

# **Preparing for the storm: The role of UK business and government in improving UK resilience to climate change in the UK**

November 2021

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The UK Corporate Leaders Group (CLG UK) provides a strong voice to support UK leadership, nationally and internationally, for the transition to a climate neutral, nature positive and socially inclusive economy.

CLG UK has frequently defined the UK's business response to climate change – one of the greatest challenges of our time. Since its founding in 2005 under the leadership of CISL's Patron HRH The Prince of Wales, CLG UK has helped build consensus across the UK business community in support of climate action. It spoke first and loudest in support of the UK's Climate Change Act, and now sits at the heart of a growing community of progressive business voices in Europe and around the world.

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# Summary

**The past few years have clearly demonstrated that businesses and communities around the world are vulnerable to a wide variety of systemic risks, many of which are underfunded and under prepared for. Risks related to climate change consistently rank among the most serious, in terms of both likelihood of occurring and severity of impact. Building resilience to better prepare for, manage and respond to these risks is essential to protect and enhance development and prosperity in the UK and around the globe.**

While governments are often tasked with supporting this resilience, businesses of all types also have a key role to play in building resilience to climate risks through adaptation. Adaptation actions here in the UK will benefit businesses themselves, as they will help to ensure continuity of production and service provision, but can also generate wider benefits and positive social outcomes, which translate to broader business benefits. Business has a key role to play in supporting the innovation and collaborative, cross-sectoral working that is needed to realise these wider outcomes.

Climate impacts associated with the risks from extreme heat, sea level rise, localised flooding, water availability and the potential for disruption to supply chains and interdependent networks at all levels, are heavily context dependent, varying according to geography and disproportionately affecting the most vulnerable in society. A place-based approach can provide a useful lens in understanding both the way climate risks can become impacts and also the adaptation and resilience strategies that can be most effectively introduced in response. Such an approach can help business and government focus action and funding on those areas and people that will be impacted most.

As the Climate Change Committee's recent Climate Change Risk Assessment shows, in the face of growing climate impacts, adaptation in the UK remains underexplored and underfunded, leaving us unprepared. While the risks we face from climate change are increasingly well understood, we are yet to fully grasp the seriousness of the impacts or to embed the planning required fully and appropriately across businesses and communities. The Covid-19 pandemic has highlighted just how vulnerable we are to all sorts of system-wide risks of the type that climate change brings.

In the UK, some progress on adaptation has been made. A broad policy framework exists, much of the underlying scientific information that businesses and others need to plan is available, and many businesses are demonstrating leadership on adaptation and working within communities to enhance resilience. But this is not enough. The increased risks from climate change mean we need a step change in application of policy and in planning for, and adequately funding measures to manage, climate impacts across the UK.

All UK businesses are potentially impacted by climate change and therefore have a role to play in this, stepping up and integrating climate resilience with greenhouse gas mitigation strategies in their strategic response to the challenge. Our top recommendations are aimed at the UK government and businesses and build on those of the Climate Change Committee. Taken together, they will help make UK communities far more resilient to climate change.

- **The UK government should set out a clear vision for a well-adapted UK and act to integrate adaptation across government policy.** This vision should build on the Climate Change Committee's recent assessment by articulating the role that different parts of society, sectors and business types can and should play in contributing to the overall vision and adapting to climate change. It should set out a roadmap for increasing resilience and include clearly defined and time-bound targets, supported by appropriate funding and agreed metrics, so that progress can be tracked over time. The need for adequate public funding in this area is key. All government departments, regulators and agencies should be required to set out how their actions will contribute to and support the overall vision.
- **The Treasury should provide a regular assessment and statement of the financial and economic risks of climate change to the UK, and the opportunities and benefits that could be derived from taking early action to enhance resilience.** This should consider and clearly outline the risks from both a below 2°C and a 4°C average global temperature rise, so everyone can be aware of the spectrum of outcomes. It should ensure appropriate funding is available and be relevant to different regions of the UK and different sectors of the economy, helping to provide organisations and businesses of different types with the resources, tools and information to manage and mitigate climate risk in the most cost-effective way.
- **The UK government should continue to demonstrate international leadership on climate** risk in its role within the G7 and G20, and through hosting the COP26 Presidency. International leadership can support the economy through mitigating the impacts of climate change on UK businesses dependent on international supply chains. Holding the COP26 Presidency provides a unique opportunity for the UK to elevate the profile of climate adaptation to the same level as measures to reduce emissions.
- **Businesses of all sizes should make climate resilience a strategic priority,** elevating climate change risk and adaptation to board level, considering different climate risk scenarios and embedding climate planning into short and long-term decision-making. This also means measuring, evaluating and reporting progress in a consistent, open and transparent way.
- **Specific measures that businesses can take now include:**
  - ensuring a holistic approach to climate change (mitigation and adaptation) and working with local and regional stakeholders to maximise opportunities to enhance climate resilience
  - stress testing preparedness for different climate scenarios (for example 2°C and 4°C average global temperature rise)
  - prioritising customer/community engagement on climate adaptation
  - ensuring adaptation plans are costed and the benefits are articulated
  - integrating nature-based solutions that deliver multiple benefits wherever possible.

**Over and above these recommendations, the UK Corporate Leaders Group (CLG UK) believes that there is more that needs to be done to explore feasible collaborative approaches to supporting systemic business transformation on resilience. We will look to work with the existing practice and experience of CLG UK members, alongside additional businesses that have a strong strategic focus on resilience, to further explore this question and support additional business and government action.**

# Introduction

Businesses and communities around the world are vulnerable to a wide variety of systemic risks, ranging from economic instability and the ongoing Covid-19 pandemic to climate change and biodiversity loss. Climate-related risks are consistently ranked among the highest global risks, both in terms of probability and impact.<sup>1</sup> Building resilience to better prepare for, manage and respond to these risks (adaptation) is a necessity to protect and enhance development and prosperity (Box 1). This requires action from across the economy, from policymakers to businesses.

## Box 1: Adaptation and resilience

**Adaptation** involves changing the way we do things to prepare for the current and future effects of climate change. This means we will be better protected against extreme weather events such as droughts and flooding. It also means preparing for new opportunities, like the chance to grow different crops.

**Resilience** is normally understood as the capacity of a community, business, or natural environment to prevent, withstand, respond to and recover from a disruption.

Climate change means there will be more potential for disruption in future. Adaptation is therefore crucial to build resilience to the impacts of climate change.

Until recently, CLG UK has focused primarily on securing net zero targets, strategies and action in line with its members' own leading commitments. However, CLG UK members know there is a pressing need for far greater focus on adaptation and resilience. This is because the impacts of climate change are increasingly evident. These impacts are potentially devastating for many areas of the world, and are becoming more evident in the UK too.<sup>2</sup> In its most recent Climate Change Risk Assessment (CCRA), the Climate Change Committee (CCC) has concluded that, in recent years, "the gap between the level of risk we face and the level of adaptation underway has widened. Adaptation action has failed to keep pace with the worsening reality of climate risk".<sup>3</sup> In addition, while a broad policy framework for adaptation exists, there is limited evidence that planning for adaptation has permeated across all arms of government and, more widely, across business and society.

The need to act on adaptation has been rising up the agenda globally, with ambition on adaptation and resilience increasing in the lead-up to the United Nations Framework Convention on Climate Change (UNFCCC) COP26 climate summit.<sup>4</sup> One of the core goals set out by the UK, host of the summit, is to call on countries to increase action on adaptation and reduce loss and damage.<sup>5</sup> Alongside this, COP26 President Alok Sharma launched the **UN Race to Resilience (R2R) campaign**<sup>6</sup> at the Climate Adaptation Summit (CAS) in January 2021. The campaign aims to put people and nature at the heart of the fight against climate change and bring together businesses, investors, cities and civil society through a partnership of initiatives to strengthen the resilience of four billion people in communities that are vulnerable to climate risk by 2030.

One characteristic of climate risk, impacts and adaptation responses is the degree to which it is geographically specific. Risks are greater in some areas than others and impacts tend to disproportionately affect the most vulnerable in society. A **place-based approach** can be helpful in identifying the specific risks and mitigation opportunities available in each community and to ensure adaptation measures are designed and resourced to help those people, assets and communities that are most vulnerable. Adaptation actions can also bring wider benefits and positive social outcomes, often in sectors other than those in which the action is undertaken, broadening the scope for innovation and collaborative, cross-sectoral working.

Even if we meet the decarbonisation goals agreed under the Paris Agreement and limit global temperature increase to 1.5°C, adaptation will still be needed. Depending on how far and how fast we reduce greenhouse gas emissions globally, the impacts of climate change and the degree to which we need to adapt will vary, particularly in the second half of this century. But we cannot afford to delay.

This briefing highlights how leading UK businesses are already increasing community resilience through climate adaptation strategies and action. It explores the role and interaction of business and policy in supporting resilient places in the context of delivering the UK's 2050 net zero target. It highlights opportunities and the potential for adaptive approaches that not only enhance resilience, but also deliver wider economic, social and environmental benefits. It also identifies how policy can be used to support positive action in the race to resilience.

Section 1 sets out the risks associated with climate change and the expected impacts in the UK, highlighting the resultant risks to business and communities. It also provides an overview of the policy framework in relation to adaptation in the UK. Section 2 highlights the key role of business in adapting to climate change and building resilient communities. Section 3 analyses the gaps that need to be filled and shows what a well-adapted, resilient UK would look like. Section 4 outlines the recommended actions that government and business can take to support adaptation, and Section 5 provides a summary of our proposed next steps.



# 1. Time for more urgency on adaptation and resilience

## The climate is changing dangerously fast

The Intergovernmental Panel on Climate Change's (IPCC) sixth assessment report,<sup>7</sup> a “code red for humanity” according to UN Secretary-General António Guterres,<sup>8</sup> stressed the widespread, rapid and intensifying nature of climate change on all regions of the world. The report is unequivocal that past emissions of greenhouse gases have led to the unprecedented rates of climate change (including heatwaves and intense rainfall) that are being seen around the world today. It also notes that global average temperatures are likely to rise to 1.5°C above pre-industrial levels by 2040 – ten years sooner than previously predicted. Further, greater rates of global heating will make it increasingly difficult for ecosystems and societies to adapt.

In 2021 the World Meteorological Association found that the number of climate-related natural disasters has increased by a factor of five globally over a 50-year period, driven by climate change, more extreme weather and improved reporting.<sup>9</sup>

Extreme events in the UK are increasingly linked to the impacts of climate change and picked up by the media.<sup>10</sup> Recent such events include the Beast from the East (2018), storms Darcy and Christoph (2021), multiple flooding events and record heatwaves in southern England (2019 and 2020).

The CCC has highlighted the increased risk of more severe heatwaves, especially in big cities, and more intense rainfall, with an increased flood risk across most of the UK.<sup>2</sup> Increased disruption to supply chains, distribution networks and risks to food safety and security are also expected as a result of climate impacts in the UK and overseas. The scale of physical damage affecting assets, products and services in the UK and abroad will also impact on the UK's financial stability.

Figure 1 shows that the five warmest years have all occurred since 2006. Cooler years are blue, while warmer years are red.

## UK annual temperature

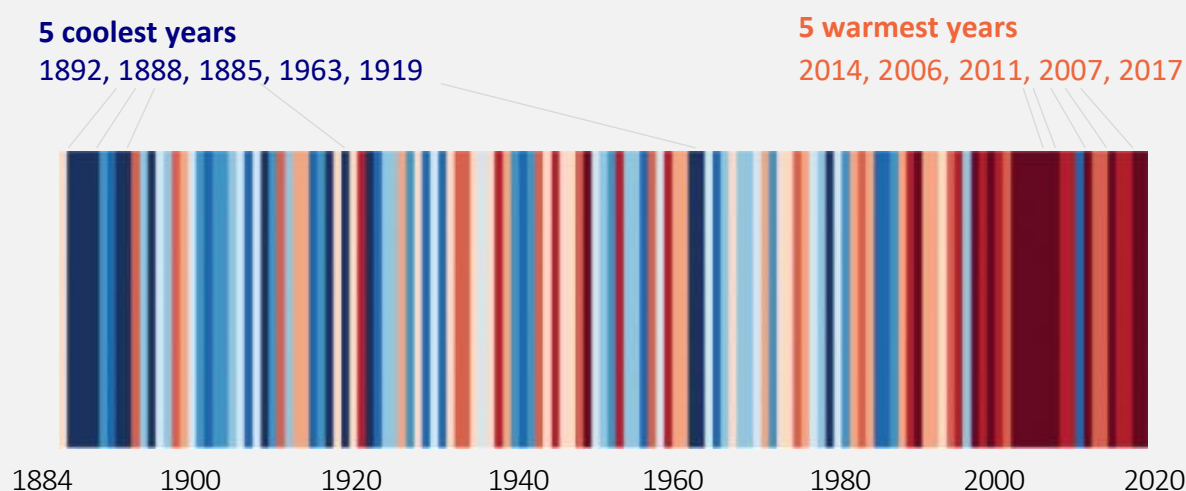


Figure 1: Timeline for UK annual temperature (source: Met Office)

Credit: Met Office

## What to expect by 2050 in the UK

Across the UK, the impacts of climate change on business, people and communities will manifest through a few key drivers, including temperature extremes, changes to rainfall patterns, sea level rise and erosion.

Climate change effect	
Temperature extremes	Rainfall patterns
<ul style="list-style-type: none"> <li>• Further increases in average and extreme temperatures, in winter and summer.</li> <li>• Episodes of extreme heat becoming more frequent – by 2050 the heatwave summer of 2018 will be a typical summer. Heat-related deaths in the UK could triple by the 2050s.</li> <li>• Increased frequency and intensity of wildfires.</li> </ul>	<ul style="list-style-type: none"> <li>• Changes to rainfall patterns, leading to increased likelihood of flooding in some places and water scarcity in others.</li> <li>• By 2050, summer rainfall could fall by as much as 24 per cent (60 per cent by 2070) and winter rainfall increase by as much as 16 per cent (30 per cent by 2070).</li> <li>• Six of the ten wettest years on record have been since 1998 – this is likely to continue to increase.</li> <li>• A doubling in the number of people across the UK living in areas at significant risk of flooding, rising from 1.9 million people today to 3.8 million total.</li> <li>• Increases in extreme weather patterns, variations in rainfall and other climatic changes could lead to average food price rises of around 20 per cent.</li> </ul>

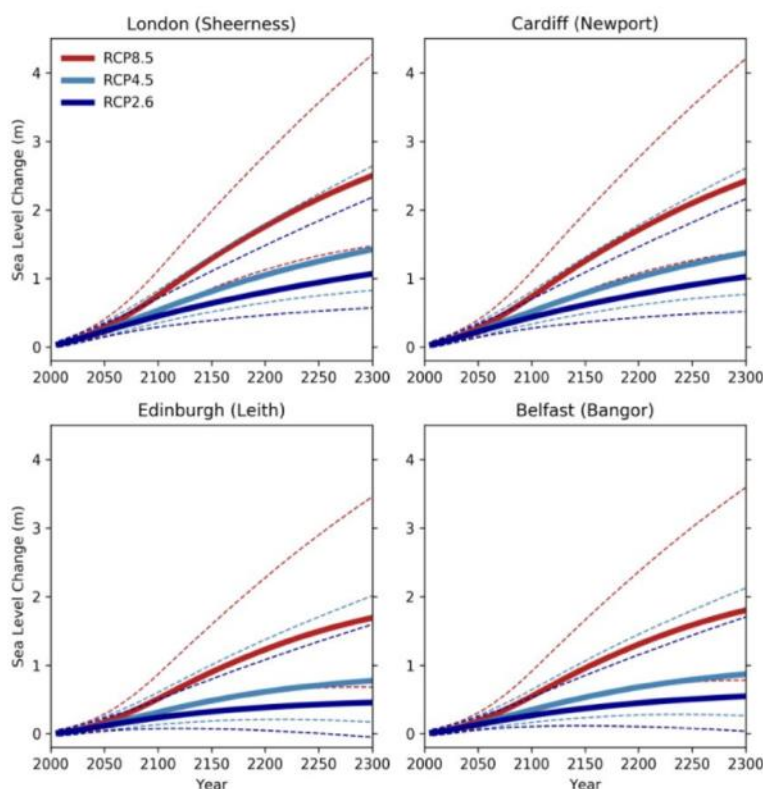


Figure 2: Sea level rise projections for different climate scenarios (source: Met Office)

Credit: Met Office

## Sea level rise



- UK sea levels have risen by 16 cm since 1900.
- Further sea level rise of between 0.27 m and 1.12 m is expected by the end of the century.
- All coastal habitats are at risk, threatening ecosystem services such as flood and erosion protection, climate regulation and tourism.
- UK sea levels will continue to rise well beyond 2100 under all future emissions scenarios (Figure 2).

## Erosion and other impacts



- Increased coastal erosion, alongside increasing sea temperatures and ocean acidification.
- Risks to transport networks from slope and embankment failure.
- Around 82,000 properties in England alone could be at risk from coastal erosion by the end of the century.
- Potential changes to other weather variables including wind strength and direction, sunshine and UV levels, cloudiness, and sea conditions such as wave height.

After 2050, the extent of further extreme weather events, climate change and the consequent impacts on people will depend on the future global emissions of greenhouse gases. With rapid global progress to net zero, there is a chance of limiting global temperature increase below 2°C. If not, we may see far higher levels of heating and much more extreme impacts. Uncertainties over the response of the climate system, including the Gulf Stream and the melting of ice caps, add further risks of very high temperature increases.

## Risks to business and communities

In the latest CCRA, the CCC identified six key risks for business (Figure 3), along with one area of potential opportunity.



Figure 3: Business risks and climate

Credit: Climate Change Committee



## Flooding



The government's Flood and Coastal Erosion Strategy refers to "climate resilient places".<sup>11</sup> However, despite increased investment in flood risk management and protection, flooding from rivers, surface water and the sea remains a major risk to business and people in the communities they serve. Indirect risks include those to infrastructure, such as flooding of railway lines and stations, lightning strikes at power stations and high winds affecting information technology assets.

The latest climate projections provided by the Met Office (UK Climate Projections 2018)<sup>12</sup> indicate an increased likelihood of heavy precipitation by 2050.

Present-day expected annual damages to non-residential properties across the UK average around £670 million.<sup>2</sup> Annual damages from flooding could increase by around 27 per cent by 2050 in a 2°C warming scenario (£850 million per year), and by 44 per cent in a 4°C scenario (£965 million per year).

## Coastal change

Significant industrial and commercial activity and infrastructure exist along the coast for most of the UK, including ports, tourism, property, heavy industry and transport links. There is also nearly 190,000 ha of Grade 1 and Grade 2 coastal agricultural land at high risk of coastal flooding.

Around a third of the English coastline is already experiencing impacts of erosion and, of the 3,700 km coastline of England and Wales, 28 per cent is experiencing erosion greater than 10 cm per year, which can be exacerbated by heavy or prolonged rainfall, coastal storms or sea level rise.<sup>13</sup>

The total of present-day expected annual direct damages to non-residential properties from coastal flooding in the UK is £120 million. Damages from coastal change, including erosion, could increase by around 30 per cent by 2050 under a 2°C scenario (75 per cent by 2080), and by around 80 per cent by 2050 in a 4°C scenario (180 per cent by 2080).

## Water scarcity

Businesses in England use approximately one billion litres of water every day.<sup>14</sup> Businesses across the UK rely on having access to high-quality water for drinking and sanitary purposes of staff and customers. However, some businesses are particularly water intensive, requiring increased supplies, for example, for power generation, mining and quarrying, chemicals, construction, paper, food and drink, heavy industry and agriculture. The high demand for water in these sectors increases vulnerability to risks that affect supply.

Water shortages caused by prolonged dry periods can have significant impacts on business, for example through disruption to production and lost output. A study for the Department for Environment, Food and Rural Affairs (Defra) estimated that in England £165 million in revenue, and £96 million in profit was lost by firms and sites in the second quarter of 2012 during the drought early in that year.<sup>15</sup> Estimates of the future economic costs for a number of hypothetical drought scenarios differing in duration, severity and in decade of occurrence range from £261 million in a one-year severe drought in the 2010s to over £43 billion in a three-year extreme drought in the 2050s.<sup>16</sup>

## Finance and investment

Cost-effective access to capital, finance, banking and insurance is a key ‘transition’ risk for many organisations. Some sectors and businesses are particularly at risk. Insurance, for example, has a dual exposure to climate change impacts. Insurance companies underwrite other people’s risks (for example paying out after extreme weather events) and the sector is also a huge global investor (and therefore potentially vulnerable to transition risks and the possibility of stranded assets).

## People

Climate change impacts directly on people and the communities in which they live. Businesses can be impacted in a variety of ways, including reduced employee productivity due to infrastructure disruption and higher temperatures in working environments. The projected increase in episodes and severity of extreme heat poses risk to the health and welfare of staff and customers, and to business productivity.

The 2020 heatwaves led to more than 2,500 deaths in the UK. However, there has been little progress in addressing the increasing risks from overheating in homes, health and care facilities, schools and prisons. Building fabric is also susceptible to damp due to flooding and intense rain, structural damage due to high winds and subsidence caused by drought. These cause harm to occupant health and wellbeing and create repair costs for building owners.

## Supply chain disruption

Climate change brings significant risks to business from disruption to supply chains and distribution networks. One such risk is to energy supplies and infrastructure. An increasing reliance on electricity as energy systems move away from fossil fuels, and the potential for climate impacts to cascade across interconnected sectors, means further action will be needed to understand and manage risks from weather-related failures of local infrastructure, supply chains and distribution channels on which businesses, their staff and customers depend. Recent rises in global gas prices, partly triggered by high demand in the cold winter of 2020–21, lower renewable wind generation during a calm summer and the impact of hurricanes in the United States on supplies, illustrate the risks faced.

The latest CCRA from the CCC identified how extreme weather events in the UK and globally can create cascading risks that spread across sectors and countries, with impacts an order of magnitude higher than impacts that occur within a single sector.

Indirect impacts include price increases for crops or other production inputs, representing a material financial risk for many businesses. According to the World Economic Forum, \$44 trillion – more than half of global gross domestic product (GDP) – is exposed to risks from nature loss, a substantial part of which is threatened by the impacts of climate change.

In addition, the impacts of climate change, from flooding to water scarcity, extreme heat and wildfires, could affect the rate and extent of terrestrial species losses across the UK and increase risks from pests, pathogens and invasive non-native species (INNS). This poses indirect risks to businesses, for example as a result of impacts on the food chain, water availability and supply chain continuity.

## Policy and frameworks for adaptation in the UK

As well as driving the reduction in domestic greenhouse gas emissions, the **Climate Change Act 2008**<sup>17</sup> set out a policy framework to ensure the UK adapts to climate change.

The Climate Change Act includes a commitment to ask the CCC's **Adaptation Committee** to produce an independent assessment of UK climate risk every five years.<sup>18,19</sup> This assessment (the CCRA) is followed by a **National Adaptation Programme (NAP)** summarising the actions that government and others are taking and will take to address those risks.<sup>20</sup> The CCC has set out ten principles for good adaptation planning that should form the basis for the next NAP (Figure 4) and against which progress on adaptation can be judged.

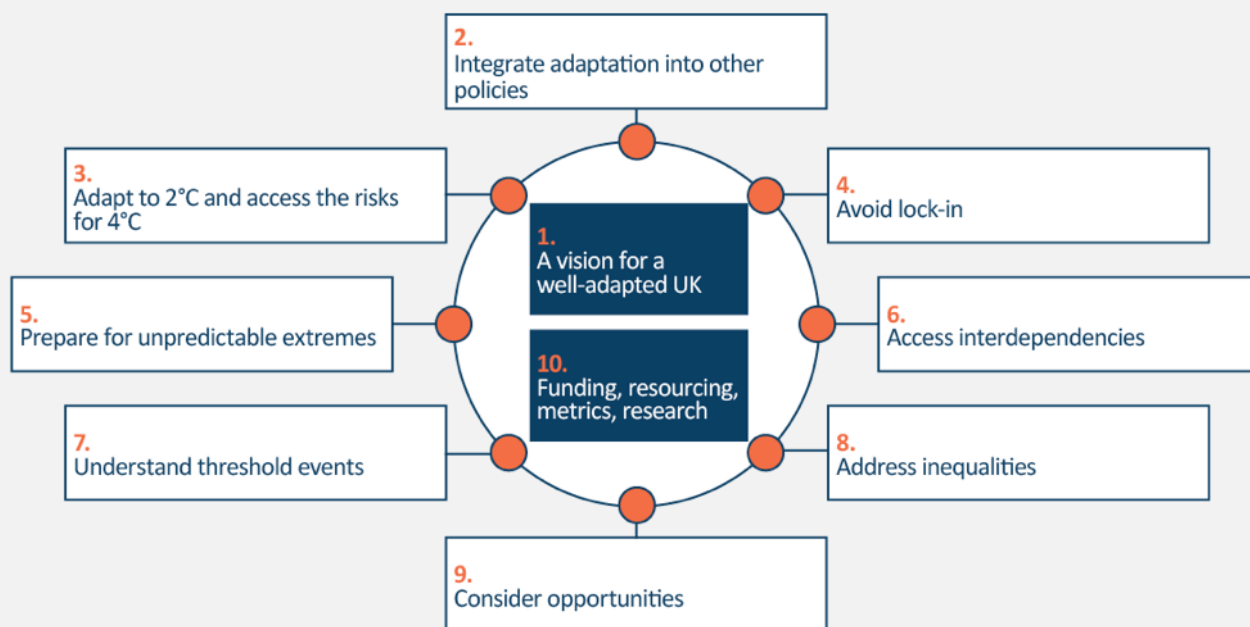


Figure 4: Ten principles for good adaptation

(source: CCC Advice to government - charts and data)

As part of its commitments under the Paris Agreement to the UNFCCC, the UK government also recently published an **Adaptation Communication**.<sup>21</sup> This Communication is a formal reporting requirement that links to the NAP by setting out the actions the UK will take to adapt to climate change in the UK, as well as how it will help those experiencing impacts overseas.

The lead department for domestic climate adaptation in the UK, Defra, has sought to embed adaptation in the **25 Year Environment Plan**.<sup>22</sup> It commits the government to making sure that all policies, programmes and investment decisions take into account the possible extent of climate change this century. Specific adaptation measures outlined in the Plan include more resilient infrastructure and buildings, the Environmental Land Management Scheme and the roll-out of a Nature Recovery Network.

Other government departments also play a key role in contributing to adaptation. For example, in 2020 the Treasury updated its guidance on **Accounting for the Effects of Climate Change**.<sup>23</sup> This supports the appraisal of climate risks and the changing of policies, programmes and projects to include improved resilience to climate change impacts and flexibility in decision-making. In addition, the recently renamed Department for Levelling Up, Housing and Communities (DLUHC) (formerly the Ministry of Housing, Communities and Local Government (MHCLG)) oversees the planning system, including location and resilience of buildings and infrastructure. The Department for Business, Energy and Industrial Strategy (BEIS) provides business support for adaptation through industrial strategy, research and innovation, and the Foreign, Commonwealth and Development Office (FCDO) works to build resilience internationally.

At a local level, Defra has published guidance for local government on preparing for a changing climate.<sup>24</sup> Around 230 councils have declared a climate emergency<sup>25</sup> and there is a wealth of guidance and support available.<sup>26</sup> Some cities and regions have developed climate change strategies and networks for action, bringing together mitigation and adaptation holistically.<sup>27</sup> The Leeds Climate Commission is one example where cities are leading the way, bringing together different organisations, businesses and groups to help the city make positive choices on issues relating to energy, carbon, weather and climate, taking advantage of the economic opportunities available and making the city more resilient to climate change.<sup>28</sup>

The Met Office Hadley Centre Climate Programme (MOHCCP) was established by government to provide world-leading scientific evidence on climate variability and change. The Met Office produces the **UK Climate Projections** (UKCP),<sup>29</sup> the most up-to-date assessment of how the UK climate may change in the future. The UK climate resilience programme<sup>30</sup> encourages the use of robust, latest evidence around climate projections in planning for climate change. Partners include the Met Office, research councils and others.

A good understanding of climate science underpins work on climate adaptation for many businesses, primarily those reporting under the **Adaptation Reporting Power** (ARP), included in the Climate Change Act. Around 100 infrastructure providers and public bodies are required to submit adaptation reports to government by 31 December 2021.<sup>31</sup> These will set out climate risks and plans to manage them.

In addition to reporting under the ARP for some organisations, the UK government will make disclosures of climate-related risks mandatory for all UK listed companies by 2025, with a significant portion of mandatory requirements in place by 2023. Reporting will be in line with global standards set by the **Task Force on Climate-related Financial Disclosures** (TCFD),<sup>32</sup> providing a clearer picture to investors, suppliers and others of how businesses understand and manage risks from climate change. Over 1,500 organisations globally already report against TCFD guidelines<sup>33</sup> (including a public statement in annual reports) and an increasing number of organisations also report on adaptation through the CDP (formerly the Carbon Disclosure Project), which provides a mechanism for translating the TCFD recommendations and pillars into actual disclosure questions and a standardised annual format.

In addition to increasing reporting requirements, an international standard now exists to help organisations adapt to climate change. Recently released by the British Standards Institution, the **standard on adaptation**<sup>34</sup> sets out how organisations can prioritise and develop effective, efficient, specific and deliverable adaptations which will increase resilience and demonstrate robust and credible risk management.



## Adaptation action needs a boost

The run-up to COP26 has seen a strong focus, both globally and in the UK, on the reduction of greenhouse gas emissions and achieving 'net zero' emissions by mid-century.<sup>35</sup> However, even if globally we achieve the goals of limiting global temperature increase to 1.5°C set out in the Paris Agreement,<sup>36</sup> the UK will inevitably face further changes in climate to 2050 and beyond, as the temperature rises up to this level.

**“** *The bottom line is that Net Zero alone is not enough to save our planet. To do that we need Net Zero Plus. And the plus is adaptation: making ourselves resilient and ready to live safely and well in a climate changed world.* **”**

**Sir James Bevan,<sup>37</sup>**

*Chief Executive, Environment Agency*

The CCC's recent risk assessment identified more than 60 risks and opportunities, fundamental to every aspect of life in the UK, covering our natural environment, health, homes, the infrastructure on which we rely, and the economy. One of the key findings is that the gap between the level of risk we face and the level of adaptation underway has widened. Furthermore, acting now will be cheaper than waiting to deal with the consequences.

Examples of the 'adaptation gap' highlighted by the CCC include a lack of national, climate change scenario-driven future flood risk maps, inadequate pricing signals to support businesses' investment in flood resilience measures, poor risk quantification, insufficient reporting of risks and a lack of business continuity capability.

**“** *Without action on adaptation we will struggle to deliver key Government and societal goals, including Net Zero itself.* **”**

**Climate Change Committee, 2021**

In spite of the apparently coherent policy framework described above, many gaps remain. Actions in the NAP are not prioritised and not easily measurable. Furthermore, there has been limited integration across government policy on adaptation. Out of 15 relevant major UK government announcements linked to addressing climate change made over the past three years, only four have included integrated plans and goals on adaptation, and delivery of adaptation actions remains limited.<sup>2</sup>

Heavily regulated sectors frequently cite the need for a more supportive regulatory environment that allows companies to take the long-term, sustainable actions needed to adapt to climate change.<sup>38</sup>

By early October, only six ARP reports had been submitted to Defra, with the majority expected in December.

Beyond a handful of leading cities and regions, the development and implementation of plans to deliver resilience at a local level remains sparse. A key barrier here is limited funding and scarce resource to deliver adaptation actions, for example around flood risk management.<sup>39</sup>

In short, adaptation remains under-resourced, under-reported, underfunded and often ignored.

## 2. The role of business in building resilient communities

Businesses *impact and depend on* the communities and places they operate in and can play a major part in adapting to climate change and building resilience. The climate risks to business identified by the CCC relate to impacts in four key areas:

- Location – impacts related to the geographical areas that businesses operate in, rely on and serve.
- People and communities – impacts on the staff, customers and other people that businesses engage with on a day-to-day basis.
- Economy – impacts on the regional and broader economy that businesses contribute to, including financing and supply chains.
- Environment – impacts on the natural environment that supports or is impacted by businesses.

These four areas are considered in turn below, along with examples of actions that large and small businesses are taking to enhance community resilience and support place-based adaptation to climate change.



### Location

Place-based climate impacts can have both direct effects on businesses, for example, flooding of premises, and indirect impacts, for example, through service disruption to customers, staff, infrastructure, suppliers and others.

Most businesses in areas of flood risk already plan and prepare for flooding, for example through investing in flood protection measures, increasing awareness, business continuity management or supporting flood defences (including traditional ‘hard’ defences and softer nature-based solutions) to help reduce flood risk. In the residential sector, Flood Re is a joint initiative between the government and insurers, the aim of which is to make the flood cover element of household insurance policies more affordable.<sup>40</sup>

Given the significant increase in financial losses (both insured and uninsured) due to the physical impacts of climate change in recent years, ClimateWise (a global network of leading insurance industry organisations convened by the University of Cambridge Institute for Sustainability Leadership (CISL)) has developed a Physical Risk Framework, demonstrating how the expertise and tools of the insurance industry can support other parts of the financial system to understand their physical risk exposure to a range of climate impacts under a 2°C and a 4°C scenario. The framework offers all those with a financial stake in infrastructure assets, including owners, investors and lenders, a means of understanding the potential physical risks of climate change on their portfolios.<sup>41</sup> Application of the framework to flood risk showed that financial losses increase under both scenarios for all types of flooding (coastal, fluvial, surface), but that at least some of these losses can be offset by adaptation measures.

ClimateWise has a project underway building on the insights of the Physical Risk Framework to explore how physical climate and infrastructure data and expertise of insurance can support local planners and developers to make more informed decisions. The project aims to demonstrate the value of integrating climate risk and adaptation into new and refurbished infrastructure, and the implications for the availability and design of insurance products and services (Box 2).

### Box 2: Community-level adaptation in Somerset

In many places, the demand for housing leads to planning decisions that facilitate building on climate-vulnerable flood plains. These decisions will affect the climate resilience of communities for decades to come. Climate change also presents the insurance industry with challenges in designing products and services for disaster protection, threatening the traditional role of insurance as society's financial risk transfer mechanism.

This project documents and demonstrates the value of effective place-based adaptation in addressing the challenges posed by climate change. It showcases new business and community engagement models for climate resilience at the local level which are transferable and scalable for application elsewhere. Specifically, this project will:

- clarify the data available to planning officers to manage climate change related present and future flood risk in planning decisions, as well as the regulations and decision frameworks in which they use the data, and their capacity to use the data in those frameworks
- review the role and impact of climate change resilience of current planning and any gap between planned and required adaptation over the life of planned developments
- identify the availability and penetration of insurance to support protection and how that will change as climate change progresses and the climate risk posed by current planning decisions unfolds.

This work is strongly supported by the Town and Country Planning Association, which sees significant climate impact risk gaps emerging in planning decisions. It is also supported by local planners and the insurance sector.

There are many good examples of national, regional and local organisations working effectively together, including regional flood and coastal committees<sup>42</sup> and regional water resource groups.<sup>43,44</sup> Working in partnership at a wider geographical scale, for example across catchments, can contribute to flood risk reduction while also delivering a wide range of co-benefits (Box 3).

Beneficial actions from business include investing in mapping and forecasting, flood planning and preparedness, and sustainable drainage systems (SuDS). The IPCC's sixth assessment report acknowledges nature-based solutions as a tool to help support the environment and mitigate the effects of climate change, including flood and erosion risk.

The National Trust's risk maps support understanding of how, at a local scale, potential risk factors (extreme heat and humidity, flooding, landslides, coastal erosion, soil heave and high winds) could change by 2060.<sup>45</sup> By identifying areas at risk, the charity can pinpoint locations that may need interventions like tree planting to slow water run-off, peat bog restoration to hold back water, river restoration or areas that need more shade due to extreme heat.

### Box 3: Smarter water catchments (Thames Water)

Catchment management can offer better value and greater benefits than more traditional hard-engineered solutions. However, it is usually restricted to an individual organisation working to address a single issue, such as pesticide run-off from agricultural land into local rivers.



Credit: Thames Water

Thames Water believe they can achieve more by taking a systems-based view of the environment, collectively addressing multiple challenges and co-delivering solutions that make the most of opportunities on an even bigger scale.

This is the premise of their 'smarter water catchments' initiative. They are putting this approach into practice to understand how they can achieve key benefits while working in a more holistic way.



## People and communities



Businesses can take beneficial action to enhance the resilience of the communities in which they operate and of the people that live in, work in and visit these communities. Actions include improved building design and retrofit, public engagement, skills development and urban greening. A key action identified in the 2018 NAP is to deliver more, better quality and well-maintained local green infrastructure, as well as enhancing the resilience of built-up areas to the impacts of climate change, for example, through reduced flood risk or mitigation of urban heat effects. These actions can provide multiple other benefits, including to people's health and wellbeing.

The proposed Future Buildings Standard<sup>46</sup> provides a step towards more resilient buildings with the introduction of a new requirement on overheating. However, recent changes around permitted development, which allow offices to be converted into residential units without planning permission, pose a significant risk that some housing will not be climate resilient or low carbon.<sup>47</sup>

Businesses can play a key role here, ensuring new and retrofitted buildings are climate proofed. They can also take action to mitigate the impact of extreme cold, for example through energy efficiency retrofitting and adopting renewable heating technologies such as heat pumps. This offers carbon reduction benefits as well as helping to protect people from the impacts of climate change and extreme weather.

Businesses can also use their position and resources to improve engagement and communication around climate change. There is extensive evidence that, while the public recognises and supports the need for climate change adaptation, people do not feel sufficiently engaged to be able to act.<sup>48</sup> This may be because the urgency, magnitude, complexity and uncertainties involved create challenges in climate communications, and because engagement and communication capacity-building efforts are insufficiently scaled.

## Economy

Mitigating the impacts of climate risks on the economy requires greater cross-sector and cross-boundary working on adaptation. Such initiatives, which can help business identify and manage interdependency risks that straddle sectors or borders, are increasing in number and range (see examples in Box 2, Box 3 and Box 4). Another example is the Transboundary Adaptation Learning Exchange project, which supports action on climate change adaptation across boundaries.<sup>49</sup>

There is an increasing range of green and sustainability linked finance products available, many of which generate considerable interest from investors and are heavily oversubscribed.<sup>50</sup> Other examples of innovative finance initiatives that can support climate adaptation include offsetting schemes,<sup>51</sup> climate bonds, stormwater retention credits (widely used in the US,) and parametric insurance (insurance that covers the probability of a predefined event happening instead of indemnifying actual loss incurred).

### Box 4: Future Fens: Integrated Adaptation (Anglian Water)

Anglian Water was one of the first organisations to publish a climate change adaptation report as part of the third round of national adaptation reporting as set up by the Climate Change Act. The company operates in one of the driest areas of the country, with only two-thirds of the national average rainfall. At the same time, the fact that much of the region is below sea level makes it very vulnerable to flooding.



The ambitious Future Fens: Integrated Adaptation initiative is a cross-sector partnership to manage land and water across the Fens in a new and integrated way to deliver sustainable growth, nature restoration and climate change adaptation.

It combines flood risk management, including upgraded coastal defences, barriers and barrages, with new open water transfers and reservoirs serving multiple sectors. Together these investments will unlock economic growth, new housing projects and improved transport links, as well as benefiting nature and tourism.

Some progress has been made at a strategic policy level, including a Green Finance Strategy<sup>52</sup> and TCFD-aligned disclosures, which will be made mandatory across the UK economy by 2025, as well as a £640 million Nature for Climate Fund (announced in the 2020 Budget) to protect, restore and expand habitats like woodlands and peat bogs. To support overseas adaptation, the government provides International Climate Finance (ICF), which will reach £11.6 billion from 2021 to 2025. Some businesses are starting to consider the rewards as well as the risks, with climate action driving competitive advantage, growth, profitability and resilience. Indeed, adaptive action frequently generates high net benefits, in many cases even when considering direct, financial benefits alone. In a recent report for UN High Level Climate Champions, the Brunswick Group found that successful organisations must take the opportunity to frame resilience as more than damage limitation: “the idea of ‘transformational resilience’ (i.e., investing in resilience creates other positive benefits) consistently outperformed a narrower concept of resilience (i.e., where tackling climate change makes us more resilient to other future shocks).”<sup>53</sup>

Further beneficial actions from business include supply chain diversification, insurance, risk disclosure and adaptation finance.

## Environment

“

*Biodiversity and climate change are two sides of the same coin, we can't solve one without the other.*”

**Tony Juniper**

*Chair, Natural England*







Actions to protect and restore the natural environment have benefits in terms of enhanced business resilience.

For example, actions in the current NAP include work to restore natural processes within river systems to enhance water storage capacity. There are encouraging signs of progress in this area, including implementation of a Nature Recovery Network, linking habitat restoration and creation to improved access, flood protection and water quality. Local Nature Recovery Strategies (LNRSs) have been piloted and will be rolled out from next year.<sup>54</sup> The new Environmental Land Management scheme<sup>55</sup> also offers an opportunity to deliver a wide range of climate adaptation outcomes, including natural flood management measures, large-scale tree planting and increased habitat connectivity.

On the other side of the coin, adaptive actions can benefit the natural environment (Box 4). The NAP includes challenging and ambitious goals to reduce water leakage, which will increase water availability to support the environment.

Business has also made some progress to link adaptation with the natural environment. One example involving several CLG members is the Catchment Management Declaration to create cross-sector collaborative projects across catchments that result in more sustainable water management outcomes.<sup>56</sup> Additionally, the Council for Sustainable Business (CSB)<sup>57</sup> was established by the UK government in 2018 to help deliver its 25 Year Environment Plan. The CSB has since established a 'Get Nature Positive' campaign, which supports businesses to take nature-positive action.<sup>58</sup> Table 1 shows examples of specific actions that different sectors can take, which will enhance climate resilience while simultaneously improving nature and biodiversity. Businesses setting a strategy that is aligned with building a restorative and regenerative economy may find themselves going far further than these actions, but they present useful entry points and actions that can be widely adopted.

Table 1: Examples of 'Get Nature Positive' actions for different sectors

Sector		Example actions
Water		<ul style="list-style-type: none"> <li>Educate customers to prevent sewer blockages</li> <li>Reduce leakage</li> <li>Include catchment measures (eg buffer strips, fencing)</li> </ul>
Tourism		<ul style="list-style-type: none"> <li>Reduce food waste</li> <li>Restore nature reserves</li> <li>Eliminate single-use plastics</li> </ul>
Fashion		<ul style="list-style-type: none"> <li>Advocate for reuse and repair of garments</li> <li>Remove toxic dyes from supply chain</li> <li>Increase use of natural materials</li> </ul>
Buildings and infrastructure		<ul style="list-style-type: none"> <li>Integrate nature-based solutions into projects</li> <li>Minimise water footprint</li> <li>Use sustainable construction materials</li> <li>Include energy-efficient lighting solutions like LED lighting, low carbon heating and cooling technologies</li> </ul>
Food retail		<ul style="list-style-type: none"> <li>Apply the food waste hierarchy</li> <li>Improve supply chain resilience</li> <li>Use certified sustainable inputs (eg soy, palm oil)</li> </ul>
Finance		<ul style="list-style-type: none"> <li>Assess, measure and report nature-based risks and opportunities</li> <li>Generate pro-biodiversity capital flows</li> <li>Encourage corporate biodiversity and climate disclosures</li> </ul>



### 3. Analysis – some progress but much more work to do

#### What needs to change?

**Although some progress on adaptation has been made, the evidence is clear that we need to do much more to build resilience, both globally and in the UK.**

The CCC set out in its recent climate change risk assessment the priorities for adaptation over the next few years (Figure 5). A key task is to ensure these priorities are reflected across government departments and supported and funded appropriately.

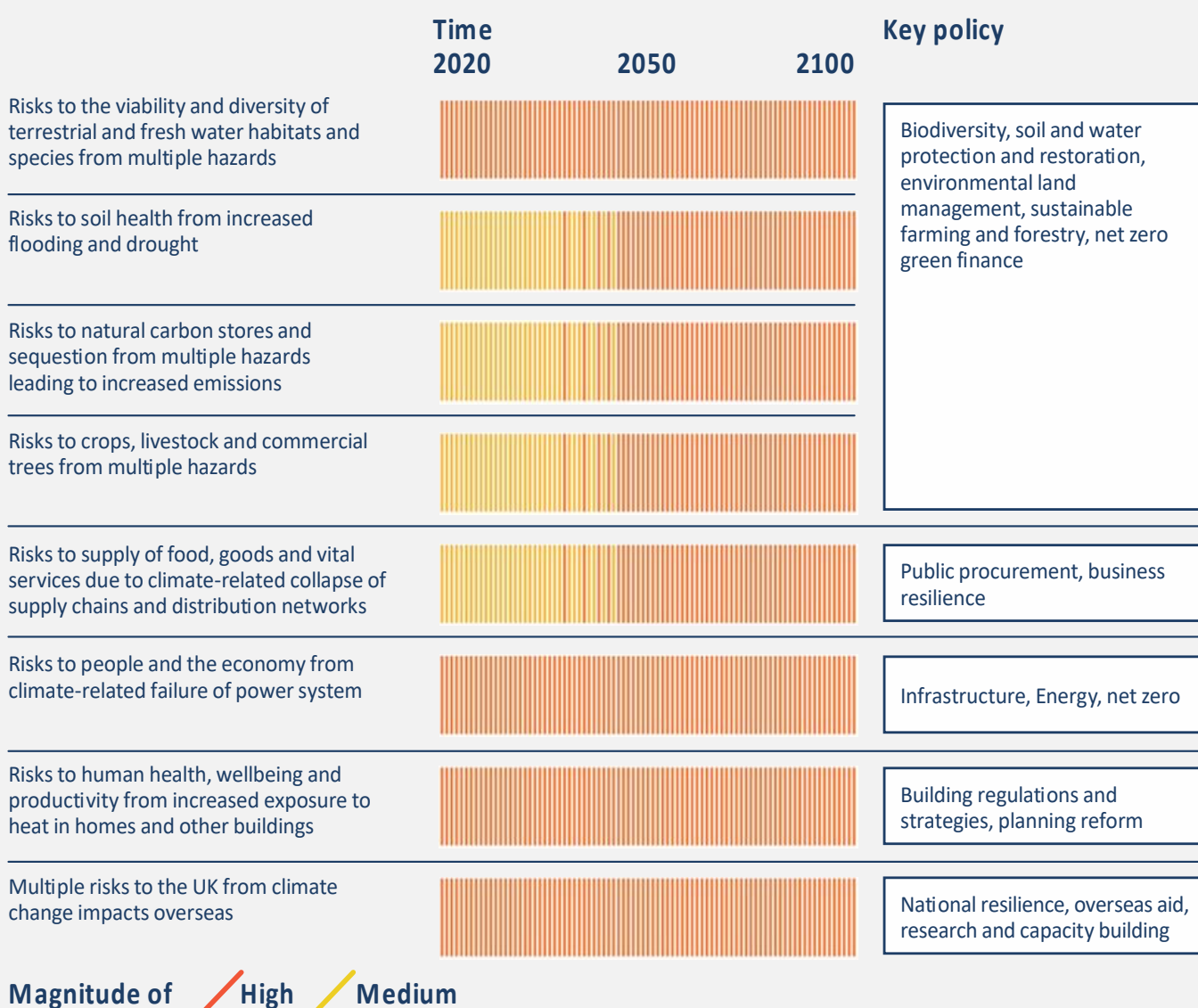


Figure 5: Short-term priorities for adaptation (source: Climate Change Committee)

(source: CCC Advice to government - charts and data)

Insufficient progress has been made against these priorities and on many of the objectives of the 2018 NAP, for example that decisions on land use, including development, should reflect the level of current and future flood risk.<sup>59</sup>

There is still more to do to improve links between climate adaptation and the natural environment. The agriculture sector can be particularly susceptible to the impacts of extreme weather events. However, to date there has been little progress to achieve the objectives set out in the first two NAPs to enhance the resilience of the sector. There remains much to do to improve soil quality, reduce flooding and run-off, diffuse pollution and promote the sustainable use of water resources, and little progress has been made in other areas, including building ecological resilience on land, in our rivers and lakes and at sea.<sup>60</sup>

There has also been limited progress on water efficiency, with the government only recently committing to a mandatory water labelling scheme. Water efficiency has the highest benefit–cost ratio of adaptation measures in the CCC's assessment and is the single most effective adaptive solution for most businesses to save money, while also providing valuable benefits for the natural environment.

Some businesses are adapting, undertaking detailed risk assessments and improving the quality of approaches to assessing and managing climate risk. This is particularly so for larger, highly regulated infrastructure providers that tend to have longer planning horizons and asset lives. However, there has been less progress by smaller and medium-sized businesses, as well as many larger companies, and at all levels some areas of risk are significantly underexplored and not fully integrated into risk planning. This includes low-likelihood, high-impact events, indirect risks, and interdependencies, for example supply chain collapses or concurrent extreme weather events leading to cascading failures across multiple sectors. Implementation of adaptation actions to build resilience remains slow and insufficient at all levels.

Generally, there appears to be low awareness in the business community about the policy framework around adaptation, and the scientific and other information available to manage climate risks. Further, while businesses are meeting regulatory reporting requirements, there is little evidence that many have been able or willing to go beyond this.

While some climate risks, particularly flooding, are increasingly well understood in the UK (although surface water flooding is a notable exception to this), the understanding of others, such as heat stress, erosion and interdependencies (those affecting businesses and sectors on which a given business depends) is much less well developed. Preparedness at a national and business level is currently inadequate for a 2°C rise in global temperatures, let alone higher levels of warming and the severe additional impacts these would bring. In addition, reporting is limited to a relatively small section of businesses, as are the means of monitoring and evaluating progress.<sup>61,62</sup>

This may be partly because there is no clear vision for adaptation that business can act on and coalesce around, as there is for net zero and the Science Based Targets initiative's (SBTi's) Business Ambition for 1.5°C campaign. The Race to Resilience is necessarily framed around risk and there are no clear, consistent metrics for most sectors to measure and report against.

Regulatory barriers to increasing resilience also remain, with an imbalance between shorter-term expectations to improve service outcomes and limit price increases, and taking a longer-term perspective that supports more sustainable adaptation approaches to climate impacts.

## How will we know when we are resilient?

Communities will only be climate resilient when they have strategies and policies in place to adequately prepare for and respond to the projected changes and inevitable shocks associated with climate change. While climate risk cannot be eliminated entirely, with the right planning and action ahead of time and in the right place, the risks to businesses and the communities they serve can be minimised and managed.

### A well-adapted, resilient society is one where:

- People and businesses are well informed about and engaged with climate change, with an understanding of the risks faced and the measures they can take, individually and collectively, to mitigate the risk and build resilience.
- There are coherent and cohesive resilience strategies at both national and local levels, providing a framework for cross-sectoral action.
- Extreme events are anticipated and prepared for, with long-term investment in assets, planning and regulation, emergency response and recovery.

Source: Chartered Institution of Water and Environmental Management (CIWEM)<sup>63</sup>

Improving communities' resilience to the impacts of climate change requires public, private and local organisations to come together to develop and implement cost-effective, flexible and adaptive solutions at the local level. Different factors influence risk and actions to enhance resilience. Key among these is geography, as climate change impacts are not uniform across all parts of the UK. Adaptive solutions will need to vary accordingly, while being based around a core set of key principles, such as those set out by the Climate Change Committee (Figure 4).

Timing is another crucial aspect of building resilience. The impacts of climate change will occur at different times (short, medium or long term) and there may also be thresholds when impacts become more severe or irreversible. Understanding this and planning and acting accordingly using adaptive management approaches is important to ensure solutions are appropriate, affordable and take account of the best available information.

Those impacted do not always have the levers or ability to implement adaptive measures. Business has a particular role to play in facilitating adaptation and building resilience where this is the case.

Measuring resilience, and progress towards it, remains a challenge. Whereas mitigation has a common approach and goal that helps to catalyse action (for example achieving net zero emissions by 2030), this is not the case for adaptation. There are some signs that a more standardised approach is emerging (for example, through TCFD), broadly based around the four principles in the UN's Race to Zero campaign (pledge, plan, proceed, publish),<sup>64</sup> but there is a long way to go to define what we mean by resilience, what are the exact outcomes we want and expect (for example, common planning assumptions, consistent use of return periods for flooding) and how we will measure and track progress. Further work is also needed to assess the relative costs and benefits of different adaptation measures, their suitability to local circumstances and potential barriers to implementation.

## The role of business

There are multiple means and opportunities for business to take adaptive action. These include nature-based solutions (for example, landscape management, tree planting), which offer tremendous scope for cross-sector collaboration to reduce risks and deliver multiple benefits across different sectors. Adaptation by business can also make a significant contribution to net zero strategies, for example, through improving soil quality, leaving peat in the ground, and preserving other land cover, which enhances carbon sequestration capacity. Such actions are not without challenges though. They generally require a cultural shift in organisations, particularly infrastructure providers and their regulators, where moving away from more traditional, engineered solutions to more pioneering and innovative approaches takes time, trust and confidence in the outcomes. They may also be susceptible to climate impacts themselves, for example, wildfires and erosion, which needs to be considered.

### Box 5: Unilever: TCFD scenario analysis

Unilever's Climate Transition Action Plan includes an ambition of transitioning to a net zero business by 2039, and measures to innovate bio-based products and support suppliers to reduce water consumption and implement regenerative practices.

As part of its commitment to the TCFD recommendations, the company performed a scenario analysis to consider the material impacts that might arise from 2°C and 4°C warming scenarios.

Presenting the financial impact of long-term risks, such as climate change, draws attention to it as a priority. This has allowed senior management to assess materiality, compare to other issues and determine how much resource to use in addressing the issue, ie it contributes to the overall business case and confirms the business is doing the right thing. The analysis showed that, without action, both scenarios present financial risks to Unilever by 2030, predominantly due to increased costs in the supply chain where costs of raw materials and packaging would rise.

The company also found that the development of climate models and scientific research around climate change is still evolving and progressing, therefore Unilever needs to continue to update its models as the science progresses to make them as decision-useful as possible.

Climate change will bring some opportunities for some sectors and localities, for example through shifting demands for goods and services, new growing conditions, or the need for new financial services. However, consideration of potential benefits remains largely unexplored, and the impact on communities of changes in business locations and operations as firms seek to realise these benefits needs to be considered.

Across all business sectors, there is a lot more that can and should be done to manage and reduce the risks. Effective business action could be supported with clear government leadership and the right policy framework. There are many actions that the UK government, local governments, business, communities and other private sector stakeholders can take now to support resilient communities and deliver the solutions that are needed.

## 4. Recommendations

### The government should take the lead through additional resourcing, policy and regulation

**The UK government can take a lead in supporting a global effort to scale up resilience of non-state actors including business, local government, finance and others, raising the profile of adaptation to equal that of mitigation, as has been achieved through the Race to Zero. A strong lead and support from government will help mobilise business, providing support for the Race to Resilience global campaign.**

In developing the forthcoming NAP, the government must seek to ensure that the country is able to cope with increasing climate impacts. It must set out a vision for a well-adapted UK and act to integrate adaptation across government policy. The NAP needs to be ambitious in scope and actions to build resilience and set out a more active and dynamic programme of adaptation, with a clear approach to monitoring and evaluating progress. Crucially, this is an area where private finance will not be able to meet every need, and sufficient public financing will need to be supplied to protect the UK and deliver increased resilience in the face of climate change.

Every major UK government announcement linked to climate change should include integrated plans and goals on adapting to climate change alongside goals and plans for reducing emissions, highlighting where synergies and actions exist that support beneficial outcomes for both mitigation and adaptation.

Individual government departments have an opportunity to lead. The Treasury can do so by providing a stronger assessment of the financial and economic risks of climate change to the UK (updating the analysis carried out by the 2006 Stern Review<sup>65</sup>). Complementary to this, Defra could increase its communications on the risks of climate change and the benefits of enhancing resilience and adapting to climate, linked to the possible costs and savings to taxpayers, business customers and others. It could also provide stronger signals to regulators of the need and expectation to allow regulated sectors to invest in low and no-regrets actions that support sustainable long-term adaptation.

To increase awareness of the need for adaptation among businesses, government must do more to raise the profile of adaptation and to strengthen communication with business at every opportunity. The ARP needs to be extended to more organisations and sectors of the economy, providing businesses with the tools and information available to manage climate risk.

Government can support business action by providing a framework, principles and guidance for developing a more consistent approach to planning for resilience across business sectors. This could include cross-sector communities to improve collaboration and co-ordination over large geographical areas to reduce risks from interdependencies, and to enable smaller businesses to learn from larger organisations and infrastructure providers. It could also include the development of indicators, metrics and tools to measure and track resilience, and common planning assumptions and standards where appropriate.

Through working with the finance sector and insurance industry, government can support the identification and implementation of mechanisms like Flood Re that can be used to share risk, keeping insurance affordable and providing support for those without insurance.

There is also a need to consider the economic risks to businesses and communities from climate change impacts overseas. The UK government can lead by working to ensure the G7 delivers on its pledge of US\$100 billion in climate finance annually for developing nations, and that the G20 commits to increasing official development assistance (ODA) to support global resilience. There is also an opportunity for the UK to build on its role as the host of COP26 to continue to raise the profile of the need for climate adaptation alongside measures to reduce emissions.

The government can take a number of more specific actions to support business, including:

- A requirement that infrastructure – from housing development through to critical infrastructure – delivers best practice on resilience as standard, for example based on the British Standards Institution standard on adaptation. This should complement other policy objectives, including energy efficiency.
- Develop, test and implement recovery and emergency response plans, involving businesses and communities, and encourage greater strategic co-ordination of approaches, responsibilities and actions.
- Increase provision of advice and support to businesses, for example flood warnings, flood protection measures and the beneficial role of SuDS.
- Encourage businesses and regulators to explore the potential for a greater role for nature-based solutions, allowing these to be developed, funded and implemented in innovative ways that may move beyond the traditional regulatory contract.
- Improve the quality and availability of information 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.
- Encourage 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.
- Introduce mandatory water efficiency labelling, tighten building regulations to ensure minimum standards of water efficiency for new build and retrofit, and increase the financial support available for water and energy efficiency retrofits in homes, business premises and public sector buildings.
- Work with the Met Office and others to provide more guidance on adaptive management approaches (enabling local authorities to put in place the right adaptation solutions at the right time) and scenario analysis to support planning for more extreme climate futures, including stress testing for a 4°C warming scenario (Box 5), along with the potential additional measures available, costs and benefits to business of doing so.
- Provide specific support for small and medium-sized enterprises (SMEs) to undertake high-level risk assessments and adaptive planning.

## Opportunities for business action

There are some actions that all businesses, large and small, can take now to improve understanding of and resilience to climate impacts in the communities they serve. Many of these are low or no cost and will save business money by cutting operating costs or reducing exposure to climate risks over the medium to long term.

The first step a business needs to take is to make climate resilience a strategic priority alongside mitigation of their greenhouse gas emissions. This means making climate change adaptation a board issue and seeking to reduce the risk of businesses taking decisions that do not factor in climate change, on operating models, site locations, infrastructure, supply chains, technology, policies, or pre-existing adaptation actions. Businesses should look for innovative solutions to adaptation and to adopt low and no-regrets measures that avoid lock-in, for example avoiding or deferring investment in large-scale infrastructure or assets that are likely to be vulnerable to climate impacts under different future scenarios. Such adaptive management will help to optimise adaptation, utilise best available information and minimise costs (for example associated with stranded assets or future maintenance liabilities). Boards can also ensure that businesses regularly measure, evaluate and report progress in a consistent, open and transparent way. The TCFD framework is the most coherent and compelling way for businesses to report.

Prioritising climate resilience at a strategic level also means going beyond the delivery of one-off, standalone projects and setting time-bound, numerical targets (though these can play an important role). It means ensuring that holistic action on climate and nature is part of an overarching organisational strategy, and turning strategic aspirations into measurable short-term goals. It means improving understanding of climate risks and the way these impact on the communities in which businesses operate. This could involve utilising the latest projections effectively and assessing the full range of risks, including interdependencies (across both different sectors and geographic areas) and material financial risks, as well as opportunities created by taking early action. This will enable businesses to 'stress test' by preparing for a range of possible climate scenarios (including low-probability, high-consequence events) and to mitigate or minimise the resultant impact on services, people and communities. One particular area is a risk assessment of sites to map key vulnerabilities or areas of potential exposure to impacts (for example from flooding).

From a planning and development perspective, businesses, particularly infrastructure asset providers, developers and constructors, need to work more closely with relevant authorities and stakeholders (including the Environment Agency, local authorities and insurers) from the earliest possible stage. This can ensure that all new development is appropriately designed, planned and built, taking into account current and future climate risks and resilience to climate impacts.

The finance sector can play an important role in providing access to a range of financial products and services that support adaptation and enhance resilience. Private, central and development banks can do more to analyse, structure solutions, provide liquidity, lend, and syndicate risk to assist in adaptation efforts for the benefit of the resilience of society, as well as their own financial portfolios.

Other, more specific actions that businesses can take include:

- developing the methods and tools needed to measure, track and report on resilience
- investing in local resilience and inclusive community engagement, along with research into business opportunities in high-risk locations (for example coastal areas susceptible to erosion or sea level rise)
- building resilience to water supply risks through enhanced water efficiency and by undertaking water footprint studies to identify the extent to which businesses are directly and indirectly dependent on water to provide goods and services
- preparing heat plans to ensure staff and customers are protected from extreme heat events – actions could include enhancing the resistance of buildings to heat and providing shaded areas
- looking for opportunities to promote and deliver nature-based solutions that enhance resilience to climate impacts while also providing a wide range of health, wellbeing and other benefits.

## Taking a systemic approach to build business leadership

Business groups and representative organisations can support resilient businesses and communities. They can share best practice and facilitate collaboration, helping to identify new opportunities for businesses of all sizes to adapt to climate change appropriately and in a way that delivers real benefits for people. They can also provide opportunities for businesses to work in partnership to ensure projects and solutions are appropriate, trusted and supported, that implementation is effective, and progress is tracked and managed effectively over time.

Business groups can work at a systemic level to help businesses make resilience a strategic priority. One option to enable this would be the development of a feeder programme for the Race to Resilience global campaign. Such a programme could provide a parallel route to entry for businesses into the Race to Resilience, as the SBTi's Business Ambition for 1.5°C campaign has for Race to Zero, ie where a business makes a commitment and then has up to two years in which to measure their emissions and set appropriate and specific targets and priorities for action. To explore the feasibility of this and consider other ways to embed business transformation on resilience, CLG UK will explore the establishment of a new 'UK Resilience Task Force'. This could draw on the existing practice and experience of businesses, including both CLG UK members and other companies with a strong strategic focus on resilience, to undertake scoping work and develop tools and processes to support businesses in making resilience a strategic priority.



## 5. Next steps – fixing the roof while the sun is still shining

**The past few years have clearly demonstrated that businesses and communities around the world are vulnerable to a wide variety of systemic risks. Risks related to climate change consistently rank among the most serious, in terms of both likelihood of occurring and severity of impact. Building resilience to better prepare for, manage and respond to these risks is essential to protect and enhance development and prosperity in the UK and around the globe.**

While governments are often tasked with supporting this resilience, businesses of all types also have a key role to play in building resilience to climate risks through adaptation. Adaptation actions here in the UK will benefit businesses themselves, as they will help to ensure continuity of production and service provision, but can also generate wider benefits and positive social outcomes, which translate to broader business benefits. Business has a key role to play in supporting the innovation and collaborative, cross-sectoral working that is needed to realise these wider outcomes.

Climate impacts associated with the risks from extreme heat, sea level rise, localised flooding, water availability and the potential for disruption to supply chains and interdependent networks at all levels, are heavily context dependent, varying according to geography and disproportionately affecting the most vulnerable in society. A place-based approach can provide a useful lens in understanding both the way climate risks can become impacts and also the adaptation and resilience strategies that can be most effectively introduced in response. Such an approach can help business and government focus action and funding on those areas and people that will be impacted most.

As the Climate Change Committee's recent Climate Change Risk Assessment shows, in the face of growing climate impacts, adaptation in the UK remains underexplored and underfunded, leaving us underprepared. While the risks we face from climate change are increasingly well understood, we are yet to fully grasp the seriousness of the impacts or to embed the planning required fully and appropriately across businesses and communities. The Covid-19 pandemic has highlighted just how vulnerable we are to all sorts of system-wide risks of the type that climate change brings.

In the UK, some progress on adaptation has been made. A broad policy framework exists, much of the underlying scientific information that businesses and others need to plan is available, and many businesses are demonstrating leadership on adaptation and working within communities to enhance resilience. But this is not enough. The increased risks from climate change mean we need a step change in application of policy and in planning for, and adequately funding measures to manage, climate impacts across the UK.

All UK businesses are potentially impacted by climate change and therefore have a role to play in this, stepping up and integrating climate resilience with greenhouse gas mitigation strategies. Our top recommendations are aimed at the UK government and businesses and build on those of the Climate Change Committee. Taken together, they will help make UK communities far more resilient to climate change.

- **The UK government should set out a clear vision for a well-adapted UK and act to integrate adaptation across government policy.** This vision should build on the Climate Change Committee's recent assessment by articulating the role that different parts of society, sectors and business types can and should play in contributing to the overall vision and adapting to climate change. It should set out a roadmap for increasing resilience and include clearly defined and time-bound targets, supported by appropriate funding and agreed metrics, so that progress can be tracked over time. The need for adequate public funding in this area is key. All government departments, regulators and agencies should be required to set out how their actions will contribute to and support the overall vision.
- **The Treasury should provide a regular assessment and statement of the financial and economic risks of climate change to the UK, and the opportunities and benefits that could be derived from taking early action to enhance resilience.** This should consider and clearly outline the risks from both a 2°C and a 4°C average global temperature rise. It should ensure appropriate funding is available and be relevant to different regions of the UK and different sectors of the economy, helping to provide organisations and businesses of different types with the resources, tools and information to manage and mitigate climate risk in the most cost-effective way.
- **The UK government should continue to demonstrate international leadership** in its role within the G7 and G20, and through hosting the COP26 Presidency. International leadership can support the economy through mitigating the impacts of climate change on UK businesses dependent on international supply chains. Holding the COP26 Presidency provides a unique opportunity for the UK to elevate the profile of climate adaptation to the same level as measures to reduce emissions.
- **Businesses of all sizes should make climate resilience a strategic priority**, elevating climate change risk and adaptation to board level, considering different climate risk scenarios and embedding climate planning into short and long-term decision-making. This also means measuring, evaluating and reporting progress in a consistent, open and transparent way.
- **Specific measures that businesses can take now include:**
  - ensuring a holistic approach to climate change (mitigation and adaptation) and working with local and regional stakeholders to maximise opportunities to enhance climate resilience
  - stress testing preparedness for different climate scenarios (for example 2°C and 4°C average global temperature rise)
  - prioritising customer/community engagement on climate adaptation
  - ensuring adaptation plans are costed and the benefits are articulated
  - integrating nature-based solutions that deliver multiple benefits wherever possible.

**Over and above these recommendations, CLG UK believes that there is more that needs to be done to explore feasible collaborative approaches to supporting systemic business transformation on resilience. We will look to work with the existing practice and experience of CLG UK members, alongside additional businesses that have a strong strategic focus on resilience, to further explore this question and support additional business and government action.**

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