaluate	N/A	No change
	O-B2	Buildings are prepared for flooding.	Partial	Medium	No change
	O-B3	Buildings are resilient to other climate risks.	Unable to evaluate	N/A	N/A
Community preparedness and response	O-CPR1	Communities are prepared for climate shocks.	Partial	Medium	No change
	O-CPR2	Communities can respond to climate shocks.	Limited	Medium	No change
	O-CPR3	Local cultural heritage is conserved.	Limited	Low	N/A

Notes: 1) Where there are no indicators available a score may be applied if there is substantive published qualitative evidence to inform a score. 2) For this progress report, we have broken down the 'mixed' score from our 2023 assessment to 'partial' and 'limited' to improve the specificity of our assessment. 3) To account for the variability in available evidence to assign a score, we indicate whether we have high, medium, or low confidence in the quality of available evidence. 4) The 'Change from APR 2023' is N/A where a score was previously 'unable to evaluate' in our 2023 assessment of progress. 5) We did not score O-BR3 in 2023 but now have more confidence in the evidence for the impact of climate change on risks to buildings from hazards such as wind and subsidence, and a growing evidence base of what measures are required to adapt to these risks, allowing us to evaluate the outcome in this report.

Figure 2.6 Indicators monitoring progress in the built environment



Description: Charts show that the number of properties better protected by EA schemes has been rising since 2017, but the rate of delivery has slowed in recent years. Delivery of property-level measures within these schemes has increased. There is a declining trend in the condition of EA flood and coastal erosion risk management assets and little change in grant-in-aid resource allocation for asset maintenance activities. The percentage of planning applications that follow EA advice, the percentage of at-risk properties registered for flood warnings and the availability of multiple insurance quotes for households with recent flood claims have remained consistently high over the last five years. There are negligible trends in urban impermeable surface, which remains just under 50% and data on sewer flooding and storm overflow spills. There is a steadily increasing trend in the number of flood incidents the fire and rescue service are attending annually.

Source: Historical data from EA, ADAS, Water Mark, Flood Re, and the Home Office.

Notes: (1) The shaded area on the indicator charts identifies the period 2022 to 2025, highlighting the change in indicator performance since our last progress report assessment. (2) Data in charts (a), (b), (c), (d), (g), (h), (k) is recorded with a year end of March (i.e. the data point for 2024 covers the period of April 2023 to March 2024). Data in charts (a), b), (j) have been updated with the most recent EA quarter 2 reporting out to September 2024 (i.e. the data point for 2025 covers April 2024 to September 2024). (3) Data in chart c shows the EA's asset maintenance funding allocation for regular asset management and maintenance only. Funding is shown in £2023 prices but it should be noted that much EA asset management requires specific materials which may be particularly volatile to changing prices - construction material prices have been consistently above consumer price inflation since 2020. (4) Regulatory data used in chart (e) does not provide a comparable timeseries because the number of monitored storm overflows has increased over the chart timeseries (reaching 100% by end 2023), therefore capturing more spills. (5) Data in chart (i) covers the whole of the UK because flood reinsurance legislation is UK-wide. All other data are for England. Flood risk management policy and planning policy are devolved, and the EA's remit covers England.

Towns and cities

This outcome area assesses adaptation in the built environment.[*] Available indicators show continued delivery of flood and coastal risk management projects but declining asset condition. Urban heat adaptation remains unable to evaluate. The data which we had previously used as an indicator to score our resilience in planning outcome (O-TC5) has not been updated since our last report, meaning this also receives an unable to evaluate score.

- **Flooding from rivers and the sea (O-TC1: Partial).** The roll-out of the Government's flood and coastal erosion risk management (FCERM) capital investment programme has continued with a steady increase in the cumulative total number of homes better protected from flooding (Figure 2.6a).[86] However, delivery rates have been persistently lower than expected over recent years.

  - The Environment Agency (EA) are forecasting a reduced number of properties will be protected through the programme by 2027 compared to the initial programme target (Figure 2.7).[87] This shortfall is due to delayed flood defence projects.[88] Delays have resulted from a combination of factors, including rising costs, backlogs from the previous programme and delivery capacity (Box 2.6).

  - In February 2025, the Government committed £2.65 billion over the next two years to better protect 52,000 properties (as well as to maintain or restore protection levels to a further 14,500 properties through defence repairs).[89] The number of properties due to be protected from this investment is in-line with annual targets from previous years (Figure 2.7). If delivered, this would bring the programme slightly closer to the track of the original targets.[†;90]

  - The condition of flood defence assets has declined in recent years and is falling short of targets (Figure 2.6b). This makes these defences potentially less effective in providing protection. National Audit Office (NAO) analysis in 2023 found that 203,000 properties were at increased risk as a result of assets being below required condition (Box 2.6).[91] These trends are occurring despite relatively consistent allocations of funding for asset management and maintenance and flood risk management funding (in real terms) over the last four years (Figure 2.6c and Figure 2.9). Asset maintenance and upgrade has been challenging to deliver within funding due to increased material costs (construction material price indices have been significantly above consumer price inflation indices since 2020) and ageing assets, compounded by more frequent and severe events.[92] For example, successive storms over winter 2023/24 damaged over 1,500 EA assets.[93]

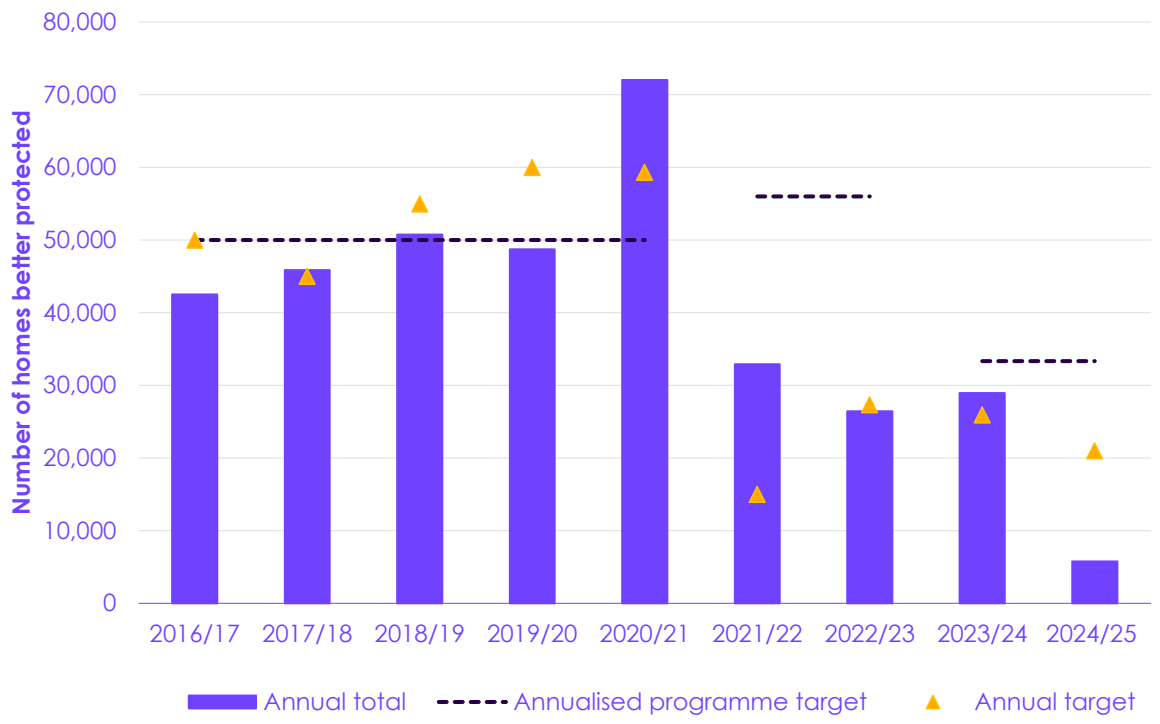
[*] Community-level adaptation and local government action are captured in the 'community preparedness and response' outcome area.

[†] The new investment should deliver 66,500 homes better protected (52,000 through new defences) by March 2026. This would be in-line with the annual delivery numbers expected under the reduced six-year programme target of 200,000 by 2027 but would still be below the number required to meet the initial target of 336,000 homes better protected by 2027.

– There has been ongoing delivery progress in other flood risk management projects, such as the £200 million flood and coastal innovation fund and £25 million natural flood management programme.*;[94];[95] The number of farms receiving advice on catchment-based approaches and natural flood management is consistently rising.[96]

– Further evidence is required to evaluate how these wider innovations contribute to managing overall flood risk at a catchment scale. Recent updates to the national flood risk assessment show more properties are at high risk of flooding from rivers and the sea than in previous assessments and the number increases with climate change (Box 2.5).[97] Delivery gaps in present day adaptation must be addressed urgently to avoid a widening challenge in future.

Figure 2.7 Improved flood protection for homes in England



Description: The number of homes better protected ever year by schemes as part of the national flood risk management capital programme has been consistently lower for the current programme (which started in 2021) than the previous programme (which started in 2015). Annual numbers of homes better protected since 2021 have met annual targets so far, but these are lower in ambition than the annualised programme targets.
Source: EA (2017–2024) *Corporate scorecard data.*
Notes: (1) Years are in financial year so run from April to March. 2024/25 data were only available up until September 2024 at the time of publication. (2) The EA are forecasting they will achieve their cumulative target of 113,272 by end of March 2025. (3) The annual total shows the number of properties better protected by schemes in the flood risk management programme each year. (4) The annual target shows the EA's target number of properties better protected for that year. (5) The annualised programme target shows the overall programme target (e.g. 300,000 for the 2015–2021 programme and 336,000 for the 2021–2027 programme) divided by years (six) in the programme. (6) The lower target in 2023 represents the reduced projected forecast of 200,000 for the current programme. (7) The chart references the previous government's capital programme targets and delivery to date and does not cover the February 2025 funding announcement and targets.

* The innovation fund is split across the flood and coastal resilience innovation programme (FCRIP), the coastal transition accelerator programme (CTAP) and the adaptation pathways project. Since 2021, It has funded 35 local projects, 91% of which are on track, and has delivered interventions including 211 sustainable drainage systems and six community resilience and adaptation funds. The number of natural flood management (NFM) projects in construction across all current EA programmes is approximately 60, up on the previous programme at a comparable stage - however the current forecast for schemes delivered by 2027 is around 175, a shortfall on the six-year ambition of 260 schemes.

- **Flooding from surface water (O-TC2: Limited).** There are still only limited datasets on adaptation to surface water flood risk at a national scale. Available indicators show no major change in the extent of permeable surfaces in the UK's urban areas (Figure 2.6f) and mixed trends in investment from water companies to reduce the risk of sewer flooding and maintain the public sewer.[98;99] The most recent data (2023 to 2024) shows an uptick in the number of properties in England experiencing internal and external sewer flooding, likely linked to severe rainfall events (Figure 2.6d).[100] Data on storm overflows shows an increase in the number of sewage spills per storm event in 2023 compared to 2022 (Figure 2.6e), which is likely partially driven by increased rainfall intensity as surface water run-off puts pressure on the sewer network.[*;†;101]

  - There is a clear gap in data collection on sustainable drainage systems and other drainage adaptation at a national scale, preventing a good understanding of how their deployment is changing.

  - Improved data and methods in the most recent national flood risk assessment have resulted in a considerable increase in estimates of the number of properties at high risk of surface water flooding to about 1.1 million. This is three times greater than previous estimates of properties at high risk. Over 25% of these properties in areas at high risk are in London (Box 2.5). This data includes depth estimates – 83% of properties at high risk of surface water flooding are in areas with likely flood depths of less than 30cm, meaning damages are likely to be smaller than those associated with river and sea flooding.[102] Evidence gaps remain for assessing groundwater flood risk and adaptation.

[*] There are some local and community level datasets on adaptation to surface water flooding, such as the Mayor of London's SuDS retrofit mapping.

[†] Increased installation of monitors over time makes direct comparison of spill data over a timeseries difficult.

Box 2.5
Second National Flood Risk Assessment (NaFRA2) and National Coastal Erosion Risk Mapping (NCERM2)

The Environment Agency has recently updated the National Flood Risk Assessment (NaFRA) using new data and modelling. The previous full update to NaFRA was in 2018. NaFRA2 uses an improved combination of local and national models to map present-day and future flood risk in England. The National Coastal Erosion Risk Map (NCERM) has also been updated using evidence from the National Network of Regional Coastal Monitoring Programmes. NCERM was last updated in 2017.[103]

These new assessments provide an important baseline dataset from which 'net change' in the number of properties at risk can be assessed in the future. Key messages include:

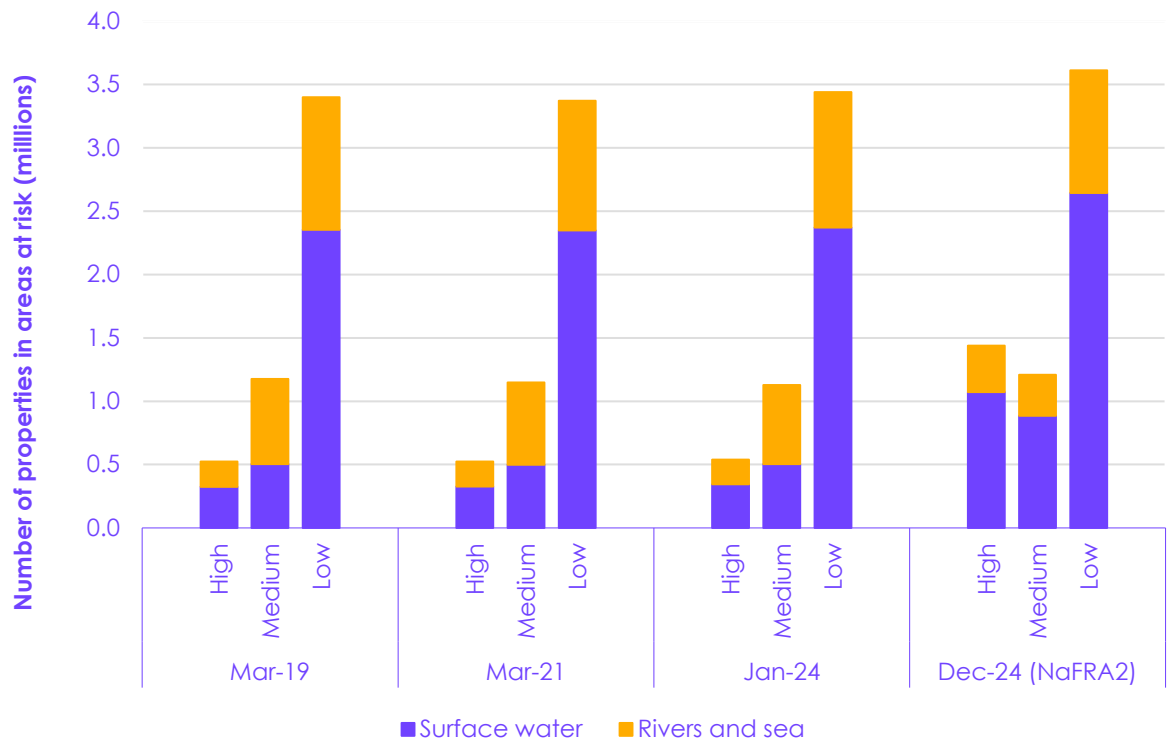
- NaFRA2 shows more properties are at risk than the previous assessment overall (Figure 2.8). Most of this increase is attributed to properties in areas at risk of surface water flooding - the total estimate of which is 4.6 million across high, medium and low risk bands, a 42.9% increase from the previous assessment.
- The number of properties at risk of flooding from rivers and the sea (2.4 million) has decreased slightly compared to the 2018 assessment but the number of those in areas at 'high risk' (greater than 1 in 30 chance of flooding) has increased.
- These changes are largely related to improved data and modelling methods, including better understanding of flooding in steep catchments, improved accounting for surface water deflection, some updated information on flood defence conditions and methods for estimating defence asset failure. These improvements mean the risk can be described more confidently than in previous assessments.
- Groundwater flood risk was not included in the assessment.
- Approximately 3,500 properties (1,900 of which are residential) are at risk of coastal erosion between now and 2055 even assuming that current shoreline management plans (SMPs) are delivered. NCERM results are based on time periods because it is difficult to accurately predict precise future shoreline positions due to high uncertainty around the timing of cliff collapses which do not follow a linear trend over time but are often in response to extreme storm events.

Both NaFRA2 and NCERM2 include a future climate change scenario based on a high emission pathway.* Under this future climate change scenario:

- 637,600 properties are predicted to be in areas at high risk of river and sea flooding between 2036 and 2069 and 1.78 million in areas at high risk of surface water flooding between 2040 and 2060, a 73% and 67% respective increase on present-day estimates.
- 5,200 (2,900 of which residential) properties are at risk of erosion between now and 2055, rising to 19,700 by 2105. If SMPs are not delivered, 44,500 properties could be at risk between now and 2055.

* NaFRA2 and NCERM2 climate change scenarios are based on EA's central allowance for river and surface water flooding (50th percentile UKCP18 RCP8.5) and higher central allowance (70th percentile UKCP18 RCP8.5) for sea flooding and coastal erosion.

Figure 2.8 Properties with high, medium, or low flood risk in England



Description: The chart illustrates how our understanding of the distribution of the number of properties in England at risk of flooding from rivers, the sea and surface water has changed since 2019, based on national flood risk assessment data. Change in risk over time is not directly comparable because the most recent national risk assessment from in 2024 used new data and methods to previous assessments. Before the new modelling, the number of properties at risk has remained relatively consistent in the assessment. In the most recent estimates, more properties are found to be in areas at risk of flooding. Most of this increase comes from an increase in estimates of areas at risk of surface water flooding, which accounts for over two-thirds of all properties at risk in December 2024.
Source: EA (2024) *National assessment of flood and coastal erosion risk in England 2024;* EA (2019) *Flood and coastal erosion risk management report: 1 April 2018 to 31 March 2019*; EA (2021) *Flood and coastal erosion risk management report: 1 April 2020 to 31 March 2021*; EA (2024) *Flood and coastal erosion risk management report: 1 April 2023 to 31 March 2024*.
Notes: (1) The chart shows properties in areas of risk of flooding from rivers and the sea, and from surface water. (2) Change in risk over time is not directly comparable because data from December 2024 is from the newest national risk assessment (NaFRA2), which used updated data and methods (see Box 2.5). Instead, the chart illustrates how our understanding of the distribution of risk has changed. (3) Risk bands are as follows: high risk – each year an area has a chance of flooding of greater than 3.3% (greater than a 1 in 30 chance of flooding); medium risk – each year an area has a chance of flooding between 1% and 3.3% (1 in 30 to a 1 in 100 chance of flooding); low risk – each year an area has a chance of flooding of between 0.1% and 1% (1 in 100 to a 1 in 1,000 chance of flooding). The EA also reports on the number of properties in areas at very low risk (less than 0.1% chance of flooding) for rivers and the sea. This is not included in the chart. (4) NaFRA2 identifies that around 750,000 of the total 6.3 million properties at risk are those in areas at risk from both rivers or the sea, and surface water.

- **Coastal change (O-TC3: Limited).** There remains a lack of substantial evidence of adaptation to coastal change, including around what effective action looks like and when this is delivered. Coastal erosion assistance grants continue to be administered but numbers are low in accordance with relatively low numbers of properties at risk (Box 2.5).[*;104]

  – New evidence from the EA shows that with climate change, 44,500 properties may be at risk from coastal erosion from the present day up to 2055 if shoreline management plans (SMPs) are not delivered (Box 2.5). This is significantly higher than the number at risk (5,200 properties) should SMPs be delivered.[105]

[*] Coastal erosion assistance grants are per-property grants administered to local authorities to assist with demolition and removal costs associated with homes at imminent risk of coastal erosion.

  - In a recent assessment of SMPs, an independent panel found 40% of the plans were 'effective' for good deliverability.[106] Current records show only 43% of SMP actions are classed as 'progressing', with 30% 'not yet started' and only 8% 'complete' but these actions are not linked to clear timelines, which makes it hard to assess progress.[107] For three plans (15%), the independent panel observed that it was not clear what progress had been made since plans were developed in 2011 and 2012.

- **Urban heat (O-TC4: Unable to evaluate).** We are still unable to evaluate adaptation to urban heat at a national scale. There are no national datasets recording delivery of measures such as urban greening or the availability of publicly accessible cool spaces, despite some good practice dataset examples at the local level, such as City of London's resilience measures catalogue and Greater London Authority's update to their tree canopy and green cover mapping, which estimated London's canopy cover at 19.6%.[108;109]

- **Planning system (O-TC5: Unable to evaluate).** Updates to data previously available on where new residential addresses are being built have not been released, meaning it is no longer possible to estimate how much development is occurring in flood risk regions. While the number of planning applications granted against EA flood risk advice remains low, the number of residential planning applications granted against advice has increased slightly over the past two years (Figure 2.6g). Further national-scale data on adaptation delivery via the planning system, such as developments with targeted adaptation measures, are required to evaluate this outcome further.

Box 2.6
Delivery of the 2021–2027 flood and coastal erosion risk management investment programme

Defra is the policy lead for flooding and coastal erosion in England. The EA develops and maintains a national strategy covering all sources of flooding and have operational risk management responsibilities for flooding from main rivers, reservoirs, and the sea. Other risk management authorities, including lead local flood authorities and highways authorities, are responsible for aspects of local and regional flood risk management, including surface water flooding.

The previous government's policy statement and EA strategy on flood and coastal erosion were published in 2020 and supported by a £5.2 billion six-year capital investment programme for flood and coastal defence for 2021 to 2027. To measure the programme's performance, Defra and the EA developed a set of metrics, including a headline metric of 'properties better protected'. This box provides an overview of delivery progress on the 2021 to 2027 capital programme to date, noting that this has been superseded from February 2025 by the £2.65 billion investment out to 2026.

In 2023, the EA forecasted that the capital programme would provide better protection to 200,000 properties overall, a reduction of 40% from the original 336,000 'homes better protected' target.[110] Reasons for the reduced forecast include backlogs from the previous programme, supply chain issues, and capacity and skills shortages. Inflation has had a significant impact on project costs. The EA estimates over half of the reduction in the forecast can be attributed to inflation.[111]

The National Audit Office identified several further risks to future delivery of the reduced forecast, including:

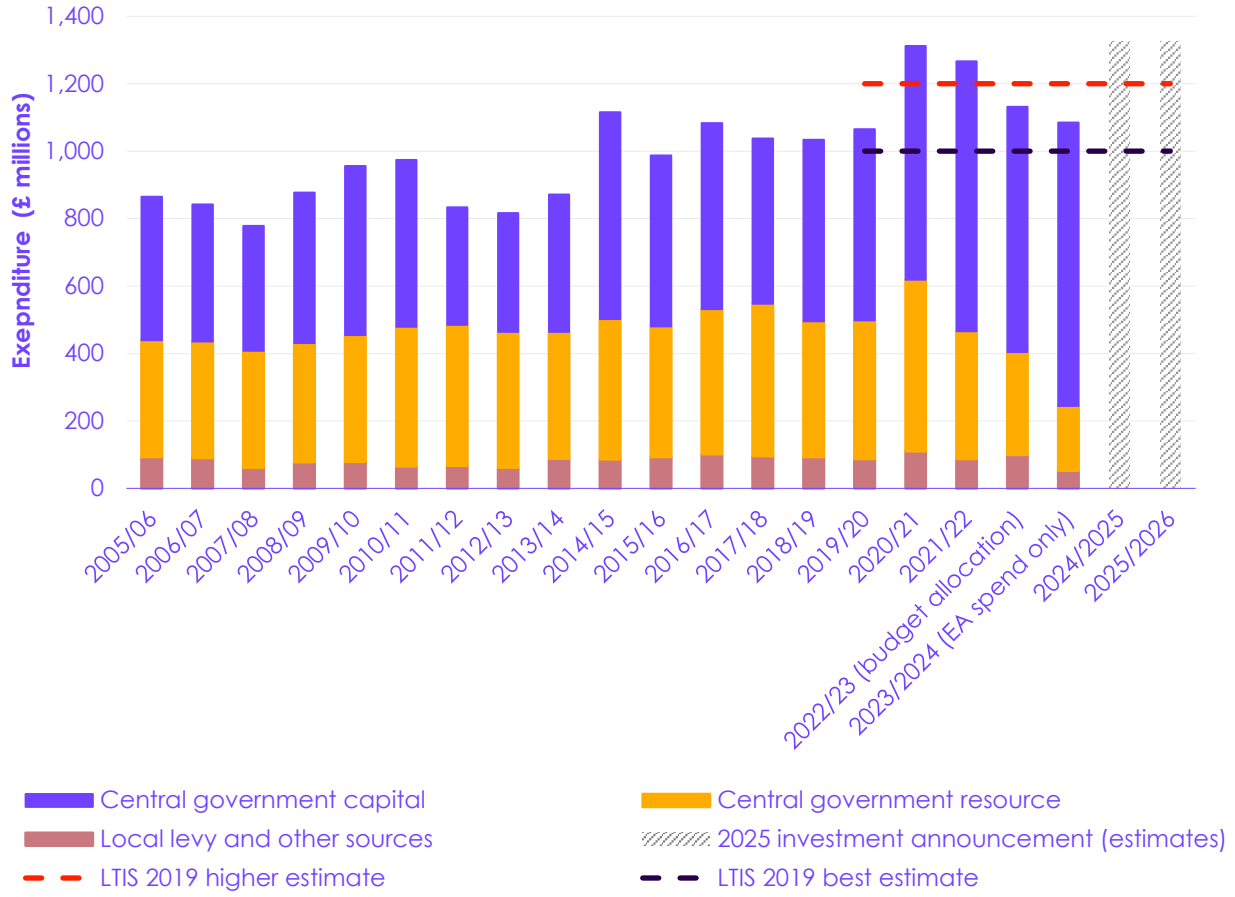
- Most of the projects require partnership funding, some of which is still to be secured. EA estimated around £2.3 billion partnership funding is needed, an increase on the £1.5 billion estimated at the start of the programme. Private sector contributions have also been lower than hoped.
- Other risk management authorities have a significant role in delivering the programme and are expected to contribute to just under half of the reduced properties better protected target.
- Delivery of a range of smaller projects and wider resilience interventions (i.e. beyond hard structures) has remained challenging despite changes to funding rules and the business case process.

Maintaining current defence assets is also critical for effective flood risk management. The EA has assessed the optimal value for money is achieved when 98% of its high consequence assets (assets which protect a high number of properties) are maintained at the required condition. In September 2024, the EA reported that 92% of high consequence assets were at or above target condition.[112] The 98% target has not been met for the past five years, with performance slowly declining.[113]

- Costs of operating and maintaining assets are increasing as more defences are built, while damages have increased due to more frequent serious flood events placing pressure on the infrastructure.[114]
- The EA have suggested that their resource funding is not sufficient to manage these costs and in 2022 the asset condition target was reduced to 94–95% (although EA's assessment of optimal value for money remains unchanged). Defra and HMT agreed to move £25 million from the capital to maintenance funding budgets for 2023/24 and the EA are re-priorisiting £108 million of capital funding for asset maintenance and repair in the next two years (£36 million in 2024/25 and £72 million in 2025/26).[115] In addition, the £2.65 billion commitment from this year covers maintenance as well as new defences. It too early to say how this has impacted asset condition overall, but Defra have estimated that 14,500 properties will benefit from asset maintenance and repair by 2026.[116]
- Similar challenges exist around flood defence infrastructure which is not owned by the EA. The maintenance status of third-party assets is often uncertain, and local authorities have raised concerns about resource funding - between 200/09 and 2021/22, revenue spend by local authorities on flood risk management increased from £90 million to £134 million.[117]
- Across the board, risk management authorities have struggled to maintain skills and capacity required to deliver both the capital programme and ongoing asset maintenance.

The overall outlook on delivery of flood adaptation is therefore mixed. There has been significant delivery and implementation progress since the first national strategy was published in 2020. However, indicators show some slowing and declining trends which must be monitored in the context of future risk.

Figure 2.9 Expenditure on flood and coastal erosion risk management in England (£ million, real terms, 2023 prices)



Description: Government expenditure on flood and coastal erosion risk management has been increasing in real terms over the past 20 years for both capital and resource components, with spending since 2021 exceeding the EA's annual optimal spend estimate from 2019. The proportion of capital spending has increased more than resource spending. The recent announcement of £2.65 billion funding for 2024 to 2026 is an increase on previous annual trends overall (the balance between capital and resource is yet to be announced).
Source: Defra (2023) *Funding for Flood and Coastal Erosion Risk Management*; EA (2024) *Flood and coastal erosion risk management report: 1 April 2023 to 31 March 2024*; Defra (2025) *Record investment to protect thousands of UK homes and businesses*; HM Treasury (2025) *GDP deflators at marker princes and money GDP December 2024*.
Notes: (1) Capital spending covers investment and resources for building long-term assets. Resource spending is spent on day-to-day resources and administration and covers routine maintenance activities. Other funding sources include the local levy on local authorities (raised by the EA) and other income raised through drainage charges, partnership funding and other local authority sources. (2) Prices have been converted using December 2024 GDP deflators to 2023 real prices (estimates for 2024 to 2026 have not been converted). (3) Defra have not yet published updated flood expenditure figures. 2022/23 spend is therefore taken from budget allocation and 2023/24 spend is taken from EA reporting (i.e. this doesn't include core Defra funding). Data for the 2022/23 and 2023/24 local levy uses EA expenditure (2024). (4) Estimates for 2024/25 and 2025/26 are based off the annualisation of the investment announced in February 2025 – the annual funding split and the split between resource and capital are not yet known. These estimates have not been converted to real prices. (5) LTIS is the EA's long term investment scenario. The chart shows the modelled optimum level of annual national investment for the next 50 years from the most recent LTIS from 2019. LTIS values have not been converted to real prices and the optimum identified in 2019 has been kept constant.

Buildings

The ability to adequately assess delivery of building-level adaptation to heat remains low, with no good datasets at national scale. However, indicators of uptake of building-level adaptation to flood risk are showing positive trends in the last few years. We are unable to evaluate delivery of adaptation measures to other climate hazards such as storms because the evidence base on how to improve building-level resilience and the uptake of measures is not well developed.

- **Buildings overheating (O-B1: Unable to evaluate).** There are still no datasets that provide an up-to-date picture of how overheating incidence in the residential and non-residential building stock is changing over time, or the number of passive or active cooling measures installed.

  - Both the English Housing Survey (EHS) and Energy Follow Up Survey (EFUS) provide some details on the prevalence of overheating in different housing types.[*;118] According to the 2023 EHS, 12% of households reported at least one part of their home got uncomfortably hot, an increase from 11% in 2022.[119] Data from the most recent EFUS showed around 3% of the main bedrooms in houses and 10% of the main bedrooms in flats had night-time temperatures which exceeded 29°C on seven or more nights in summer 2018.[120] More evidence is required to assess how overheating prevalence is changing over time as these studies only provide snapshot pictures and do not provide regular assessments of overheating.

  - Preliminary findings from Department for Education (DfE) research estimate there are an average of 1.7 days of extreme overheating events in schools and 4.3% cumulative lost learning time during the school year (based on 2019).[121]

  - Ongoing research from DESNZ and The Health and Safety Executive (HSE) is exploring overheating adaptation measures for existing buildings and metrics that could be collected in future. Some local governments are planning their own investigations to assess overheating, but there remains a priority data gap for consistent measurements and assessment of building-level overheating at a national scale.

- **Buildings flooding (O-B2: Partial).** The rate of delivery of property-level resilience (PFR) measures in homes through EA schemes increased in 2023/24, with the annual number of homes receiving measures returning to 2020/21 levels, after two years of lower annual delivery rates (Figure 2.6h).[122]

  - Outside of EA schemes, we continue to lack consistent national-scale data on the implementation and maintenance of property-level flood resilience, although data suggest more workers are becoming PFR trained.[123]

  - For key public buildings, there is evidence that DfE and delivery partners (including the EA, water companies and lead local flood authorities) have been increasing delivery of flood resilience measures in schools, with 438 schools benefitting from investment to reduce flood risk to the end of March 2024.[124]

  - The average domestic flood-related insurance claim has been high in the past two years relative to the past five-year average, although it is not clear whether there is a longer-term trend (Figure 2.10).[125] For residential buildings, the ability of households which have been recently flooded to access multiple insurance quotes remains high due to the Flood Re scheme (Figure 2.6e).[†;126] Flood Re report that four out of five households with previous flood claims continue to see reduced premiums of more than 50% since the scheme inception.[127]

[*] The English Housing Survey (EHS) includes a question on whether residents feel any part of their home gets uncomfortably hot and, if so, which parts. The Energy Follow Up Survey (EFUS) is conducted on a subset of the EHS, with additional questionnaires and temperature measurements in up to five rooms per household. EFUS surveys are not regularly undertaken, with the most recent carried out over three years between 2017 to 2019.

[†] The Flood Re scheme is a joint initiative between the Government and insurers which provides reinsurance cover to promote the availability and affordability of flood insurance for eligible homes. Since the scheme was introduced in 2016, availability and affordability have improved significantly.

- As of December 2024, 72% of the insurance market was actively offering Build Back Better (BBB), where householders can claim for insurance-funded resilience measures on top of the cost of repairs after a flood event.[128] Approximately 30% of claims after winter 2023/2024 storms contained an element of BBB – while this is a good start, there is more to do to encourage households to adopt BBB when offered.[129]

- There are no datasets yet on the number of properties receiving Defra PFR grants after storms Babet (2023) and Henk (2024) but over 8,000 properties were flooded and are eligible to apply.[130] Grants are awarded as reimbursement when resilience improvement works are completed, which may be a barrier for some households.* More evidence is required on what property-level measures work best in which situations and what the most effective levers for increasing uptake are.

- **Other climate risks (O-B3: Unable to evaluate).** We are unable to evaluate adaptation to other climate risks in buildings due to limited data available to assess how these risks may change with future climate and even less data on adaptation actions. This gap includes evidence around the type and efficacy of different actions, as well as the rate and extent of delivery of these actions.

  - Claims data from insurance firm Aviva showed around 19% of all UK home claims between 2020 and 2024 were related to storm damage, and the average cost of domestic claims incurred for storm damage has been consistently higher in the period since 2021 than in 2018 to 2020.[131;132]

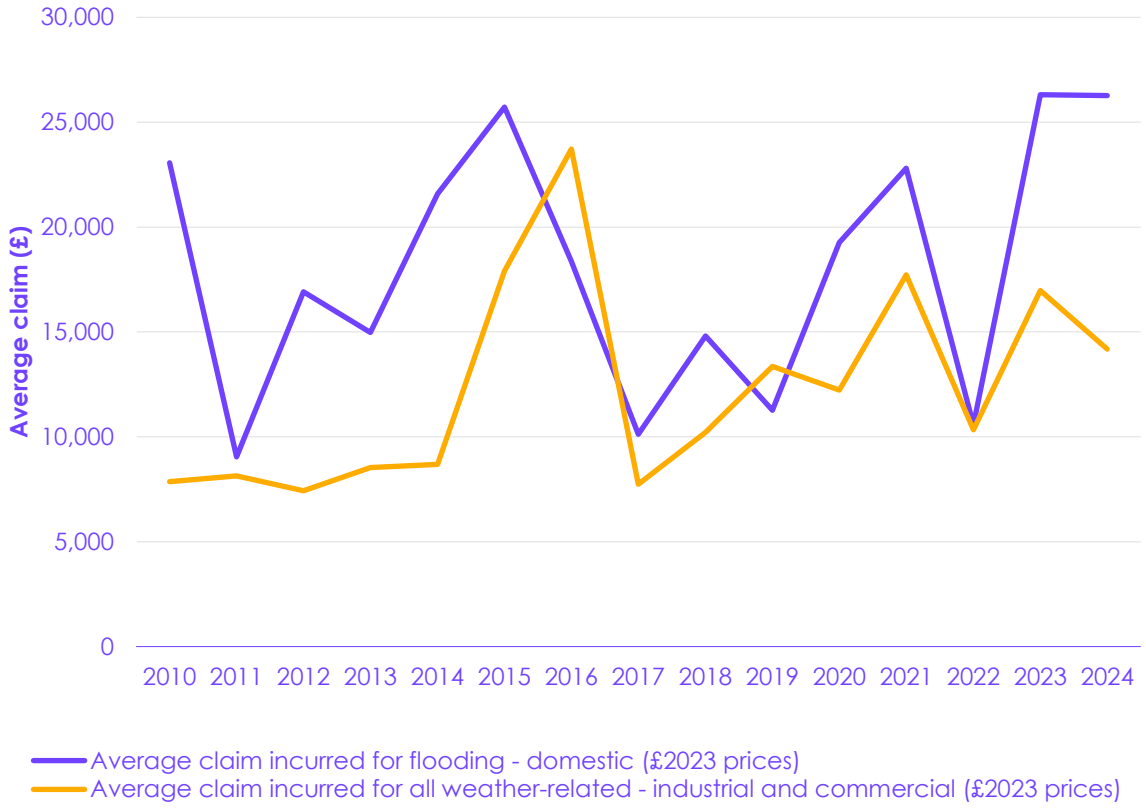
  - New research on future projections of wind-driven rain under a 4°C warming scenario suggest annual wind-driven rain could increase by 25% from the west, southwest, and south in some regions. The projections show notable seasonal and geographical variation, with winter wind-driven rain projected to increase from southerly and westerly directions. The regions at highest risk of increases in wind driven rain are mostly already classed in Approved Document C of the Buildings Regulations as having 'severe' exposure to wind-driven rain, with guidance reflecting this. Further evidence is required on the opportunities for insulation and adaptation of the building stock in future.[133]

  - Damages from clay shrink-swell (subsidence) in Great Britain, which can be exacerbated by climate changes in rainfall and drought patterns, are estimated at £3 billion over the past decade. Modelling suggests that more than 6% of properties are highly likely to be affected by subsidence by 2030 under a high emissions climate scenario, rising to 10.9% (and 57.3% for London) by 2070.[134] Further evidence on adaptation planning to increase resilience to subsidence and reduce exposure to damages is required.

  - There is little data on the number of properties at risk of wildfires in England, and no data on building-level measures to help manage wildfire risk.

* For comparison, in 2020, 5,700 properties were flooded, and 1,600 properties approved for PFR grants, resulting in a total award of just over £6 million.

Figure 2.10 Average UK insurance claims notified due to flooding and weather events for domestic and industrial and commercial claims



Description: The average domestic insurance claim notified due to flooding in the UK has been generally rising since 2017 (other than a low in 2022). The last two years have seen claims comparable to 2015 levels, when there was extreme flooding in the North of the UK. For industrial and commercial claims, the average notified for all weather-related claims tracks a similar trend of increase since 2017, but claims are lower in general than the domestic flood claims.
Source: Association of British Insurers (2025) *Unpublished dataset*; HM Treasury (2025) *GDP deflators at marker princes and money GDP December 2024*.
Notes: (1) Data covers the whole of the UK. (2) Weather-related claims include claims for damage from flood, storms and weather-related escape of water (e.g. pipes). (3) Industrial and commercial data is not available for flood-related claims alone. (4) Values are adjusted to 2023 prices using December 2024 GDP deflators.

Community preparedness and response

Available evidence shows some progress since 2023 in adaptation for community preparedness and response, and some improvements in data availability and delivery for adaptation in the local and cultural heritage sectors.

- **Community preparedness (O-CPR1: Partial).** Local authorities play a key role in community preparedness for climate impacts. 27% of all local authorities in England now have climate risk registers in place, with slightly higher rates (36–39%) in larger authorities (such as County and Combined Authorities) and London Boroughs.[135]

  - A pilot set of local authorities were invited to report under the Fourth Round of the Adaptation Reporting Power (ARP4) which provided evidence for improved local adaptation planning. The reports cover the identification of priority risks and actions, as well as an indication of whether plans have been benchmarked to adaptation standards. As of February 2025, 18 local authorities have submitted reports, all of which cover actions to adapt to a range of future climate hazards, and some of which include implementation timelines, indicating a good baseline for future delivery.[136] For example, Blackpool Council set out how a risk assessment using future scenarios has informed their action plan and vulnerability assessment, linking this directly to actions such as the delivery of a council-wide green infrastructure strategy.[137]

  - Within the community, more at-risk properties are now being covered by EA flood warnings. However, there was a slight decline in the number of properties who have taken up these warnings in the last year (Figure 2.6j).[138] Data from the EA's survey of public flood risk perception also suggests that a declining proportion of people know how to find out about flood warnings or know what actions to take in a flood.*;[139]

  - Evidence for longer-term community-level preparedness for climate-related hazards other than flooding (such as number of community cooling centres, provisions for safety during extreme wind, community heat wardens) remains limited and difficult to evaluate.

- **Community response (O-CPR2: Limited).** Local Resilience Forums are multi-agency groups formed of key emergency responders and agencies in regions designed to improve coordination for emergency response. By early 2024, only 5.3% of them had updated and published community risk registers on heat, cold and flooding risks, which are an important lever for delivery and communication at the local level.[140]

  - The EA score their own capacity to respond to flooding and environmental incidents at quarterly intervals. The most recent data (September 2024) shows around 80% of incident response cells were operating as 'green' (sufficient staff and resources available, with safe operating conditions), however multiple areas had moved from green to amber or red since the previous quarter, with the EA forecasting further reductions over the winter period (when frequency, duration and magnitude of incidents tend to be higher). More data is required to evaluate whether this is part of a longer-term trend.[141]

  - Effective and timely emergency response is needed to limit impacts when extreme weather events occur. The number of weather events requiring emergency response is increasing (Figure 2.6k). For example, the average number of flooding incidents attended by fire and rescue services was 18% higher in between 2021 and 2023 than the average of the previous decade, with 54 incidents requiring evacuations between 2023 and 2024.[142]

  - There have been some positive examples of good practice at the local level. For example, in June 2024, the Greater London Authority's London Resilience Unit staged an extreme heat exercise simulating a five-day heatwave with over 80 participants from a range of sectors in the region.[143]

  - Available data on wildfires show peaks in 2019 and 2022 but more evidence is needed to evaluate wildfire trends at the rural-urban fringe (Figure 2.1c).[144]

* Just under half of respondents said they knew what to do when a flood warning was issued in the most recent survey.

- Data on adaptation measures (for example, fire stations with boats or wildfire equipment) in emergency response facilities, estates and operations would be a useful future indicator, and more data on household and community level recovery and post-event response is required to evaluate this outcome further.

- **Cultural heritage (O-CPR3: Limited).** We continue to lack outcome-level evidence for adaptation delivery in the cultural heritage sector but evidence from heritage organisation ARP4 reporting suggests some progress since 2023. This includes submissions from Historic England and English Heritage (joint return) and the National Trust. Reports set out case studies of adaptation delivery, as well as implementation timelines linked to risk assessments.[145] This is a positive step towards developing a baseline evidence base on adaptation in the heritage sector.

  - Historic England have been carrying out adaptive planning with other stakeholders at Hurst Castle, and their restoration of Blenheim Palace's Orangery Roof included widening gutters to increase rainfall capacity and re-introducing sash weights on windows to aid passive cooling.[146]

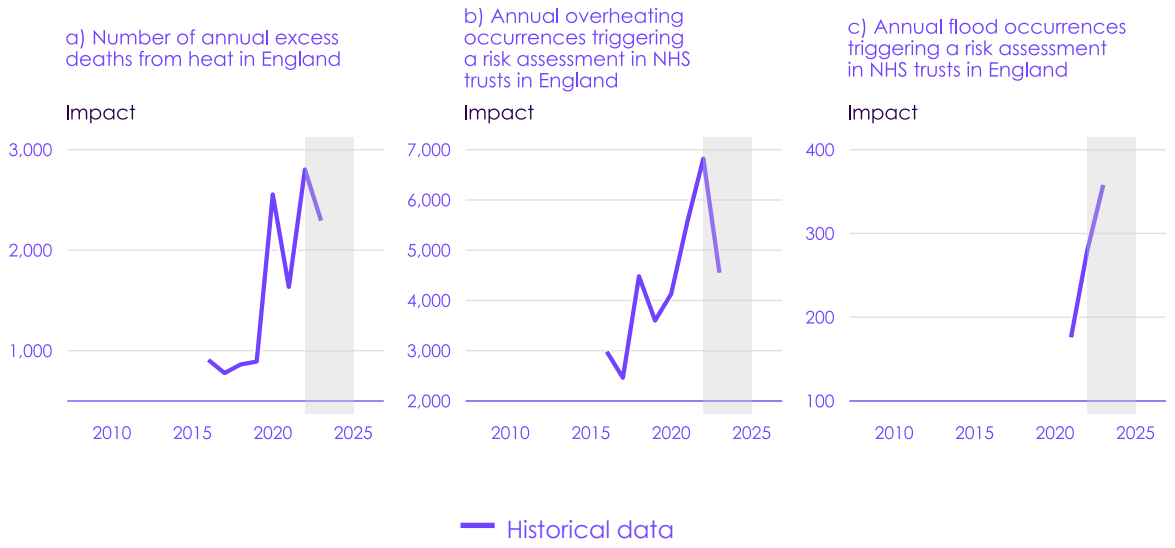
2.2.4 Health and wellbeing

Table 2.7
Health and wellbeing outcome scores

Thematic area	Outcome ID	Outcome	Delivery and implementation score	Quality of evidence to assess score	Change from 2023 Progress Report
Heath	O-H1	Protect population health from the impacts of climate change and utilise potential benefits.	Insufficient	High	No change
	O-H2	Quality and accessible healthcare delivery during extreme weather.	Insufficient	High	No change

Notes: (1) Where there are no indicators available a score may be applied if there is substantive published qualitative evidence to inform a score. (2) For this progress report, we have broken down the 'mixed' score from our 2023 assessment to 'partial' and 'limited' to improve the specificity of our assessment. (3) To account for the variability in available evidence to assign a score, we indicate whether we have high, medium, or low confidence in the quality of available evidence.

Figure 2.11 Indicators monitoring adaptation progress on health



Description: There has been an increase over time in the number of annual excess mortality incidences from heat and overheating or flooding occurrences triggering a risk assessment in NHS trusts. However, the trend is dependent on weather variability.
Source: Historical data provided by UK Health Security Agency (UKHSA) and NHS.
Notes: (1) Recorded overheating is defined as that triggering a risk assessment (when an occupied ward or clinical area has a daily maximum of over 26°C). Flooding from external weather events is defined as where water has breached the boundary of a site and caused disruption,) or where water has breached the exterior of the building (e.g. water ingress through a door or roof). (2) The shaded area on the indicator charts identifies the period 2022 to 2025, highlighting the change in indicator performance since our last progress report assessment. (3) All indicators represent England, recognising that health is a devolved policy area.

Health

Delivery of adaptation to address and prevent human health impacts from climate change remains insufficient. Overall, there is a long-term increasing trend in heat-associated deaths and a long-term trend of overheating in hospital settings. There remain significant gaps in the availability of data to monitor the impacts of climate change, particularly on wider health outcomes beyond overheating and flooding.

- **Population health (O-H1: Insufficient).** Heat-related mortality (as reported by the UK Health Security Agency - UKHSA) has been trending upwards since recording began, particularly within vulnerable groups (over 65 years olds).[147;148] The vast majority of heat-related deaths occur in the elderly (who are often disproportionately vulnerable to heat-related illness due to age-related physiological characteristics and pre-existing health conditions).[149]

  - New indicators on heat-health impacts were reported for the first time in the 2024 Adverse Weather and Health Plan (AWHP) annual report, including on years of life lost due to heat (16,239 across 1 June 2023 to 30 September 2023).[150] Continued reporting on these indicators will help strengthen tracking of heat-health impacts in the coming years, but the availability of data for the tracking of morbidity impacts still remains limited at present.

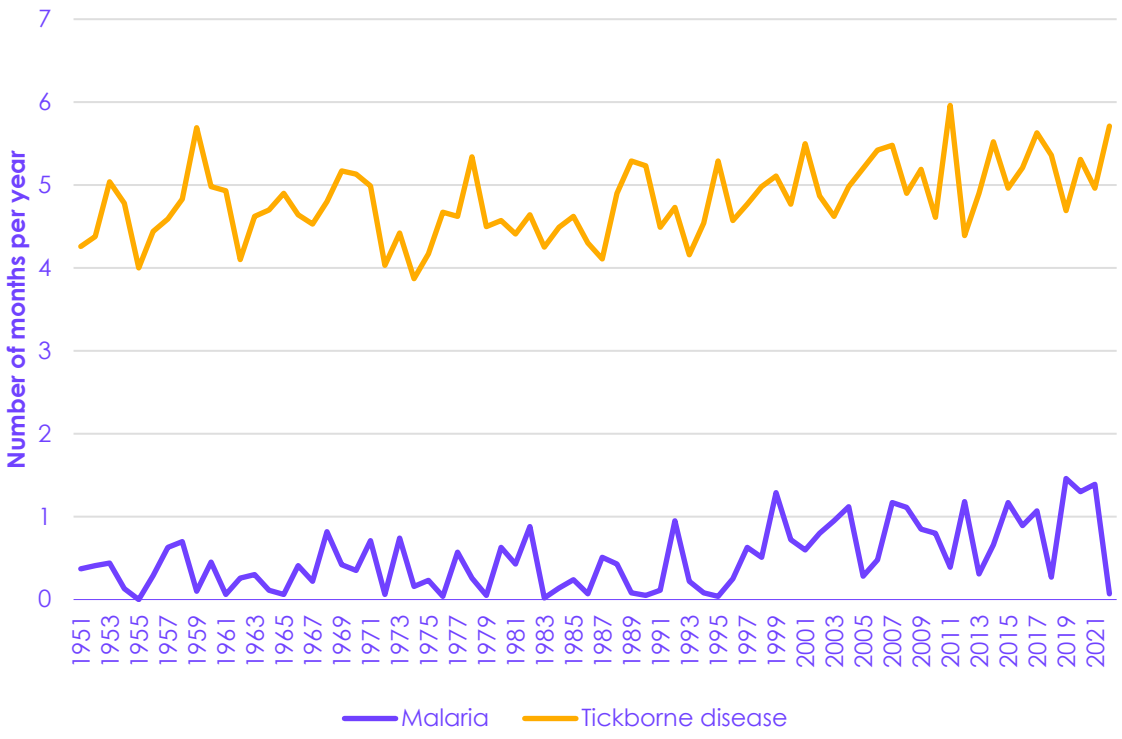
  - Climate change can also influence the prevalence of some vector-borne and infectious diseases, including tick and mosquito presence and distribution.[151] The number of months with climatic conditions suitable for the spread of malaria and tick-borne disease across the UK has risen since the 1960s (Figure 2.12).[152] However, more data collection and reporting on actual cases of, and mortality from, climate-sensitive diseases is needed to assess adaptation progress.

- Malaria is not currently established in the UK and the risk of tick-borne encephalitis is currently very low. Reported Lyme disease cases are increasing, though the drivers are unlikely to be solely attributable to climate change; for example, improved diagnostic techniques and testing may also contribute to an increase in reported cases.[*;153]

- Improved monitoring of climate-sensitive pathogens is required to inform public health risk assessments and actions, and to help assess adaptation progress. UKHSA have recently expanded the network of invasive mosquito traps (to over 1,100) and the network of wetland sites conducting native mosquito surveillance (to around 35), as well as doubling the number of sites where surveillance is undertaken by local government.[†;154]

- Vibrio bacteria can cause a number of infections via human exposure to sea water and contaminated food, and their prevalence is linked to rising sea temperatures.[155] Modelled data shows an increase in estimated Vibriosis cases, resulting from a rising length of the UK coastline with water conditions becoming suitable for Vibrio transmission (88,450 km in 2023, up by over 14% since 2018).[156]

Figure 2.12 Number of months per year with suitable conditions for disease spread



Description: The number of months with climatic conditions suitable for the spread of malaria and tick-borne disease across the UK has risen since the 1960s. Since 2001 there have been on average around five months per year when conditions are suitable for tickborne diseases, and one month per year on average when conditions are suitable for malaria.
Source: Lancet Countdown (2024) *Unpublished dataset*.
Notes: This data tracks the number of months that had conditions suitable for the spread of malaria from the parasite *Plasmodium vivax*, which is the parasite of greatest interest to malaria spread in the UK.

[*] Environmental degradation and land use change are also big drivers for Lyme incidence.

[†] Traps are techniques used in surveillance of mosquitoes, designed to collect a variety of species at different life stages.

- **Healthcare delivery (O-H2: Insufficient).** Available data covering the NHS estate shows a long-term rise in recorded overheating of NHS trust buildings (Figure 2.11b).* Since 2021, recorded flooding incidences have also increased (Figure 2.11c).†;157 As more years of data are collected, the understanding of trends in impacts on the NHS estate will improve. There is insufficient data to monitor vulnerability of health care delivery (including effects on care disruptions, and infrastructure damage) to climate change and delivery of adaptation actions. Beyond the NHS, there is no routinely collected data that covers adaptation in other healthcare settings such as care homes, domiciliary care, and GP surgeries, and documents extreme weather disruption.

2.2.5 Economy

Table 2.8
Economy outcome scores

Thematic area	Outcome ID	Outcome	Delivery and implementation score	Quality of evidence to assess score	Change from 2023 Progress Report
Business	O-BS1	Public and private adaptation measures are implemented to minimise risks to business sites.	Insufficient	High	No change
	O-BS2	Businesses have access to capital and insurance including for adaptation.	Unable to evaluate	N/A	N/A
	O-BS3	Productivity losses due to physical climate risks are minimised.	Insufficient	Medium	N/A
	O-BS4	Supply chain risks are identified and managed.	Insufficient	Low	No change
	O-BS5	Risks and actions are disclosed and managed by businesses.	Limited	Medium	No change
Finance	O-F1	All financial institutions incorporate physical risks into	Limited	Medium	N/A

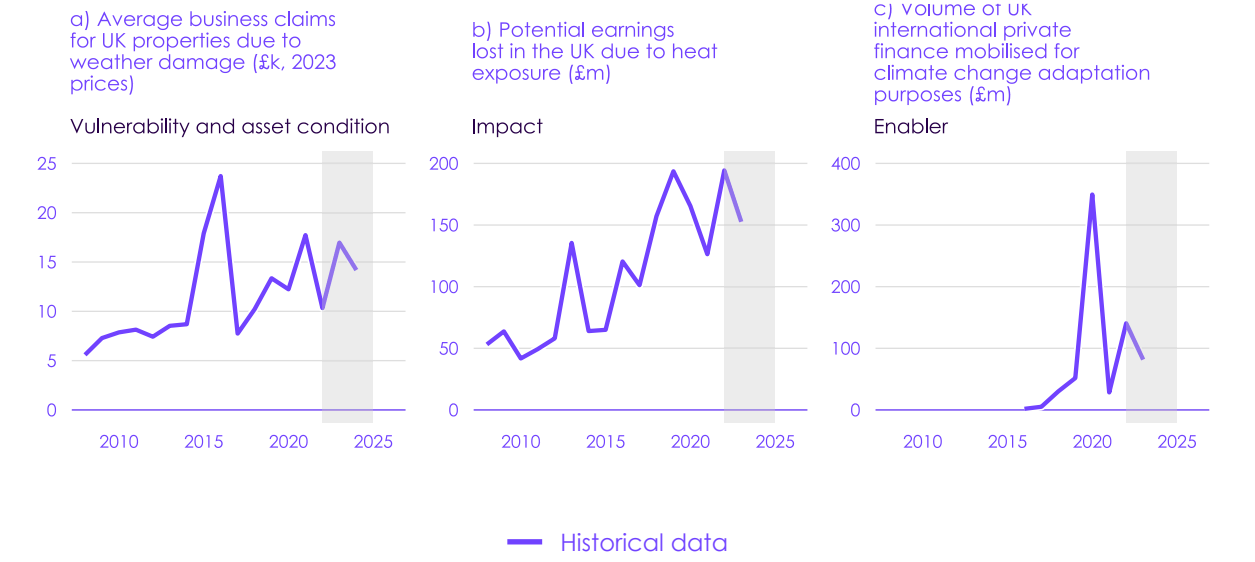
* Recorded overheating is defined as that triggering a risk assessment (when an occupied ward or clinical area has a daily maximum of over 26°C). Some incidents may go unreported.

†

		financial decision-making.			
	O-F2	UK financial services are a global leader in adaptation.	Limited	Medium	N/A
	O-F3	No viable adaptation project fails for lack of finance.	Unable to evaluate	N/A	N/A
	O-F4	Risks and actions are disclosed and managed by financial institutions.	Limited	Medium	No change

Notes: (1) Where there are no indicators available a score may be applied if there is substantive published qualitative evidence to inform a score. (2) For this progress report, we have broken down the 'mixed' score from our 2023 assessment to 'partial' and 'limited' to improve the specificity of our assessment (3) To account for the variability in available evidence to assign a score, we indicate whether we have high, medium, or low confidence in the quality of available evidence. (4) The 'change from APR 2023' is N/A where a score was previously 'unable to evaluate' in our 2023 assessment of progress.

Figure 2.13 Indicators monitoring adaptation progress in the economy



Description: There is an estimated increase in the potential earnings lost in the UK due to heat exposure. There is a less clear pattern in terms of average businesses claims for UK properties due to weather damage, and volume of UK international private finance mobilised for adaptation purposes.
Source: Historical data provided by the Association of British Insurers, Lancet Countdown and UK International Climate Finance.
Notes: (1) The shaded area on the indicator charts identifies the period 2022 to 2025, highlighting the change in indicator performance since our last progress report assessment. (2) In-year costs are presented in real 2023 prices. (3) The indicators are available for the UK, recognising that this is a reserved policy area.

Business

There is an improving, but still patchy, evidence base to assess how well-prepared UK businesses are to the effects of climate change. New sources of data provide additional insights compared to

our previous report, for example data on insurance claims for business properties due to weather events, productivity losses due to extreme heat, and recent survey data from the ONS and the Carbon Disclosure Project (CDP).

- **Adaptation measures to minimise risks to business sites (O-BS1: Insufficient).** Data on adaptation measures taken by UK businesses to reduce the risk to their sites is limited. However, data from the Association of British Insurers (ABI) shows an increase in business insurance claims.

  - ABI data indicates that average business claims incurred due to weather events have risen considerably, more than doubling from £5,000 in 2004 to £14,000 in 2024 (in 2023 prices) (Figure 2.13a).[158]

  - Gross business claims incurred due to weather events show the same trend, rising from around £180m in 2004 to around £440m in 2024.*

  - Business claims for climate-related business interruption – where losses are not directly linked to property damage but rather to the inability to operate from the business premises due to weather-related disruptions – have also increased. Between 2004 and 2024 the average claim has increased by around 50%, and gross claims have increased by around 70%.†

- **Access to capital and insurance by businesses including for adaptation (O-BS2: Unable to evaluate).** There is limited data available to assess this outcome. The UK has a well-developed capital market and a leading insurance sector with strong insurance penetration rates across business and industry, historically scoring highly in rankings such as the Access to Capital Index.[159] Nevertheless, some concerns remain regarding regional disparities and SMEs' access to capital and insurance, particularly for adaptation action.[160;161;162;163;164;165]

- **Productivity losses due to physical climate risks (O-BS3: Insufficient).** Among businesses impacted by severe weather events in the last 12 months, 21% experienced staff absenteeism due to extreme weather according to the 2024 ONS Business Insights and Conditions (BICS) survey.‡;[166]

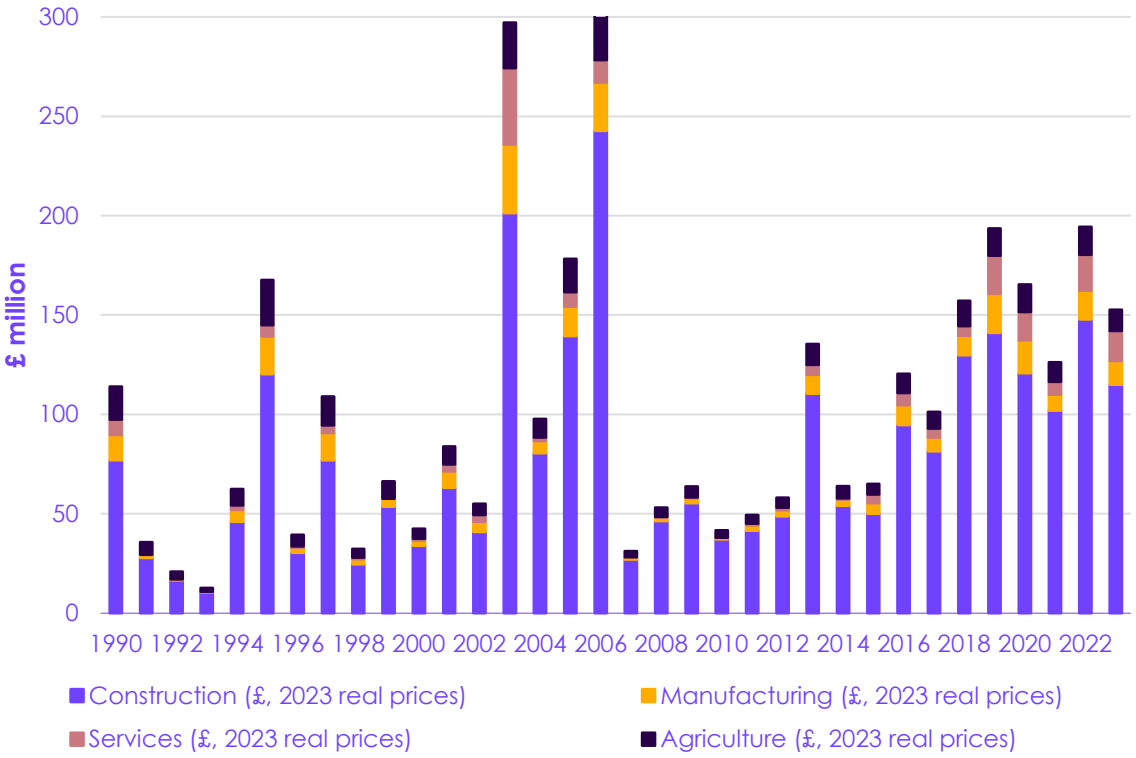
  - Data from the Lancet Countdown shows a real-terms rise since 2010 in estimated earnings lost due to heat-related reductions in UK labour capacity, reaching an average of £160 million for 2021 to 2023 (Figure 2.13(b) and Figure 2.14 by sector).[167] This is consistent with similar experimental statistics published by the ONS.[168] About 75% of these losses are attributed to the construction sector, which is the most affected, with an average loss of £120 million for 2021 to 2023.

* Gross business claims indicate the total value of all claims made. Average business claims indicate the average value of a business claim.

† These trends are variable and fluctuate significantly year-on-year.

‡ All businesses, excluding those with 0–9 employees.

Figure 2.14 Potential earnings lost due to heat exposure by sector



Description: There has been an increase in potential earnings lots due to heat exposure in the last ten years. The years with the highest potential earning losses were in 2003 and 2006, due to heatwaves and record-breaking temperatures in the UK.
Source: Lancet Countdown (2024) *Unpublished dataset*.
Notes: (1) Earnings have been adjusted to 2023 prices. (2) The data are based on a population of outdoor workers at risk as estimated by WHO. (3) Potential work hours lost due to heat exposure are calculated using temperature, humidity, solar radiation, and the typical metabolic rate of workers in specific economic sectors, through established epidemiological models to determine the hours lost. (4) Hours lost data are combined with the International Labour Organization's wage data to quantify the potential loss of earnings resulting from heat-related reductions in labour capacity. Direct adaptation actions to protect productivity are not accounted for. (5) The 2003 and 2006 spikes are due to heatwaves and record-breaking temperatures in the UK.

- **Supply chain risks (O-BS4: Insufficient).** The UK's significant openness to trade can make it vulnerable to external supply chain shocks. Climate change risk assessments have identified supply chains as a key area of exposure. Diversification of supply chains across countries can help provide resilience.[169]

  - The ONS BICS survey shows that in 2024 only 4% of businesses reported severe weather event as the main reason for global supply chain disruption, and only 2% of businesses were concerned about climate change affecting their supply chains in the next 12 months.[170;171] However, it is uncertain whether this indicates resilience or a lack of awareness of climate change impacts on UK supply chains.

  - The UK's supply chains may be at risk due to trade chokepoints. The three key trade chokepoints by value of UK imports are Gibraltar, the Suez Canal, and Bab al-Mandab.[172] Of these, the Suez Canal is likely to face operability disruption due to increased future climate events.[173;174]

  - There are also interdependencies between supply chain resilience and infrastructure and technology resilience, for example in terms of the resilience of refrigeration units in vehicles to higher ambient temperatures.

- **Disclosure and management of climate change risks by businesses (O-BS5: Limited).** The 2023 to 2024 annual review by the Financial Reporting Council indicates few compliance issues in premium-listed companies' reporting against the Taskforce for Climate-related Financial Disclosures (TCFD) framework.[175] However, TCFD reports are often high-level and insufficiently detailed on physical climate risks and adaptation, and it is unclear whether reporting on climate risks using the TCFD framework is effectively translating into reduced exposure to physical risk and increased adaptation efforts.

  - There is very little evidence of whether and how businesses are using their physical risk data for their own decision making. The CDP conducts an annual survey of major global corporations on climate mitigation and adaptation. In 2023, CDP survey data found that around 40% of UK business respondents identified current or future physical risks as having a substantial financial or strategic impact on their business. Around 60% of businesses at risk were able to monetise that risk. Similarly, the survey shows that only one in three UK businesses use quantitative or a mix of quantitative and qualitative climate change scenario analysis to inform their business strategy.[176]

Finance

There is generally limited publicly available time-series data to track what adaptation actions have taken place, and how well prepared the UK's financial system is for climate change. However, qualitative and case study-based information provides evidence of limited progress in some areas and remaining challenges in others.

- **Incorporate physical risks into financial decision-making (O-F1: Limited).** New evidence available since 2023 indicates there is limited incorporation of physical risks into financial decision-making, changing our score from 'unable to evaluate' in 2023. This may in part be due to the implementation of climate-related supervisory expectations by the Prudential Regulation Authority.

  - In 2024 the UK Climate Financial Risk Forum (CFRF) Adaptation Working Group reported how the financial sector may under-price climate change risks, in turn constraining investments in adaptation.[177] In 2024, the CFRF surveyed financial institutions on their use of climate hazard information in decision-making. Though based on a small sample, findings show a primary reliance on qualitative tools when making adaptation decisions.[178]

  - The reinsurance broker Guy Carpenter (who mostly insures other insurance and reinsurance companies) confirmed that only 28% of their UK clients assessed climate risks quantitatively in 2024.[179] Similarly, a 2024 review by The Pension Regulator reports that many scenario models used by occupational pension schemes significantly understate climate risk, often failing to account for all physical risks or physical climate tipping points.[180] Pension funds are particularly susceptible to the impacts of climate change in the next 30 to 50 years due to their long-term investment horizon.

- **Global leadership in adaptation services (O-F2: Limited).** There is limited evidence of UK leadership in providing adaptation services such as financing adaptation action abroad, innovating and being a market leader in adaptation finance and insurance. Making international comparisons is difficult. The UK supports developing countries in mobilising private funding for adaptation through the UK International Climate Finance (ICF) programme (Figure 2.13(c)).

- FCDO reports that since its launch in 2011 and 2024 the ICF programme had mobilised approximately £700 million of private finance for adaptation purposes.[181]

- Additionally, the UK has globally recognised examples of adaptation schemes, such as Flood Re's 'Build Back Better' initiative, which helps flood victims repair their homes with resilience measures.[182]

- The reinsurance company SwissRe estimated the percentage of uninsured economic losses from natural catastrophes in major world economies between 2014 and 2023, a measure commonly known as the 'protection gap'. The UK performed better than the average of other advanced economies, with the estimated gap remaining steady at 21% on average over the 2014 to 2023 period.[183]

- **Financial viability of adaptation projects (O-F3: Unable to evaluate).** There is no consistent data showing whether viable adaptation projects fail for lack of finance and this outcome is scored as unable to evaluate. The Committee's 2023 report Investment for a well-adapted UK set out barriers to adaptation financing.[184] However evidence suggests that in many cases there is an underlying funding-related barrier to investment with a lack of bankable cashflows from improved resilience limiting the viability of projects.

  - Disclosure and management of climate change risks by financial institutions (O-F4: Limited). Large financial institutions are required to report in accordance with the TCFD framework. However, TCFD reports often vary significantly and tend to be high-level. Also, it is unclear whether reporting of climate risks in TCFDs is effectively translating into reduced exposure to risks.

  - A 2023 review of climate-related metrics and targets by the Financial Reporting Council (FRC) analysed TCFD reports from a sample of five UK banks, including two from the FTSE 100 and one from the FTSE 250. None of the reports quantified the financial effect of climate change, and four banks out of the five surveyed explicitly stated that they did not consider the quantitative impact to be 'material' at this time.[*;185]

  - However, disclosure requirements are expected to have improved awareness of climate-related risk among financial institutions. As a result, we assess that progress has been made over the progress report period, despite the disparity in the quality of reports and the difference in adaptation actions between leaders and laggards.

[*] Information is material if its omission or misrepresentation could reasonably be expected to influence the economic decisions shareholders take on the basis of the annual report as a whole.

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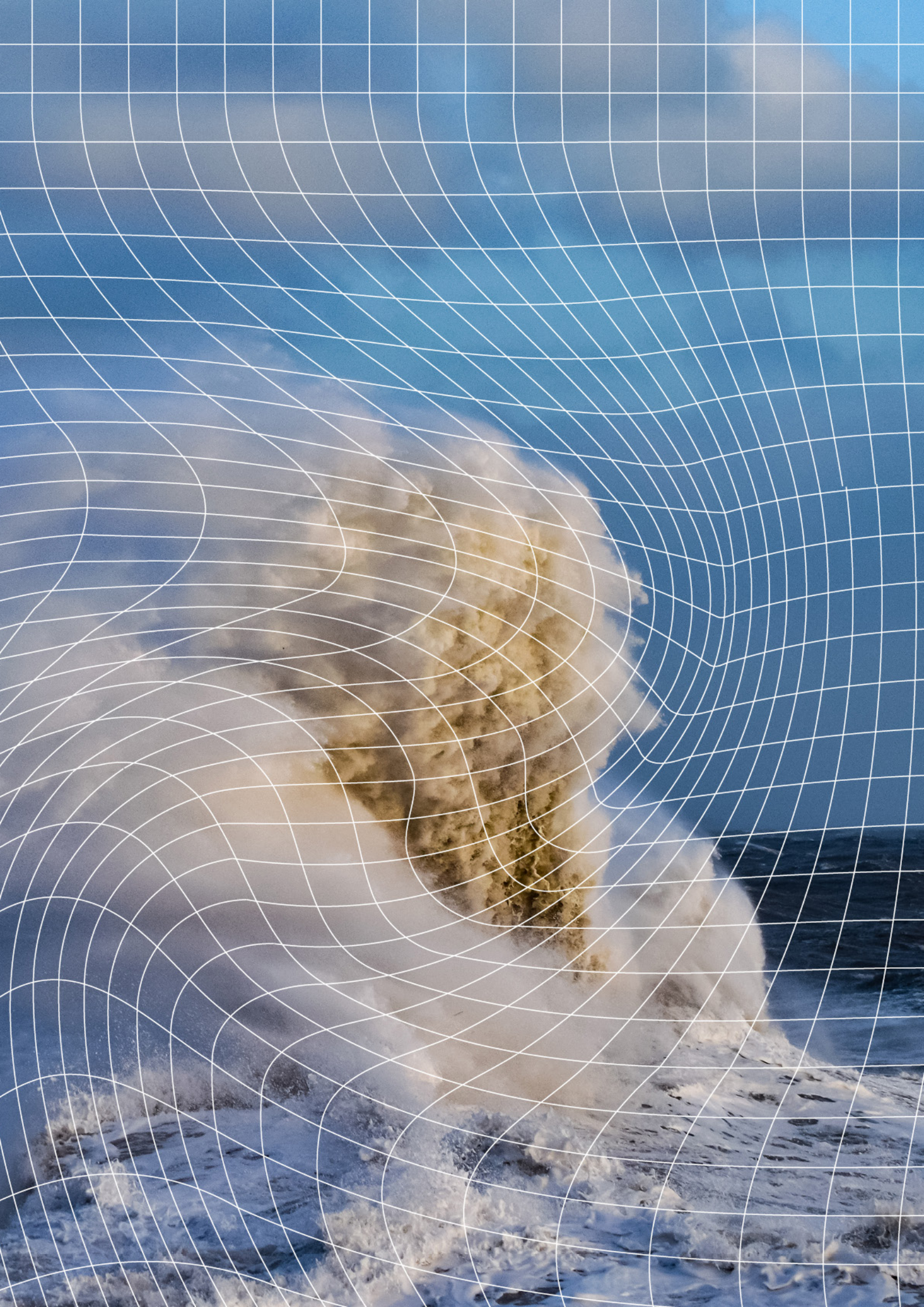


Chapter 3: Assessment of policies and plans

The Climate Change Act (2008) (the Act) requires the Government to set out its objectives for climate adaptation; proposals and policies to meet those objectives; and timescales for introducing those proposals and policies. Government does this through the Third National Adaptation Programme (NAP3). The Act also requires the Committee to assess progress against the programme. This is the first statutory Climate Change Committee (CCC) progress assessment of NAP3.

Our key messages are:

- **NAP3 falls far short of what is needed and needs urgent strengthening.** NAP3 lacks the pace and ambition to address growing climate risks, which we are already experiencing in the UK. A strengthened cross-cutting approach to adaptation is now vital to make it a true cross-government priority. Stronger integration and coordination with the other parts of government resilience planning are required, as is putting data collection on a proper footing.

- **Only a few areas have good adaptation planning.** Adaptation planning is lacking in most areas, with only three out of 46 outcomes achieving a 'good' policy and planning score. Nearly all areas need further development, with higher scores mainly limited to regulated infrastructure sectors or publicly funded areas like flood and coastal erosion management. 27 outcomes (60%) show limited or insufficient progress, highlighting major gaps in adaptation efforts across policies and plans.

- **The pace of change in policies and plans remains slow.** Since our 2023 assessment, 11 policies and plans scores have improved, mostly in water supply, transport, finance, and business. However, other required outcomes have worsened as plans no longer align with their stated objectives in water demand and system performance, and protection from river and coastal flooding.

- **Driving forward adaptation delivery is now critical.** Forthcoming policies and plans provide opportunities to drive forward the UK's climate resilience. These opportunities must be seized. Failure to do so risks locking-in new risks that put delivery of government objectives in jeopardy or require more costly adaptation later on.

This chapter is laid out in four sections, covering:

- UK adaptation policy and our assessment framework for policies and plans.
- Evaluation of progress on recommendations accepted by government.
- Assessment of policies and plans.
- Priority recommendations to the UK Government.

3.1 UK adaptation policy and our assessment framework for policies and plans

UK adaptation policy

The Third National Adaptation Programme (NAP3) was published in 2023 and covers the five-year period 2023 to 2028. NAP3 is required to respond to the risks identified in the most recent Climate Change Risk Assessment (CCRA) – a five-year assessment delivered under the Act that identifies the risks that climate change poses to the UK. The NAP is primarily for England (as most policy areas relevant to climate change adaptation are devolved) as well as covering adaptation for the whole UK in policy areas that are reserved for the UK Government. The NAP is coordinated and published by the Department for Environment, Food and Rural Affairs (Defra) but contains actions from a wide range of government departments.

NAP3 identified actions from across the UK Government intended to support adaptation to climate change risks in different sectors of the economy and society. For the first time, NAP3 included actions for international dimensions that cover risks with cross-border impacts. For example, actions that consider the impacts on global supply chains, violent conflict, and migration.

This progress report builds on our initial assessment of NAP3 (published in March 2024).[1] In this initial assessment of the published NAP3 documents we concluded:

- **NAP3 falls far short of what is needed.** NAP3 lacks the pace and ambition to address growing climate risks which we are already experiencing in the UK. NAP3 is largely a collation of pre-existing actions.
- **Slow progress across three NAPs shows that the current approach is not working, and that change is needed.** NAP3 is an improvement on its predecessor. However, shortfalls in governance, investment, and monitoring are fundamentally limiting the response to climate risks in the UK.
- **An urgent refresh of NAP3 and adaptation governance should be undertaken.** NAP3 must be strengthened to avoid locking in additional climate impacts. Key reforms must be implemented to support improved delivery of adaptation.
- **The UK has lost its place as a leader in climate adaptation.** The UK should look to international examples of good practice as valuable templates of what should be achieved as part of the refresh of the NAP.
- **We cannot assess progress without monitoring and evaluation.** The monitoring and evaluation system pledged in NAP3 needs to be delivered urgently.

Assessment framework for policies and plans

This report assesses progress achieved to date and provides priority recommendations to strengthen the programme over the remainder of the NAP3 period. As in past reports, we use a formalised adaptation monitoring framework to evaluate progress.[2]

We evaluate evidence from within the scope of the published NAP3 but also consider wider policies and plans (primarily at a national level) that sit outside the NAP actions whilst still being relevant for managing the UK's climate risks. This includes making use of the newly available reports from the fourth round of the Adaptation Reporting Power (ARP4 – Box 3.1). We supplement our assessment of policies and plans available in the public domain with targeted stakeholder engagements, both within and outside government, to ensure that our assessment is up-to-date and robust.

Box 3.1
The fourth round of the Adaptation Reporting Power (ARP4)

The ARP was created under the Act to help understand and improve the resilience of key infrastructure systems to climate change. It enables government to ask certain organisations to produce reports on:

- The current and future predicted effects of climate change on their organisation.
- Their actions taken and their future proposals for adapting to climate change and progress made towards their implementation.

This power can be applied to organisations defined as 'reporting authorities' under the Act – 'persons or bodies with a function of a public nature' and 'statutory undertakers'. The ARP reports from these organisations are intended to provide key information on infrastructure resilience to be used by other elements of the regular five-yearly adaptation policy cycle, including the CCRA and the NAP.

ARP4 made a number of changes, responding to recommendations from the CCC's evaluation of the third round:[3;4]

- A shorter cycle to better align the ARP with the rest of the UK adaptation policy cycle. Given the shorter cycle, there is an expectation that ARP4 submissions would seek to be updates for organisations that reported in round three.
- An expanded scope to cover more sectors including canals and rivers and a pilot of local authority reporting.

The ARP4 closed in December 2024.[5] Where possible, evidence from these reports has been used to inform this assessment. They will also inform the Fourth Climate Change Risk Assessment - Independent Assessment (CCRA4-IA), which will be published in 2026.[6]

Our framework evaluates the policies and plans in place to deliver each required outcome by assessing whether the necessary policy milestones (consistent with the CCC Adaptation Monitoring Framework) are in place or achieved, the plans are comprehensive and appropriately ambitious, enablers including funding are in place, and whether the plans include monitoring and evaluation (Table 3.1). In this report, we concentrate on policies and plans published prior to the end of March 2025 only.

Table 3.1
Scores and criteria for policies and plans

Good policies and plans	Credible plans which are comprehensive and appropriately ambitious, with enablers (including funding, monitoring and evaluation) and timelines in place.
Partial policies and plans	Some adjustment to plans may be needed to deliver outcomes and to improve ambition. Whilst the plans cover funding and enablers (including monitoring and evaluation), there are some uncertainties on how these will be delivered.
Limited policies and plans	Plans need further work to improve ambition and to deliver outcomes. There are considerable uncertainties on how enablers and funding will be delivered and there is minimal evidence of monitoring and evaluation.
Insufficient policies and plans	Plans are either missing, do not cover key areas, do not have appropriate ambition or lack funding and new proposals are needed. Negligible evidence of monitoring and evaluation plans are in place.
Unable to evaluate	There is insufficient evidence to assess, or it is too early to tell.

Notes: Previously 'good' policies and plans were scored as 'credible' in the CCC's last assessment of progress.

We provide an updated assessment of policies and plans under a set of different outcome areas (Table 3.2). These contain 13 thematic areas, each of which in turn has between two and six specific outcomes. We summarise our analysis, considering the same set of thematic areas (and their required outcomes) as in our 2023 Progress Report.[7] We also assess policies and plans for international collaboration, following its inclusion in NAP3, but do not assess specific outcomes underneath it.

Table 3.2
Summary of assessment areas

Outcome area	Thematic area	Number of outcomes
Land, nature, and food	Nature	3
	Working land and seas	3
	Food security	2
Infrastructure	Water supply	4
	Energy	3
	Telecommunications and ICT	3
	Transport	6
Built environment and communities	Towns and cities	5
	Buildings	2
	Community preparedness and response	3
Health and wellbeing	Health	2
Economy	Business	5
	Finance	4
International collaboration	NA	NA

Notes: The 13 thematic areas cover adaptation outcomes to address the set of risks identified in our Third Climate Change Risk Assessment.[8]

3.2 Evaluation of progress on recommendations accepted by government

We also evaluate the recommendations accepted by government from the set of detailed sectoral recommendations in our 2023 Progress Report, using the criteria laid out in Table 3.3.

Table 3.3
Scores and criteria for recommendations

Achieved	Recommended action has been implemented in full.
Partial progress	The recommendation is not completed in full, but the steps taken by government deliver sufficient progress.
Limited progress	Some steps have been taken by government, but are incomplete, or not at the required pace to achieve the recommendation.
Insufficient progress	Negligible progress has been made. The steps taken by government (if any) are not credible.
Unable to evaluate	There is insufficient evidence available to inform an assessment but there is some known progress.

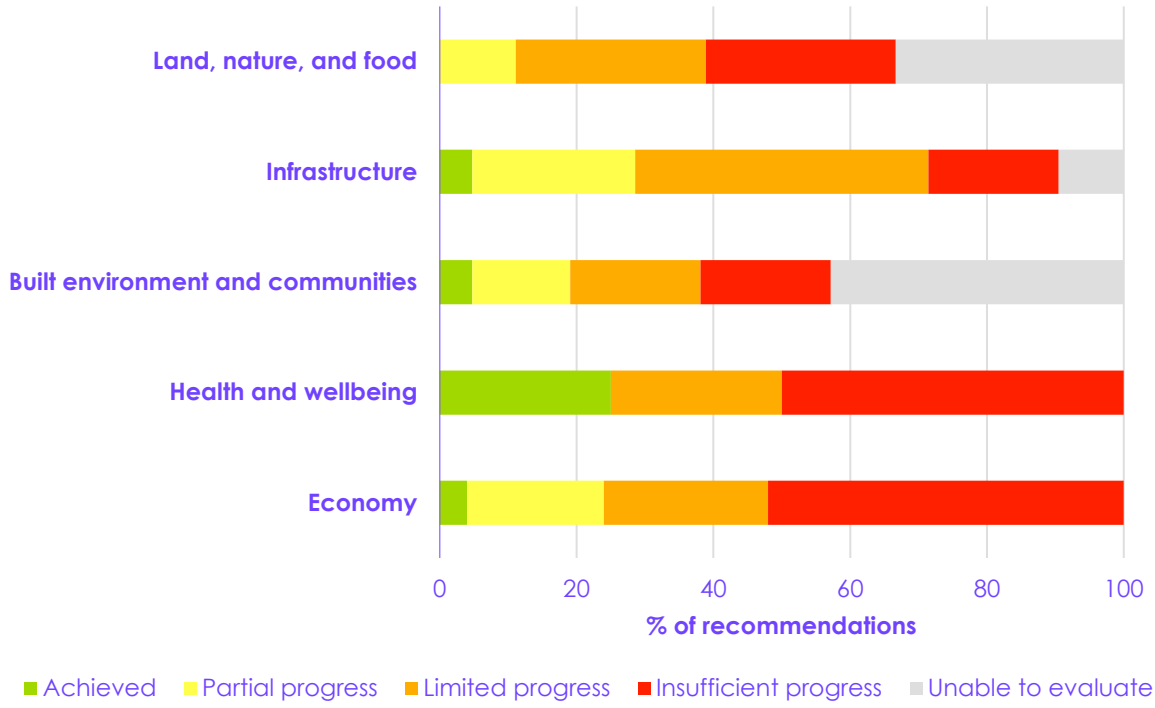
Notes: In our previous assessment of progress, recommendations were scored as: achieved, underway, partly achieved, not achieved.

In our Progress in adapting to climate change – 2023 Report to Parliament, published soon before NAP3, we recommended 89 detailed actions to close policy gaps in government's adaptation planning. We have evaluated the extent to which these have been delivered in the last two years, either as part of NAP3 or otherwise (Figure 3.1).*

- Four of these recommendations have been evaluated as achieved in full. A further 14 have seen partial progress over this period. Most of the 89 recommendations have either seen insufficient or limited progress over this period.
- Progress implementing our recommendations has been particularly limited in telecommunications and ICT, food security, community preparedness and response, buildings, and towns and cities with limited or insufficient progress for all recommendations.
- For some recommendations (15) we have been unable to evaluate progress on our recommendations based on availability of information.

* Our scoring for each recommendation will be published alongside this report.

Figure 3.1 Progress against 2023 priority recommendations



Description: For land, nature, and food, of the 18 recommendations, a third are scored as unable to evaluate due to lack of available information. There has been insufficient progress in 28% of recommendations, limited progress in 28% of recommendations and partial progress in 11%. For infrastructure, of the 21 recommendations, 5% are achieved, 24% have partial progress, 43% have limited progress, 19% have insufficient progress and the remainder are unable to be evaluated. For built environment and communities, of the 21 recommendations, 5% are achieved, 14% have partial progress, 19% have limited progress, 19% have insufficient progress and the remaining 43% are unable to evaluated. For health, of the four recommendations, one has been achieved, one has limited progress and the remainder have insufficient progress. For the economy, of the 24 recommendations, one has been achieved, 17% have partial progress, 25% have limited progress and the remaining 54% have insufficient progress.
Source: CCC analysis.
Notes: (1) Our scoring for each recommendation will be published alongside this report. (2) The number of recommendations for each outcome area varies. There are 18 recommendations for Land, Nature and Food, 21 for Infrastructure, 21 for Built environment and communities, 4 for Health and 24 for Economy.

3.3 Assessment of policies and plans

3.3.1 Land, nature, and food

Table 3.4
Land, nature and food outcome area scores

Thematic area	Outcome ID	Outcome	Policies and plans score	Change from 2023 Progress Report
Nature	O-N1	Terrestrial habitats are in good ecological health.	Limited	No change
	O-N2	Freshwater habitats are in good ecological health.	Limited	No change
	O-N3	Marine and coastal habitats are in good ecological health.	Insufficient	Worsened
Working land and seas	O-WLS1	Climate resilient agricultural production.	Insufficient	No change
	O-WLS2	Climate resilient commercial forestry sector.	Partial	No change
	O-WLS3	Climate resilient commercial fisheries and aquaculture sector.	Partial	No change
Food security	O-FS1	Disruption to food and feed import supply chains due to climate change is minimised.	Insufficient	No change
	O-FS2	Vulnerability to food price shocks is reduced.	Limited	No change

Notes: Previously, a 'good' score was labelled 'credible' in our 2023 Monitoring Framework.

Nature

Progress in this sector has been hampered by delays in the publication of several key policies and plans. These delays, and wider uncertainty around future funding (e.g. Nature for Climate Fund), are reducing the overall effectiveness of policies and plans for adaptation in nature.

- **Terrestrial habitats in good ecological health (O-N1: Limited).** The Environmental Improvement Plan (EIP) sets out the Government's vision and delivery plan for restoring the health of the natural environment, including how to strengthen the resilience of ecosystems.[9] Although the EIP recognises the importance of adaptation, it is not clear how climate change will impact the ability to achieve the targets set out in the document. This has also been recognised by the Office for Environmental Protection's assessment of the EIP (Box 3.2). Work to revise the EIP is ongoing, which could help drive forward specific adaptation targets and improve indicators to measure progress.

  - A consultation on a Land Use Framework was published in January 2025, with the final framework to be published before the end of 2025 (see working lands and seas).[10] This framework is essential to set out how land should be used to tackle both climate change mitigation and nature restoration, whilst building resilience to climate impacts.

  - There are other early-stage policies and plans in development which may help progress adaptation for terrestrial habitats. These include the consideration of how climate risk will impact protected sites and Sites of Special Scientific Interest (SSSIs) and the subsequent trigger for the creation of an Adaptive Delivery Plan for SSSIs with high climate vulnerability from 2025, the requirement for Protected Landscapes to have adaptive management plans by 2028, and the potential consideration of adaptation within Local Nature Recovery Strategies (LNRS), the first of which was published at the end of 2024.

- **Freshwater habitats in good ecological health (O-N2: Limited).** The Government's 2023 Plan for Water set out a vision for the "integrated management" of the water system, considering both nature and people.[11] It is currently unclear how the actions in this plan will be taken forward and how they relate to the upcoming water regulation reform. It is also not yet known how the revised EIP (a key strategy for this outcome) will consider climate risks to freshwater habitats.

  - There are opportunities to strengthen the inclusion of adaptation in policies and plans for the freshwater environment. This includes the forthcoming Water Framework Directive (WFD) reform, and work to future-proof the measures under the current set of River Basin Management Plans (which aim to achieve their environmental objectives by 2027).

- **Marine and coastal habitats in good ecological health (O-N3: Insufficient).** The UK Marine Strategy supports the roll out of Marine Protected Areas which, if effective, strengthens the resilience of marine and coastal habitats to climate impacts. However planned actions for protection no longer look credible to deliver interim milestones.*

  - Government published the Marine Strategy Part 3 in January 2025. Although climate change is clearly noted as a pressure in the programme of measures, it does not include any specific or targeted adaptation actions.[12] There is currently no planning in the EIP for how climate change will affect the feasibility of targets to protect and enhance nature in designated marine areas or beyond. Several of the Marine Plan Monitoring Reports have been delayed in publication and have missed their statutory deadlines. We have therefore lowered our policy score from 2023 to insufficient.

  - While the score has worsened, there are some positive developments to note, specifically around plans to develop evidence, skills and resources that will support climate adaptation. For example, continued updates to the evidence base from the Marine Climate Change Impacts Partnership.[13]

* Reporting from the Office for Environmental Protection (OEP)(Box 3.1) concludes that the milestone of halting damaging activities in Marine Protected Areas (MPAs) by the end of 2024 will not be met.

Box 3.2
Office of Environment Protection's (OEP) assessment of the Environment Improvement Plan

The OEP released their annual Progress in improving the natural environment report in January 2025, for the reporting period April 2023 to March 2024.[14]

Their analysis concludes that there has been less progress in the 2023/24 reporting period than the previous assessment. Progress against the 10 goals of the Environmental Improvement Plan 2023 (EIP) was mixed for five and limited for five goals. In terms of the overall prospects of meeting targets and commitments, the report concluded that the Government remains largely off track for seven goals and is partially on track for three. The report also finds that improving environmental indicator trends dominate in one of the 10 EIP goals, show a mixed picture in eight goals (including mitigating and adapting to climate change), and deteriorating trends dominate for one goal.

The report finds there is a real need for an increase in the pace and scale of implementation – including coherent and more detailed delivery plans, as well as improved monitoring of progress and join-up across government departments. The forthcoming revision to the EIP presents an opportunity to deliver all that must be achieved by 2030 and beyond to meet targets and commitments.

Progress in the reporting period on adaptation was rated as limited. The assessment finds that progress is especially limited for the natural environment and agriculture sector. Significant gaps include no strategies for key sectors such as agriculture, and limited plans for adaptive delivery or revision of biodiversity targets, despite accelerating climate change.

The OEP calls for more comprehensive plans for adapting sectors that are highly susceptible to climate risks. These should fully consider the specific future risks and opportunities and outline a detailed and targeted approach to managing them. They also recommend greater consideration of climate risks in achieving targets under the revised EIP, including cascading impacts on multiple targets, and additional action that may be needed to address these.

Working land and seas

A consultation on the Government's Land Use Framework was launched in January 2025.[15] A strong framework will be key to balancing the multiple pressures placed on working land use - including how land is used to help the country adapt. It is too early to tell the extent to which the final framework will consider adaptation, especially in relation to interactions between agriculture and nature.

- **Climate resilient agricultural production (O-WLS1: Insufficient).** The Agriculture Act (2020) is shifting subsidies towards paying land managers to produce public goods.[16] The new Environmental Land Management (ELM) farm payments have the potential to drive resilience measures on farmland.[17] However, there is still no specific adaptation guidance within ELM, no assessment of the extent to which proposed measures will help to address climate risks, nor funding allocated to the uptake of these measures in the most at-risk parts of the country. Government has closed the Sustainable Farming Incentive (SFI) offer to new applicants, creating uncertainty around future funding streams which could support greater resilience of farmland.[18]

    - It is unclear how forthcoming initiatives, including the upcoming Land Use Framework, the Government's announcement of a new Farming Roadmap due later this year, and the new Flood Resilience Taskforce, will support progress on adaptation for agriculture. Ministerial decisions have led to a pause in funding for farm water storage and in the next round of the Farming Innovation Fund.

- **Climate resilient commercial forestry (O-WLS2: Partial).** This provides overall guidance, including on climate change, to the forestry management sector.[19] Recent positive progress includes the development of skills and training (for example on silviculture and wildfire management), the publication of guides to support adaptation delivery such as the Riparian Woodland guide, and ongoing research into the impact of invasive non-native species (INNS), pests, pathogens, and diseases for the forestry sector.[20]

  - Although tree planting rates have been improving, they must increase further to meet targets in the EIP.[21] There is currently no Tree Action Plan for England beyond 2024 to steer future progress.[22] This sector has been impacted by delays, for example, in the publication of the Tree Health Resilience Strategy and in scoping and developing a Wildfire Strategy and Action Plan.

- **Climate resilient commercial fisheries and aquaculture (O-WSL3: Partial).** Fisheries Management Plans (FMPs) set out ambitions and commitments to deliver sustainable fisheries.[23] However, the consideration of adaptation and meaningful associated actions is inconsistent across these plans. There are delays in the publication of the next set of FMPs, which were due by the end of 2024.

  - Work is ongoing to understand the climate risk to fisheries and aquaculture, for example, through the publication of an updated climate adaptation plan for the Wild Capture Seafood Industry in March 2024, and through specific projects such as the trials by the Marine Management Organisation (MMO) on diversifying fisheries in southwest England due to shifts in species distributions.[24;25]

Food security

Government policies and planning for food security do not yet have a coherent focus on climate risks. Supporting disclosure of supply-chain level risks remains a key gap. The upcoming Food Strategy will provide an opportunity for the Government to embed climate resilience into UK food policy.

- **Food and feed supply chains (O-FS1: Insufficient).** Food supply chains are owned and operated by the private sector. The Critical Imports and Supply Chain Strategy (which includes food) sets out a role for government to support the development of tools and data to help companies understand their supply chain risks.[26]

  - The UK Food Security Report has been expanded, with an increased focus on climate impacts and changing weather patterns.[27] However, it does not provide datasets that help private companies in the sector to manage their climate-related risks.

  - Effective supply-chain level disclosure remains a key gap in coverage for current policies and plans. Large companies in the food supply chain were not included in the scope of the Adaptation Reporting Power. This gap is not addressed by reporting under the Taskforce for Climate-Related Financial Disclosure (TCFD) which remains limited on disclosure in how companies are thinking about their supply chain risks.

- **Vulnerability to food price shocks (O-FS2: Limited).** The Food Strategy (published in 2022) sets an ambition to deliver a secure food supply but does not include an explicit focus on limiting vulnerability to price shocks (from climate change or other causes).[28] Some support mechanisms for low-income households (such as free school meals) that can help reduce vulnerability to food price shocks are in place.

3.3.2 Infrastructure

Table 3.5
Infrastructure outcome area scores

Thematic area	Outcome ID	Outcome	Policies and plans score	Change from 2023 Progress Report
Water supply	O-WS1	Reduce demand	Partial	Worsened
	O-WS2	Improve system performance	Partial	Worsened
	O-WS3	Increase supply	Partial	Improved
	O-WS4	Interdependencies identified and managed	Limited	Improved
Energy	O-E1	Reduced vulnerability of energy assets to extreme weather	Partial	No change
	O-E2	Climate-resilient supply	Limited	No change
	O-E3	Interdependencies identified and managed	Insufficient	No change
Telecommunications and ICT	O-ICT1	Vulnerability of assets reduced	Limited	No change
	O-ICT2	System level resilience	Limited	Improved
	O-ICT3	Interdependencies identified and managed	Insufficient	No change
Transport	O-T1	Asset and system level reliability of rail network	Good	No change
	O-T2	Asset and system level reliability of strategic road network	Good	No change
	O-T3	Asset and system level reliability of local roads	Insufficient	No change
	O-T4	Asset and system level reliability of airport operations	Partial	No change
	O-T5	Asset and system level reliability of port operations	Limited	No change
	O-T6	Interdependencies identified and managed	Limited	Improved

Notes: Previously, a 'good' score was labelled 'credible' in our 2023 Monitoring Framework.

Box 3.3
Key developments relevant to policies and plans across infrastructure sectors

Since our last progress report, developments in policies and plans that are relevant across all infrastructure sectors include:

- His Majesty's Treasury (HMT) has produced a working paper on the 10 Year Infrastructure Strategy. One of the strategy's three key objectives is to enable resilient growth.[29] The strategy is expected to be published in the summer of 2025.
- The National Infrastructure Commission (NIC) published a report on the development of resilience standards in UK infrastructure.[30] Recommendations in the report are currently being considered by government, including in the development of the 10 Year Infrastructure Strategy.
- Further work is underway by the Cabinet Office to improve understanding of the resilience of critical national infrastructure (CNI) and to identify and manage interdependencies. Very little information on these efforts is currently publicly available. However, developments for which information is available in the public domain include:
  - Establishment of the Climate Resilience Steering Board, an action from NAP3. It is co-chaired by Defra and the Cabinet Office. It provides a cross-government forum for consideration of interdependencies and systemic risk.[31]
  - The use of the CNI Knowledge Base as the 'single source of truth' for UK CNI, enabling government analysts to visualise data from the Criticalities Programme on interdependencies. This software lets risk owners view UK CNI on a map or as a network graph, with interdependencies mapped across it.[32]

Water supply

The water sector in England is a regulated utility, with services and infrastructure largely delivered by private companies that invest in, build, and maintain water supply and sewerage infrastructure, and supply household and business customers. Defra is responsible for setting policy for the sector. Ofwat is the regulator responsible for enforcing service standards and setting five-year price reviews.[*] These price reviews determine (based on plans submitted by the water companies) the level of consumer bills and how much companies must invest in particular service outcomes.[†] Ofwat's latest Price Review (PR24) covers 2025 to 2030 and includes expenditure allowances of £104 billion – an increase of approximately 71% compared to the 2019 Price Review.[33] The Government has recently established an independent commission on the water sector, with an objective of reviewing the regulatory framework for water.[34]

- **Reduce demand (O-WS1: Partial).** Ofwat's 2024 Price Review allocates £258 million for programmes to reduce consumption and £1.7 billion to deliver over 10 million smart meters.[35;36] However, despite steadily increasing metering rates, the industry is still off track to meet its demand reduction targets (see Chapter 2). It is now clear that existing measures are insufficient on their own and that further measures need to be incorporated into plans for them to remain credible. We assess that gaps in policies and plans are now clearly identifiable, so we have downgraded the score of this outcome to 'partial'.

[*] The Environment Agency, Natural England, and the Drinking Water Inspectorate are also involved in the regulation of water supply in England.

[†] Water companies' roles in wastewater management, including the new statutory requirement for the development of Drainage and Wastewater Management Plans (DWMPs) is addressed under "flooding from surface water" (outcome area: O-TC2) in the Towns and Cities section of this report.

  - The Price Review has also established a £100 million water efficiency fund in recognition that existing programmes were "likely to fall short of [the sectors'] long-term goals for water efficiency" owing to a lack of "sustained, coordinated and large scale initiatives".[37] It remains to be seen whether these measures will be sufficient to deliver progress at the pace needed to meet its goals.

  - Planned mandatory water efficiency labelling (a key policy gap for demand reduction) has not yet come into law, but legislation is expected to be laid in 2025.

- **System performance (O-WS2: Partial**). Ofwat's 2024 Price Review allocates £723 million specifically to leakage reduction.[38] This is an increase from the 2019 Price Review allocation of approximately £111.5m (in 2017/18 prices) specifically for leakage reduction.[*;39;40] However, companies will also have used base expenditure allowances to implement measures to reduce leakage, making direct comparisons challenging. Existing initiatives to reduce leakage have had a positive overall effect but have shown themselves to be inadequate to achieve targeted reductions. The lack of substantial new policies and plans to deliver the step-change needed to address this gap means that we have downgraded the score of this outcome to 'partial'.

- **Increase supply (O-WS3: Partial).** Ofwat's 2024 Price Review includes £2bn development funding to kickstart £50bn investment in infrastructure needed to increase supply, including building nine new reservoirs, nine large-scale water transfer projects, and 12 water recycling plants.[41] Updated Water Resource Management Plans (WRMPs) prepared by water companies, and Regional Plans for Water Resources prepared by regional water resources groups, have responded to concerns about the lack of interconnections (which help to distribute supply to where it is most needed).[42] The inclusion of this broad range of supply options in updated plans has resulted in an upgraded score for this outcome, from 'limited' to 'partial'.

- **Addressing interdependencies (O-WS4: Limited).** The Environment Agency's review of WRMPs and Regional Plans for Water Resources notes that: "All five regional groups have, to varying extents, considered non-public water sectors in their draft regional plans. However, planning for these sectors continues to be limited."[43] Ofwat's 2024 Price Review allocates £277 million to improve resilience to power interruptions and flooding.[44] In their ARP4 reports, most water companies reference plans to address interdependencies with the power sector, although plans to address interdependencies with other sectors are often missing. Overall, this has resulted in an upgraded score for this outcome, from 'insufficient' to 'limited'.

[*] £111.5m (2017/18 prices) was initially allocated as an enhancement allowance to companies that forecast to perform beyond the 2024/25 upper quartile leakage level. See Ofgem's Leakage enhancement assessment. No base expenditure allowance was initially provided to reduce leakage. However, following an appeal, the Competition and Markets Authority (CMA) allowed the appealing companies approximately £140m to reduce leakage. See the Summary of Final Determinations (17 March 2021).

Energy

The energy sector in Great Britain is a regulated utility, with services and infrastructure largely delivered by private companies that invest in, build, and maintain energy infrastructure and supply household and business customers. The Department for Energy Security and Net Zero (DESNZ) is responsible for setting policy for the sector and Ofgem is the regulator responsible for enforcing service standards and determining price controls. The next price control period for energy networks (RIIO-3) will include a requirement for stress testing, and Ofgem is currently developing guidance for this, which could also help identify and manage interdependencies.[45] One of the most substantial changes in sector governance since our last progress report was the launch of the National Energy System Operator (NESO) on 1 October 2024. NESO is the single body responsible for the strategic planning and design of Great Britain's energy network (electricity and gas), including a resilience remit.[46] However, it is too early to see a direct impact on adaptation policies and plans since NESO's launch.

- **Vulnerability of energy assets to extreme weather (O-E1: Partial).** Standards exist for asset resilience to some specific weather-related hazards (such as Engineering Technical Report (ETR) 138 for flood protection and ETR 132 for protecting the overhead network during extreme weather via tree clearing), but are in need of an update to account for the UK's changing climate. Standards regarding a more comprehensive set of hazards, including heatwaves, drought, storminess, and wind strength and regimes (beyond tree clearing) are urgently needed as we embark on a major energy systems upgrade needed to achieve Net Zero.[47]

  - In 2021, network companies established the Climate Change Resilience Working Group at Ofgem's request. The group's primary focus is addressing Ofgem's requirements for a climate resilience metric.[48] This work is ongoing. However, evidence of progress to date is limited.

  - Ofgem's RIIO-ED2 price control introduced a requirement for electricity distribution companies to submit climate resilience strategies as part of their business plans. In RIIO-3, this has been extended to electricity and gas transmission and gas distribution.[49]

  - NESO's high-level methodology principles for the Centralised Strategic Network Plan recognise the need for the plan to "consider extreme climate events, changes to average conditions due to climate change, as well as other high-impact, low-probability events, throughout the network planning process."[50]

  - Limited data availability in the sector still hinders efforts to establish monitoring and evaluation frameworks to assess progress in this area. Ofgem's Multiyear Strategy states that it will make data as accessible as possible to increase accountability.[51]

- **Climate-resilient energy supply (O-E2: Limited).** The Security and Quality of Supply Standard (SQSS), administered by NESO, sets overall levels of security of supply for design and operation of the electricity transmission network.[52] The SQSS does not mention climate change risk or adaptation, but does require the transmission system to be built to withstand unavailability of wind, wave, and tidal generation, as well as interconnection. However, unavailability of power from other generation types is not yet explicitly considered when designing the network.

  - NESO's draft methodology for the Strategic Spatial Energy Plan states that it will consider climate change impacts on availability and suitability of land.[53] Ofgem's proposed policy framework for the Regional Energy Strategic Plan notes the need to consider resilience, but could go further by incorporating projected climate impacts at a local/regional level in its pathway development.[54]

  - Unlike network companies, Ofgem does not require energy generation operators to submit climate resilience strategies. Energy generators also do not have to submit Adaptation Reporting Power (ARP) reports. However, energy generation operators can voluntarily submit ARP reports, and some prepare resilience strategies and adaptation plans under other reporting regimes.[*;55]

  - Ofgem's Multiyear Strategy includes an objective of "secure and resilient supplies" and a sub-objective to "build resilience to extreme climate events and long-term climate change" through development of a regulatory and economic framework for climate resilience.[56] Ofgem's Forward Work Programme 2025/26 states that it will work with the Government and NESO to drive urgent progress on the energy sector's resilience to climate change.[57]

- **Interdependencies are addressed and managed (O-E3: Insufficient).** There is a lack of coordinated policy and planning from government on infrastructure interdependencies. Ofgem's ARP4 report notes the need for a whole system approach with more centralised leadership to address interdependencies across infrastructure sectors through improved collaboration between regulators.[58] However, some key energy sector actors are addressing interdependencies in their plans.[†]

Telecommunications and ICT

Telecommunications and ICT covers public electronics communication networks, private telecommunications networks and data centres. Public electronics communication networks are designated Critical National Infrastructure (CNI), delivered by private companies. Policy is set by the Department for Science, Innovation and Technology (DSIT) and regulatory oversight is fulfilled by Ofcom, who provided updated guidance on network resilience in 2024.[59]

The rapid 5G-enabled digitalisation of the economy means that private networks are increasingly part of the delivery of key services, including critical infrastructure and flood defences.[60;61] There is a regulatory gap in the oversight of these private telecommunications networks.[62]

Data centres are a commercial sector, but their designation as CNI in September 2024 could increase government involvement in the sector.[63] DSIT is conducting an industry survey to assess which data centres should be included in the CNI asset register, and if additional guidance or sector-level stress testing would be valuable.

- **Asset-level vulnerability (O-ICT1: Limited).** Government agreed with industry to pause the rollout of landline digitalisation, out of concerns for vulnerable customers.[64] Risks to these customers became particularly apparent following extended power outages caused by Storms Arwen and Eunice in winter 2021/22.[65] This has resulted in the switch-off of the Public Switched Telephone Network (PSTN) being delayed until January 2027. There are a high number of network resilience incidents regarding the PSTN, so it's critical that government and industry rapidly develop solutions for protecting customers while continuing with the transition.

[*] Energy UK, Renewable UK, and Solar UK submitted a joint ARP4 report on behalf of their members.

[†] The Energy Networks Association (ENA) identifies telecommunications, water, and transport as key interdependencies in its ARP4 report. Energy UK, Renewable UK, and Solar UK's joint ARP4 report notes that their members (electricity generation companies) consider interdependencies in their climate change adaptation programmes, and that the sector has made progress on water resource planning.

- **System level resilience (O-ICT2: Limited).** The publication of new Ofcom guidance has improved the score for this outcome. The guidance includes measures which ensure public networks are designed to avoid or reduce single points of failure, which should mean that customers will not be affected by individual asset failure and will experience a more reliable network. Ofcom oversight should ensure a high standard of compliance. However, there are no processes in place to monitor the impact of the guidance on network reliability or weather-related resilience, resulting in a 'limited' score.

- **Managing interdependencies (O-ICT3: Insufficient).** There remains insufficient protection for vulnerable customers in the PSTN switchover, with providers only required to provide a minimum of one hour's power resilience to consumers in the event of a power cut.[66] Furthermore, there is a lack of Ofcom guidance on power back up at mobile radio sites. In 2023, Ofcom published a call for input on power backup for mobile radio access networks, with the results highlighting the expense and environmental implications of installing batteries at all sites.[67] This is an area Ofcom will continue to work on with government and industry.

Transport

The Department for Transport (DfT) sets transport policy, with operation and oversight of transport infrastructure and services varying by mode. There have been some positive policy and plan developments in the transport sector, such as DfT's consultation on adapting the UK's transport system to the impacts of climate change and guidance on climate change risk assessments for the transport sector (Box 3.4).[68]

- **Asset and system level reliability of the rail network (O-T1: Good).** Most of the UK's rail services are currently run by private franchises. However, the Government intends to bring most passenger train operators under public ownership, starting this year.[69] The Office for Road and Rail (ORR) regulates rail services as well as the performance and funding requirements of Network Rail, an arms-length body of DfT, which owns and maintains the railway network. Network Rail's regional Weather Resilience and Climate Change Adaptation Plans for Control Period 7 (2024 to 2029), continue to be comprehensive. Each regional plan includes specific adaptation actions tied to climate risks and planned investment (for example, drainage and earthworks). Plans for the entire network include:

  - Planned spend of £2.8 billion on activities and technology to directly help the network cope with extreme weather, as well as the development of long-term adaptation pathway strategies to assess future investment needs.[70]

  - Recruitment of 400 extra drainage engineers, building or rebuilding 600 kilometres of drains, installing smart movement sensors on cuttings and embankments, and CCTV at high-risk flooding sites.[71]

  - HS2 and Network Rail's ARP4 reports also include comprehensive action plans with details on adaptation activities, implementation timetables, and risk owners.[72]

- **Asset and system level reliability of strategic road networks (O-T2: Good).** The Strategic Road Network is managed by National Highways – an arm's length body of the DfT, and its performance is overseen by the ORR. The Government's Road Investment Strategy (RIS) sets the objectives and investment for National Highways covering five-year periods. RIS3 (covering 2025 to 2030) was expected at the end of 2024 but has been delayed pending the spending review. The Government has therefore issued an interim settlement for the 2025/26 financial year while it continues to develop RIS3. Performance indicators relevant to adaptation (under the "well maintained and resilient network" theme) in the interim settlement remain the same as in RIS2.[73]

  - National Highways' initial report on RIS3 sets out proposed actions relating to climate resilience across operations, maintenance, and renewals – including improving drainage, trialling nature-based solutions, taking remedial action at high-risk structures, and investing in new road surface materials that can better respond to extreme temperatures.[74] It will be important for RIS3 to include this.

  - DfT's draft adaptation strategy aims to incentivise adaptation measures through funding agreements such as RIS3 – it will be important for RIS3 to include this as well. National Highways' ARP4 report considers a broad range of hazards, informed by appropriate climate projections. It specifies timed adaptation actions and sets out plans to enhance governance and monitoring of climate risks, including development of risk indicators.

- **Asset and system level reliability of local roads (O-T3: Insufficient).** Local Authorities are responsible for managing local roads. Their carriageway maintenance backlog increased from £106.0 million in 2022/23 to £124.9 million in 2023/24.[75] In addition, most NAP3 commitments on local roads are stalled. For example, an update to local transport plan guidance to include expectations on adaptation is pending review. The Government has recently announced the availability of additional funding for local highways maintenance. This funding is dependent on local highway authorities producing reports on undertaken and planned maintenance.[76] This score may improve if these reports are produced to a high-quality standard.

- **Asset and system level reliability of airport operations (O-T4: Partial).** Airports are privately operated and regulated by the Civil Aviation Authority (CAA). Eight airport operators, as well as National Air Traffic Control Services, and the CAA submitted ARP4 reports. The quality of adaptation planning exhibited by these is mixed, but there are some examples of good practice.[*]

  - For example, the submission from Manchester Airports Group provides an indication of priorities across a range of measures, from improved monitoring and maintenance to higher construction standards and plans for capital upgrades.

  - Other submissions are of lower quality with only very high level or general adaptation plans. This is the case for the CAA, which fails to provide any meaningful evidence of embedding climate adaptation into its regulatory duties and only reviews progress on addressing climate risks every five years.

- **Asset and system level reliability of port operations (O-T5: Limited).** Ports are run by a mix of private operators and local authorities. Statutory Harbour Authorities are local legal entities with powers to manage harbour areas, but there is no regulatory oversight of ports. The six published ARP4 reports from UK port operators are generally of limited quality, with many operators submitting high-level or general adaptation plans.[†]

  - However, Peel Ports, which operates eight ports across the UK, offers an example of good practice, with specific adaptation measures assigned against a comprehensive range of risks and receptors.

[*] As of 18 March 2025, Aberdeen, Glasgow, and Southampton (AGS) Airports, Birmingham Airports, Edinburgh Airports, Gatwick Airport, Highlands and Islands Airports, Luton Airport, Manchester Airports Group, and Newcastle Airport have submitted ARP4 reports.

[†] As of 18 March 2025, PD Ports, Port of Dover, Port of London Authority, Peel Ports, Milford Haven Port Authority, and Port of Felixstowe, Harwich International Port, and London Thamesport have published ARP4 reports.

  - NAP3 included a commitment for DfT to trial a regular monitoring survey for the ports sector over the NAP3 period from 2023 to 2028 to gather information on the frequency of disruption to port operations from extreme weather. They intend to launch the survey in spring 2025.

- **Identifying and managing interdependencies (O-T6: Limited).** DfT's internal risk assessment tool helps to identify and understand interdependencies. DfT's consultation on adapting the transport system (see Box 3.4) highlights the importance of interdependencies, and states that "by 2028, all Transport Infrastructure Operators will identify and map out their interdependencies across the transport sector and with relevant infrastructure operators. This will include plans for addressing potential points of failure."[77]

  - As part of its ARP4 report, TfL conducted a comprehensive assessment of interdependencies for all transport modes within London.[78] Replication of this comprehensive approach to interdependency assessment nationally would help improve this score.

Box 3.4
Draft DfT adaptation strategy and guidance on climate change risk assessments

The Department for Transport (DfT) published a consultation on a draft transport adaptation strategy in April 2024.[79] This is the first time DfT has systematically considered transport resilience and adaptation in the round, demonstrating a recognition of its role in convening industry and setting high-level vision and strategy for transport climate resilience.

The proposed transport strategy includes three overarching objectives:

- The transport sector will understand the need to adapt their business and operations to the changing climate, building their response into 'business as usual'.
- The transport sector will utilise available guidance and tools to support them in prioritising investments on adaptation and sharing information to galvanise adaptation action.
- DfT will set the strategic direction for the transport sector, enhancing adaptation action and fostering cross-sector collaboration.

It also includes a series of actions and policies which aim to enhance climate adaptation planning, ensure plans are achieved, and ultimately improve resilience in the transport system. Specific actions include:

- Enhance climate risk assessment guidance so infrastructure operators can identify risks and prioritise action. This was published in March 2025 – see below.
- By spring 2025, develop a tool to provide additional climate information for the transport sector to inform climate adaptation investments, risk assessments, and asset designs.
- By 2028, progress the development of indicators to measure adaptation outcomes. This work is currently underway.

It will be important to follow up on the actions set out in the consultation and flesh these out, including with more precise timings, in the final transport adaptation strategy. However, no date has been set for the publication of the final strategy.

The DfT has also published guidance to the transport sector on conducting climate change risk assessments.[80] This is a welcome development, which provides a step-by-step guide to the key activities and principles involved in undertaking a climate risk assessment. Useful points of note include:

- Recommended use of appropriate climate scenarios.
- A framework for climate risk scoring.
- A framework for considering different types of adaptation approaches.
- An online inventory of existing adaptation approaches for different transport modes.
- Links to additional resources.
- A worked example.

3.3.3 Built environment and communities

Table 3.6
Built environment and communities outcome area scores

Thematic area	Outcome ID	Outcome	Policies and plans score	Change from 2023 Progress Report
Towns and cities	O-TC1	Places are resilient to river and coastal flooding.	Partial	Worsened
	O-TC2	Places are resilient to surface water and groundwater flooding.	Limited	No change
	O-TC3	Sustainable coastal management in place.	Partial	No change
	O-TC4	Urban heat risks are managed.	Limited	No change
	O-TC5	Planning system prioritises climate resilience.	Insufficient	No change
Buildings	O-B1	Buildings do not overheat.	Limited	No change
	O-B2	Buildings are prepared for flooding.	Partial	Improved
	O-B3	Buildings are resilient to other climate risks.	Unable to evaluate	N/A
Community preparedness and response	O-CR1	Communities are prepared for climate shocks.	Partial	Improved
	O-CR2	Communities can respond to climate shocks.	Partial	No change
	O-CR3	Local cultural heritage is conserved.	Limited	No change

Notes: (1) O-B3 was not assessed in APR 2023. We now have more confidence in the evidence for the impact of climate change on risks to buildings from hazards such as wind and subsidence, and a growing evidence base of what measures are required to adapt to these risks, allowing us to evaluate the outcome in this report. However, more evidence on effective planning for this risk is required to evaluate further. (2) Previously, a 'good' score was labelled 'credible' in our 2023 Monitoring Framework.

Box 3.5
National resilience review

In July 2024, the Government announced a review of our national resilience against the full range of risks that the UK faces.* The review covers broad national resilience and should include extreme weather. It will build on the evidence base that supported the development of the previous government's Resilience Framework.[81] The review is expected to deliver a national resilience strategy in 2025 in line with the Spending Review.[82]

The review of national resilience is an opportunity to develop coordination in both national and local resilience planning, and address gaps in planning for extreme weather and climate change risk.

- **National:** there are currently a range of different national-level resilience activities, including the National Security Risk Assessment and National Risk Register, and the Climate Change Risk Assessment.[83;84] Coordination and integration between these activities, particularly regarding the Climate Change Risk Assessment, which is delivered by Defra rather than the Cabinet Office, is often limited.
- **Local:** the review will cover the full range of risks to the UK and will consider ways to strengthen Local Resilience Forums (LRFs), including recommendations to place the National Resilience Standards for LRFs on a statutory footing.[85] LRFs are multi-agency partnerships which coordinate emergency preparedness activities and produce community risk registers. The review will consider recommendations from public inquiries, as well as views from local actors, businesses, academics and the voluntary and community sector.

Towns and cities

Policy milestones and ambitions are in place to adapt to flooding and coastal change but are currently undermined by uncertainties associated with long-term and maintenance funding and complex responsibilities to account for plans at a local level. NAP3 is a missed opportunity to provide strategic direction on managing future heat risk across government. Planning policy should be a major lever for delivering adaptation, but current national policy has significant gaps in how it weights climate change and resilience.

- **Flooding from rivers and the sea (O-TC1: Partial).** Government sets the direction for river and coastal flood policy, which is then delivered by the Environment Agency (EA) and other risk management authorities. There is a good and largely ambitious plan in place through the existing 2020 Flood and Coastal Erosion Risk Management (FCERM) policy, strategy and 2021 investment programme, as well as associated initiatives such as the Flood and Coastal Innovation and Natural Flood Management programmes.[86;87;88;89] However, plans are lacking clear long-term targets and evidence indicates a shortfall in delivery of adaptation via the programmes (see Chapter 2). The Environmental Audit Committee (EAC) are currently conducting an inquiry on flood resilience in England, with evidence submitted in early 2025.[90]
  - Delivery has been partially limited by policy gaps, particularly around the funding and governance accompanying the plans (Box 2.6). These gaps have included shortfalls in funding for maintaining flood defence assets, a lack of enabling mechanisms for delivering a wide range of adaptation measures, and lack of clarity on roles and responsibilities within a complex governance set up. Evidence submitted to the EAC suggests that gaps in current plans make it hard to reduce flood risk in the future.[91]

* The national resilience review was committed in response to the Covid-19 Inquiry Module 1 report but will cover national resilience more broadly.

  - In early 2025, Defra announced £2.65 billion investment over the next two years for new and existing defences, as well as £50 million to internal drainage boards (IDBs) as part of a one-off £75 million IDB fund. This funding will provide a boost to new projects and essential maintenance for managing water levels. The EA are re-prioritising £108 million of capital funding (£36 million in 2024/25 and £72 million in 2025/26) for asset maintenance and repair.[92]

  - Government will be launching a consultation to review the current funding formula for allocating money to flood risk management projects. This is a welcome step in refreshing the current investment approach to ensure it can deliver adaptation at the required scale. Funding reform was also discussed in the second meeting of the Flood Resilience Taskforce, aiming to improve coordination between organisations working on flood resilience.[*];[93]

  - Despite these recent commitments to boost investment, reform flood funding and engage the Flood Resilience Taskforce, the score for this outcome has been downgraded in recognition of the policy gaps identified above.[94]

  - The development of the next investment programme is the key upcoming opportunity to address these gaps. The Government has decided to bring forward a reformed investment approach and programme, covering new and existing defences, from April 2026, with the amount of investment decided at the Spending Review. The next programme should be ambitious and deliverable, based on the updated National Flood Risk Assessment (Box 2.5), and informed by measures of 'net' change and long-term targets for flood risk management.[95]

- **Flooding from surface water and groundwater (O-TC2: Limited).** Defra and the EA have strategic oversight of policy to manage flooding from all sources, but surface water flooding is largely managed on-the-ground by risk management authorities outside of the EA – such as local authorities and water companies. There are limited policies and plans in place to inform surface water and groundwater flood risk management across these authorities. This score is unchanged since our last report, reflecting no clear government plan for the legislative rollout of Schedule 3 of the Floods and Water Management Act (2010) since it was announced by the previous government in January 2023.[†] There are no obvious alternative legislative mechanisms outside of Schedule 3 to regulate connections to the sewer and maintenance schedules for sustainable drainage.

  - In June 2023, the EA announced changes to simplify the business case approvals process for grant-in-aid funding, which is positive for speeding up smaller surface water projects.[96]

  - The previous government responded to the National Infrastructure Commission's 2022 study on surface water flooding in March 2024, accepting the principles behind most recommendations but making few commitments to action and accelerate these.[97]

[*] The Flood Resilience Taskforce includes ministers from across government, as well as representatives from organisations including the EA, Lead Local Flood Authorities, the Met Office, the National Farmers Unions, and Local Resilience Forums. The first two meetings (September 2024 and February 2025) have discussed preparedness for autumn and winter flooding, learnings from recent flooding and funding reform.

[†] The previous government committed to reforming local flood risk management planning by 2026.

- Modelling and data advances have improved the EA's confidence in the updated National Flood Risk Assessment for surface water flooding (Box 2.5) and should be reflected in upcoming policy opportunities.[98]

- Outside of floods policy, planning policy can also play a role in regulating drainage in developments. Updates to the National Planning Policy Framework (NPPF) in December 2024 include welcome elements on sustainable drainage systems, promoting their inclusion in all new developments (extending beyond major developments), and a new definition of sustainable drainage with more detail on multifunctional benefits. However, NPPF policy is recommended rather than enforced in legislation – meaning that there remain policy gaps for delivering sustainable drainage in new development, despite these recent updates.[99]

- Inclusion of biodiversity net gain (BNG) is now mandatory for new development and may help to deliver surface water adaptation benefits, and statutory guidance on local nature recovery strategies may enhance natural drainage as an additional benefit.[*];[100]

- Water and sewerage companies have a significant role in managing drainage, and some policy levers to regulate these are in place. Drainage and wastewater management plans (DWMPs) are now a statutory requirement for sewerage undertakers. The first cycle of (non-statutory) plans have been published, and the next (statutory) round are due to be published in 2027/28 in accordance with new government guidance, expected in Spring 2025. DWMPs will set out company plans for a resilient drainage and wastewater system over the next 25 years, accounting for climate change, urban development and population growth. The plans will be the evidence base for short, medium, and long-term investment need, driving improvements on storm overflows, flooding, and pollution incidents.[101]

- **Coastal change (O-TC3: Partial).** The EA has a strategic overview role for managing coastal change. Coastal groups – including local authorities – are required to develop Shoreline Management Plans (SMPs), which are used to inform local planning decisions. The SMP process includes many aspects of good adaptation planning, such as taking an adaptive long-term approach (to 2100) and co-development with stakeholders and communities. Progress on reviewing and refreshing these since 2023 has been positive, as has publication of updated plans and coastal erosion risk mapping on a new online map portal.[102]

  - The 2023 SMP refresh project involved the EA and Defra supporting coastal groups to check the status of the plans and ensure they remain fit for purpose. Following the update, the EA led an independent peer review of SMPs which identified that the effectiveness and influence of plans was variable, with gaps in linking across to other strategic plans and clear enablers for delivery. The review recommended that the Government and the EA should ensure the next flood and coastal investment programme is informed by the SMPs, provide guidance on the climate triggers for transitioning management approaches, provide more clarity on how SMPs align with other strategic plans and commit to ongoing reviews and improvement of the plans.[103]

  - Defra announced a second £6 million phase of the Coastal Transition Accelerator Programme (CTAP) in September 2023 and have committed to review national policy for SMPs by the end of 2026.[104]

[*] Biodiversity Net Gain is mandatory from February 2024 under the legislation inserted by the Environment Act 2021 into the Town and Country Planning Act 1990. It is an approach to development and land management to improve the natural environment. Developers must deliver a BNG of 10% (calculated using a biodiversity metric) either on-site or off-site.

- **Urban heat (O-TC4: Limited).** Urban heat risk can be managed at the local level but central government policies, such as regulation in the built environment, are key levers for this outcome. There is no overarching strategy for adapting to and managing future urban heat risks across government. There are some policies and plans in place to manage the impacts of heat in specific policy areas such as health (for example, the Adverse Weather and Health Plan) and at the building-level (see O-B1) (for example, Part O of Buildings Regulations for new buildings, and the Ministry of Justice's (MoJ) Climate Change Adaptation Strategy), but these do not consider urban heat adaptation specifically.[105;106;107]

  - Mandatory biodiversity net gain (BNG) in new developments, and statutory guidance on local nature recovery strategies, are positive policy progress for delivering some green infrastructure-based adaptation interventions. However, it is too early to tell how these are being applied in urban settings specifically and the policy could be better utilised for urban heat risk management.

  - NAP3 could have been a policy vehicle to join up approaches on managing heat but does not provide strategic direction at a national level or a coordinated approach across geographical levels.

- **Climate resilience in the planning system (O-TC5: Insufficient).** Planning policy has the potential to be a key lever for adaptation in the built environment. However, this outcome remains scored as 'insufficient' because, despite recent updates, current national policy lacks ambition on climate change adaptation, and is missing a clear approach to enforcement and monitoring.

  - Updates to the National Planning Policy Framework (NPPF) in December 2024 included some positive progress for adaptation but policy remains vague, with no stated resilience outcomes to add weight to other existing but non-statutory climate-relevant spatial plans, such as SMPs or the Thames Estuary 2100 Plan. Further detail is required in the forthcoming updates to Planning Practice Guidance (PPG), which provide the mechanisms to deliver change through planning.

  - The NPPF updates include a specific new paragraph with a more proactive approach to including climate change mitigation and adaptation in decision-making as well as plan-making, and broadened policy to consider drought and overheating, as well as sustainable drainage systems in all new developments. Other changes include practical clarification on when specific flood risk testing (known as the sequential test) is required.[108]

  - The Government has stated that it will consider whether further changes are required to manage flood risk and coastal change through the planning system in further reforms. Updates to the Flood Map for Planning are expected in spring 2025.[109] These are steps forward for embedding adaptation, but planning policy still lacks ambition and detailed guidance on climate change, particularly on accounting for risks outside of flooding. The PPGs are the key opportunity to set in place enablers and mechanisms to add weight to the NPPF's new paragraph.

Buildings

This outcome covers adaptation in public and private buildings. There has been some progress in adaptation planning for public buildings, particularly for education and justice facilities, where plans with clear resilience objectives have been developed. There has also been some progress in national plans for increasing the uptake of building-level flood resilience. There remain gaps in adapting buildings to overheating, although some policies are in place for new residential buildings.

- **Buildings do not overheat (O-B1: Limited).** The Government regulates the quality of new residential buildings related to overheating via Part O of the Buildings Regulations.[110] However, gaps remain in enforcement mechanisms, and the monitoring of overheating and adaptation in the existing residential and non-residential building stock).

  – There has been progress in in planning and assessment of overheating for key public buildings, including prisons and schools (Box 3.6). Guidance for retrofitting for improved energy efficiency in existing homes (PAS 2035:2023) now considers climate resilience and adaptation. It applies to all domestic retrofit projects and is mandatory for those receiving public funding.[111] Guidance could be strengthened further as the evidence base on overheating and energy efficiency develops.*;[112]

  – The previous government consulted on extending the application of Part O to cover material change of use.[113] The Government are considering the consultation feedback and are expected to respond and lay associated legislation in 2025. This is an opportunity to progress the inclusion of adaptation in buildings policies further.[114]

  – The Building Safety Regulator is now able to propose amendments to the Building Regulations and Statutory Guidance, including changes relating to climate resilience. This may be an important regulatory lever for addressing adaptation to overheating.

- **Buildings are prepared for flooding (O-B2: Partial).** Key policy levers for this outcome are plans for buildings and property-level resilience, some of which are delivered by the national flood investment programme. The increase in score to partial reflects progress in planning for public buildings (Box 3.6) and ambition to improve property flood resilience uptake, including through ongoing engagement with insurers and the Property Flood Resilience (PFR) market.[115]

  – Flood Re's five-yearly review in 2024 concluded that changes embedded since the last review have been positive. This includes Build Back Better (BBB), where householders can claim for installing PFR measures when repairing properties after a flood. The 2024 review makes further recommendations, including increasing the maximum that households can benefit from BBB to £15,000 from £10,000.[116]

  – For projects within the flood risk management capital programme, the EA have released new guidance for flood risk management authorities on appraising PFR projects. This helps to streamline the process and make it easier for PFR projects to access grant-in-aid funding.[117] In January 2025, the EA commissioned a new independent review of PFR, expected to report in autumn 2025. The review will consider progress since the 2016 property flood resilience action plan.[118]

* There is a growing evidence base from the Energy Follow Up Survey analysis and DESNZ projects (e.g. CS-N0W) on heating and cooling need in the UK housing stock.

- Outside of the flood risk management capital programme, the Government may provide grants to support households and businesses (at a property-level) after extreme flooding through the Flood Recovery Framework, coordinated by the Ministry of Housing, Communities and Local Government (MHCLG) (see O-CR2), and Defra's PFR repair grant scheme.* The scheme was most recently activated after Storms Babet and Henk in 2024.[119]

- Recommendations from the government evaluation of the PFR grant scheme since 2013 included improving clarity on grant eligibility and communication, as well as facilitating checks on quality.[120] The latter should be improved by increasing uptake of PFR training (from the Chartered Institute of Water and Environmental Management) and local authority use of the EA's updated four-year PFR Framework, which aids surveying and quality assurance.[121;122]

Box 3.6

Progress in adaptation plans for public buildings

There has been some improved planning for climate adaptation in public buildings, including:

- The Ministry of Justice (MoJ) published their Climate Change Adaptation Strategy in April 2024, which commits to improving understanding of climate risk across the estate, including for flooding and overheating.
  - All new prison infrastructure will be designed to BREEAM (Building Research Establishment Environmental Assessment Method) standards, which set standards for environmental performance, and will require a climate change risk assessment.[123]
- In December 2023, the Department for Education (DfE) published an update on progress on their Sustainability and Climate Change Strategy.[124] DfE have a requirement for all new schools to consider future flood and heat risk in site selection and design.
  - In line with the strategy, they have carried out a climate change risk assessment for the education estate, which includes flood risk from all sources and overheating risk in terms of extreme overheating events and lost learning. [125]
  - DfE continues to work in partnership with the EA, water companies and local authorities to deliver flood resilience, drainage improvements and water efficiency in schools, in line with the climate change strategy.

- **Buildings are resilient to other climate risks (O-B3: Unable to evaluate).** We did not evaluate this outcome in our 2023 Progress Report and there are still significant evidence gaps. There has been some initial progress in the completion and publication of research commissioned by DESNZ on future wind-driven rain and building hazard mapping (including for wildfire and subsidence).[126] The wind-driven rain research found that Approved Document C (Buildings Regulations) does already broadly account for spatial differences in the hazard severity.[127] Further evidence is required to evaluate whether plans are sufficient under future scenarios and for other risks. The Phase 2 Grenfell Tower Inquiry Report recommended reviewing Building Regulations and particularly Approved Document B on fires. The Government's response is expected in spring 2025. Depending on its approach, it may have consequences for policies and plans for climate resilience in building fabric.[128]

* The Flood Recovery Framework is used in exceptional circumstances to support councils and communities after severe flooding. Grants are available for: flooded households who can apply for up to £500 cash for immediate costs; council tax and business rate relief for at least three months; and Business Recovery Grants for SMEs. The framework was activated after storms in 2024, with the PFR repair grant and Farming Recovery Fund also opened for applications at the same time. Future activation after flood events remains an option and is subject to Ministerial discretion.

Community preparedness and response

There are some key policy milestones already in place for community preparedness and response, such as through the Civil Contingencies Act.[129] Expanding adaptation reporting to local authorities and heritage organisations has helped to better understand the extent to which effective plans are in place and the review of national resilience presents an opportunity to embed climate change considerations in resilience planning. However, there are gaps in plans, particularly around funding and governance, which are preventing risk assessment translating into action.

- **Communities are prepared (O-CR1: Partial).** There has been some progress in policies and plans since 2023, particularly around community preparedness plans, which has improved this score to partial. However, there remain gaps in central government plans to support the rollout of consistent community adaptation planning – including clear funding and finance and requirements for monitoring.

  - Defra piloted local adaptation reporting as part of the fourth round of adaptation reporting (ARP4), as committed in NAP3 and aligned with our previous advice to inform adaptation reporting (Box 3.1). Local authorities have responsibilities for key areas of adaptation delivery, including local transport, planning and resilience. As of February 2025, 18 local authorities have reported under ARP4 (28 local authorities and two combined local authorities were initially involved).[130] This public reporting is valuable to drive forward consideration and prioritisation of climate change risk and adaptation across the range of local government activities.*

  - There is currently no mandated local authority adaptation reporting or local funding ring-fenced for adaptation planning and delivery. The costs and benefits, and barriers and enablers, of reporting for local authorities should be considered as the Government makes plans for the fifth round of ARP.

  - Government announced the Plan for Neighbourhoods in March 2025 – a £1.5 billion programme, with up to £20 million available for 75 local authorities over the next 10 years. The plan includes (but is not limited to) a pre-approved list of interventions for investment, which cover improving green space, climate-resilience in housing and tree planting and could enable local adaptation delivery.[131] The Government has also committed to bringing forward the English Devolution Bill, which provides a key upcoming legislative opportunity to enable and mandate place-based planning for climate change.[132] The Met Office's local climate projections service (funded by Defra and launched in 2024) provides more relevant risk assessment information at the local level to improve local plans in the future.[133]

* An evaluation of the ARP4 process has been commissioned by Defra and is due to report in 2025. This will include an evaluation of the local authority pilot, including feedback on the process and its value from the different types of authority that took part. This will inform future planning and consideration of wider rollout of reporting by local and combined authorities.

- **Communities can respond to climate shocks (O-CR2: Partial).** The key central government policies and plans for this outcome area sit within civil contingencies and national resilience planning (Box 3.5). There are well-developed plans for developing and expanding flood warnings, as set out in the EA's flood risk management strategy, with improvements expected to be launched in Summer 2025. Plans to improve surface water flooding forecasting capabilities through a Rapid Flood Guidance service are also positive.[134] There are existing plans in place for flood recovery through the Flood Recovery Framework scheme, which allows eligible areas to apply for post-event grants (see O-B2). A post activation review of the framework has identified measures, including improved data sharing and extended application timelines, for further consideration.[135] However, plans for a cross-government coordinated response to other climate risks (such as wildfires and extreme heat) are not as well developed.

  - At a strategic level, existing plans are limited by a lack of integration and alignment between national and local resilience, as well as limited join-up across long-term preparedness and short-term response, and the range of agencies and actors required to deliver emergency response to future climate shocks. The ongoing review of national resilience is an opportunity to strengthen local resilience activities and emergency response plans in the context of climate change.[136]

- **Local cultural heritage is conserved (O-CR3: Limited).** Cultural heritage is maintained and managed by a wide set of organisations including arm's-length bodies (such as Historic England and Natural England), charities (such as the National Trust and English Heritage), private organisations and local authorities. More organisations with responsibilities for managing heritage sites reported under ARP4, with returns demonstrating strong ambition to deliver and track adaptation. Alongside some improved hazard mapping for heritage sites, this provides a good baseline to develop long-term strategies with clear outcomes and targets.

  - While NAP3 highlights areas of progressing work and collaboration across the Department for Culture, Media and Sport (DCMS), Defra, arms-length bodies and other heritage organisations, there are still gaps in cross-departmental policy for ensuring sufficient funding and regulation, and monitoring and evaluation of what works.

3.3.4 Health and wellbeing

Table 3.7
Health and wellbeing outcome area scores

Thematic area	Outcome ID	Outcome	Policies and plans score	Change from 2023 Progress Report
Health	O-HW1	Protect population health from the impacts of climate change and utilise potential benefits.	Limited	No change
	O-HW2	Quality and accessible healthcare delivery during extreme weather.	Limited	No change

Notes: Previously, a 'good' score was labelled 'credible' in our 2023 Monitoring Framework.

Health

There remain only limited policies and plans in place that promote integrated consideration of climate hazards and adaptation action to protect population health and healthcare delivery.

- **Population Health (O-HW1: Limited).** Government sets public health policy frameworks and funds key agencies such as the UK Health Security Agency (UKHSA) which helps prevent, prepare for and respond to infectious disease threats and outbreaks, and environmental hazards (including weather and climate hazards). Despite new publications since 2023, key gaps in policies and plans on adaptation remain.*;[137];[138];[139];[140]

  - The Adverse Weather and Health Plan (AWHP) aims to equip communities and individuals with the knowledge and resources to prepare for and cope with adverse weather conditions.[141] It is a positive step forward on responding to, monitoring, and evaluating weather-related health hazards, as well as implementation response, and training. It promotes whole-of-government coordination by clearly defining roles and responsibilities across national, regional, and local levels.

  - Overall, there is still a need for developing an integrated suite of indicators that can be used to set targets, monitor progress and set a baseline assessment of risks to health from climate change more widely, including vector-borne diseases and mental health. The UKHSA Health Effects of Climate Change (HECC) report provided an update on potential climate and health indicators including the use of existing datasets which could provide a starting point.[142]

- **Healthcare delivery (O-HW2: Limited).** Healthcare is delivered by the publicly funded NHS, whilst social care is often delivered privately with a mixture of public and private funding. Overall, gaps remain in policies and plans to protect healthcare delivery from future climate risks.

  - A suite of policies and plans have been published by NHS England which improve ambition on considering adaptation across the NHS estate. The NHS Standard Contract has been updated to mandate that all NHS providers actively mitigate risks related to climate change and severe weather.[143] The latest Green Plan Guidance now includes an adaptation provision to be incorporated within Green Plans by 2027.[144] The recently published NHS Climate Change Risk Assessment Tool and the NHS Climate Adaptation Framework will also support identification of climate risk to sites and services.†;[145] Similarly, the Care Quality Commission single assessment framework now considers emergency preparedness for climate events, but this is at NHS trust sites only.[146]

  - There are opportunities to strengthen these plans further through implementation targets and consistent monitoring and evaluation mechanisms. Climate assessment at all Care Quality Commission sites is also needed to ensure policies and plans have sufficient scope. Funding allocations to adapt hospitals, care homes and other healthcare buildings are not set out. The NHS 10-year plan provides an opportunity to integrate adaptation within the NHS estate and operations, while helping to ensure sufficient funding. Improved coordination across local and central government is needed to protect vulnerable people in care homes during extreme weather.

* Since the APR 2023, the UKHSA have published a Science Strategy (2023 to 2033) and Strategic Plan (2023 to 2026), followed by a Data Strategy, Health Effects of Climate Change (HECC), the Adverse Weather and Health Plan (AWHP) and a UK Biological Security Strategy.

† This is only available to NHS staff at this time.

3.3.5 Economy

Table 3.8
Economy outcome area scores

Thematic area	Outcome ID	Outcome	Policies and plans score	Change from 2023 Progress Report
Business	O-BS1	Public and private adaptation measures are implemented to minimise risks to business sites.	Limited	No change
	O-BS2	Businesses have access to capital and insurance including for adaptation.	Limited	No change
	O-BS3	Productivity losses due to physical climate risks are minimised.	Insufficient	No change
	O-BS4	Supply chain risks are identified and managed.	Partial	Improved
	O-BS5	Risks and actions are disclosed and managed by businesses.	Partial	Improved
Finance	O-F1	All financial institutions incorporate physical risks into financial decision-making.	Partial	Improved
	O-F2	UK financial services are a global leader in adaptation.	Limited	Improved
	O-F3	No viable adaptation project fails for lack of finance.	Insufficient	No change
	O-F4	Risks and actions are disclosed and managed by financial institutions.	Good	Improved

Notes: Previously, a 'good' score was labelled 'credible' in our 2023 Monitoring Framework.

Business

NAP3 sets out that private businesses are responsible for investing in the resilience of their specific commercial sites and their supply chains.[147] The programme seeks to support private sector action by ensuring businesses have useful information to assess climate risks, as well as a supportive regulatory environment.

- **Adaptation measures to minimise risks to business sites (O-BS1: Limited).** The private sector holds the primary responsibility for managing business sites. Government policies and plans largely focus on providing reliable information to help businesses assess and address climate risks.[148]
  - Developments in this area include the launch of the Met Office's local climate projections service which provides relevant risk assessment information at the local level.[149] This helps provide information to businesses on hazards, although most information is related to flood risk, with information on other hazards more limited.
  - The SME Climate Hub, supported by the UK Government and included within NAP3, has limited information on climate adaptation.[150]

  - There are publicly funded programmes that help defend businesses at risk from flooding. For example, the Flood and Coastal Erosion Risk Management programme takes a collaborative approach to partnership funding between businesses and the public.[151;152] There is also a government commitment to support rural communities and farmers against flooding.[153]

- **Access to insurance and capital for adaptation (O-BS2: Limited).** The UK has deep and liquid capital and insurance markets, along with a strong insurance industry.[154;155] However, while general access to capital is available, finance for climate adaptation still lags behind finance for mitigation with documented barriers to financing adaptation projects including information gaps, lack of revenue streams, nascent markets, and regulatory challenges.[156]

  - Government has recognised these challenges in the Green Finance Strategy, but the adaptation finance deliverables and action plan pledged for 2024 has not yet been delivered.[157]

  - FloodRe, the government-backed reinsurance scheme for flood risk, does not cover businesses, and a recent government review of access to flood insurance found that only 21% of SMEs that owned their business premises held buildings insurance.[158]

- **Productivity losses due to physical climate risks (O-BS3: Insufficient).** There are very few effective standards on working environments to help businesses limit productivity losses due to extreme weather. Workplace heat standards set by the Health and Safety Executive (HSE) are advisory.[159] They provide simple guidance on what can be done to manage workplace temperatures, but do not have a strong productivity focus.

  - The NAP identifies actions from government to address information gaps for businesses to manage their own risk, particularly for Small and Medium sized Enterprises (SMEs) by developing factsheets via the SME Climate Hub. These have not yet been published.

  - The NAP also contained an action for the Cabinet Office to support the development of the UK Resilience Academy to increase provision of professional training to businesses on resilience, including resilience to climate change risks.[160] The status of this action and any progress is unclear.

- **Supply chain risks (O-BS4: Partial).** The UK Critical Imports and Supply Chains Strategy, published in 2024, has a focus on addressing potential bottlenecks in international supply chains linked to long-term trends, including the physical impacts of climate change.[161] The strategy includes initiatives such as a supply chains resilience framework, increased availability of trade data for businesses to assess supply chain weak points, and scenario 'stress testing'. We have raised our score to 'partial' based on the new strategy which provides a foundation for more directly incorporating climate risk management into supply chains.

- **Disclosure and management of climate change risks by businesses (O-BS5: Partial). The** Green Finance Strategy sets out the Government's approach to climate-related disclosure across the economy, including on physical climate risk. Two of its key elements, the Transition Plan Disclosure and the alignment with International Sustainability Standards Board (ISSB) standards, are currently voluntary in the UK (Box 3.7]).

  - The UK Government has reinstated its commitment to aligning the UK Sustainability Reporting Standards (UK SRS) with the ISSB standards. The Government also plans to consult on requirements for UK-listed companies to report sustainability-related information, building on or even replacing the existing mandatory TCFD (task force on climate-related financial disclosures) reporting.[162]

– We have increased this outcome's score reflecting the Government's focus on disclosure. However, whilst this focus is welcome, information required to be disclosed on climate risk and adaptation is still basic and will need to be further developed over time to provide a richer adaptation disclosure landscape. The Transition Pathways Taskforce Working Group on adaptation have made recommendations on how to extend the Transition Plan Disclosure into adaptation.[163]

Box 3.7
Components of the UK Sustainability Disclosure Requirements (SDR)

In recent years, the UK Government has endorsed several initiatives and frameworks on sustainable disclosure standards.[164]

- **Taskforce on Climate-Related Financial Disclosures (TCFD):** Mandatory for large UK companies and financial institutions since April 2022, the TCFD framework requires disclosure of climate-related risks, including scenario analysis, under four pillars: governance, strategy, risk management, and metrics and targets. In October 2023, the Financial Stability Board (FSB) announced that TCFD's monitoring responsibilities would be transferred to the International Financial Reporting Standards (IFRS) Foundation, formally integrating TCFD into the IFRS sustainability framework.[165]
- **International Financial Reporting Standards (IFRS):** The International Sustainability Standards Board (ISSB) is responsible for developing IFRS Sustainability Disclosure Standards. In 2024, the UK's Financial Reporting Council (FRC) recommended adopting IFRS S1 (General Sustainability Reporting) and IFRS S2 (Climate-related Disclosures) to align with international standards.[166] IFRS S2 requires companies to disclose climate risks using both qualitative and quantitative metrics, though adaptation-related disclosures remain limited (for example, percentage of assets exposed to physical risks).[167] The Government plans to consult on UK Sustainability Reporting Standards (UK SRS) which will assess and endorse IFRS S1 and S2.
- **Transition Plan Taskforce (TPT):** A UK-led initiative active from 2022 to 2024, the TPT focus was to support companies in developing credible transition plans for reducing emissions and integrating climate resilience.[168] Unlike TCFD and IFRS, which focus on climate risks and financial disclosures, TPT emphasises forward-looking corporate action. In 2023, TPT published a disclosure framework, aligning with TCFD and IFRS recommendations.[169] The framework is largely focussed on disclosure relating to actions supporting the transition to Net Zero, although it does include outlining resilience objectives. Adaptation is included in a list of external factors that may affect a company's achievement of the company's 'strategic ambition'. The TPT's adaptation working group published recommendations on how to make transition plans resilient.[170] Though currently voluntary, the Financial Conduct Authority (FCA) plans to consult on strengthening its expectations for transition plan disclosures.[171]
- **UK Green Taxonomy (UKGT):** Unlike other frameworks and instruments that focus on risk at the organisational level, a taxonomy classifies a company's economic activities as sustainable or not. The UK Green Taxonomy (UKGT), currently still under development, would aim at supporting investment into activities aligned with sustainability goals, and to mitigate greenwashing.[172] An initial consultation was planned for October 2023, but it was postponed.[173] In late 2024, the UK Government launched a consultation on the value case and usability of a UKGT, which could further delay its implementation. The consultation did not go into detail on the role of adaptation in the potential taxonomy.[174] There is currently no clear timeline for the completion of the process of developing a green taxonomy. However, if implemented, a UKGT would provide valuable data on adaptation and mitigation efforts, but it will also need to integrate with the SDR and other frameworks.

Finance

The 2023 Green Finance Strategy set out a role for government in setting guidance and requirements for disclosure, supporting innovation, ensuring access to liquidity, championing the UK globally and creating and promoting green investment opportunities in the economy. The inclusion of adaptation within this plan has allowed our scores to improve. However, there is a lack of detail on actions, timelines, and progress against the milestones connected to adaptation. In particular, the promised adaptation finance deliverables and action plan, due by the end of 2024, has not been delivered.

- **Incorporate physical risks into financial decision-making (O-F1: Partial).** Most UK public financial institutions have at best partial coverage of adaptation in their published plans.[175;176] More guidance is being produced to help incorporate physical risks into decision making, supported by public organisations.

  - The Climate Financial Risk Forum, established by the Bank of England and the FCA in 2019, and run by the private sector and the Green Finance Institute, published a report in 2024 providing guidance and recommendations to industry to assess the physical risks they face and including several case studies on climate change adaptation finance.[177]

  - The Government continues to invite key financial institutions to report under the Adaptation Reporting Power, asking them to provide details on how they manage their physical climate-related risks.[178;179]

- **Global leadership in adaptation services (O-F2: Limited).** The Green Finance Strategy identified an objective to reinforce and expand the UK's position as a world leader on green finance and investment. This includes incorporating nature and adaptation, and collaboration with international partners to support alignment of global financial frameworks with climate and sustainability objectives.

  - The UK has established international programmes, such as UK International Climate Finance (ICF), to support developing countries in undertaking both mitigation and adaptation actions. By 2024, the programme had mobilised over £600 million in private finance for adaptation goals, since the programme was first launched in 2011.[180]

  - However, beyond international climate finance, plans to deliver on these objectives are missing, with the promised adaptation finance deliverables and action plan under the Green Finance Strategy not yet delivered.

- **Financial viability of adaptation projects (O-F3: Insufficient).** The 2023 Green Finance Strategy (GFS) and NAP3 have both committed to mobilising private finance for adaptation.[181] While both GFS and NAP3 include commitments to work with industry partners to foster collaboration and address barriers to investment, the specifics of plans and actions are unclear.

  - There have been some initiatives to foster public-private information sharing, such as the FCA- and PRA-led Climate Financial Risk Forum. However, the UK Green Taxonomy has been delayed (see Box 3.7).

- **Disclosure and management of climate change risks by financial institutions (O-F4: Good).** In the UK, insurers and banks have been required to report to the Prudential Regulation Authority on climate change risks and climate risk management since 2019, under Supervisory Statement 3/19, which was updated and strengthened in 2024.[182] The Government continues to invite key financial institutions to report under the Adaptation Reporting Power, providing detail on how they manage their physical climate-related risks.[183;184]

3.3.6 International collaboration

The UK faces systemic international climate risks that can only be tackled through global collaboration on adaptation, mitigation and climate-resilient development.* These risks are defined as systemic because they arise from interactions of multiple global systems and impact UK society and the economy in highly complex ways.

CCRA3 identifies four systemic international climate risks to the UK related to:

- International human mobility (ID3).
- Violent conflicts (ID4).
- International law and governance (ID5).
- Cascading risks across sectors and borders (ID10).

Systemic international climate risks to the UK are driven by continued global climate change, in conjunction with economic, social and environmental developments around the world. While the UK cannot fully reduce its exposure to these risks, it can contribute to global risk reduction efforts through supporting effective international climate policy, and via international co-operation to support both reduction of emissions and adaptation to climate change around the world.

This section qualitatively assesses policy and planning progress on the UK's contribution to addressing these systemic international risks, recognising the welcome inclusion of actions to address international risks in NAP3 (Box 3.8).†

* Non-systemic international climate risks are covered in the food security, business, and finance sections of Chapter 2 and 3.

† Delivery and implementation progress is not assessed as outcomes and monitoring indicators are not currently defined for systemic international risks.

Box 3.8
How NAP3 addresses international climate risks

NAP2 had no actions for international risk, leaving this important area unaddressed and not monitored. NAP3 for the first time addresses international risks to trade, food, the financial sector, health, as well as the systemic risks of migration, conflict, law and governance, and cascading risks.[185]

NAP3 actions to reduce international risks fall under the following approaches:

- Providing adaptation finance to those most vulnerable.
- Deploying the UK's evidence and analytical capabilities to improve understanding of these risks.
- Continuing to provide the UK's international climate leadership.
- Engaging with domestic industry partners where they have levers to act.

Trade, food, finance, and health risk are the responsibility of the corresponding UK Government departments. FCDO is the leading department for international systemic risks but shares specific actions with the Cabinet Office (on migration, conflict, cascading risks), Defra (on law and governance, cascading risks), DESNZ (on law and governance), the Home Office (on migration) and the MOD (on conflict).

In many cases actions proposed in NAP3 are largely a continuation of ongoing programmes, funding and research which, while valuable, do not signal an increased ambition needed in this space.

In the 2023 Progress Report, the Adaptation Committee advised government on several priorities for advancing its efforts to tackle systemic climate risk through international collaboration. Progress against each is summarised below:

- **Defining UK international role and delivery on the Paris Agreement.** While the UK published an ambitious emissions reduction target in its 2035 Nationally Determined Contribution (NDC), at present there is no comparable domestic ambition on adaptation consistent with the agreed Global Goal on Adaptation under the UNFCCC.[186] The 2030 Strategic Framework for International Climate and Nature Action, published by the UK Government in March 2023, increased ambition on international adaptation, mitigation and finance. Realising this vision will contribute to reducing all systemic international risks. However, the focus on past policies and programmes and the lack of detail on what will be done in future suggested risks to delivery, as detailed in our Progress in reducing emissions 2023 report to Parliament.

- **Championing international climate ambition.** Beyond UNFCCC, the UK has generally been a consistent and strong voice championing the climate agenda at key international forums like the G20 and the UN Security Council.[187;188] The Prime Minister's speech at the 2024 UN General Assembly clearly committed the UK to international climate leadership.

- **Mobilising climate finance.** At COP28, the UK pledged £40 million to the UN Fund for Responding to Loss and Damage, and £20 million for wider Loss and Damage funding arrangements, including support for early warning systems and disaster risk finance.*;[189];[190] The Government remains committed to spending £11.6 billion on international climate finance (ICF) between 2021/22 and 2025/26, which includes £1.5 billion per year for adaptation by 2025. However, ICF delivery is at risk. More than half the budget needs to be delivered in the last two years of the spending cycle, and the proportion of adaptation financing in 2023 fell below 40%, far from the aim of an equal split with mitigation.[191];[192] To fund the increase in defence spending announced in February 2025, the Government will significantly cut Overseas Development Assistance (ODA) from 0.5% to 0.3% of UK Gross National Income starting from 2026/27.[193] It is currently uncertain what this cut will mean for ICF.

- **Mitigating migration, conflict, and cross-border cascading risks to the UK via international cooperation.** Since 2023, cross-government understanding of how international climate risks impact security has improved, thanks to dedicated research and awareness-raising across departments.[194];[195] However, practical progress to reduce these risks was mostly a continuation of previous programmes and funding on peacebuilding, early warnings and nature, with some ODA funding re-targeted towards climate and conflict or migration.[196];[197];[198];[199] Cross-border cascading risks, the less well defined and newest area for international climate work, saw the least action. Plans to date do not match the scale of the challenge, being largely delegated to existing UK diplomatic work and ICF delivery. The Government has signalled that climate will be a focus of its security work, which provides an opportunity for a step change in tackling these risks.

3.4 Priority recommendations

This assessment of policies and plans highlights the need to strengthen and develop adaptation policy to address the shortfalls identified in this chapter and drive adaptation delivery across the economy (Section 2.2). Strengthening cross-government governance on adaptation and taking advantage of upcoming policy opportunities will be critical for improving the quality of policies and plans on climate adaptation.

Land, nature, food

The state of the UK's natural environment, a proxy for its overall resilience to climate extremes, continues to decline despite environmental improvement goals. The roll-out of the Environmental Land Management schemes (which support farmers and land managers to deliver public goods alongside food production) is underway, but specific adaptation guidance is lacking within the Environmental Land Management schemes – as is sufficiently granular reporting to judge its effects on climate resilience.

Key policies that will influence adaptation for nature, working lands and seas, and food security have been delayed. The Government is currently conducting a review and refresh of the approach to agricultural and environmental policies in England and key decisions on budgets for adaptation-relevant actions on land depend on the spending review.

* While there is no global definition of loss and damage, it generally concerns the losses and damages that occur at the limits of adaptation, when climate impacts cannot or have not been adapted to.

Government should:

- **Integrate its approach to adapting to climate change across Defra's forthcoming foundational strategies.** These include the Land-Use Framework, Environmental Improvement Plan, 25-year farming road map, and food strategy. These strategies should recognise the need for adaptation measures to ensure their goals are met. They should set out how these adaptations will be funded, have clear objectives, delivery targets, responsibilities and milestones.

- **Clarify budgets and address non-financial barriers for the deployment of specific adaptation measures through the Environmental Land Management schemes.** Following the spending review, there should be certainty about how farmers and land managers will be supported to adapt their land for production, nature and wider resilience. Government should ensure low-regret and low-cost measures are taken up through regulations or minimum requirements in agricultural support mechanisms.

Infrastructure

The UK has experienced significant infrastructure disruption due to extreme weather in recent years. Disruptions from heat and flooding on rail and road networks are rising. In the public water system, some parts of the country are facing more acute drought challenges. Examples of damaging cascading infrastructure failures have been seen, particularly in the record heat of 2022.

A number of periodic settlements for regulated infrastructure are due to be finalised in 2025, alongside development of government strategies in several infrastructure areas. The effectiveness of mandates for climate resilience across regulated infrastructure sectors is currently variable, and improving these mandates should be a priority to strengthen the resilience of infrastructure to a wide range of hazards.

Government should:

- **Set out in the 10-year infrastructure strategy how it intends to mainstream climate adaptation into the delivery of infrastructure across sectors. This** includes setting out clear resilience standards for infrastructure systems. Government should establish the mechanisms to address infrastructure interdependencies where most effective to do so, including through standardised scenarios for stress-testing infrastructure resilience.

- **Ensure key regulated funding agreements provide incentives for adaptation deployment.** These include the next Road Investment Strategy and the RIIO-3 price control final determinations (for gas distribution, gas transmission and electricity transmission) – both due in 2025. The funding agreements should ensure that adaptation measures are deployed at-scale and for a broad range of climate hazards.

Water companies remain off track to deliver the water demand and leakage reduction targets needed to prepare for a drier future despite new plans. The lack of new actions to meet the targets for demand reduction and leakage improvement means that we no longer judge there to be fully credible plans in these areas. Reviews of governance and regulation in this sector should seek to address these gaps.

Government should:

- **Ensure that the next water regulatory settlement can fund and encourage more ambitious adaptation action.** Through the reforms to the public water sector, currently being considered by Defra and Ofwat, the next water regulatory settlement (due in 2029) should fund and encourage more ambitious options to get the sector back on track for its demand and leakage reduction targets, considering the potential impacts on vulnerable customers.

Adaptation action to reduce the vulnerability of energy sector assets is underway, principally focussing on flooding and storms, with ongoing research and analysis regarding vulnerability to other climate-related hazards. The National Energy System Operator (NESO) was launched in 2024 as the single body responsible for the strategic planning and design of Great Britain's energy network (electricity and gas). NESO has a resilience remit – which it must now flow through its activities, including the planning of the UK's Net Zero electricity system.

Government should:

- **Include consideration of resilience to a range of climate scenarios and hazards in NESO's Strategic Spatial Energy Plan.** This should include consideration of differing levels of exposure to flood, water scarcity and heat hazards in different locations, to ensure generation and network assets are sited to minimise risk of systems-level impacts during future extreme weather. It should also include consideration of high impact, low likelihood events.

Built environment and communities

The large-scale flood defence programme in England, led by the Environment Agency, continues to protect more homes, but its budget in real terms is shrinking as risks are escalating, meaning delivery is falling short of targets, and the condition of flood defence assets is declining. Adaptation efforts to combat urban overheating remains weak and poorly monitored. There are no regularly produced national datasets recording changing risks and the delivery of measures such as urban greening or building-level adaptations.

The current period of the Environment Agency's Flood and Coastal Erosion Risk Management investment programme is ending a year early, with the next programme due to start aligned with the new government spending settlement. Beyond flooding, a key policy gap is the lack of a coherent cross-government strategy to help coordinate action on tackling urban heat nationally and at local level.

Government should:

- **Include long-term targets on net change in flood risk in the next flood and coastal erosion risk management investment programme.** These need to be supported with sufficient levels of funding and a clear delivery plan to ensure these targets are met.

- **Set out a long-term cross-sector plan to manage future heat risk and drive joined up action.** This should bring together relevant government departments and agencies, and involve regional and local government, to ensure that adaptation delivery for future extreme heat is coordinated across the built environment, the health system, and community response nationally and locally.

Health and wellbeing

Heat-related deaths are rising in the UK. A rise in reported incidences of overheating and flooding have also been seen within the National Health Service (NHS) estate, but a full picture of disruption to health care delivery from extreme weather is not available. Beyond the NHS, there are no routinely collected data on extreme weather disruption or adaptation implementation in other health care settings such as care homes, domiciliary care and GP surgeries.

The UK Health Security Agency's Adverse Weather and Health Plan is a useful step in improving the coordination of the health response to extreme weather by clearly defining roles and responsibilities across national, regional, and local levels. However, it needs to go further to address fully all climate risks and provide an approach to health adaptation that can be effectively monitored. The Government has set out a process to develop a 10-year plan to build an NHS fit for the future. This needs to ensure that upgrades to NHS planning and assets can make it more resilient to climate extremes today and in the future.

Government should:

- **Develop an improved climate and public health adaptation plan, building upon the current Adverse Weather and Health Plan.** This should cover a greater range of hazards and responses. This needs to be an action-oriented plan that provides improved quantitative targets and associated indicators to monitor progress related to health adaptation across sectors.

- **Strengthen the Green Plan guidance and NHS Climate Adaptation Framework.** This should be done by defining outcomes and targets for implementation and accountability, monitoring and linkages with Net Zero. Integrated care systems and partnerships should also include adaptation within their integrated care strategies.

Economy

Businesses across the economy are impacted by climate risk. Recent years have seen high levels of insurance claims from extreme weather and productivity impacts are being recorded. Climate-related disruption to key supply chains is already having important implications for businesses, households and the Government.

Businesses and financial institutions can take action to enhance their resilience, but barriers remain to effective action across the economy, including provision of appropriate information and access to finance for adaptation measures. The 2023 Green Finance Strategy set out ambitions to improve disclosure on adaptation and to drive forward investment into climate resilience across the economy. However, adaptation progress under the strategy has been limited. Disclosure is only one way of encouraging private sector action and it is not clear that it is driving adaptation investments. Adaptation finance remains nascent. Government has a key role to enable private sector action by removing barriers, correcting market failures, and ensuring that high-quality information is available to understand climate risk management across the economy.

Government should:

- **Ensure that businesses have access to appropriate adaptation information to help manage their own risks.** In part, this requires coordination of the emerging analytics and metrics resources across government into a portal accessible to companies, especially small and medium-sized enterprises (SMEs).

- **Ensure that the commitments outlined in the Sustainable Disclosure Requirements integrate and streamline requirements for robust adaptation-related disclosure.** This should ensure that reporting burdens for companies are minimised whilst providing effective disclosure of information to help the private sector monitor and manage corporate climate risks.

- **Deliver on the 2023 Green Finance Strategy commitments to set out an adaptation finance action plan.** This should seek to include adaptation within transition plan disclosure requirements and guidance, as well as how the Government intends to mobilise private investment towards adaptation actions.

International collaboration

It is in the UK national interest to support adaptation outcomes globally. Many of the most impactful risks to the UK come from its links to other parts of the world as part of a highly connected global economy. NAP3 recognises the critical role of the UK working with other countries and domestically as part of a fully-fledged response to global climate risk.

The UK's contribution to international adaptation outcomes encompasses public, private and third sectors. The Government has a key coordinating role to help maximise the UK's overall international adaptation impact, setting out how aid, trade policy, and diplomacy can be mobilised effectively and help leverage further private and third sector contributions.

Government should:

- **Develop and implement a cross-government strategy to address climate-driven risks to migration, conflict and international cascading risks.** This should include setting out its International Climate Finance contribution to the New Collective Quantified Goal as part of UK international leadership but also extend to how government can help maximise the impact of the UK's private and third sectors.

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Annex 1: Sectoral recommendations

Table A1
Sectoral recommendations for the next two years for the UK Government

ID	Priority recommendations	Primary responsibility	Supporting actor(s)	Thematic area(s)
R2025-01	**Integrate its approach to adapting to climate change across the Department for Agriculture, Environment, Food, and Rural Affairs' (Defra) forthcoming foundational strategies.** These include the Land-Use Framework, Environmental Improvement Plan, 25-year farming road map, and food strategy. These strategies should recognise the need for adaptation measures to ensure their goals are met. They should set out how these adaptations will be funded, have clear objectives and delivery targets, responsibilities and milestones.	Defra		Nature; Working land and seas; Food security
R2025-02	**Clarify budgets and address non-financial barriers for the deployment of specific adaptation measures through the Environmental Land Management schemes.** Following the Spending Review, there should be certainty about how farmers and land managers will be supported to adapt their land for production, nature and wider resilience. Government should ensure low-regret and low-cost measures are taken up through regulations or minimum requirements in agricultural support mechanisms.	Defra		Nature; Working land and seas; Food security
R2025-03	**Set out in the 10-year infrastructure strategy how it**	HM Treasury	Cabinet Office	Water supply; Energy;

	intends to mainstream climate adaptation into the delivery of infrastructure across sectors. This includes setting out clear resilience standards for infrastructure systems. Government should establish the mechanisms to address infrastructure interdependencies where most effective to do so, including through standardised scenarios for stress-testing infrastructure resilience.			Telecommunications and ICT; Transport
R2025-04	**Ensure key regulated funding agreements provide incentives for adaptation deployment.** These include the next Road Investment Strategy and the RIIO-3 price control final determinations (for gas distribution, gas transmission and electricity transmission) – both due in 2025. The funding agreements should ensure that adaptation measures are deployed at-scale and for a broad range of climate hazards.	Department for Transport (DfT); Department for Energy Security and Net Zero (DESNZ); Defra		Water supply; Energy; Telecommunications and ICT; Transport
R2025-05	**Ensure that the next water regulatory settlement can fund and encourage more ambitious adaptation action.** Through the reforms to the public water sector, currently being considered by Defra and Ofwat, the next water regulatory settlement (due in 2029) should fund and encourage more ambitious options to get the sector back on track for its demand and leakage reduction targets, considering the potential impacts on vulnerable customers.	Defra	Ofwat	Water supply
R2025-06	**Include consideration of resilience to a range of climate scenarios and hazards in the National Energy System Operator's (NESO) Strategic Spatial Energy Plan.** This should	DESNZ	NESO	Energy

	include consideration of differing levels of exposure to flood, water scarcity and heat hazards in different locations, to ensure generation and network assets are sited to minimise risk of systems-level impacts during future extreme weather. It should also include consideration of high impact, low likelihood events.			
R2025-07	**Include long-term targets on net change in flood risk in the next flood and coastal erosion risk management investment programme.** These need to be supported with sufficient levels of funding and a clear delivery plan to ensure these targets are met.	Defra	Environment Agency	Towns and cities; Buildings; Communities
R2025-08	**Set out a long-term cross-sector plan to manage future heat risk and drive joined up action.** This should bring together relevant government departments and agencies, and involve regional and local government, to ensure that adaptation delivery for future extreme heat is coordinated across the built environment, the health system and community response nationally and locally.	Defra; Cabinet Office	Ministry for Housing, Communities and Local Government (MHCLG); Department for Health and Social Care (DHSC); UK Health Security Agency (UKHSA); DESNZ	Towns and cities; Buildings; Communities
R2025-09	**Develop an improved climate and public health adaptation plan, building upon the current Adverse Weather and Health Plan.** This should cover a greater range of hazards and responses. This needs to be an action-oriented plan that provides improved quantitative targets and associated indicators to monitor progress related to health adaptation across sectors.	DHSC	UKHSA	Health

R2025-10	**Strengthen the Green Plan guidance and NHS Climate Adaptation Framework.** This should be done by defining outcomes and targets for implementation and accountability, monitoring and linkages with Net Zero. Integrated care systems and partnerships should also include adaptation within their integrated care strategies.	DHSC		Health
R2025-11	**Ensure that businesses have access to appropriate adaptation information to help manage their own risks.** In part, this requires coordination of the emerging analytics and metrics resources across government into a portal accessible to companies, especially Small and Medium-sized Enterprises (SME).	Department for Business and Trade (DBT)		Business
R2025-12	**Ensure that the commitments outlined in the Sustainable Disclosure Requirements integrate and streamline requirements for robust adaptation-related disclosure.** This should ensure that reporting burdens for companies are minimised whilst providing effective disclosure of information to help the private sector monitor and manage corporate climate risks.	HM Treasury		Business; Finance
R2025-13	**Deliver on the 2023 Green Finance Strategy commitments to set out an adaptation finance action plan.** This should seek to include adaptation within transition plan disclosure requirements and guidance, as well as how the Government intends to mobilise private investment towards adaptation actions.	HM Treasury		Finance
R2025-14	**Develop and implement a cross-government strategy to address climate-driven risks to migration, conflict**	Foreign Commonwealth and		International collaboration

	and international cascading risks. This should include setting out its International Climate Finance contribution to the New Collective Quantified Goal as part of UK international leadership but also extend to how government can help maximise the impact of the UK's private and third sectors.	Development Office (FCDO)		
R2023-01	Defra should produce a strategy to ensure the agriculture sector remains productive under a changing climate, set targets for this and collect data to monitor success.	Defra		Working land and seas
R2023-02	The Land Use Framework should address the trade-offs and co-benefits of multifunctional landscapes to benefit climate mitigation, adaptation, food security, nature recovery, timber, recreation and rural livelihoods.	Defra		Nature; Working land and seas
R2023-03	The Home Office should create and implement a cross-departmental strategy with external stakeholders to identify and mitigate risks of wildfire.	Home Office		Nature; Working land and seas
R2023-04	Government should work with the private sector to enable more funding for building climate resilience for the agriculture, commercial forestry, and fisheries and aquaculture sectors, including (but not limited to) innovation, research and development, and jobs and skills.	Defra		Working land and seas
R2023-05	Government must strengthen policy and funding to restore coastal marine habitats by regulating bottom trawling, enforcing sustainable fishing quotas, and better protecting Marine Protected Areas to provide nursery areas to threatened commercial wild fish stocks.	Defra		Working land and seas

R2023-06	Defra should include a stretching and comprehensive soil health target as a priority in its forthcoming Soil Health Action Plan.	Defra		Nature; Working land and seas
R2023-07	The Environmental Improvement Plan goals should be mainstreamed across all government departments responsible for their delivery, and trade-offs with competing policies should be mitigated.	Defra	Other government departments	Nature
R2023-08	Defra must clearly link the multiple benefits delivered through meeting the new Environment Act (2021) targets to the suite of climate, environment and planning policies that support them.	Defra		Nature
R2023-09	Defra should set interim adaptation targets to drive early action to improve climate resilience of nature, enable progress assessments, and secure adequate resources (including for green jobs and skills) to facilitate delivery of the targets.	Defra		Nature
R2023-10	Defra should publish full details on how the Environmental Land Management scheme will support healthy ecosystems to build climate resilience, and the actions that reduce vulnerability to climate change that will be eligible for payments under the scheme.	Defra		Nature; Working land and seas
R2023-11	The Ministry of Housing, Communities and Local Government (MHCLG) should add an expectation in the National Planning Policy Framework that Local Plans and Design Guides support delivery of Local Nature Recovery Strategies and Natural England's Green Infrastructure Standards. It should ensure	MHCLG		Nature

	that the Environmental Outcome Reports provide equivalent or stronger protection for biodiversity than the current system.			
R2023-12	Government should adopt the recommendations for revised technical standards for Sustainable drainage systems (SuDS) in England, to ensure that SuDS are multifunctional systems that support biodiversity, improve water quality and provide green space for people.	MHCLG	Defra	Nature
R2023-13	Government should invest in social and ecological research to understand how best to work with people to restore nature and build resilience to the impacts of climate change and other pressures.	Defra		Nature
R2023-14	Collate data from water companies on uptake of water efficiency measures as a national indicator.	Ofwat	Defra	Water supply
R2023-15	Require water companies to report weather-related interruptions to supply to Ofwat and collate this as a national indicator.	Ofwat	Defra	Water supply
R2023-16	Conduct a review of governance arrangements for resilience to climate hazards in the energy system, to ensure they are fit for the new expanded and more diverse low-carbon system given increasing societal reliance on electricity.	DESNZ	Ofgem	Energy
R2023-17	Coordinate a systematic assessment of risks posed from cascading impacts across multiple sectors due to failures of the decarbonised energy system as part of the next round of the Adaptation Reporting Power.	Defra		Energy
R2023-18	Designate Ofgem and parties responsible now and in the future (including the	DESNZ	Ofgem	Energy

	new Future System Operator) for the maintenance of energy sector codes and standards, with a clear mandate to ensure climate and weather resilience.			
R2023-19	Extend requirements for reporting on outages to include the cause, duration and customers affected for all outages and collate this as a national indicator.	Ofgem	DESNZ	Energy
R2023-20	Mandate reporting on climate risk and adaptation plans by all generators, network operators and regulators under the Adaptation Reporting Power.	Defra		Energy
R2023-21	Commission further research to improve understanding of how climate change is altering key weather hazards that will impact the energy system.	DESNZ	UK Research and Innovation (UKRI); Defra	Energy
R2023-22	Designate Ofcom with a statutory remit for climate resilience.	Department for Science, Innovation and Technology (DSIT)	Ofcom	Telecoms and ICT
R2023-23	Design a pathway to develop and implement minimum climate resilience standards for Telecommunications and ICT infrastructure.	Cabinet Office	DSIT	Telecoms and ICT
R2023-24	Develop a set of indicators to enable monitoring of the impacts of weather and climate on Telecommunications and ICT services and the actions being taken to manage them.	Defra	DSIT	Telecoms and ICT
R2023-25	Make the National Resilience Standards a statutory requirement	Cabinet Office		Community
R2023-26	Undertake an assessment of the characteristics of vulnerability and adaptive capacity across England	Defra		Community

R2023-27	Expand the Part O Building Regulation requirement to cover refurbishments of existing buildings, conversions of non-domestic buildings to residential and prisons.	MHCLG		Buildings
R2023-28	Undertake post occupancy evaluations of new build homes to monitor summer temperatures to ensure homes meet Part O when built.	MHCLG		Buildings
R2023-29	Increase understanding of overheating risk in existing buildings by making use of annual empirical studies of overheating. For example, the Energy Follow Up Survey would be a useful tool to track overheating in homes if it were to be conducted each year. The Government should also assess other innovative ways to monitor temperatures in buildings, for example by using smart data.	DESNZ	Department for Education (DfE); Ministry of Justice	Buildings
R2023-30	Through the cross-government working group on overheating ensure the Government is actively addressing the need to mitigate overheating risks when installing measures to increase the energy efficiency of buildings.	DESNZ	Defra, Cabinet Office	Buildings
R2023-31	Work with the Environment Agency and other risk management authorities, such as water and sewerage companies, to set clear targets for the uptake of property-level flood resilience and set out standards for quality and maintenance. This should include improved data collection and monitoring.	Defra	Environment Agency; Ofwat	Buildings
R2023-32	Planning policy should be reformed to ensure that climate resilience is a priority, with mandatory adaptation interventions on	MHCLG		Towns and cities

	all built-environment project applications.			
R2023-33	Government should set long-term targets for the number of people and buildings at high to very low risk for all sources of flooding (sea, river, surface water, and groundwater).	Defra		Towns and cities
R2023-34	Policy decisions within shoreline management plans should be statutory.	Defra		Towns and cities
R2023-35	Set out mechanisms for funding installation and maintenance of SuDS and green infrastructure	Defra	MHCLG; Local authorities	Towns and cities
R2023-36	Urgently collect data on the location, type and standard of SuDS and green infrastructure interventions	Defra; MHCLG	Local authorities	Towns and cities
R2023-37	Provide a mechanism for setting out place-based targets for urban greenspace and unplanned impermeable urban surfaces in towns and cities	MHCLG; Defra	Local authorities; Natural England	Towns and Cities
R2023-38	Planning policy should ensure that assessments for all type and size of built development include, at a minimum, an assessment of current and future flood, erosion, and heat risk under future climate scenarios. This requires tighter controls on Functional Floodplain and Coastal Change Management Area designation, as well as statutory consultees with appropriate skills to assess future climate risks.	MHCLG		Towns and cities
R2023-39	The Department of Health and Social Care (DHSC) must work with MHCLG and local authorities to develop a long-term cross-sector approach to address risks in the social care sector, including using appropriate levers to accelerate adaptation action and ensuring that monitoring of overheating occurrences	DHSC	MHCLG; Local authorities	Health

	and air quality in care homes is undertaken frequently.			
R2023-40	Make available long-term, protected funding to adapt hospitals, care homes and other healthcare buildings to the impacts of climate change.	DHSC		
R2023-41	The Care Quality Commission (CQC) must include the readiness of health and care providers to manage overheating and other extreme weather within the new Single Assessment Framework inspections.	CQC		Health

April 2025

Progress in adapting to climate change – 2025 report to Parliament

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