

Developing a University climate change risk assessment and adaptation strategy

As teaching and research institutions, universities are major contributors to climate change adaptation and mitigation, as they have the power to inform and influence students and their academic workforce to take action. To harness this potential for building climate resilience, Cranfield University developed a Climate Change Risk Assessment followed by a draft plan for adaptation measures, by involving staff and students in a series of workshop-based exercises.

Cranfield University campus suffered from flash flooding in June 2016 due to poor drainage which caused widespread damage, resulting in over £1 million worth of costs, and severe interruptions to day-to-day business. On a more frequent basis, the campus suffers from power outages due to extreme weather, overheating of laboratory equipment which destroys experiments, extreme cold causing damage to pipes and roads, and infrastructure damage caused by high winds. All such risks will likely increase as a result of climate change.

As part of a hybrid MSc Thesis project, a climate change risk assessment for Cranfield University was drawn up which outlined climate change risks for the University and suggested opportunities for adaptation. This project was motivated by

the lack of an existing strategy to address the risks posed by extreme weather events affecting the university campus. It involved carrying out focus group research with different groups of stakeholders from across the university. This approach helped to prioritise risks, opportunities, and controls for climate change risks and put forward a list of recommended adaptation options for Cranfield University.

However, there were major cost barriers to implementation of the newly developed strategy for adaptation and resilience-building. Many of the measures listed in the strategy would be high in capital costs and would be challenging or costly to retrofit into existing buildings. Such measures would require buy-in from senior management at the university.

KEY MESSAGES

- **There is no one size fits all** for climate change risk assessment and adaptation strategy, every university must carry out its own individual assessment.
- **Climate change risk assessments should involve stakeholder groups** and engage from the bottom-up to create a well-rounded perspective of risks and potential adaptation measures, although these should be backed up with quantitative evidence such as costs and weather data.
- **Some adaptation methods come with adverse risks in themselves** – for example using air conditioning, which can increase emissions. Special consideration and assessment of risks and trade-offs should be carried out before committing to such measures.

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“Using sustainable draining systems and green/blue spaces is a low cost, visually appealing way to mitigate flood risk and provide cooling at university campuses.”

It was found that some of the lower cost blue/green options would not have been effective enough or would be difficult to implement.

Since the project to develop the risk assessment and strategy was completed in 2019, several adaptation measures have been carried out for new builds at campus, such as at Baroness Young Halls where a sustainable drainage systems (SuDS) has been installed to mitigate flood risk. Cranfield University now also has a target to officially publish the adaptation strategy

by 2023, and is taking measures alongside resilience-building to reduce emissions from university operations and deliver on a net-zero carbon emissions target by 2030.

Cranfield University is now monitoring and keeping an ongoing record of extreme weather events and associated damage at campus, to continue tracking climate change risks. For example, the university is using sensors to monitor weather and temperature changes and are looking to support more on-campus research into different adaptation methods.

As a next step, the university will further develop measures for adaptation in the design guides for buildings and infrastructure. This will require a top-down approach to make sure senior management are engaged. This builds on the previous learning from the initial strategy development that showed the importance of gaining senior management buy-in in early stages of risk assessment and adaptation planning to secure funding to invest in adaptation options.

Key facts about the institution:

Institution name:	Cranfield University
Location (city and nation):	Cranfield, Bedfordshire
Number of students (total for institution):	3887
Number of staff (total for institution):	1845
Campus type and location:	Rural

Key facts about the intervention (case study):

University or department led:	Department led (Facilities team/Academic team hybrid)
Number of staff engaged:	31
Number of students engaged is:	15
Climate risks the intervention addressed:	Flooding, high winds, high temperatures, very low temperatures,

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