



## Flood and Coastal Erosion Risk Management Research Programme

# Accounting for adaptive capacity in FCERM options appraisal

## Project Summary SC110001/S

### Background

Adaptive capacity is the ability to adjust to future change in order to take advantage of opportunities that arise and appropriately manage additional risks that are presented.

The Environment Agency has produced a new guide that provides tools to ensure that future flexibility is properly valued in Flood and Coastal Erosion Risk Management (FCERM) decision making and options appraisal. This will help to identify cost-effective solutions, able to cope with multiple future uncertainties. The new tools and guide will supplement existing appraisal guidance, providing practical tools that can be used to assess the value of building in future flexibility.

### Why was the study needed?

FCERM has always faced the challenge of decision making in the face of multiple uncertainties, including in the climate, the economy and society. Traditionally, these have been addressed by adopting a precautionary approach, acting as early as possible to manage potential risks, but the costs are likely to be high. However, a managed adaptive approach, which is more flexible and capable of addressing challenges and opportunities as they arise can offer advantages. The benefits can include improved resilience to negative changes (e.g. sea level rise, increases in extreme weather) and enabling opportunities to arise from positive future changes (e.g. changes in FCERM policy, improved scientific knowledge, funding increases) and more cost-effectiveness. The absence of clear methods and tools to value adaptive approaches has been recognised as an obstacle to wider adoption. This project addresses this gap by providing new tools to value the flexibility offered by adaptive approaches.

### What is in the guide?

The guide has been developed based on a wide range of evidence gathered from a literature review, case studies, expert opinions, stakeholder workshops and existing appraisal guidance. The guide includes advice on considering adaptive approaches at different stages in appraisal, including defining the problem, identifying opportunities, objective setting, objective screening and option appraisal. The practical tools in the guide include recommended approaches for constructing multiple

future scenarios, an option screening tool and a decision tree methodology. Examples of the application of these tools in simple case studies are also included.

There are two publications presenting the findings from this project. The Supplementary Appraisal Guide is aimed at practitioners, and is intended to be used alongside existing appraisal guidance to support better valuing of adaptive solutions. It provides practical advice and examples of implementing the tools developed in this project. The report explains how the guide was developed, how it has been influenced by practitioner feedback and areas for possible future development.

### What were the key findings?

Understanding and managing future uncertainty is complex. Developing the approaches to assess the value of responses to uncertainty requires a clear and structured approach.

The structured approach developed by this guide:

- supplements existing guidance, such as FCERM appraisal guidance
- improves the ability to value managed adaptive approaches in appraisal. This does not necessarily require complex analysis, but means that the realities of an uncertain future can be acknowledged and reflected in the appraisal process.

Most benefits are likely to be achieved where significant change is likely and substantial uncertainty is faced. Where the situation is more certain and damages are smaller, a detailed analysis isn't necessarily required.

### Target audience

This guide is intended to assist stakeholders, FCERM project managers, consultants and the Environment Agency in developing and appraising managed adaptive approaches.

This guide describes tools and techniques that can be applied to help value adaptability, but it is important to note it is not a compulsory element of all project appraisals. Anyone considering its use to inform the business case for FCERM investments should discuss

their plans and application of this guidance with the Environment Agency's Flood and Coastal Risk Management Risk Assessment and Investment Team for their support.

This summary relates to information from project SC110001 reported in detail in the following output(s):

**Report:** SC110001/R1

**Title:** Promoting adaptive solutions and accounting for adaptive approaches in FCERM options appraisal – supplementary guide

**Report:** SC110001/R2

**Title:** Accounting for adaptive capacity in FCERM options appraisal

**Project manager:** Daniel Hine and Paul Weller, FCRM Directorate

**Theme manager:** Sue Manson, Incident Management and Modelling

**Research Contractor:** JBA Consulting, Bank Quay House, Sankey Street, Warrington, Cheshire, WA1 1NN

### **March 2018**

This project was commissioned by the Environment Agency's FCRM Directorate, as part of the joint Flood and Coastal Erosion Risk Management Research and Development Programme.

Website: <http://evidence.environment-agency.gov.uk/FCERM/en/Default/FCRM.aspx>

Email: [fcerm.evidence@environment-agency.gov.uk](mailto:fcerm.evidence@environment-agency.gov.uk).

Enquiries: [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk).

© Environment Agency