**UK climate resilience programme**

The aim of this programme is to draw together climate research and expertise to deliver robust, multi and interdisciplinary climate risk and adaptation solutions research. This will ensure the UK is resilient to climate variability, and able to exploit adaptation and green growth opportunities.

Budget: £18.7 million

Duration: 2018 to 2023

Partners involved: Natural Environment Research Council, Engineering and Physical Sciences Research Council, Economic and Social research Council , Arts and Humanities Research Council, Met Office

The UK Climate Resilience Programme aims to draw together fragmented climate research and expertise to deliver robust, multi and interdisciplinary climate risk and adaptation solutions research. This will ensure the UK is resilient to climate variability and change, and powerfully positioned to exploit the opportunities of adaptation and green growth.

The funding forms part of the Strategic Priorities Fund, delivered by UK Research and Innovation (UKRI) to drive an increase in high quality multi and interdisciplinary research and innovation. It will ensure that UKRI’s investment links up effectively with government research priorities and opportunities.

[Find more information about the programme on the UK Climate Resilience Programme website](https://www.ukclimateresilience.org/), including access to the science plan and details of supported research projects, programme news and events.

How do we make our cities and regions resilient to climate change? What are the opportunities to manage adaptation to deliver improvements to society and facilitate economic growth? These are broad and urgent questions for decision makers from national to local scales, in government, business and society. It is recognised that there is a need to use UK expertise and make this transferable to others, while better understanding and assessing the effectiveness of adaptation and climate resilience interventions.

### Knowledge gaps

There are two major knowledge gaps:

* characterising and qualifying climate-related risks in decision-relevant terms
* developing effective adaptation strategies and policies that deliver resilience, improve lives, and promote economic growth.

We have the opportunity to deliver green growth by better understanding how people, businesses and institutions can adapt under a changing climate. As we transition to a low carbon future, there is an opportunity to exploit the co-benefits of climate resilient development. Alongside increasing climate resilience, we can design better environments that promote improved quality of life and facilitate new economic opportunities. There is a particular opportunity to develop a new generation of climate services. These services will exploit novel understanding, technology innovations, engineering solutions and the community and commercial behaviours that are needed to build resilient futures across the UK and internationally.

### Programme objectives

The main objective of the UK Climate Resilience Programme is to drive innovative multi and interdisciplinary research within UKRI and Met Office communities to address the aforementioned knowledge gaps. These are:

#### Characterising, quantifying and communicating climate-related risks

Climate risk is an integration of weather and climate hazards, the impacts of these hazards across the natural environment and human populations, vulnerability and exposure. For example, the impacts that a heavy rainfall event has on livelihoods, flood defences, finances and homes, businesses and civil infrastructure built on a flood plain.

The aim is to develop robust approaches, including the software tools, needed to quantify current and future risk in decision relevant metrics. This involves fundamental research challenges, including:

* end-to-end understanding of key processes and uncertainties
* understanding behavioural responses to climate risk at individual, community, regional and (inter)governmental levels
* providing climate and impacts information at relevant spatial scales
* different risk communications routes
* improving and characterising climate predictions and projections across timescales from the near-term to several decades or more in the future
* combining hazard vulnerability exposure information into risk metrics
* decision makers’ perception of risk.

#### Developing risk-informed resilience and optimise the opportunities from a transition to a low carbon future

Building a low carbon future presents opportunities to increase national resilience and provide co-benefits including improvements to wellbeing and the economy. The fundamental research needed includes:

* designing decision frameworks to balance protection, co-benefits and costs
* developing  new adaptation approaches
* promoting behaviour changes
* monitoring the effectiveness of adaptation.

#### Co-producing pilot end-to-end climate services

Climate services are at an early stage of development and new research will:

* develop novel co-production processes
* develop industry quality standards
* investigate governance approaches and design improved monitoring.

The research from this programme should add to the evidence base for the UK Climate Change Risk Assessment and the National Adaptation Programme. It should also align with the UK government’s 25 Year Environment Plan (2018), specifically the goal to reduce the risk of harm from environmental hazards and to mitigate and adapt to climate change. It will contribute to the government’s Clean Growth Strategy (2017) and support the Department for Transport’s current priorities for building resilience. It will support Public Health England’s Strategic Plan (2016) and the Animal Plant Health Agency with respect to increasing our resilience to pests and diseases with changing climate, extreme heat and the impact of flooding.

There is a need and an urgency for building resilience. It is widely recognised that the impacts of extreme weather and climate change permeate throughout society affecting lives and livelihoods.

UK flooding events in 2007 affected 55,000 homes, killed 13 people and cost the UK economy £3.2 billion. Global impacts of extreme weather events also affect the UK, for example the 2010 to 2011 increase in wheat prices following crop failures in the Black Sea region.

The situation is often exacerbated when events are compounded, for example when hot and dry summers occur at the same time and have an impact on the availability of water. As the climate warms, extreme events and the ensuing costs to society will increase.