National Audit Office

REPORT

Government resilience: extreme weather

Cross-government

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HC 314

Key facts

8

of the 89 risks included in the UK government's National Risk Register are extreme weather events

Over 10:1

average benefits to cost ratios for water efficiency, and heat alert and heatwave planning measures from analysis undertaken for the Climate Change Committee

Over £1bn

estimated yearly economic cost of at least eight individual climate risks, including risks to businesses from flooding and risks to health and wellbeing from high temperatures. The annual economic costs of all climate risks will be higher

Extreme weather events are already having significant impacts:

More than 4,500 the number of deaths associated with the hottest days in England in 2022, when the temperature passed 40°C for the first time since records began

1.4 million the number of properties left without power because of Storm Eunice in 2022

£96 million the impact on the economy (lost profits) of the 2012 drought in England, according to a 2013 estimate

60% the percentage of properties at risk of surface water flooding out of all properties at risk of flooding (coastal, fluvial, groundwater and surface water) across England

Extreme weather events are likely to become more frequent and extreme as global temperatures rise:

By 2050 hot summers in the UK are projected to double in frequency and the chance of a summer as hot as 2018 (the joint hottest on record) is expected to be 50%

Summary

Introduction

1 Government assesses the most serious risks facing the UK or its interests overseas over the next few years via the National Security Risk Assessment, a classified document. Its public-facing version, the National Risk Register, includes 89 risks. Both documents identify eight extreme weather events as national risks: coastal flooding, droughts, high temperatures and heatwaves, low temperatures and snow, fluvial flooding, severe space weather, storms and surface water flooding. The third independent assessment of the UK's climate risks, issued by the Climate Change Committee (CCC) in 2021, identifies 61 risks and opportunities arising from changing climatic conditions and extreme weather events.

2 Extreme weather events are those weather events that are significantly different from the average or usual weather pattern. Extreme weather events are becoming more frequent and more extreme as global temperatures rise. Recent events, such as successive severe storms, high temperatures and droughts experienced in 2022, have highlighted the challenges that the UK faces from these risks.

3 The Cabinet Office assigns ownership of acute national risks to lead government departments (LGDs) across risk identification and risk assessment; prevention, resilience, preparation and emergency response; and recovery. The LGD may change between these phases as the impacts change and different competencies are required. For some national risks, ownership of some or all phases of the risk lifecycle is devolved to the administrations in Northern Ireland, Scotland and Wales. The National Audit Office (NAO) does not audit these administrations, and so these plans are outside the scope of this report. The UK adopts a bottom-up approach to managing emergencies as most emergencies only affect local areas. Local responders, such as the police, fire and ambulance services, manage them without the direct involvement of central government. The response to larger-scale emergencies is led by an LGD and, in the most serious cases, is coordinated through the Cabinet Office Briefing Rooms (known as 'COBR'). COBR's role is to ensure that ministers and senior officials are provided with timely, coordinated and quality advice to enable quick and efficient decision-making during national crises, to provide a focal point for the government's response and to be an authoritative source of advice for local responders.

4 The COVID-19 pandemic highlighted the need to strengthen national resilience to prepare for future emergencies that may impact the UK. Government defines resilience as "an ability to withstand or quickly recover from a difficult situation, but also to get ahead of those risks and tackle challenges before they manifest". This covers the UK's ability to anticipate, assess, prevent, mitigate, respond to and recover from known, unknown, direct, indirect and emerging risks.

5 In December 2022, government published *The UK Government Resilience Framework*, setting out its strategic approach to strengthening resilience. The framework identifies three core principles: the need for a shared understanding of the risks faced by the UK; prevention rather than cure wherever possible (as responding to events and repairing damage can be much more costly than investing in prevention and preparedness); and that developing resilience requires a 'whole of society' approach. The framework sets out the key actions that the UK government intends to undertake by 2025 or 2030 in England and in those areas where responsibilities are not devolved, across the UK. The third National Adaptation Programme, published in July 2023, also sets out a five-year programme of work across government to build resilience to climate change.

6 The NAO will be undertaking a programme of work on resilience. This report and the report *Resilience to flooding* are the first reports in this series.[1]

Scope

7 This report examines how well-prepared the country is for future extreme weather events. Given the cross-cutting nature of these risks and their impacts they require coordinated action to be taken across government and beyond. The report sets out how central government coordinates, leads, supports and assures local activity, but does not cover local responses, such as local response plans. It also does not cover arrangements in the devolved nations. It aims to answer the following questions:

- Does the UK government have a clear vision and well-defined roles and responsibilities to manage national risks, such as extreme weather events, and the generic capabilities to deal with emergencies?
- Does the UK government have a clear understanding of extreme weather events and the impacts that they can have in England?
- Has the UK government taken appropriate action to prepare for, respond to, and prevent the potential impacts of, extreme weather events in England?

1 Comptroller and Auditor General, *Resilience to flooding*, Session 2023-24, HC 189, National Audit Office, November 2023.

8 The report concludes on how well-prepared the country is for future extreme weather events. It does not cover all extreme weather events, but uses examples from four case studies (droughts, high temperatures and heatwaves, surface water flooding and storms) to set out how government manages these risks (**Figure 1** on pages 8 and 9). By using four case studies on extreme weather events, we also aim to draw out wider learning for government on improving national resilience. Appendix One sets out our audit approach and evidence base.

Key findings

Arrangements for managing national risks, such as extreme weather

9 Since 2021, government has strengthened the arrangements to manage national risks. In 2021, the Cabinet Office established the National Situation Centre to bring data, analysis and insight together to improve its ability to identify, monitor and manage risks. During the period of extreme heat in July 2022, the centre worked with partners to identify vulnerable groups and locations, helping government to target support effectively. The Cabinet Office established: a resilience directorate, which leads the government's efforts to strengthen the UK's resilience along with a new board with cross-government representation; the COBR Unit, which leads horizon-scanning for and response to acute emergencies and drives professionalisation of emergency management in government; a resilience sub-committee of the National Security Council; and the UK Resilience Forum, which brings together representatives of the public, private and third sectors to improve communication and collaboration on risk, emergency preparedness, crisis response and recovery. The Cabinet Office also appointed a Head of Resilience to provide leadership and coordination across the UK resilience system and updated the list of LGDs, providing greater clarity over responsibilities for national risks across the risk lifecycle (paragraph 1.5, and Figures 2, 3 and 5).

Figure 1

Our four case studies of extreme weather events: droughts, high temperatures and heatwaves, storms and surface water flooding

Extreme weather events can have significant impacts, affect many people and can be costly

	Droughts	High temperatures and heatwaves	Storms	Surface water flooding
Definition	Periods of water shortage caused by a period of low rainfall. Their nature, timing and impacts vary. Droughts are classified as agricultural, environmental or water supply, depending on their impacts. These three types of drought may occur separately or together. Droughts can have four stages: prolonged dry weather, drought, severe drought and recovering.	Extended periods of hot weather when a location records a period of at least three consecutive days with daily maximum temperatures meeting or exceeding the heatwave temperature threshold. This varies by UK county from 25°C to 28°C.	Deep and active areas of low pressure with strong winds and precipitation. Storms are named if they have the potential to cause an amber or red National Severe Weather Warning.	Surface water flooding occurs when rainfall overwhelms the capacity of drainage systems and water flows over the land instead of through drainage systems.
Recent events	A drought was declared in August 2022. By September 2022, 11 out of 14 Environment Agency areas in England were in drought. In early 2023, two areas remained in drought.	In the UK there have been heatwaves in four of the last five years. The summer of 2018 was the joint hottest on record. The 2022 heatwave was unprecedented, with temperatures exceeding 40°C for the first time.	In 2021-22, the Met Office named six storms, with some of the highest wind speeds recorded in more than 30 years. Storm Eunice left 1.4 million homes without power and Storm Arwen left more than 1 million customers without access to mobile and fixed-line connections.	In July 2021, widespread flooding affected three-quarters of London's boroughs, with 1,500 properties flooded. It affected homes, businesses, health infrastructure and transport networks.
Future likelihood	As global temperatures rise, there is a risk that droughts will become more frequent in the UK. Droughts are expected to become more severe.	The likelihood and intensity of high temperature episodes is increasing. By 2050, hot summers in the UK are projected to at least double in frequency and the chance of a summer as hot as 2018 is expected to be 50%.	The evidence base for increased storminess is weak.	Evidence is building that heavy rainfall events are becoming more frequent and intense.
Who could be affected	Can affect significant parts of the UK.	Can affect significant parts of the UK. Urban areas are more at risk because man-made structures absorb more heat than natural landscapes.	Can affect significant parts of the UK. Northern areas are more likely to be affected.	Across England, of the 5.7 million properties at risk of coastal, fluvial, groundwater or surface water flooding, 3.4 million (60%) are at risk of surface water flooding. More than 365,000 properties are in areas at high risk of surface water flooding.
Costs and deaths	The economic costs of the 2012 drought in England were £165 million in revenues and £96 million in profits, based on a 2013 estimate.	The estimated productivity loss in the 2010 heatwave was £770 million. More than 4,500 heat-related deaths were recorded during the summer of 2022 in England.	Estimated insurance losses of £250 million to £300 million for Storm Arwen and £200 million to £350 million for Storm Eunice. Storm Arwen caused three deaths, Storm Eunice caused four deaths and Storm Babet in 2023 caused seven deaths.	The July 2021 London floods resulted in estimated insurance losses of £281 million and no deaths.
Common types of impact	**Agricultural**: impact on crop production or farming practices such as spray irrigation, impacting agricultural production. **Environmental**: reduced river flows, exceptionally low groundwater levels and insufficient moisture within soil. This results in stress for wildlife, fish and habitats, environmental damage and increased wildfire risk. **Infrastructure**: ground shrinkage affecting some roads and parts of the rail network. **Water supply**: shortages and restrictions impacting individuals, industry and businesses.	**Health**: excess deaths, increased risk of sunburn, heatstroke and other heat-related illnesses. **Environmental**: stress for plants and animals. **Infrastructure**: disruption to transport networks, supply chains, power and water supplies. **Social and economic**: likely disruption as behaviours change, including working patterns and levels of productivity.	**Health**: casualties and fatalities. **Environmental**: fallen trees. **Infrastructure and economic**: disruption to power, communications and transport networks; damage to homes, businesses and other properties.	**Health**: casualties and fatalities. **Environmental**: polluted watercourses. **Infrastructure and economic**: damage to homes and businesses; disruption to transport and services (such as hospitals, schools, prisons and courts).

Source: National Audit Office review of literature on extreme weather events

10 Government has yet to set out how resilient it would like the UK to be, either to all risks in aggregate or to most specific risks. Stakeholders, such as government resilience practitioners, the National Infrastructure Commission and the CCC, have welcomed *The UK Government Resilience Framework*. They regard its three principles for strengthening resilience and supporting actions as positive first steps. However, the framework does not set out a well-defined vision for what a resilient UK looks like, including targets and standards for the desired level of national, local or sectoral resilience. For three of the four extreme weather risks we examined (all except drought), government has not specified what outcome it is looking to achieve, such as target levels of preparedness or resilience, or the amount of risk that it is willing to accept in the pursuit of those outcomes (risk appetite). Without these, government cannot make informed decisions about trade-offs between long- and short-term priorities, investment or funding allocation of priority areas. It also makes it difficult for government or other stakeholders to track progress and evaluate how effectively and efficiently government is using public funds to improve national resilience. The Cabinet Office told us that it is developing options for different levels of investment that government may commit to specific response capabilities, depending on its risk appetite and tolerance (paragraphs 1.6 and 3.2).

11 Instead, government focuses on common consequences of risks and the ability to respond via generic capabilities, as well as planning for specific risks where this will make the most difference. This is informed by a number of sources, including the National Security Risk Assessment, new chronic risk analysis planned to provide evidence on potential future risk trajectories, capabilities assessments (see paragraph 14), assessments of the resilience and interdependencies of critical national infrastructure sectors and lessons from the National Exercising Programme (see paragraph 24). Cabinet Office told us this will be used to take a view on what level of preparedness is appropriate, what level of risk is acceptable and to make investment decisions (paragraphs 1.11 to 1.13).

12 Government is taking steps to address extreme weather risks as whole-system risks but could do more to strengthen assurance arrangements. Although single or multiple LGDs have ownership for each extreme weather risk, to manage these risks and build resilience to them requires coordinated action to be taken across government and beyond. This can be challenging for individual departments to coordinate and oversee. For example, commenting in March 2023 on previous adaptation programmes, the CCC has noted the lack of progress being made by government on climate adaptation, for which the lead department in England is the Department for Environment Food & Rural Affairs (Defra). To address this, the Cabinet Office and Defra, working with HM Treasury, has established a senior-level Climate Resilience Board. The Board aims to oversee strategic, cross-cutting climate adaptation and resilience issues and drive government action to increase UK resilience to climate change (paragraphs 1.17 and 1.18, and Figure 6).

13 Some roles and responsibilities for managing risks are still not clear. Although government has identified that developing resilience requires a 'whole of society' approach, it has yet to set out the respective roles of central government, local government, the devolved administrations, the private and voluntary sectors, and the public, leading to uncertainty on what actions to take. Regulation can play an important role in helping to manage risks but not all regulators have a remit for climate resilience, including extreme weather events (see paragraph 25). In addition, for some individual risks, such as surface water flooding, it is not always clear who the public should contact when an event occurs (paragraphs 1.7, 3.9 and 3.19).

14 The Cabinet Office's latest assessment of central government's preparedness is due to conclude by the end of 2023. The Cabinet Office draws together the common consequences of national risks, such as disruption to critical national infrastructure and casualties, to form 25 national resilience planning assumptions. These set the benchmarks for the generic capabilities, such as dealing with disruptions to critical national infrastructure, that should be in place for the UK to be prepared adequately to deal with most emergency scenarios. The Cabinet Office is running an assessment of the central government's capabilities to determine the UK's current level of preparedness and any gaps in its ability to respond to these risks, which is due to be completed by the end of 2023 (paragraphs 1.11 to 1.13).

Understanding of extreme weather events and their impact

15 Government has good forecasting data for droughts, heatwaves and storms, but less so for surface water flooding. Weather forecast data, climate change modelling data and risk assessment data are available and shared widely to inform decision-making and risk management. For example, the Met Office provides short-, medium- and long-range weather forecasts and issues weather warnings when severe weather has the potential to impact the UK. Surface water floods are the exception. Currently, it is difficult to predict the precise location, timing and impact of these events due to their localised nature and because they normally happen very quickly. The Met Office is due to carry out further modelling work on localised heavy rainfall in 2024 (paragraphs 2.2, 2.3 and 2.5).

16 Government continues to develop its understanding of extreme weather impacts from previous events but lacks information on less common events. Government has less data on how high temperatures and heatwaves will impact the UK because it has limited experience of this type of event. For example, some of the effects of longer periods of high temperatures on different sectors and infrastructure were unknown until the record-breaking temperatures experienced in July 2022. Government has announced several pieces of work to better understand the impacts of extreme heat. Our 2021 report on government's preparedness for the COVID-19 pandemic highlighted the need for government to promptly share and implement lessons from exercises.[2] The Cabinet Office now produces a regular UK Resilience Lessons Digest, which summarises lessons from a range of sources to share insights across government and wider partners. For example, the first issue in October 2022 shared lessons from Storm Arwen in 2021. Government regularly carries out exercises and applies the learning from these. While government arrangements for recovering from emergencies recommend that lessons should be identified and shared for the benefit of those who might be involved in future emergencies, we saw less evidence of government implementing learning from actual events (paragraphs 2.4 and 3.5, and Figure 8).

17 Government does not yet have a good understanding of the interaction between different risks, the further impacts that this can have and how risks in one system can have knock-on effects in another system. For example, the July 2022 heatwave resulted in failures at two data centres used to host the IT systems of a London hospital. This caused widespread disruption to patient care and clinical services, including to hospitals in the area to which patients were diverted. During Storm Arwen, in November 2021, problems with the power network affected communication networks and people's ability to access emergency services: households without power had no way of contacting emergency services because their phone lines were reliant on electricity to work. Mapping and understanding these interconnections can help to manage these risks as a system, which is only as strong as its weakest link. The Cabinet Office is working with departments to map critical national infrastructure assets and the interdependencies between them to inform risk mitigation and planning. It aims to complete the first phase of this work by the end of 2023 (paragraphs 2.7 and 2.8).

2 Comptroller and Auditor General, *The government's preparedness for the COVID-19 pandemic: lessons for government on risk management*, Session 2021-22, HC 735, National Audit Office, November 2021.

18 Government produces 'reasonable worst-case scenarios', but some recent events have exceeded planning assumptions. Considering multiple scenarios can help to plan and identify the different response capabilities that might be needed. Storm Arwen in November 2021 exceeded the planning assumptions of those scenarios, such as expected customer call volumes, because its atypical northerly wind direction caused more damage than wind gusts coming from the prevailing south-west would have done. The review that followed recommended updating the reasonable worst-case scenarios against which response plans could be tested and providing updated planning assumptions for other sectors to plan against (paragraphs 2.9 to 2.13).

19 Adaptation action can help to reduce the future costs of these events. Analysis for the CCC indicates that at least eight climate change risks may each have a cost of more than £1 billion a year by 2050. These include risks to businesses from flooding and risks to health and wellbeing from high temperatures. An evidence base is also building of the economic benefits of many adaptation actions. For example, analysis undertaken for the CCC indicates the average benefit to cost ratios for the following measures were: water efficiency measures (11:1), heat alert and heatwave planning (10.5:1), weather and climate services including early warning (9:1), and flood preparedness and protection (6:1) (paragraph 2.14).

Action to prevent, prepare for, and respond to the potential impacts of extreme weather events

20 Government has dedicated response arrangements in place for extreme weather events. These provide it with the means to monitor events and the response to them and consider where central government support and actions may assist. Processes in place include established escalation protocols, with clearly defined roles and responsibilities across policy and communications; close working with forecasters and government agencies, such as the Met Office and the Flood Forecasting Centre to inform planning and risk assessments; and regular reviews and testing of plans. Government and the response community undertake reviews of significant events to learn lessons, to be better prepared for the next ones (paragraph 3.5, and Figures 6 and 7).

21 The CCC has found little evidence that government is driving adaptation at the pace and scale needed to fully prepare for climate risks facing the UK. Government has undertaken a range of activities to develop resilience to future extreme weather events, such as updating building regulations and investing £5.2 billion in flood defences. However, the CCC's 2023 report to Parliament on progress in adapting to climate change found very limited evidence of the implementation of adaptation at the scale needed to fully prepare for climate risks facing the UK across cities, communities, infrastructure, economy and ecosystems. It, along with the National Infrastructure Commission, has highlighted that infrastructure, such as roads, rail, power and data centres, is not designed to withstand extreme weather events, particularly high temperatures and heatwaves (paragraphs 3.25 and 3.26).

22 Government has committed to developing a coordinated approach to investment in resilience, but this approach may not be ready until 2030. Government does not know how much the public sector is spending to manage extreme weather risks because action is taken across a wide range of organisations. There is no common definition of what constitutes resilience activity, so this figure would be difficult to calculate. We found little evidence across our case studies that risk assessment was feeding into funding decisions. Government notes that to make strategic investment decisions, it needs to understand how current capabilities match up with risks and concentrate investment where gaps are identified. As a first step, it aims to agree a working definition of resilience activities and capabilities, and using that, map current government resilience capabilities. It also plans to start measuring and tracking departmental investment in resilience across national risks, meaning risk-owning departments will be able to track investments, which should help support the coordination and prioritisation of investments (paragraphs 3.12 and 3.13).

23 Government has done less to encourage private sector investment in resilience to extreme weather events and climate change than on other long-term challenges such as net zero. Both public and private sector investment has a critical role in developing national resilience to extreme weather events and climate change. Many flood defence projects require funding to be secured from public and private sector sources in addition to government funding before they can go ahead.[3] Defra has not set a target for how much of this additional funding should come from the private sector and, to date, only 9% has been from the private sector. The 2023 Green Finance Strategy highlights government's intention to take action to prepare the UK for the physical impacts of the changing climate, to seek to align financial flows with a climate-resilient economy, and to increase investment in adaptation. However, government action to create the right environment for adaptation lags behind that for net zero. For example, when compared with the strategy's commitments on net zero and nature, commitments on adaptation are substantially weaker; there is a lack of concrete goals and actions, milestones and plans to address the key barriers to adaptation; and there is a lack of scale and urgency in action compared with the magnitude and proximity of the risks (paragraphs 3.14 and 3.15).

3 Comptroller and Auditor General, *Resilience to flooding*, Session 2023-24, HC 189, National Audit Office, November 2023.

24 We found limited evidence that government tests and assures contingency plans. It is important that government gains assurance that contingency plans are fit for purpose for those risks that are managed by a wide range of organisations, many outside government's direct control. It can gain assurance by reviewing and approving plans and testing them through simulation exercises. While government tests some contingency plans through exercises carried out at the local, departmental and national levels, government considers it impractical to test all plans. Local resilience forums produce emergency plans, but central government has no direct oversight of these plans and does not assure them. Following a hiatus due to EU Exit and the COVID-19 pandemic, the Cabinet Office has restarted the National Exercising Programme. National exercises bring together key partners (including local government) to embed lessons; stress-test government's plans, structures and skills; and test government's ability to respond to risks that affect the whole of society (paragraphs 3.3, 3.4 and 3.6).

25 Regulation and standards are important tools to support the development of resilience to extreme weather events but government's use of these tools is currently limited. Some regulators, including Ofgem and Ofcom, do not have a statutory climate resilience remit. By comparison, Ofwat's duties include securing the long-term resilience of water companies' water supply and wastewater systems against climate change, using a range of regulatory tools including the price review process. Some standards for climate resilience are in place in sectors such as the water, rail and road industries. However, many sectors lack resilience standards. For example, while the energy sector has standards on recovering power after extreme weather, resilience against floods and incident recovery, most of these standards do not set a measurable level for resilience against climate change. Government has committed to new standards for resilience by 2030 (paragraphs 3.7 to 3.11).

26 Government can do more to ensure that alerts reach individuals at risk in good time. The Met Office undertakes a range of activities, including issuing severe weather warnings, to help the public make informed decisions about day-to-day activities and actions they can take to reduce potential impact. Government recently tested a new system of emergency alerts, that it plans to use to get urgent messages quickly to mobile phones when there is a risk to life and provide clear instructions about how best to respond. The public can sign up for flood warnings from the Environment Agency including fluvial, coastal and groundwater flooding, but not surface water flooding. Surveys show that public awareness of the risk of surface water flooding is low and that people do not know who to report these incidents to when they happen (paragraphs 3.17 and 3.19).

Concluding remarks

27 Extreme weather events can have devastating consequences for individuals, communities and businesses. Recent events have shown that government must do more to help prepare for and develop resilience to extreme weather. Government continues to strengthen the arrangements in place to manage these risks. However, for the extreme weather risks we examined, government has yet to set out what outcome it is looking to achieve in managing these risks and the amount of risk that it is willing to accept in the pursuit of those outcomes (risk appetite). Government does not know how much is being spent on managing extreme weather risks. Without this information it is difficult to conclude on whether its current approach represents value for money.

28 Extreme weather is becoming more frequent and severe. Government needs to increase its focus on reducing these risks and making the system more resilient to the worsening impacts of extreme weather. Given the dynamic nature of risks over the medium- and long-term, even where government makes improvements, they may not be keeping pace with changes in climate risk. The challenge for government now is how it places sufficient emphasis on prevention and preparedness, making informed decisions about prioritisation to ensure efficient and effective investment in the long-term.

Recommendations

29 Our recommendations focus on managing extreme weather events but note where they are relevant to managing risk more widely.

a **The Cabinet Office, working with other departments, should strengthen leadership, accountability and assurance arrangements for the management of extreme weather risks**. This could build on the new Climate Resilience Board that will oversee strategic, cross-cutting climate adaptation and resilience issues. It needs to cover the whole risk lifecycle and prevention activity, across government to ensure action is taken where needed. This recommendation could equally apply to other national and cross-cutting risks that require cross-government action.

b **The Cabinet Office should review the current risk and resilience structures and identify any gaps in its system-wide oversight of national risks.** Once this review is completed it should consider how to address any gaps identified, including consideration of the merits of a Chief Risk Adviser.

c **The Cabinet Office should set out what a resilient UK looks like, a strategy to deliver this, and the specific roles of government, the private and voluntary sectors and the public.** The Cabinet Office, working with LGDs should:

- assess the current level of risk and how that risk is changing over time;
- decide what is the tolerable and acceptable level for that risk (or sets of similar risks) and set out 'what good looks like' now and in the future;
- identify the gap between this and the current performance and position;
- produce costed long-term plans, in which there is a high degree of confidence in delivery, for how to drive down the risk to an acceptable level;
- bring this information together for a coordinated and prioritised approach to investment (see recommendation e); and
- monitor and track the progress in driving down the risk to the acceptable level.

d **LGDs, working with the Cabinet Office, should develop a set of resilience standards for infrastructure and give regulators consistent climate resilience roles.** Government has already committed to improve standards for resilience by 2030. It should set out a pathway to deliver these standards. Giving regulators consistent roles would enable greater coordination across regulators to improve resilience across sectors.

e **The Cabinet Office, working with HM Treasury and other departments, should develop a coordinated, prioritised approach to investment in climate and wider resilience by 2025, and implement it by 2028.** While government has committed to developing this approach by 2030, it should bring forward its delivery as a coordinated, prioritised approach is urgently needed to ensure that investment in resilience is cost-effective and achieves the greatest benefits.

f **LGDs, working with HM Treasury and the Cabinet Office, should encourage greater investment in climate adaptation from the private sector.** This might involve publicising the benefits the private sector derives from adaptation, expanding the use of UK green gilts or introducing similar financial instruments to mobilise private sector resources for climate adaptation; and facilitating risk-sharing by expanding the scope of risk-pooling arrangements. The private sector has a pivotal role to play in managing extreme weather risk and other risks related to climate change.