

Digest
#02
October 2023

ResilienTogether is one of 25 Flood and Coastal Innovation Programme (FCRIP) projects funded by DEFRA. These aim to demonstrate how practical innovative actions can work to improve resilience to flooding and coastal erosion.

These digests highlight learning from ResilienTogether. They document learning captured during the project which can be used by schemes and organisations across the country.

Local authority project partnering with university

Contributing to water management research and accessing academic networks through Local Authority partnership with the University of Exeter's Centre for Water Systems



University of Exeter

ResilienTogether

The Central Bedfordshire Council led 'ResilienTogether' FCRIP is creating a Smart Catchment, through use of innovative technologies and techniques, to reduce flood risk to people and places, enhance the water environment in the Pix Brook catchment and improve community resilience in the face of climate change.

This digest relates to how the partnership between ResilienTogether and University of Exeter (UoE) provides benefit to research and dissemination.

What challenges have we faced?

ResilienTogether aims to pilot new technologies and share their findings to drive forward best practices in water management. Relating to research and dissemination, this poses challenges of:

- Project partners requiring knowledge and experience in the many technical disciplines that ResilienTogether spans, including hydrometry, water quality and data visualisation.
- Identifying and investigating specific knowledge gaps requires an evidence-led approach coordinated by experts in scientific research.
- Local Authority networks are required to share learning beyond their regional partners. Access to the academic sphere and to innovators in the industry is needed to identify opportunities and embed learning.

Our solution

In September 2021, Central Bedfordshire Council (CBC) partnered with UoE when developing the Outline Business Case for ResilienTogether.

This early engagement with UoE facilitated embedding research and learning to place these elements at the centre of project delivery goals.

Outcomes

In year one of the project, UoE undertook a high-level assessment of the Pix Brook catchment relating to urban and stormwater management opportunities. This research contributed to a research paper issued in *Water Research* titled 'Moving to a future of smart stormwater management: A review and framework for terminology, research, and future perspectives'.

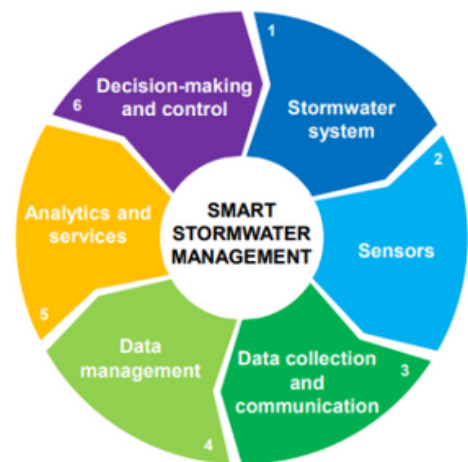


Figure 1. The "smart water management" wheel derived by UoE as part of the stormwater management opportunities assessment

UoE's post-doctoral researchers used academic papers, grey literature and stakeholder engagement sources to identify specifications, costs and benefits of smart stormwater management components. This informed ResilienTogether's approach to deployment of level sensing technology across the catchment.

This learning has been shared via UoE attending the 2nd International Joint Conference on Water Distribution (Valencia, 2022), from which the conference paper 'Towards Digital Twins of City-scale Waterways Using Sensor, IoT and Open Access Data' was published.

A research-led approach has provided ResilienTogether with the most up-to-date intelligence on technology readiness. While local authority projects are bound by real-world limitations when implementing recommendations, this has linked ResilienTogether's piloting of new technology to academic audiences to ensure learning is captured.

A further example of this is how UoE carried out a literature review of industry established and new technologies for automated water quality sampling in the Pix Brook catchment. Research was based on a wide range of sources including academic papers and product websites. It positions ResilienTogether to pilot technologies that explore a defined research niche and link most closely with project objectives.

In year two of the project, UoE undertook a market needs assessment which engaged stakeholders in a conversation about their perceived needs for a live modelling platform. Many different organisations were interviewed and these included sensor/platform providers, research institutions, councils, consultancies, software companies, water companies, and also government agencies, infrastructure providers, insurance companies and not-for-profit organisations (Figure 2).

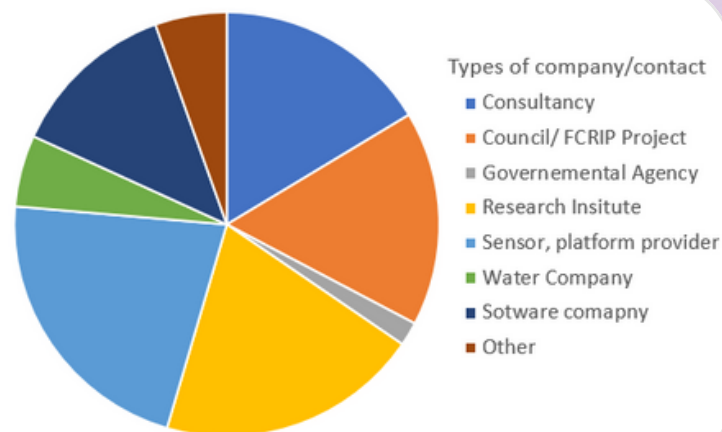


Figure 2. Type of company contacted during market research

These conversations were summarised in a market needs report. Such research links ResilienTogether's work to a wider network of potential end users outside of the partnership. It allows the project to consider the wider uses of live modelling and the problems that it can solve. This contributes to developing an innovative tool that delivers against the needs of the Pix Brook and Local Councils and has components that have application in the broader industry.

Overall learning

The partnership between Central Bedfordshire Council and UoE creates a Risk Management Authority partnership with academia to overcome the challenges relating to project research and dissemination. By engaging UoE early in project development, a greater depth and breadth of research was embedded at the project's core. This approach has benefitted the project and been used to share research and learning with larger network of peers and connect ResilienTogether's work to a broader audience.

Benefits

1. Breadth and depth of research

Academic partners have the capacity and experience to research on a broader scale than local authorities. They will cover a greater breadth of literature, considering all options, before focussing their research to comprehensively consider solutions.

2. New network of experts

Partnering with an academic institution has given ResilienTogether access to a network of contacts with different expertise across academia, industry and other public sector organisations. These contacts can be called upon to advise and propose innovative solutions to a range of technical challenges.

3. Dissemination of knowledge

Academic papers produced as part of the project are peer reviewed, making the project's findings more reputable. Through papers and conferences, research will then have a greater impact on a larger audience of peers who can further develop innovations piloted by ResilienTogether.

Dr Mike Gibson

Research Fellow at UoE

"In this project we have had the unique opportunity to introduce more technical expertise to the elements of social science in order to establish the needs/problem definition and existing technologies in this area. Working closely with CBC and other partners we now have an excellent understanding of the organisational and institutional division of responsibility for flooding."