

# FLOOD MANAGEMENT IN A CHANGING CLIMATE



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**FLOODING IS AUSTRALIA'S MOST EXPENSIVE NATURAL HAZARD AND RECORD DAMAGES resulting from the 2010-11 floods reflect global trends. Climate change scenarios predict that flood intensity and frequency will increase, potentially exposing Australia to even greater damages in the future. Floods are therefore a key area for improving adaptive capacity.**

## ▶ OBJECTIVES

- ▶ This research aims to determine how best to adapt to future flood threats by analysing recent flood events and management approaches in Australia, USA, China and the Netherlands.
- What are the strengths and weaknesses of Australian flood management?
- Are our institutions able to accommodate future flood threats?
- Can we transfer innovative approaches from overseas?
- Will resilience policies lead to adaptive outcomes?

## ▶ METHODS

- ▶ Literature review
- ▶ Interviews
- ▶ Case studies

## ▶ PRELIMINARY FINDINGS

### Is Australian flood management effective?

Prevention is a priority for adaptation in Australia, including land use controls and relocation (IPCC 2014).

Australia continues to develop flood prone areas; multiple conditions and exemptions hamper application of development legislation and planning provisions.

Development tools, such as DFL, do not incorporate anticipated future risks.

National recovery arrangements are insufficient and expose Australia to repeat damage costs.

Funding for mitigation is minimal.

### Bad decisions are hard to reverse!



### Should we put in more dams and flood levees?

Structural mitigation can reduce exposure to low and medium sized floods. However, it increases vulnerability to major floods. Levees and dams facilitate ongoing development of flood prone land, exposing more assets to risk. Levees also increase erosion and the severity of flooding elsewhere in the catchment. This impacts other communities, drinking water quality, riparian and marine ecosystems and natural resource dependent industries.

*Recent floods have resulted in a push for more flood levees.*

### Is community resilience the answer?

Recent floods demonstrate that the capacity of emergency services is stretched in a major flood event. Increasing community self-reliance is therefore a sensible adaptation measure if it can be achieved. However disadvantaged groups have limited financial means to implement prevention or to recover.

*Risk awareness is no substitute for effective flood development controls.*

### What about flood response?

Reviews recommend improving flood warning systems, especially for flash flood, and greater interoperability between response agencies. Joined-up capacity is a logical solution for coping with major disasters. However 'all hazards, all agencies' has been an Australian policy objective since 1989 and reviews make it clear that this has not yet been achieved.

*Prevention is better than cure.*

### What are they doing overseas?

The Netherlands, the USA and China rely on traditional mitigation, such as levees and channel modification. Recent exceptional floods have prompted countries to reassess their approach to flooding. They believe levees will be insufficient to address future threats. Reviews also highlight high maintenance, administrative and external costs. These countries are strengthening strategic levees, but they are also trying to reduce their reliance on them. Examples include:

- Removal or re-alignment of levees to increase floodplain area;
- Reversal of past land reclamation using relocation, property elevation and flood-compatible land use;
- Restoration and reconnection of wetlands and river channels to provide natural flood storage;
- Integrated water resource mgmt.

*Research is investigating the transfer of adaptive approaches to Australia.*

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Floods don't have to be disasters: urban planning in Canberra

