



# Foresight Future Flooding

## Key Messages for Researchers

### The project

Sir David King, the Government's Chief Scientific Adviser and Head of the Office of Science and Technology, commissioned the Foresight Flood and Coastal Defence project to consider:

- How might the risks of flooding and coastal erosion change in the UK over the next 100 years?
- What are the best options for Government and the private sector for responding to the future challenges?

The work has been performed by a team of 60 leading experts, and constitutes the most wide-ranging analysis of the problem of increasing flood risk that has ever been made in the UK and possibly internationally.

The team developed four scenarios of the future, based on a scientific review of the key factors which will affect the risks of flooding. These scenarios embody different amounts of climate change and different socioeconomic futures for the UK.

There are two key messages. Firstly, continuing with existing policies is not an option – in virtually every scenario considered, the risks grow to unacceptable levels. Secondly, the risks need to be tackled across a broad front. Reductions in global greenhouse-gas emissions would reduce the risks substantially, however, this is unlikely to be sufficient in itself. Hard decisions need to be taken – we must either invest more in sustainable approaches to flood and coastal management or learn to live with increased flooding.

This summary draws out some of the key messages for researchers.

# Some key findings

## **The current situation**

Nearly 2 million properties in floodplains along rivers, estuaries and coasts in the UK are potentially at risk of flooding. 80,000 properties are at risk in towns and cities from flooding caused by heavy downpours that overwhelm urban drains – so-called ‘intra-urban’ flooding. In England and Wales alone, over 4 million people and properties valued at over £200 billion are at risk.

## **How flood risks might change**

If flood-management policies and expenditure continue unchanged, annual losses would increase under every scenario by the 2080s. However, the amount of that increase varies, from less than £1 billion, to around £27 billion.

## **Effectiveness of responses**

An integrated portfolio of responses could reduce the risks of river and coastal flooding from the worst scenario of £20 billion damages per year, down to around £2 billion in the 2080s. This is still double present-day damages but compares with growth in GDP of between 2 and 14 times for the scenarios considered.

If we aim to mitigate climate change as part of our strategy for managing future risk, it would make the task we face substantially easier.

## **What are the implications for science and technology?**

The project has identified areas that have the greatest bearing on future risks, but which are also the most uncertain. These fall into three broad categories:

- Reducing uncertainty in risks and responses: e.g. intra-urban precipitation; land-use planning and management.
- Strategic assessment of responses: e.g. strategic risk assessment for intra-urban flooding; evaluation of non-monetary flood damages.
- Sustainability and Governance: e.g. whole-system costs and benefits; human and ecological consequences of managed realignment and abandonment of defences.

Science and technology can best inform decisions on flood defence when the many fields of expertise work together. The Foresight project has shown the benefit in adopting such an approach.

Some of the most important issues are international in nature, and could usefully be considered in multinational research programmes. An example includes the interaction between international governance and long-term flood-risk management.

The Foresight project has produced a substantial body of new work that could usefully contribute to the global effort to understand climate change and its implications.

**Flood-risk management could benefit from developments in unrelated fields. The challenge is to connect the different areas of science with the flooding community.**

**The project successfully tested this idea by mounting a workshop on intelligent sensor networks. This identified the defence and transport sectors as leaders in the field. Flood management could potentially benefit by applying developments to the active management of urban drainage, monitoring of flood defences, and early warning systems.**

### **Key choices**

The reports include a discussion of strategic issues the UK will face including:

- Should we invest more to ensure better informed decisions on long-term flood management?
- Do we need to do more to join up different areas of science?

## Where to find more information

Key sections of interest in the project reports:

Volume 1 Chapter 9 Synthesis of results and key messages

Appendix A Drivers – catchment and coastal

Appendix B Drivers – intra-urban

Appendix D Recommendations for further work

Volume 2 Chapter 9 Strategic choices

Appendix A Summary of responses – catchment and coastal

Appendix B Summary of responses – intra-urban

Appendix D Recommendations for further work

Copies of the full reports can be downloaded or ordered from  
[www.foresight.gov.uk](http://www.foresight.gov.uk)

## Next steps

An action plan has been drawn up. This sets out how a wide range of stakeholders will take the work of the project further. The plan can be downloaded from [www.foresight.gov.uk](http://www.foresight.gov.uk)

## The Foresight Programme

Foresight runs a rolling programme of up to four projects at a time. Each produces challenging visions of the future to ensure effective strategies now. The findings of the projects do not constitute Government policy. So far, four other projects have been started. Further information can be found on the Foresight website at [www.foresight.gov.uk](http://www.foresight.gov.uk)

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