



Resilient Growth
An Information Note
for Local Enterprise
Partnerships



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Resilient Growth: An Information Note for Local Enterprise Partnerships.

This publication was developed by Climate UK in collaboration with the Environment Agency's Climate Ready Support Service

Climate UK is a family of nine independent climate change partnerships in England, together with their equivalents in Scotland, Northern Ireland, and Wales. We focus on activity to meet our aim of being the *'leading body working in partnership to achieve a UK that limits the impacts of climate change and is resilient to its effects'* and our objectives:

- Investigate, inform, and advise on risks and opportunities presented by climate change
- Support emerging climate change policy and action locally and nationally
- Coordinate and support integrated, sustainable, and effective responses across key sectors across the UK.

Our unique offer is our collective adaptation expertise, combined with our local knowledge drawn from extensive networks of organisations and relationships with key individuals throughout the whole of the UK.

The **Climate Ready Support Service**, led by the Environment Agency, provides advice and support to the public, private and voluntary sectors to enable them to adapt to the changing climate. Further information is available at www.gov.uk/government/policies/adapting-to-climate-change.

For further help and assistance please refer to [CUK Resilient Growth Contacts](#) to see who your local Climate and Environment contacts are.

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'Reductions in emissions of greenhouse gases are not happening fast enough. Preparing societies for the impacts of climate change must therefore happen in tandem with mitigation efforts'.

This was a conclusion from the World Economic Forum earlier this year. There is a growing consensus that while it is still critical for us to focus our efforts on building a low carbon economy, it is increasingly important for us to also prepare for the inevitable impacts of climate change.

We have all been witness to our increasingly extreme weather, and businesses are critically challenged at these times, either by the direct impact on assets and productivity, or indirectly on customers, supply chains and the cost and availability of resources.

The volatility in our weather system mirrors the volatility of the market and the challenges our businesses already operate in. Business has learnt to operate surrounded by uncertainties caused by changing demographics, urbanisation, fast-moving technology, skills shortages and resource constraints. Business is finding ways to be resilient to these changes, and our changing climate is another critical challenge which no longer makes business-as-usual an option.

It makes business sense to act now rather than later, with every £1 spent now saves £4 in investment down the line. For example the cost of backing up data off site and having alternative arrangements with suppliers and staff if your site is flooded is nothing compared to the cost of picking up the pieces if you are unprepared.

The good news is there is also a sizable and growing market for adaptation goods and services, from flood barriers and back up energy generation, to software and consultancy, worth almost £70bn globally. Tapping into this market not only benefits communities across the globe, but also provides jobs and growth locally.

Resilient businesses will understand where their risk is and potential market opportunities and therefore develop better ways to operate and grow. Local Enterprise Partnerships and other partners need to follow this example and make sure they play their crucial part by 'climate proofing' their investment plans to improve local infrastructure, sites and business support programmes.

We recognise this challenge as part of our long term, sustainable, economic growth strategy, and we encourage others to use this information note to help you become more prepared.



Dr Martin Reeves

Chair of West Midlands Low Carbon LEP Leadership Group & Chief Executive of Coventry City Council.



Professor Chris Rapley CBE

Chair of London Climate Change Partnership and Professor of Climate Science at University College London

Introduction

The aim of this note is to further the aspiration of Local Enterprise Partnerships to deliver economic growth which responds to the challenges and opportunities of our future climate.

Through following this advice you will be able to better respond to requirements from funders, especially the European Commission, who are increasingly looking for evidence of how you have embedded climate resilience and adaptation into your plans and projects, and contribute to the delivery of the National Adaptation Programme.

It is focused on how both short-term climate resilience, and longer-term adaptation to climate change, is incorporated into LEPs' investment programmes to safeguard delivery into the longer term. To do this we focus on the following areas:

- Resilient Infrastructure - ensuring capital investment is resilient to climatic and other environmental shocks;
- Resilient Businesses - embedding climate risk and resilience into business support activity;
- Resilience Opportunities - capitalising on the growth in adaptation goods and services.

We then bring it all together in terms of longer term economic, social and environmental decision-making through local governance and effective, transparent and accountable processes.

The Case for Action

It is understandably difficult to assess the impact that climate change will have on individual local economies, but it is certainly considerable. The Intergovernmental Panel on Climate Change estimated it at 3% of global GDP in 2007, and closer to home the Stern Review 2005 estimated this at 5% of global GDP.

What is certain is that there is clear evidence to show that climate change is happening^a, that it is human induced^b, that climate impacts are increasing, and that action now is better than action later. The OECD estimates that, across Europe, £1 spent now in adapting will save £4 in damages later on.^c

Including climate change in any assessment of future risk is good business. It will not only reduce future costs, but safeguard current investment and productivity^d from the climate impacts we already face, and provide opportunities for innovation and market development. The value of the global adaptation market is estimated at £68.7bn and growing above market trend^e.

What you will expect to see from a changing climate will vary and depend upon the vulnerability of infrastructure and communities. In general, if global greenhouse gas emissions are not reduced, average summer temperatures are projected to rise by an average of over 2°C by the 2040s. This would increase the probability of heat waves^f, making record breaking temperatures the norm,

such as the 38.5°C in 2003⁹ which is connected to over 2,000 additional deaths in the UK^h. By the 2080s average temperatures could be up to nearly up to 4 °C.

We will also see an increase in extreme weather events as temperatures rise, causing:

- heavier and longer rainfall events – with increased risk of flooding;
- more and longer-lasting heat waves;
- higher sea levels.

We may potentially see increased impacts upon human health, water supplies, natural systems, food production, and increased poverty and deprivation. The rise in global temperature and the extreme weather which will result will also have indirect effects on UK supply chains from across the globe.

What can LEPs do – Your 10-point Checklist

The information note states in more detail the key actions Local enterprise Partnerships can do to embed climate resilience, but effectively they consist of the following actions;

1. Identify someone with responsibility for adaptation and resilience within your governance structures [Page 14]	<input checked="" type="checkbox"/>
2. Work with others to understand your current vulnerability to weather and how this may change over time. [Page 15]	<input checked="" type="checkbox"/>
3. Appraise all projects for resilience initially based upon 'Value at Risk', and identify those investments that require consideration of longer-term impacts, so that adapting them now can be both cost-effective, and not costly to reverse. [Page 15]	<input checked="" type="checkbox"/>
4. Understand and support your strengths in adaptation goods and services. [Page 12]	<input checked="" type="checkbox"/>
5. Challenge your suppliers, especially developers, architects and landscape designers to incorporate smart solutions to climate risk. [Page 12]	<input checked="" type="checkbox"/>
6. Ask questions about the resilience of local infrastructure and the services your economy relies upon. [Page 7]	<input checked="" type="checkbox"/>
7. Ask your business support providers to include resilience training and resources in their programs. [Page 11]	<input checked="" type="checkbox"/>
8. Focus on understanding the risk for critical elements of your economy, such as large businesses, business/industrial parks, and your key clusters and sectors. [Page 5] [Page 9]	<input checked="" type="checkbox"/>
9. Embed climate change into your skills offer, especially for management and leadership. [Page 12]	<input checked="" type="checkbox"/>
10. Collaborate with those you rely upon, or share impacts and intelligence with. [Page 17]	<input checked="" type="checkbox"/>

Resilient Infrastructure

The OECD estimates that, across Europe, £1 spent now in adapting will save £4 in damages later onⁱ, so ensuring your investment is weather and climate resilient makes business sense now.

The impact of climate change on infrastructure will vary considerably depending on the location, type of installation, and resilience of the systems it relies upon. Town and County Planning requirements and Building Regulations provide some climate assurance for many topics including on flood risk and the provision for nature and biodiversity. However it is important not to rely solely on standards and regulations, but to use these as starting point in effectively managing long-term impacts.

There are an increasing number of best practice examples of how individual buildings, sites, and infrastructure are using climate adaptation techniques, not only to build resilience, but also to increase confidence and vitality in the local economy.

To help those engaged in the planning and development process, Climate UK and the Environment Agency's Climate Ready Service have produced a series of [training materials](#)^j that are free to download and may be tailored to suit your needs. This builds upon previous [advice produced by the Town and Country Planning Association \(TCPA\)](#)^k on incorporating adaptation into design and planning.

How does resilience help to achieve your goals?

Incorporating climate resilience within your infrastructure projects will:

- Safeguard investment for the future, minimising maintenance and damages
- Provide longer term confidence for business investment and inward investment
- Create more desirable buildings and developments
- Encourage staff retention through improved working conditions
- Improve your image and reputation
- Potentially reduce insurance premiums.
- Provide multiple benefits, including health protection and local environmental enhancements.

What can Local Enterprise Partnerships do?

Reliable information is available to help you embed adaptation into the specification of buildings and infrastructure you may commission, influence, or fund. Given the wide-ranging and strategic nature of your activity, there are a number of ways to incorporate resilience into any one initiative.

Promote Building-Level Resilience

Depending on the level of vulnerability, all building projects need to have regard for increases in excess heat, flooding, subsidence, drought, and wind. In order for you to address these risks in your initiatives, the [National Building Specification](#)^l has worked with the Environment Agency's Climate Ready service to improve guidance at the specification stage for new build or alterations, both in the specification of systems and technologies, and how to embed these issues at the earliest possible opportunity.

The Chartered Institution of Building Services Engineers (CIBSE) has an [online 'Design Compass' tool for designers](#)^m, focussing on both climate resilience and carbon reduction. The [Association of British Insurers](#)ⁿ has also produced advice on insurance implications of climate change risk.

For residential development, the [Code for Sustainable Homes guidance](#)^o provides both guidance on incorporating elements of adaptation and a clearly defined standard which could be adopted at the local level.

There are also an increasing number of resources to help designers and specifiers on individual techniques available through the Climate UK website, and others such as the [Green Roofs guidance](#)^p from the Institute of Structural Engineers, and [Sustainable Urban Drainage guidance from CIRIA](#)^q.

CHESHIRE & WARRINGTON STRATEGIC SITE ASSESSMENT

The Cheshire & Warrington Local Enterprise Partnership has assessed all of its [strategic development sites](#) for both climate risk and opportunities for carbon reduction and renewable energy. This will inform future priorities and has provided a platform for discussion with local businesses to build their adaptive capacity.

Assess the Resilience of Your Key Sites

Understanding climate risk at the site level is likely to be a key consideration for Local Enterprise Partnerships, both in terms of the adaptation of existing business locations, and in the planning and design of new developments.

Working at the site level provides significant benefits in terms of the adaptation options available, such as sustainable urban drainage systems or green infrastructure for cooling, and the ability to assess interdependencies between occupants and infrastructures (see below).

Where flood risk is a major consideration, it is critical to engage with local flood authorities and the Environment Agency at the strategic level to identify and reduce the risk, which could have a significant impact on the local economy. Given that £1 of Flood & Coastal Resilience expenditure delivers over £5 of direct economic damage avoided, many Local Enterprise Partnerships have recognised this issue and have incorporated allocations of funding for addressing flood risk into both Growth Deals and European Strategic Investment Funds.

It is also important to work in partnership with neighbouring areas, especially across river catchments, to look at holistic approaches to managing flood and other climate risks impacting on your economic priorities.

LOWER DOVE, DERBYSHIRE

The Environment Agency worked with local stakeholders and a major employer, Nestle, to raise and extend existing flood defences along the River Dove. The £9.33m scheme, including a partnership contribution from Nestle, safeguarded 400 local jobs and created an additional 400 jobs.

Public Realm.

Not only does a high quality public realm support economic development, but it is also a vital for most adaptation activity, it dictates how air and water impact upon buildings, and provides opportunities for shelter and shade. In particular, green infrastructure such as parks, street trees, and water features can provide opportunities to manage water, increase urban cooling, improve air quality during heat waves, and assist nature to adapt.

The [Green Infrastructure Partnership](#)^r has been established to support the development of green infrastructure (GI) in the UK, identifying and developing solutions to enhance GI to strengthen ecological networks and improve communities' health, quality of life and resilience to climate change. In addition, the [Mersey Forest](#)^s has resources for developers and planners seeking to use green infrastructure to combat climate change and reap multiple benefits.

WORCESTERSHIRE GREEN INFRASTRUCTURE AND CLIMATE PLANNING.

With the support of Defra, Environment Agency and SWM the LEP has developed a methodology to help identify climate impacts for key investment sites, and then draw up site profiles and actions.

Transport Infrastructure

Transport infrastructure is typically highly vulnerable to climate and weather variability while being critical to the resilience of an area. Closure of a road or bridge can lead to extensive disruption of business activity.

When specifying new roads for a development, or working with the Highway authority on improvements to the local network, it is important to build in resilience. Climate UK with [ADEPT](#)^t and [CIHT](#)^u has produced [guidance for local highway authorities](#)^v to explore their vulnerability and support action to address it.

Although the strategic transport network is covered by large network operators who typically have robust adaptation processes in place, it is advisable to engage with these providers to understand existing preparedness and any specific vulnerability which may limit your economic plans, especially in relation to power and IT supply. Ports and freight facilities can be particularly vulnerable given their proximity to coastal impacts.

Interdependencies

When planning infrastructure, or in seeking to make existing developments more resilient, it is important to look at the relationship between the infrastructure, users and services on and off site, to determine whether there are any knock-on effects where one system relies upon another. Known as 'interdependencies,' these can often be critical to the resilience of a development. For example, power and IT services are vital to most businesses and many will not have back-up generators or broadband services. Alternatively, key staff in an incident may not be able to reach the site due to transport disruption or caring duties elsewhere.

ANYTOWN PROJECT.

[London Resilience](#) brought together more than 100 experts from some 50 London organisations to discuss the potential implications of disruption to electricity and water supply, and map out the knock-on effects.

Understanding these interdependencies requires dialogue with the businesses and the infrastructure or service providers in an area. You can identify and explore pinch points and potential weak spots by discussing the issue with decision makers in your most important and vulnerable sites.

Resilient Businesses

All businesses are vulnerable to climate impacts, and most already understand the importance of managing risk. However only around half of SMEs are taking any action to reduce risk^w and many of these actions are inadequate to safeguard jobs and growth.

The impact on businesses of extreme weather can be devastating, with permanent closure a frequent consequence. An [ABI study](#)^x revealed that 80% of businesses which do not have an emergency plan in place do not recover from a major incident such as a flood, even where insurance is in place to cover financial losses.

Recent research has also identified that up to 40% of SMEs feel noticeably 'weaker' as a consequence of extreme weather due to loss of customers, reduced income, and problems with cash flow.^y [AXA research](#)^z indicates that the average length of business interruption by flooding has increased from 8 months in 1996 to 14 months in 2005 as businesses become more complex and flooding more frequent.

Although larger businesses tend to be more resilient and are able to ride out significant events better, the risks can be more substantial to a local economy and their exposure to the international impacts of climate change can be significant.

The challenge is to ensure that as the climate changes, all businesses prepare for short term contingencies and longer term adaptation.

How does resilience help to achieve your goals?

Including business resilience in your business support offer provides significant benefits, in particular:

- Direct reduction in business interruption from direct and supply chain weather impacts
- Leaner and more competitive businesses
- Reduced damage to assets, meaning lower maintenance and replacement costs
- Potential for reduced insurance premiums
- Improved health and safety provision for staff
- Promotes effective leadership.

What can Local Enterprise Partnerships do?

There are a number of ways in which a Local Enterprise Partnership can embed business resilience within its business support offer:

Business Level Risk and Resilience Assessments

Building upon business continuity planning already taking place in most businesses, these bespoke assessments are usually undertaken by the businesses themselves, but with external assistance as required.

The [Business Resilience Health Check](#)^{aa} is a free online tool designed to provide a high-level introductory assessment for any business, especially SME's who are typically more vulnerable. It will provide a bespoke action plan which identifies issues for further exploration. Developed by Business in the Community and Climate UK, this tool is already being used by business support organisations across the country, and accredited training in its use is available.

A [BACLIAT](#)^{bb} (Business Areas Climate Impacts Assessment Tool) assessment will help a business explore impacts upon logistics, process, finance, people, premises, and markets. This assessment generally requires external assistance to complete.

Some Local Enterprise Partnerships and Local Authorities have provided bespoke information to businesses. The [Weathering the Storm](#)^{cc} guidance has been produced in a number of areas and is designed to be replicated, with the help of Climate UK and input from Climate Ready and your local adaptation specialists in businesses, local authorities, academia, and the climate change partnerships.

Sector-based approaches

Businesses can obtain critical information on potential climate impacts and solutions from other businesses in the same sector. Involving sector support organisations locally and nationally can be very productive and can lever in resources. This is especially important in LEP areas which have dominant or priority sectors for growth.

There are a growing resource library of sector-based resources, and key sector support organisations who are leading on climate resilience include:

- [Food and Drink Federation](#)^{dd}
- [Tourism – Climate Prepared](#)^{ee}
- [Farming Advisory Service](#)^{ff} and [Farming Futures](#)^{gg}

Supply Chain Approaches

Facilitating the assessment of climate risk across supply chains is a very effective way of promoting both the resilience of localities and of the local economy. Most of your larger businesses have supply chains within the local area, particularly for services, and in other cases suppliers will cluster locally to maximise shared benefits. In both cases, working with

WEATHERING THE STORM

Climate UK's local climate change partnerships have worked with a number of local areas and LEPs to produce a [practical guides for businesses to embed climate resilience](#).

BUSINESS ADAPTATION SUPPORT PROGRAMME

[Sustainability West Midlands](#) provided support to hundreds of local businesses on adaptation, including awareness raising through briefings to local business networks, case studies, regional awards, and delivering business support events with local green business clubs, and Severn Trent and Birmingham Airport supply chains using the Business Health Check Tool. The baseline and repeat survey demonstrated the majority of businesses had moved from low awareness to implementing an internal risk plan and therefore becoming resilient to further extreme weather events. This programme is currently being extended to local farmers.

larger businesses helps safeguard not only their economic contribution, but also the resilience of the wider SME base.

In addition, most businesses have supply chains across the UK and globe, especially for raw materials on which they rely. So increasingly local businesses, large and small, need to be aware of the impacts of weather and longer-term climate change in other parts of the UK and abroad. For example, in 2011 the Thai floods disrupted supplies for thousands of companies, including Unilever—which lost an estimated €200 million globally. On the flip-side, many businesses could also see impacts on their customer base from climate events elsewhere, impacting upon turnover and cash-flow.

In order to assist supply chain resilience the Environment Agency's Climate Ready Service have produced [supply chain guidance](#)^{hh} to assist companies and business support organisations.

Supporting leadership

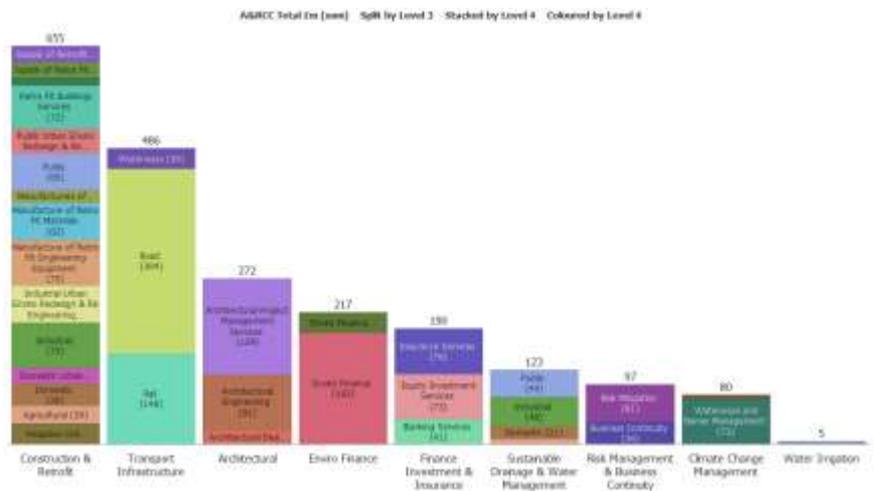
Developing local management and leadership skills to understand climate impacts, manage risks, and capitalise on opportunities is vital to your future economy. With help, these skills are easily incorporated into your leadership role, training and events, and the support services that you commission. Many business-facing organisations already provide advice on climate change, energy efficiency, and carbon reduction, and many are increasingly incorporating resilience advice in their programs. Examples include Business in the Community and the Confederation of British Industry. In addition, some universities provide dedicated leadership training on sustainability, such as Lancaster University and the University of Cambridge.

BRIGHTON MARINA

Staff at Brighton Marina undertook a Level 3 Business Resilience qualification, which they felt they helped them to weather last winter's storms because of the knowledge they gained.

Resilience Opportunities

Adapting to climate change can directly stimulate jobs and growth. Globally the value of the Adaptation and Resilience (Climate Change) Sector (A&RCC)ⁱⁱ is estimated at £68.7bn. In the UK, the market is worth £2.1bn, mainly in construction and retrofit and transport resilience.^{jj} At present the market is growing well above trend at around 5% in the UK, and predicted to increase globally to more than 7% by 2015/16. The diagram shows the key sectors involved and the relative sales for each.



How can resilience help to achieve your goals?

Supporting the A&RCC sector through your business support and training programmes can provide significant benefits:

- Direct business growth above current trends;
- Access to a significant global market accelerating to more than 7% per annum
- Access to the knowledge base within universities and academia locally
- Further development of local USPs
- Opportunities for professional development
- Recognition as a leading area.

CLEONE FOODS

Winner of a Sustainability West Midlands business adaptation award, this company in Birmingham won a major food contract, beating similar competitors, because of its resilience plan. The win resulted in an 11% increase in the company sales

UK FLOOD BARRIERS

Based in Worcestershire is one of fastest growing companies in UK over the last 4 year. A local business owner was flooded, developed an innovative flood barrier technology, and is now exporting around the world from Thailand to the United States

What can Local Enterprise Partnerships do?

To achieve the benefits, LEPs can:

Encourage innovation and knowledge transfer.

Most of the goods and services required for successful adaptation have not been invented yet, but may simply require repurposing of existing processes and technologies, such as water saving or low-energy cooling. New financial mechanisms and risk management approaches are also emerging where innovation is encouraged.

Creating the conditions for innovation is important, through knowledge sharing and transfer within and between sectors, and encouraging collaboration between academia and business.

Engage your key sectors.

Where local strength exists in businesses directly or indirectly related to the A&RCC, sector-based approaches can build capacity and understanding of the markets available, especially for export. It is helpful to understand and assess the size and scale of the main components of the A&RCC, which may include:

- Architectural Services
- Climate Change & Risk Management
- Drainage, Water Management & Irrigation
- Finance
- Transport
- Construction

Further information on the barriers and opportunities for these sectors is available in the Opportunities for UK Business from Climate Change Adaptation.

Existing sector support organisations are an effective engagement mechanism, supplemented by specific climate change expertise.

Build the Adaptation Market Locally.

A Local Enterprise Partnership and its supporting organizations can support the growth of the A&RCC sector through the goods and services they buy. This can help to improve resilience immediately as well as support local businesses and expertise. Challenge your suppliers, especially developers, architects and landscape designers to incorporate smart solutions to climate risk, such as shading, green roofs, sustainable drainage, green space for cooling and flood attenuation.

Embed Adaptation Skills

The types of activity in the A&RCC cover a wide spectrum of skills, from construction to financial services. There is an opportunity through partnering with local training providers and professional institutions to develop new skills programmes to meet this opportunity. These programs would improve the capacity of skills providers in construction, transport and design, while uncovering opportunities to make these sectors more resilient.

Further opportunities exist to develop leadership and management skills to support business resilience and continuity. Wider climate and carbon literacy skills across large workforces can ensure they are prepared to adapt as well as reduce their impact.

WATER MANAGEMENT FOR GROWTH

The Greater Lincolnshire Local Enterprise Partnership (LEP) supported the creation of 5,440 jobs through 11 water management and flood resilience projects funded by £20.5m of Growth Funds.

WATER INNOVATION FOR GROWTH

Liverpool City Region LEP has investigated its water innovation capacity to explore the potential for leveraging excellence in water management for economic development.

Governance – Leading for the future

Climate resilience is critical for the long term wellbeing of all areas, and it is important to grasp local opportunities to incorporate consideration of future climate in all long-term strategic decisions.

Embedding resilience into your structures

Below are some steps you can take to demonstrate that climate resilience has been incorporated into local governance to deliver longer term sustainable outcomes.

Make your plans resilient

Many activities you are currently undertaking will have to be resilient to significant changes in our climate. There should be a clear set of locally agreed objectives and criteria around the long term vision for an area, which considers how it can be delivered despite climate risks and other pressures into the future. This helps you to align different funding criteria to ensure that local priorities drive local investment. The Adaptation Wizard is a tool for organisations to assess vulnerability and is used by many as the basis for strategy and reporting.

LEPs might also adopt a clear scheme for a strategic sustainability appraisal of their overall economic, social and environmental impacts. This should include contribution towards carbon reduction as well as ensuring continuity and resilience. It should indicate where in the overall programme these benefits will be delivered and monitored, and be communicated and consulted upon with local stakeholders.

Embed Advocacy

A strong advocate with responsibility for climate resilience is critical to minimising the risks and maximising opportunities. There are organisations who can advise on climate resilience or who have experience in embedding it within their operations. Many of these can also discharge requirements to involve environmental stakeholders in programmes such as EU structural funds.

Climate UK local representatives can advise on

WEST MIDLANDS LOW CARBON LEP LEADERSHIP GROUP

Sustainability West Midlands and partners have supported the six West Midlands LEPs to develop a joint evidence base, benchmarking good practice, investment prospectus, green business club network, joint statement on key climate change priorities. They are now developing support programme on local sustainability appraisal good practice and several cross-LEP projects in response to adaptation such as business support and green infrastructure.

embedding climate resilience. You may also find help by speaking with others, including your Local Authority, utility companies, Local Nature Partnerships, Environment Agency, Natural England, local environmental groups (Wildlife Trusts, RSPB, Groundwork), and often local universities. The [CUK Resilient Growth Contacts](#) list provides details of some of these organisations.

Given that our knowledge of climate adaptation is developing, it is also important to encourage your resilience advocates to keep abreast of the latest information from Climate Ready and Climate UK, and to involve these organisations in your wider consultative processes. Your local Climate UK representative can be found at the back of this document.

ESTA – Environmental Sustainability Technical Assistance in the North West.

LEPs across the North West, with DCLG and the Environment Agency, have come together to explore shared challenges on environmental sustainability including embedding resilience and climate adaptation. This included the appointment of Advisors to help embed resilience into projects and plans.

Appraise Projects for Climate Risk

Most of your initiatives will be impacted by severe weather and climate change, or will provide opportunities to increase the resilience of others to current or future climate, whether that is a large infrastructure investment or support to an individual SME. We therefore recommend that you ensure that your resilience advocate can contribute to any appraisal process you adopt.

In addition, it is best practice to encourage significant projects to fully appraise their own climate resilience, especially ones with major investment and/or long lifetimes, and ones that will be difficult to reverse if they prove vulnerable. There are various ways of doing this, and frameworks that others have used to consider future climate risk alongside other potential risks and opportunities.

One approach is based upon ‘value at risk’, which enables significant issues to be identified at project design and challenged during your assessment. This approach simply allows the user to score the relative value of the investment against the current climate vulnerability of the investment or related attributes such as supply chains or infrastructure, based upon a matrix which prioritises vulnerability.

		CURRENT VULNERABILITY				
		LOW Low indirect risks	MINOR	MODERATE Indirect spatial and/or supply chain risks	MAJOR Direct spatial risks	EXTREME Direct spatial and supply chain risks
INVESTMENT VALUE	EXTREME Long-term National Investment	High (H)	Extreme (X)	Extreme (X)	Extreme (X)	Extreme (X)
	MAJOR Long-term Strategic/Multi site Investment	Moderate (M)	High (H)	Extreme (X)	Extreme (X)	Extreme (X)
	MODERATE Significant single site investment	Low (L)	Moderate(M)	High (H)	Extreme (X)	Extreme (X)
	MINOR Small scale single site investment	Low (L)	Low (L)	Moderate(M)	High (H)	High (H)
	LOW Short-term small scale activity	Low (L)	Low (L)	Moderate (M)	High (H)	High (H)

For example:

- Large scale infrastructure investments, such as a new business park, will be MAJOR for investment value and could be MAJOR for climate vulnerability if in a city prone to the urban heat island effect – this indicates EXTREME RISK and is worth investigating further.
- Individual de-minimis investments in local SMEs, such as capital equipment, are likely to have a MINOR investment value but may have an EXTREME vulnerability if located in a flood risk area and the business has significant supply chains in other vulnerable areas – this indicates HIGH RISK and is worth investigating further.

It would be advisable to undertake more detailed assessments of any investments deemed EXTREME or HIGH:

- Re-assess the risk in relation to future climate, working with partners to understand local climate scenarios and the relationships with surrounding infrastructure or key services. The approaches in sections 1-3 will assist with this.
- Identify potential adaptation options, ensuring that these are in themselves resilient to climate impacts - working in partnership will ensure a robust approach.
- Cost a preferred option to be embedded into the design, keeping in mind the benefits of avoided costs associated with the action, and where possible focussing on low or no-cost solutions, or those which have a wider economic or social benefit, such as green infrastructure.

Build Partnerships and Cross-Border Working

Climate and weather impacts are rarely contained or limited to a single area or a single organisation. It is therefore important to build relationships with neighbouring or similar areas, or with other stakeholders locally who can help both to assess the risks and help mitigate them. In particular, local universities may have climate change knowledge and modelling which could be useful to build your evidence base.

Your local climate change partnerships are a good starting point to engage others on this agenda; all have years of experience in understanding and tackling climate risk and in building dialogue between sectors.

Report your successes

Part of the rationale behind climate adaptation is to provide confidence in the economic resilience of you area, and to encourage wider adoption of climate action by others. By reporting your approach and sharing your successes you will provide a clear signal to your businesses and communities that you take resilience seriously. This can be reported as part of a wider report back on progress or as part of a sustainability process.

References & Links

- a Latest HMG evidence available at <https://www.gov.uk/climate-change-explained>
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- c Calculation based on the ratio between the cost of adaptation and the difference between gross and residual damage for Europe from table 3 page 24 in de Bruin, K.C., Dellink, R.B. and Agrawala, S. (2009) 'Economic Aspects of Adaptation to Climate Change: Integrated Assessment Modelling of Adaptation Costs and Benefits' OECD Environment Working Papers No.6, OECD Publishing.
- d According to the Centre for Economics and Business Research (CEBR), productivity falls by 8% at 26 °C, by 29% at 32 °C and by 62% at 38 °C.
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- i Calculation based on the ratio between the cost of adaptation and the difference between gross and residual damage for Europe from table 3 page 24 in de Bruin, K.C., Dellink, R.B. and Agrawala, S. (2009) 'Economic Aspects of Adaptation to Climate Change: Integrated Assessment Modelling of Adaptation Costs and Benefits' OECD Environment Working Papers No.6, OECD Publishing.
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- l <http://www.thenbs.com/topics/environment/articles/Climate-change-adaptation-in-buildings.asp>
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- n <http://www.climatewise.org.uk/>
- o <https://www.gov.uk/government/policies/improving-the-energy-efficiency-of-buildings-and-using-planning-to-protect-the-environment/supporting-pages/code-for-sustainable-homes>
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- q <http://www.susdrain.org/>
- r <http://www.tcpa.org.uk/pages/green-infrastructure-partnership-gip.html>
- s <http://www.greeninfrastructurenw.co.uk/climatechange/>
- t <http://www.adeptnet.org.uk/>
- u <http://www.ciht.org.uk/>
- v <http://climateuk.net/localhighways>
- w Ingirige & Wedawatta, University of Salford, 2011
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- y Blundel, Richard; Baldock, Robert; Dadd, Deneise; Schaefer, Anja and Williams, Sarah (2014). Resilience and recovery: SME experiences of extreme weather events and other external threats.
- z <http://nationalfloodforum.org.uk/wp-content/uploads/AXA-Climate-Change-and-its-effects-on-small-businesses-in-the-UK.pdf>
- aa <http://www.businessresiliencehealthcheck.co.uk/>
- bb <http://climateuk.net/resource/bacliat>
- cc <http://climateuk.net/resource/weathering-storm>
- dd <https://www.fdf.org.uk/climate-change-adaptation.aspx>
- ee <http://www.climateprepared.com/>
- ff <https://www.gov.uk/government/groups/farming-advice-service>
- gg <http://www.farmingfutures.org.uk/>
- hh <http://climateuk.net/resource/supply-chains-adaptation-guidance>
- ii https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/224070/bis-13-p144-adaptation-and-resilience-climate-change-report-2011-12.pdf
- jj Adaptation and Resilience (Climate Change) (A&RCC) - Report for 2011/12, BIS/13/P144

Case Study Links

- Cheshire & Warrington Strategic Site Assessment - http://claspinfo.org/CW_riskassess_growthsites
- Worcestershire GI and Climate Planning - <http://www.wlep.co.uk/>
- Anytown Project - <http://www.londonprepared.gov.uk/>
- Weathering the Storm - <http://climateuk.net/resource/weathering-storm>
- Business Adaptation Support Programme - <http://www.sustainabilitywestmidlands.org.uk/projects/cross-sector-west-midlands-climate-adaptation-partnership/>
- Brighton Marina - <http://www.brightonmarina.co.uk/news.aspx>
- Cleone Foods - <http://www.sustainabilitywestmidlands.org.uk/resources/cleone-foods-winner-of-the-bitc-business-resilience-award-2013/>
- UK Flood Barriers - <http://www.ukfloodbarriers.co.uk/Default.aspx>
- Water Management for Growth – <http://www.greaterlincolnshirelep.co.uk>
- Water innovation for Growth - <http://www.enworks.com/ESTA-project-outcomes>
- West Midlands LEP Leadership Group - <http://www.sustainabilitywestmidlands.org.uk>
- ESTA – Environmental Sustainability Technical Assistance in the North West - <http://www.enworks.com/ESTA-intro>

For further help and assistance please refer to [CUK Resilient Growth Contacts](#) to see who your local Climate and Environment contacts are.



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