



BUSINESS

This briefing summarises how business has been assessed in the latest UK Climate Change Risk Assessment (CCRA) Technical Report, and what types of action to adapt to climate change risks and opportunities would be beneficial in the next five years.

The full assessment looks at risks and opportunities for the UK under two climate change scenarios, corresponding to approximately a 2°C or a 4°C rise in global temperature by 2100. It answers three questions, for 61 different risks or opportunities using available published evidence and analysis:

- 1.** What is the current and future level of risk or opportunity?
- 2.** Is the risk or opportunity being managed, taking account of government action and other adaptation?
- 3.** Are there benefits of further adaptation action in the next five years, over and above what is already planned?

The main findings from the full assessment related to business are summarised below, together with the adaptation actions that would be beneficial over the next five years.

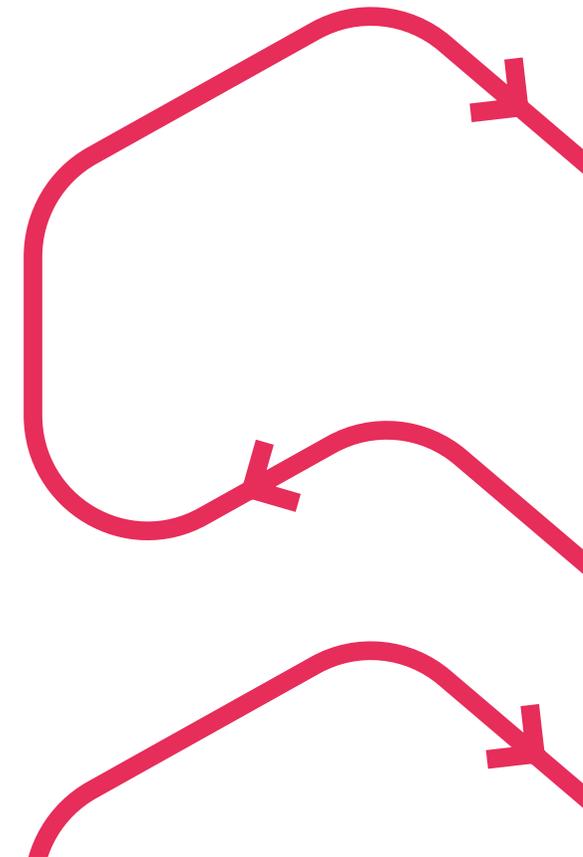
Each risk or opportunity has an identifier code linked to the full analysis, which is available in the CCRA3 Technical Report.

Readers are encouraged to use these briefings to locate the parts of the Technical Report of most relevance to them.

Alternatively, if you would like a summary of the analysis by UK nation, please go to the national summary documents:

- **England • Northern Ireland**
- **Scotland • Wales**

This briefing is aimed primarily at the UK Government, the governments of Scotland and Wales, the Northern Ireland Assembly and their respective departments and agencies responsible for business. However, it should also be of interest to a wider audience.



Key messages



- None of the risks identified have decreased in magnitude since CCRA2. This is partly because more information is available, and partly because some businesses have failed to take climate risks into account in their decision-making, thus perpetuating or increasing their vulnerability or exposure.
- The climate risks to businesses in the assessment that score as needing additional action in the next five years are the risk of flooding; the risk of coastal change due to erosion, flooding, and extreme weather events; and the risks from disruption of supply chains and distribution networks. Climate change outside the UK that affects UK businesses through investment, supply chains, distribution networks, and other business relationships is also a key source of risk.
- The risk to productivity from extreme heat requires urgent investigation to understand the actions that can be taken.
- Opportunities for new adaptation goods and services also require investigation to understand the case for action more clearly.
- The evidence base has increased since CCRA2, reflecting in part a greater awareness of climate change by larger corporates, regulatory pressures, and demands from investors for disclosure of risks.
- However, despite the improving quality of risk assessments and approaches to assessing physical risk, there is still a lack of evidence of businesses acting to reduce the risks, including for low-likelihood, high-impact, indirect risks, and interdependencies.
- There is a longstanding discrepancy in available information between SMEs and larger companies, and listed versus non-listed companies, creating a knowledge gap that needs to be addressed urgently, given the importance of SMEs to the UK economy.
- Climate risks to businesses may be “locked in” over time by business decisions taking place that do not factor in climate change, on operating models, site locations, infrastructure, supply chains, technology, policies, or pre-existing adaptation actions.
- Physical climate risks to businesses are often interdependent with risks in other sectors (and other CCRA chapters) – including the natural environment, infrastructure, built environment, and international dimensions.
- Climate change will bring some opportunities for some sectors and localities through shifting demands, new growing conditions, or the need for new financial services. However, consideration of potential benefits remains largely unexplored.
- Financial disclosure of climate-related risks will be required of listed companies by 2025, in line with global standards set by the Task Force on Climate-Related Financial Disclosures (TCFD). This development will provide a clearer picture of how businesses understand and manage risks from climate change.

Risks, opportunities, and benefits of further action



More action needed

Further investigation

Sustain current action

Maintain a watching brief

Average UK wide scores

B1. Risks to business sites from flooding.

B2. Risks to business locations and infrastructure from coastal change from erosion, flooding and extreme weather events.

B3. Risks to businesses from water scarcity.

B4. Risks to finance, investment and insurance including access to capital for businesses.

B5. Risks to business from reduced employee productivity due to infrastructure disruption and higher temperatures in working environments.

B6. Risks to business from disruption to supply chains and distribution networks.

B7. Opportunities for business from changes in demand for goods and services.

1. Risks to businesses from flooding (B1)



Current and future risks to business sites and functions from flooding are significant, with high magnitude impacts expected across the UK.

Present day expected annual damages to non-residential properties across the UK average around £670 million.

Damages could increase in a 2°C warming scenario by around 27% by 2050 and 40% by 2080, and in a 4°C scenario by around 44% by 2050 and 75% by 2080. These projections assume no changes in the asset base or size of the economy.

Costs to businesses arise from damage to sites as well as from business interruption and indirect losses, such as lost production time and associated costs. Flood risk management actions being taken forward, including flood protection and planning and preparedness through business continuity management, is encouraging but given the scale and the wider implications for the economy and society at large, more action would be beneficial.

The availability of insurance and costs of capital could increase the magnitude even further unless risk levels are reduced through corporate as well as community-level adaptation action.

Beneficial actions in the next five years include:

- **Actions to improve the evidence base and provide advice and support to businesses.**
- **Increasing investment in adaptation through a much higher uptake of property-level protection, raising awareness of flood warnings, greater use of sustainable urban drainage and continued investment in flood defences could decrease expected annual damages for non-residential properties from today's level by 5% by 2050 and limit damage to an increase of 1% by 2080 compared to present day levels of expected damages under a 2°C global temperature rise scenario. In a 4°C scenario, impacts still rise even with very high levels of adaptation.**

Further details on this risk: Business and Industry Technical Chapter, risk B1.



2. Risks to businesses and infrastructure from coastal change from erosion, flooding, and extreme weather events (B2)



A considerable amount of industrial and commercial activity and infrastructure exists along the coast for most of the UK.

The geomorphology of the coastline, coastal processes, nature of the hazard, past human intervention in the coast and coastal protection policies will all determine how coastal risks change in the future.

Flooding and coastal change is expected to become a high risk from the 2050s for all UK countries.

Without further adaptation, damages could increase by around 30% by 2050 and 73% by 2080 under a 2°C scenario. In a 4°C scenario the damages could rise by around 82% by 2050 and 181% by 2080.

Beneficial actions in the next five years include:

- Enable businesses to become involved in coastal protection and change projects, through partnership funding of coastal redevelopment, habitat creation or new methods of construction to better protect properties.
- Better provision of information from national and local government about protection levels and the limits of flood defences for coastal businesses, along with linking the future risks from climate change to coastal management strategies and development of visions by coastal communities.
- Investments in community resilience and inclusive community engagement, along with research into business opportunities in high-risk coastal locations.

Further details on this risk: Business and Industry Technical Chapter, risk B2.



3. Risks to business from water scarcity (B3)



Around 1 billion litres of water are used by businesses in England each day for cooling and heating, washing products, dissolving chemicals, suppressing dust, and as a direct input to products. Businesses also rely on a fresh water supply for drinking and sanitary purposes of staff.

Present-day risks from water scarcity are low, but these could rise significantly over the next 30 years and beyond, in both public water supply and direct abstractions from rivers and other sources.

The future magnitude of risk is considered medium across the UK. Many parts of the UK may be affected, not just southern regions.

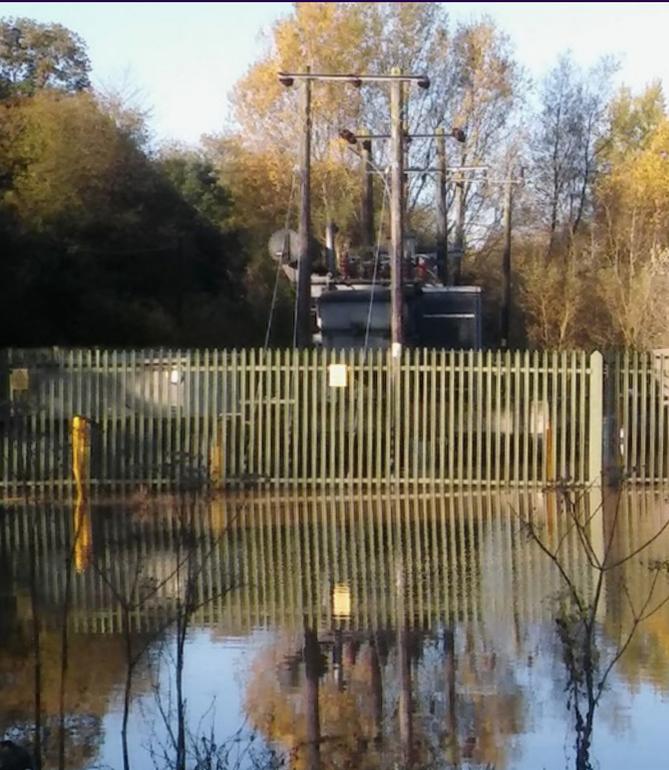
Beneficial actions in the next five years include:

- > A further understanding of sector usage of freshwater, along with a twin-track approach of demand management and supply enhancement.
- > Introducing water efficiency labelling linked to minimum standards of new build and retrofit.

Further details on this risk: Business and Industry Technical Chapter, risk B3.



4. Risks to finance, investment, and insurance, including access to capital for businesses (B4)



Risks to the UK's financial stability from the climate are currently moderate but expected to increase due to the scale of physical damage affecting assets, products, and services in the UK and abroad.

In a 4°C warming scenario, the assessment has highlighted that climate change impacts could be largely uninsurable due to the sheer scale and extent of damages.

As a global financial hub, the UK needs more consideration of the implications for companies of physical risks across countries and regions. Internalising climate risk and pricing it into insurance, lending or investment decisions will have implications for those relying on access to capital and insurance.

Currently there is limited evidence of physical climate risks affecting price changes, but this could change suddenly in the wake of more extreme events.

The magnitude of risk is currently considered medium, potentially increasing to high in a 4°C warming scenario.

Beneficial actions in the next five years include:

- Investment in physical risk reduction by companies.
- Improved stress testing for different climate scenarios alongside research into the effects of climate risk reporting on corporate strategies or investment decisions.
- Improved insurance products to promote uptake and improved scenario analysis for disclosure and reporting.
- Further research into new products like resilience bonds, along with investment in digital tools to support decision-making and understanding of risk.
- Improving collaboration between banks, borrowers, government and insurance to increase the quality of disclosure.

Further details on this risk: Business and Industry Technical Chapter, risk B4.



5. Risks to business from reduced employee productivity due to infrastructure disruption and higher temperatures in working environments (B5)



High temperatures can have negative impacts on employees' health and wellbeing and ability to commute to work.

There is some evidence that businesses are experiencing these impacts already, but in the UK the risk remains largely unquantified, as was the case for the last CCRA in 2017.

The impacts of extreme heat are likely to vary widely across business sectors or geographies, depending on factors such as the type of work, whether work is indoors or outdoors, and the local built environment and infrastructure.

Home working due to COVID-19 is likely to offer insights into overall productivity but also creates a new risk for those employees working from homes prone to overheating as well as other climate hazards like damp and mould.

The risk is currently considered low magnitude, but could rise to medium or even high in the future, particularly in England.

Beneficial actions in the next five years include:

- Analysis to start to quantify the current and future risk of overheating to businesses.
- Further research into interdependencies between business and infrastructure, types of employees at greatest risk, and effectiveness of planned or autonomous adaptation.
- Better collection of business continuity information related to extreme weather.
- Adaptation reporting by businesses to increase understanding of the risk.

Further details on this risk: Business and Industry Technical Chapter, risk B5.



6. Risks to business from disruption to supply chains and distribution networks (B6)



Extreme weather is already one of the top reported causes of supply chain disruption across all sectors, with exposure to climate hazards set to increase.

Nearly 60% of business surveyed by the Business Continuity Institute reported productivity losses due to extreme weather in 2018.

Some action is being taken by businesses, and there are emerging opportunities from advances in technologies and from the learning and increasing focus on supply chain resilience following the COVID-19 crisis. However, it is unclear if this level of background action will keep pace with the increasing risk or how effective it will be in managing climate or weather-related disruption specifically.

The future magnitude of risk is assessed unknown, but potentially could be very large and more action is needed.

Beneficial actions in the next five years include:

- Product and geographical diversification.
- Scenario planning for extreme weather events.
- Incorporating risks into risk registers and management programmes.
- Intensifying use of storage facilities.
- Including supply chain partners in risk assessment, planning, and communication.
- Making better use of technology to predict, monitor, and manage disruption.
- Improving insurance coverage.
- Larger businesses could support and incentivise adaptation of supply chains.



7. Opportunities for business from changes in demand for goods and services (B7)



Climate change will affect the production costs, comparative advantage, and demand for certain goods and services in the UK.

While most evidence relates to changing conditions for food and drink production, the most significant change since CCRA2 has been the growth of climate advisory services.

Businesses that anticipate changing markets may be able to gain an advantage, but barriers exist, suggesting that government intervention could help companies realise these opportunities, as it has with carbon management. This opportunity has not been well quantified to date, and there is a role for government to assess the scale of the opportunity in more detail and understand what barriers may exist to businesses taking up the opportunity.

The magnitude of the opportunity is currently low, but could rise to medium by the 2050s and beyond.

Beneficial actions in the next five years include:

- More research into emerging sectors and business capacity post COVID-19.
- Taking advantage of potentially significant opportunities in retrofit of building stock for adaptation.
- Taking advantage of potential new opportunities in transport, industry, and energy.
- Assessing products for maladaptation, for example, increased use of air conditioning.

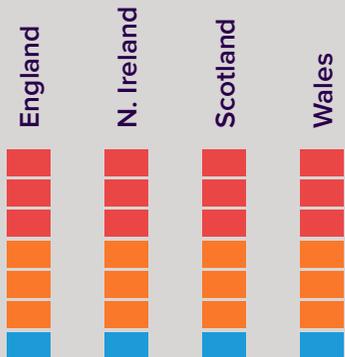
Further details on this opportunity: Business and Industry Technical Chapter, opportunity B7.



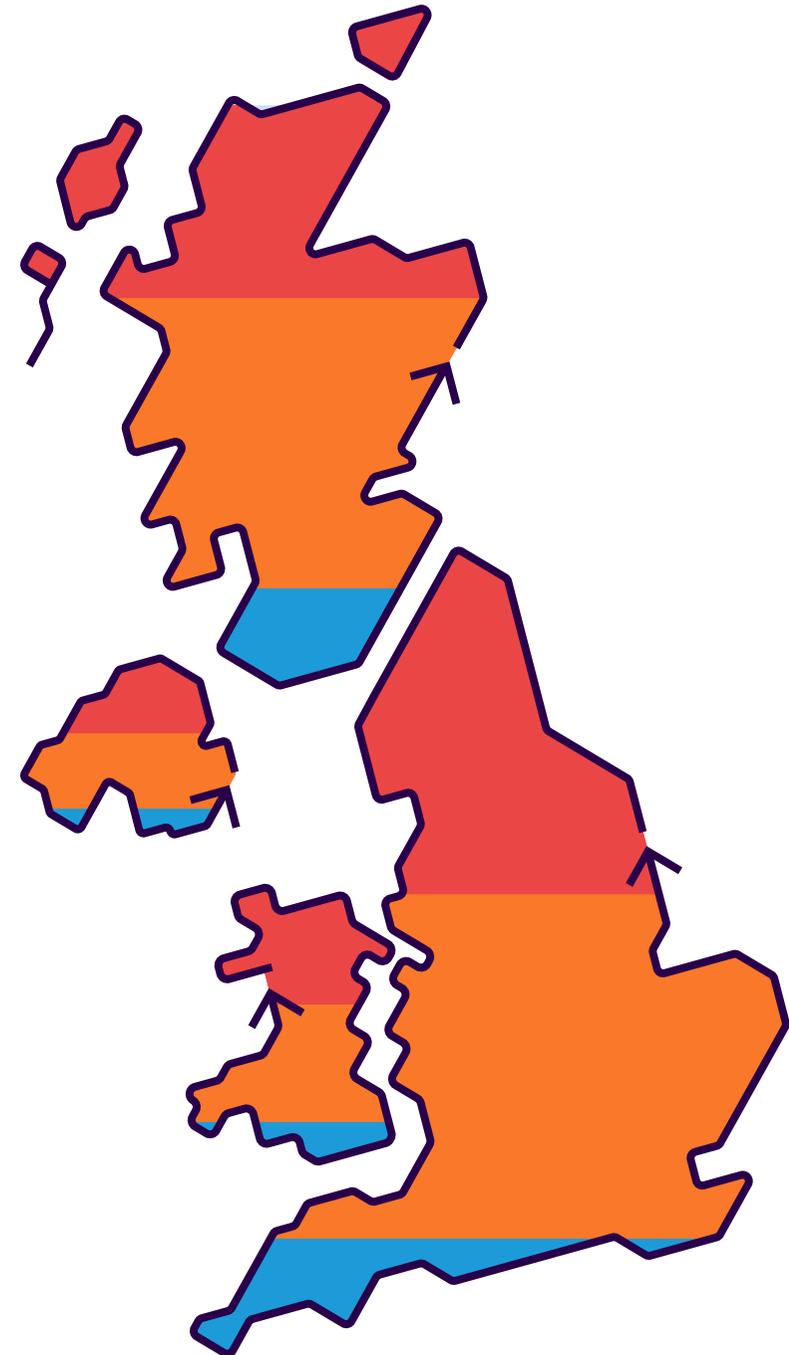
Variations across the UK

Key

- More action needed
- Further investigation
- Sustain current action
- Maintain a watching brief



Risk or opportunity	England	Northern Ireland	Scotland	Wales
Risks to business sites from flooding (B1)	●	●	●	●
Risks to business locations and infrastructure from coastal change from erosion, flooding and extreme weather events (B2)	●	●	●	●
Risks to businesses from water scarcity (B3)	●	●	●	●
Risks to finance, investment and insurance including access to capital for businesses (B4)	●	●	●	●
Risks to business from reduced employee productivity due to infrastructure disruption and higher temperatures in working environments (B5)	●	●	●	●
Risks to business from disruption to supply chains and distribution networks (B6)	●	●	●	●
Opportunities for business from changes in demand for goods and services (B7)	●	●	●	●



Background

The UK Government is required by the UK Climate Change Act 2008 to assess the risks and opportunities from climate change to the UK every five years and respond to the risks via a National Adaptation Programme, covering England. The devolved administrations also publish their own adaptation programmes in response to the risk assessment.

For this third UK Climate Change Risk Assessment, the Government's independent advisers on climate change, the Climate Change Committee (CCC), have been asked to prepare an independent risk assessment setting out the latest evidence on the risks and opportunities to the UK.

Over 450 people from more than 130 organisations have contributed to preparing the assessment. The risks have been assessed using the latest climate projections for the UK which were updated in 2018 by the Met Office. These briefings summarise some of the key topics that are assessed through the Technical Report, to enable readers to understand the key messages and where to find more detail.

Where to find more detail

Each risk or opportunity in this briefing has an identifier code linked to the full analysis, which is available in the CCRA3 Technical Report. Readers are encouraged to use these briefings to locate the parts of the Technical Report of most relevance to them.

Alternatively, if you would like a summary of the analysis by UK nation, please go to the national summary documents: • **England** • **Northern Ireland** • **Scotland** • **Wales**.