Adapting universities and colleges to a changing climate

Making the case and taking action

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HEBCoN
Higher Education Business Continuity Network

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Acknowledgements

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EAUC and HEBCoN are grateful to all the universities that provided case studies, some of which are included in the Guide with others available on EAUC's Sustainability Exchange: www.sustainabilityexchange. ac.uk/adaptation.

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As the specialist provider of insurance cover for Universities and Further Education Colleges, UMAL has a particular interest in helping the sector better recognise climate related risks. EAUC engaged with UMAL to better understand how our changing climate is impacting on the sector. Beyond this project, UMAL and EAUC will continue to work in partnership and help take climate risks beyond the sector 'boiler rooms' and into institutions' 'board rooms'.

EAUC and HEBCoN are delighted that AECOM has sponsored the project, providing invaluable expertise in the field of climate change adaptation and pro-bono support. Their input has reinforced the value that specialist consultancy teams may have when addressing complex issues such as climate change adaptation if institutions have limited internal expertise. More information about AECOM is available on their website.

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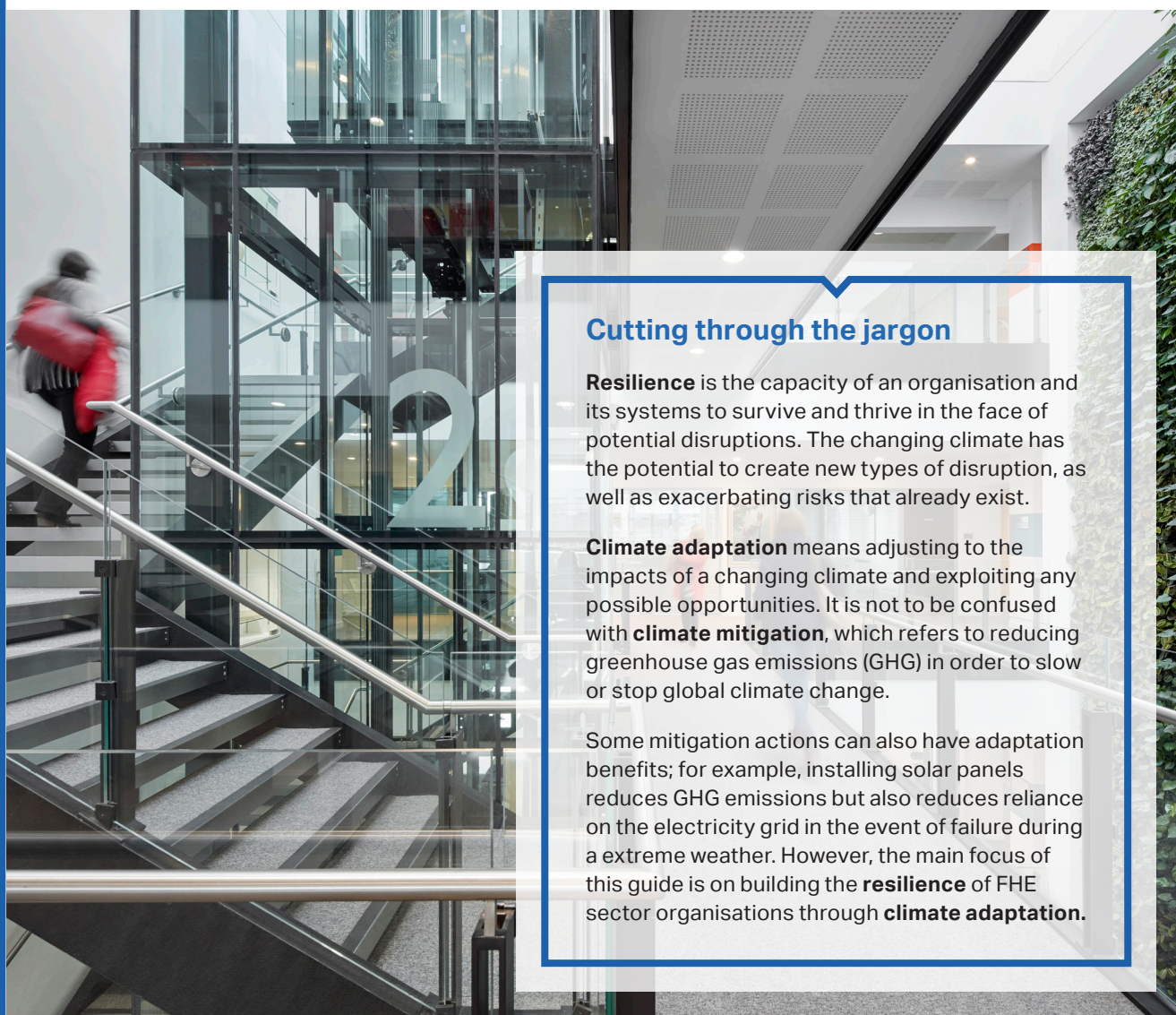
Cutting through the jargon

Resilience is the capacity of an organisation and its systems to survive and thrive in the face of potential disruptions. The changing climate has the potential to create new types of disruption, as well as exacerbating risks that already exist.

Climate adaptation means adjusting to the impacts of a changing climate and exploiting any possible opportunities. It is not to be confused with **climate mitigation**, which refers to reducing greenhouse gas emissions (GHG) in order to slow or stop global climate change.

Some mitigation actions can also have adaptation benefits; for example, installing solar panels reduces GHG emissions but also reduces reliance on the electricity grid in the event of failure during a extreme weather. However, the main focus of this guide is on building the **resilience** of FHE sector organisations through **climate adaptation.**

Foreword

The majority of the UK public supports urgent action on climate change, and Further and Higher Education (FHE) organisations not only lead research on this vital issue, but are driving solutions – not least in reducing greenhouse gas emissions – and preparing the world for its effects, which include sea level rise and extreme weather events.

Meanwhile universities and colleges should also be turning their gaze on themselves, if they have not already, to ensure that they remain able to deliver world-leading teaching and research into the future. The time to prepare for climate change is now – in fact it is already here: 2018's 'Beast from the East' cold snap and the later heatwave brought £258 million of UK insurance claims for burst pipes and subsidence respectively, for example.

Buying protection to cover these claims is vital – but it is not the solution. The changing climate poses direct risks to campus and community infrastructure, historically and culturally significant buildings and artefacts, and the wellbeing and safety of students, academics and support staff. By acting early and building resilience, universities and colleges can anticipate both direct and indirect climate risks, and so minimise future disruption.

FHE institutions will also have to contend with disruption to teaching, research, capital projects and income, and will have to cope with the subsequent repairs. Planning for this now will save money in the long run.

Those universities and colleges that take bold sustainable action themselves can act as exemplars. Adapting for climate change also opens up a massive field of research, and the most proactive FHE organisations can capitalise on new sources of funding and partnerships in the public, non-profit and private sectors. Indeed, they can support local, national and international communities by lending their knowledge and technical capacity to help them adapt to the unwelcome world of climate change.

Paul Cusition

Chief Executive and Director, (UMAL) - the mutual insurance provider specialising in coverage for the FHE sector

Climate readiness self-assessment

Each organisation will be at a different place in the process of adapting to climate change. The statements below can be used to determine where your organisation currently sits in this process.

Milestone 01. Establish the case for action

My organisation:

– Has senior leadership that understands climate change will have implications for delivery of critical functions and services.

– Has senior leadership that understands climate change may present opportunities for agile organisations.

– Has someone who is officially responsible for identifying potential climate risks and opportunities.

If all of the above are true, your organisation has reached Milestone 1 and should consider Milestone 2. If not, the resources in Parts 1 and 2 of this guide may be helpful.

Milestone 02. Identify risks & opportunities

My organisation:

– Has dedicated resources to undertake a climate change risk and opportunities assessment.

– Understands the impact of past extreme weather events (e.g. amount of disruption, cost of damage).

– Is aware of the relevant climate change projections for our region of the UK.

– Understands how projected changes in climate may positively and negatively influence delivery of critical functions and services at different time horizons (e.g. 2030, 2050).

If all of the above are true, your organisation has completed Milestone 2. The resources in Part 2 of this guide may be helpful for developing adaptation strategies.

Milestone 03. Execute adaptation strategies

My organisation:

– Has a clear understanding of the proactive measures that are needed to address climate change risks and realise opportunities.

– Has established relationships with other organisations that need to be involved in implementation (e.g. Council, adjacent landowners).

– Has allocated appropriate resources to finance and implement the measures.

– Has established a process for monitoring implementation progress and reviewing effectiveness.

If all of the above are true, your organisation has reached Milestone 3. Continue to review risks and opportunities as climate and business activities evolve.

Sustainable Urban Drainage system at Easter Bush campus, University of Edinburgh.
Photographed by Jonathan Long

Part 1:
The case for action

The 'Elevator Pitch'

A quick way to communicate the need for investment in climate adaptation to decision-makers

" The science is settled. Our climate is changing, and no matter how quickly we reduce greenhouse gas emissions, some major effects are locked in. This will influence nearly every area of our institution, from delivery of teaching, research and examinations, to student recruitment, supply chains, insurance premiums and the profitability of investments. The results will not always be catastrophic, but unless we systematically assess the risks we are driving blind.

Taking action doesn't necessarily mean 'reinventing the wheel' or spending significant amounts of money. Universities and colleges already have well-established processes for managing risk – factoring in climate change simply means applying a different lens and set of expertise.

How will our key assets and business processes stand up to a future of more extreme weather? New investments in infrastructure may be around for decades to come – how future-proof will they be? Now is the most cost-effective time to ask these questions and ensure our institution is climate-ready. "

Climate projections

In the coming decades, we willl see warmer, wetter winters and hotter, drier summers across the UK.

Projections indicate that hot summers on par with summer 2018 (with UK-wide average temperatures of 15.8°C and maximum temperatures of 35.5°C) could occur half the time by 2070. Warming will be especially pronounced in the southern UK and central Wales, followed by Scotland and Northern Ireland.

Southern England is also projected to see the largest decrease in summer rainfall, and Wales can expect the highest increase in winter rainfall. When it does rain in the summer, we can expect more intense storms.

For those universities and colleges located near the coast or estuaries, sea levels will continue to rise well beyond the year 2100 with a UK average rise of 0.65m by 2100, even if emissions are significantly reduced over the course of the century.

Finally, institutions with satellite campuses in other countries should also take note that climate change may bring different challenges to those campuses.

The map below shows headline level climate projections by devolved area of the UK and the Republic of Ireland. 2070s time period, high emissions scenario (RCP8.5).

Scotland
16% drier summers
4.5% wetter winters
2.7°C warmer summers
2.5°C warmer winters
30 to 90 cm sea level rise rise in Edinburgh

Northern Ireland
17.5% drier summers
7% drier winters
2.85°C warmer summers
2.25°C warmer winters
33 cm to 94 cm sea level rise in Belfast.

England
27% drier summers
15.5% wetter winters
3.45°C warmer summers
2.45°C warmer winters
53 to 110 cm sea level rise in London

Republic of Ireland
1.7° warmer winters/summers
+ 20% winter river flow
- 40% summer river flow
More intense rainfall & increased risk of flooding
20 cm sea level rise in Dublin; 40 cm sea level rise in southwest Ireland.

Wales
27% drier summers
29% wetter winters
3.4°C warmer summers
2.4°C warmer winters
51 cm to 113 cm sea level rise in Cardiff

Edinburgh
Belfast
Dublin
Liverpool
Manchester
Cardiff
London

Key risks to the sector

Under a changing climate, the UK will see weather that tends towards the extremes: heavy rainfall, heatwaves, drought, stronger storms. Although the more extreme weather will generate entirely new challenges for the sector, most critical is how climate change will be a 'risk multiplier', exacerbating risks that are already of high priority, such as reputation and financial sustainability.

Infrastructure and business continuity

From laboratories to transport links, resilient infrastructure is of paramount importance for FHE institutions. Climate change will present a range of challenges for FHE-owned and third-party infrastructure, affecting business continuity and increasing repair costs. Examples include:

– More regular and severe overheating of FHE buildings, including student residence halls, leading to ill health, reduced productivity and increased costs.

– Increased risk of flooding impacts to buildings, such as damage to sensitive materials (e.g. servers, archive material) on lower floors and basements, as well as water ingress into foundations. Some FHE are adopting building-level adaptations to address this, such as installation of removable flood barriers at entrances of selected buildings on Nottingham Trent University's campus.

– Disruption of supply chains due to international climate-related impacts, both acute (e.g. extreme weather events) and long-term changes (e.g. changes in growing patterns will impact food sourcing, changes in regional climate may impact ongoing research).

– Disruption of transport links, affecting supply chains and timely delivery of teaching and examinations – the 'Beast from the East' in 2018 caused the closure of Fife College for four days.

– Disruption to research projects and laboratory operations.

– Power outages affecting critical ICT systems and sensitive research activities.

– Potential for more regular disruptions to construction of capital projects and increased claims from contractors.

– Drought conditions adversely affecting condition of playing fields and landscaped areas used for student sports and recreation.

Health, safety and wellbeing

The UK's universities and colleges prioritise the safety and wellbeing of students and staff above all else. Additional threats to health and safety as a result of climate change include extreme heat impacts in overheating buildings, storm surges affecting coastal facilities, and high winds and storms creating dangerous travel conditions. The truly international makeup of staff and students complicates this further, as this cohort may be less familiar with life in the UK and the associated risks posed by our climate. Additionally, global climate-related extreme weather may pose risks to students and staff traveling to or from, or working in international locations.

Impact of snow during the "Beast from the East" at the Easter Bush campus security hub, University of Edinburgh, at the end of February 2018.
Photographed by Jonathan Long

Reputation and student recruitment

FHE institutions' responses to climate change are increasingly a factor in their Social Licence to operate. Reputational damage is a real possibility if the public perceives conduct in the face of climate change to be lacking, with flow-on effects for funding and recruitment. While this may not seem immediately pressing, a 2017 survey of students by PwC found that transparency was the second most important characteristic of the 'institution of tomorrow' – students increasingly see themselves as stakeholders looking to influence the strategic direction of their FHEs[2]. From the growing trend of large-scale school walk-outs, protests and climate-related lawsuits among youth globally, it is clear that the next generation of higher education students will increasingly hold institutions to a higher standard, with climate change mitigation and adaptation responses potentially playing an increased role in their choice of institution.

Additionally, the complex challenges of climate change are sparking innovation, job growth and research in previously small or untapped fields. Students keen to pursue these opportunities will search for institutions that can provide them with the necessary knowledge and skills to excel in this field.

Political landscape

Our sector needs to remain agile in the face of constantly changing political landscapes. The UK is fortunate to have an independent Committee on Climate Change, as well as additional legislation within devolved nations, which helps ensure a degree of continuity in terms of climate change remaining on the government policy agenda. However, this means that if government policy continues to
move towards climate resilient and low-carbon futures, universities and colleges who have lagged behind in adjusting their infrastructure and operations will be scrambling to catch up and meet any imposed targets

2) PwC (2018) Managing risk in Higher Eduction: Higher Education sector Risk Profile. Available from:

https://www.pwc.co.uk/government-public-sector/education/documents/higher-education-sector-risk-profile-2018.pdf [Accessed 15 January 2019].

Nottingham Trent University installed a removeable flood barrier in August 2014 to prevent disruption from flash flooding incidents.

Opportunities

Climate change is definitely not a good news story, but for agile organisations it does present opportunities. For example, climate change has opened up a plethora of research opportunities, teaching programmes, and funding opportunities for universities and colleges. Areas of focus include the impact of climate change on food systems, hydrology, renewable energy engineering and policy, migration and security studies, and governance, among many others. Many FHE institutions have already harnessed these opportunities but have a chance to expand them.

Additionally, FHE organisations have the opportunity to address localised climate impacts and strategies, thus allowing us to better engage with communities. We also have the ability to produce climate adaptation tools, services, and knowledge that can be disseminated or provide points of engagement with policymakers and/or companies.

Furthermore, with warmer winters, universities and colleges will likely spend less on winter heating, and less on winter weather-related repairs and maintenance. Similarly, with less snow and ice anticipated on average, we can expect less regular business disruptions due to this type of inclement weather.

FHE institutions have the opportunity to expand teaching around climate and environment, and involve students, staff, and the broader community in related projects. In this photo, Southeast Liverpool Guild of Students learn about the principles of bee-keeping.

Part 2:
Resources to support adaptation

Resources designed to help FHE staff seeking to advance the climate resilience of their institution.

Skills and knowledge requirements

Effective climate adaptation planning requires the right mixture of skills and institutional knowledge. However, you do not need to be a confident and experienced adaptation practitioner to begin strengthening the resilience of your organisation to climate change. Chances are you will not need to 'reinvent the wheel' – most likely it will be a case of integrating some additional climate change considerations into a well-established governance structure and risk management process.

Building resilience to climate change is a multi-disciplinary and collaborative process – no individual holds all the necessary knowledge. As such, assembling a 'working team' from across different functional areas of an organisation can be a great approach. A quick scan of your organisation is likely to show that more of the necessary skills and institutional knowledge are available than you may originally have thought! At a minimum, it is important to seek involvement from your institution's sustainability and business continuity management leads, as these two perspectives are complementary when considering how changes to our environmental conditions may affect operations into the future.

Page 13 provides some of the broad skills/competencies that are drawn upon in an adaptation planning process, as well as the types of knowledge about your institution that are helpful for identifying risks and selecting appropriate adaptation responses:

Case study

Estates and academic staff collaborate to address Newcastle University's flood risk

In June 2012, the 'Toon Monsoon' dropped 50mm of rain in two hours, causing flash-flooding that resulted in millions of pounds of damage. Newcastle University itself incurred over £1M in damage, demonstrating that its traditional infrastructure was unable to cope with events of this magnitude. With the frequency of these events expected to increase, the University committed to adapting the University Estate to reduce its flood risk.

In this example, Newcastle University's academic staff proved to be a critical resource. Chris Kilsby, Professor of Hydrology and Climate Change, had developed a new flood model called CityCAT, and after reaching out to the University's Estate Service it was determined that the campus was an ideal location to validate the model. This involved conducting a risk assessment of all buildings and business critical assets, as well as identifying actions which would mitigate future flood damage under different climate change scenarios. The University funded a new position of Flood Risk Manager to implement the adaptive measures, which included extensive sustainable drainage systems (SuDS) around the £58M Urban Sciences Building.

Newcastle University also used the opportunity to share knowledge and collaborate with other stakeholders to improve surface water management. For example, it has worked with Nottingham University to create the Blue Green Cities Research Project. Additionally, they are a member of the Local Action Alliance in partnership with Newcastle City Council, Northumbrian Water, Environment Agency, local businesses, and wildlife groups.

By harnessing the skills of university staff and support services, Newcastle University has led by example in becoming more climate-resilient, and has used its expertise and influence to support climate resilience throughout the North-East.

Newcastle University during the 28 June 2012 'Toon Monsoon' flood.
Photo by Nathalie Marie-Clair Chün

Skills

Enterprise risk management

Enterprise risk relates specifically to risks to your university's stated objectives. Familiarity with undertaking risk assessments is a critical skill to have in your working group.

It is often a good idea to integrate your approach for a climate-focused study with your organisation's existing enterprise risk management guidance (e.g. using similar criteria to assess likelihood and severity).

Ability to interpret weather and climate data

An increasing amount of data is available to help us understand future climate; however, this can be daunting. Some familiarity working with trend and projection data would be ideal, but resources are available to bring you up to speed (see page 16).

Strategic planning

Ideally your working team will include someone who is involved with your institution's strategic planning process and has strong links with senior leadership. This increases the likelihood that recommendations can be integrated into key plans and policies going forward.

Communication and awareness raising

Your institution's efforts around climate resilience will interest different stakeholders for different reasons. An important skill is clear and targeted communication across all levels, from officer level staff to senior leadership. Keep the message simple and consistent!

Enthusiasm and positivity!

Making the case for more action on climate resilience can be challenging. Understandably, some stakeholders you engage with may find the topic daunting, while others may see it as less important compared to competing priorities. Despite this, it's important to stay positive and make sure to highlight the upside of taking action now!

Institutional knowledge

Critical functions and key existing risks

What are your institution's key products, services, systems and activities that could be affected by changes in climate?

What risks are already important to senior leadership?

Effects of past extreme weather events

How have past events affected your institution's operations? What have been the financial costs or other impacts?

Incident registers, media reports and memories of long-standing staff can all be key sources of insight.

Key institutional stakeholders

Who relies on your organisation and vice-versa?

How could a changing climate affect what your stakeholders need from your institution, or what you can provide?

Existing policies, plans and regulations

What relevant internal policies and plans could benefit from consideration of climate change?

Are there any specific policy or regulatory considerations within your local government area or devolved area of the UK (e.g. Climate Change (Scotland) Act; Future Generations Act (Wales)?

Useful tools

A full sector-specific approach to considering the business impacts of climate change is summarised on page 16. However, there are many other tools that may also be of use to your organisation.

Climate Information and Learning

UK Climate Projections 2018 (UKCP18)

A world-leading platform providing the most-up-to date climate observations and projections data for the UK. Can seem daunting at first, but taking some time to explore the interface can provide useful insights.

Red Cross Climate Centre Games

The RCCC help organisations and governments better understand climate change impacts and the benefits of adaptation by seeing these actions play out in real-time through 'climate games.' This tool could be useful when trying to engage and communicate with broader FHE officials about the importance of institutional action on climate change.

Adaptation Support Tools

UKCIP (Climate Adaptation Wizard)

This tool walks you through the adaptation process, assessing your organisation's vulnerability to climate change, helping you make the case for adaptation to your organisation, and aiding you in developing a climate change adaptation strategy.

BACLIAT (Business Areas Climate Impacts Assessment)

This assessment can be used together with the UKCIP Climate Adaptation Wizard or in isolation. This is a workshop-based vulnerability assessment tool based around areas of business operations

LCLIP (Local Climate Impacts Profile)

This tool can be used as part of the UKCIP Climate Adaptation Wizard or on its own. Drawing on sources such as past media reports, a Local Climate Impacts Profile helps organisations assess their exposure to weather.

Adaptation Scotland

Aimed specifically at a Scottish audience but offering a growing catalogue of resources with applicability across the UK and Ireland to support adaptation progress.

Infrastructure Information

CIRIA's B£ST tool

Sustainable urban drainage systems (SuDS) can reduce the risk of flash floods and deliver a range of other benefits (e.g. temperature regulation during heatwaves, attracting biodiversity) to university and college campuses. This tool helps to put a financial value on these disparate benefits and can support business cases.

A changing climate for urban development

This toolkit was developed by the Climate Ready Clyde programme to support those developing new built environment projects to integrate climate change considerations. While developed with organisations in the Glasgow City Region in mind, the tools and principles are relevant to all parts of the UK.

ClimateADAPT — This is a knowledge-sharing platform for European climate change adaptation, which has tools such as the adaptation support tool, which is focused on helping you develop climate change adaptation strategies.

weADAPT — Stockholm Environment Institute's weAdapt platform aggregates academic articles, case studies, and forums dedicated to climate change adaptation. Their adaptation layer identifies case studies in your area of interest that detail the actions practitioners have undertaken in response to their specific climate hazards.

EcoCampus — EcoCampus is a platform that helps universities and colleges become more sustainable by providing guidance for implementing Environmental Management Systems (ISO14001).

Case study

University of St Andrews Climate Impact Assessment Workshop

Founded in 1413, the University of St Andrews is the oldest university in Scotland and third oldest in the English-speaking world. With an estate comprising many historic assets located along the Fife coastline, Sustainability Manager David Stutchfield saw the benefit of better understanding future climate threats and opportunities for the institution.

St Andrews' approach was to draw on publicly available resources and guidance from Adaptation Scotland to undertake a Climate Impact Assessment Workshop, which focused on how changes in climate could affect (both positively and negatively) the different 'critical functions' (i.e. what the university does to deliver its key objectives) across different timeframes. Participants included five property and senior managers from the Estates Department and five from the Residential Business Services, with the intention to roll the process out to other departments.

In what circumstances could this approach be suitable?

Undertaking an in-house climate impact assessment using publicly available resources is a great, low-cost way to identify key vulnerabilities and kick-off an ongoing discussion around climate change within an institution. While such an assessment is unlikely to generate recommendations to the same level of detail as a consultant-led study, by managing the process in-house it can help to engender a greater sense of ownership over the findings and next steps for implementation
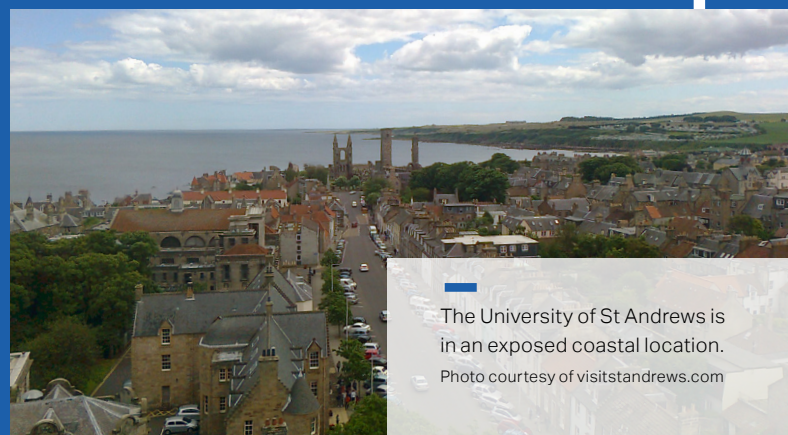
The University of St Andrews is in an exposed coastal location.
Photo courtesy of visitstandrews.com

Business Impact Assessment for Universities and Colleges

The table below outlines the many free tools that universities and colleges can use to support their efforts to improve climate resilience.

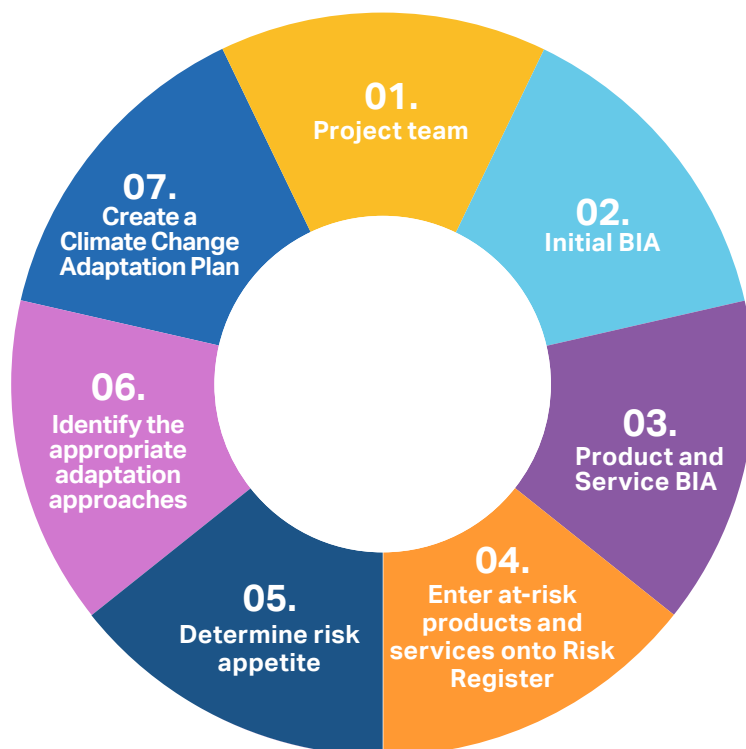## Using your existing organisational resilience framework

Climate change is one of many complex risks facing FHE institutions. Rather than treat climate change as a standalone risk, consider integrating it into existing processes and governance that may already exist within your organisation.

An institution's existing organisational resilience framework is likely to include business continuity, risk management, emergency management and crisis management. These established services are experienced in assessing and treating organisational risks.

The figure on the next page summarises an approach to integrating climate change risk into a Business Impact Assessment (BIA) process. A more detailed guide is available through the EAUC website.

Students at Kingston University support adaptation efforts through water management.

A circular diagram with seven segments:

- **01. Project team**
- **02. Initial BIA**
- **03. Product and Service BIA**
- **04. Enter at-risk products and services onto Risk Register**
- **05. Determine risk appetite**
- **06. Identify the appropriate adaptation approaches**
- **07. Create a Climate Change Adaptation Plan**

01

– Engage with business continuity and risk leads – assemble a team that understand your institution's key products, services and processes.

– Consider is there sufficient in-house knowledge of climate change, or is external input required?

02

– With senior management, define organisation in terms of key products, services and processes (e.g. Learning and Teaching; Research; Estate Management.

– Undertake high-level assessment of likely impact over time on each product, service and process – which should be assessed in more detail?

03

– Undertake a more detailed analysis of the impact of the various climate change hazards (e.g. extreme heat, rainfall flooding) on the elements of each product and service within scope (e.g. elements of 'Estate Management' could include 'building performance and systems', 'ongoing maintenance').

– First consider potential present day impacts, drawing on knowledge of past events (long-standing staff and incident registers can be valuable resources here).

– Then consider likely future impact, taking into account climate change projections.

04

– By entering these in to the organisation's risk register, climate change risk will be recognised as a corporate risk. Unless climate change is incorporated into the register it is unlikely to be seen as a significant risk.

– One approach is not to list climate change as a risk in its own right, but rather as an additional threat to be incorporated into existing strategic risk descriptions and scoring.

05

– Consider which risks your organisation is willing to tolerate – in some cases it may be reasonable to simply monitor risks where the level of impact is uncertain and unlikely to occur for several decades. However, uncertainty should not be used to defer action where the potential impact is very high.

– Understanding the appetite for each risk will ensure the adaptation approaches are in line with organisational willingness to invest.

06

Lower risk appetite

↓

Higher risk appetite

Implement *proactive* measures to minimise the risk (see page 19)

– Develop *post-incident* response plans for impacts as they occur

– *Outsource* the risk to 3rd parties (e.g. accommodation)

– Use business interruption *insurance*

– Continue to monitor (at a minimum)

07

– Document planned approaches in an adaptation plan. This may be a standalone document or a subsection of a broader risk management plan.

– Decision makers will welcome a plan that is appropriate to their tolerance of the risks posed.

Adaptation approaches

This section provides examples of actions FHE organisations can take to increase their resilience to climate change. The list is not exhaustive, nor will all approaches be relevant to every institution.

Adapting to climate change means taking targeted actions to address known and potential risks. This can occur in three ways:

• **Reducing exposure**: This means ensuring that key activities, resources and assets (economic, social, cultural and environmental) are located out of harm's way. This can mean redirecting a hazard (e.g. by constructing a sea wall) or moving things of value to another location (e.g. relocating computer servers or document archives from a flood-exposed basement).

• **Reducing sensitivity:** Sometimes it is not practical to eliminate exposure to a risk. In such cases, we can take measures to reduce susceptibility to harm. This can be as simple as encouraging staff and students to drink more water during a heatwave.

• **Increasing adaptive capacity:** This simply means increasing the ability to cope with and adjust to change. We can do this by ensuring we have a Plan B, such as backup power should a storm or heatwave result in an electricity outage.

The trees around Keele University provide natural shading, cooling and water absorption benefits.

Type	How does this type of action work?	Examples
INVESTIGATION	Sometimes we need more information to make the right adaptation decision. Investigations provide further analysis of targeted issue areas, helping to identify which adaptation options are the most cost-effective.	– Flood modelling – Feasibility studies
POLICY, PROCEDURES AND SYSTEMS	Even if further investigations are needed before a major investment can be justified, there are often 'soft' actions that can be taken quickly and cheaply.This may include updating existing policies or standard operating procedures, such as inspection schedules for building facades or rules around working in extreme heat.	– Hazard-specific emergency response plans – Increase online teaching capacities and working from home options so students and staff can stay home in inclement weather – Early warning systems for natural hazards
BEHAVIOURAL	Human behaviour is major factor in the consequences of extreme events (e.g. the decision to drive a car during a major storm). Institutions can implement awareness and/or advocacy campaigns to better educate staff, students, and communities on how to prepare for, and respond to, different types of climate hazards to ensure a robust and integrated local response strategy to extreme weather events.	– Communication and advocacy campaigns – Establishing or strengthening partnerships with other stakeholder organisations such as local authorities
NATURE-BASED SOLUTIONS	Integrating more natural features into campuses may often be more effective than hard engineering at addressing climate change risks. For example, increasing tree canopy cover and permeable surfaces can reduce extreme heat and the risk of flash flooding. Nature-based solutions may also offer supplemental benefits, such as providing areas for recreation and supporting improved mental wellbeing for students and staff.	– Raingardens and permeable pavements – Constructed wetlands and reed beds – Expansion of greenspace, including green walls and roofs – Drought-resistant planting/landscaping – Vegetated verges along roadways
TECHNICAL (ENGINEERED)	Engineered infrastructure and technological approaches may sometimes be required, particularly when assets are highlyexposed to climate change risks.	– Flood barriers and seawalls – Passive building design – Backflow preventers – Solar shading – Reinforced roofs and constructions
MAINTENANCE AND ASSESSMENT MANAGEMENT REGIMES	Ensuring that infrastructure and assets are well-maintained regularly and especially in advance of extreme weather will decrease the risks of adverse impacts.	– -Checks on the drainage network ahead of storms

Case study

University of Cambridge climate risk assessment

The University of Cambridge (UoC) has an iconic and complex estate that blends internationally recognised historic buildings with new masterplanned, mixed-use areas such as the North West Cambridge development. With planning underway for further major development, decisions made now will have consequences for UoC, and indeed the City of Cambridge, for many decades to come.

Focusing on its operational estate within and immediately surrounding the City of Cambridge, UoC commissioned AECOM to conduct a Climate Risk and Resilience Scoping Study. Using UKCP09 projections and Environment Agency flood maps, it considered the potential impacts of both acute (surface water and riverine flooding; drought; extreme heat; extreme cold; high winds) and chronic (changes in mean temperatures and rainfall) hazards. A mixture of GIS, desk research and direct client consultation was used to arrive at priority risks and opportunities.

In addition to built assets, consideration was also given to the University's transport linkages, as well as university farmland, landscaping and grounds. The study also included a strategic review of the University's key corporate risks and considered the extent to which climate change could be a key influencing factor over coming decades. This complemented the highly operational estate-focused adaptation recommendations with broader recommendations for how the organisation's leadership can help prepare it for strategic risks in areas such as financial sustainability and staff retention, as well as maximise the opportunities that climate change will present for those who act sooner.

By undertaking a climate risk assessment, UoC now has a better understanding of where its vulnerabilities lie, and it is currently considering next steps to implement adaptation options from the prioritised 'menu' produced in partnership with AECOM.

In what circumstances could this approach be suitable?

Drawing on consultant support will be more expensive than in-house approaches. Organisations that choose to draw on an external consultant may do so for a combination of reasons, including:

– A desire to get a more objective perspective on the organisation's risk profile and level of resilience.

– Having a major pipeline of investments that could benefit from more detailed input around how to improve their resilience to climate change.

– A lack of staff time or necessary skills in-house.

The University of Cambridge
Photo courtesy of Wikimedia Commons

A final word

This guide aims to act as a jumping-off point for you to initiate or expand your institution's climate resiliency. While it provides tools to resilience FHEs' climate adaptation efforts, it is by no means exhaustive. Please refer to the EAUC's Sustainability Exchange to explore more related tools, case studies, communications, policies, and strategies. You can find the website at: www.sustainabilityexchange.ac.uk/adaptation.

For more information on the EAUC and further tools, please email: info@eauc.org.uk

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