VULNERABILITIES AND URBAN FLOOD MANAGEMENT: Lessons from Australia

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1. Introduction and Australian Context
“I love a sunburnt country,
A land of sweeping plains,
Of ragged mountain ranges,
Of droughts and flooding rains”

*Dorothea Mackellar “Australia”, 1909*

Source: The Telegraph 2009

Source: Mail Online 2013
Australia faces a range of natural hazards impacting on urban areas (e.g. severe bushfires where there are dry hot summers; severe flooding with warm wet summers and cyclones)

- Australia 87% urban, and most cities on rivers near the coast
- Relatively small river catchments so floods from intense, local rainfall and small number of local authorities to coordinate

Brisbane floods, January, 2011 (Courier Mail)
Rainfall near Brisbane January 10th, 2011, for January 2011 floods

http://earthobservatory.nasa.gov/IOTD/view.php?id=48521&src=eoa-iotd
- Federal system of government
- Urban flood management State (and local government) responsibility and no single national urban flood management plan
- But national guidelines agreed by the Council of Australian Governments *National Strategy for Disaster Resilience* (COAG 2011)
- Natural Disaster Relief and Recovery Arrangements funds from National government (up to 75%), rest from States and local governments (Disaster Assist 2013)
- Approaches are different in each State – here Queensland and New South Wales

Source:
http://www.escapeartist.com/Live_In_Australia/Map_Of_Australia/
• Assumptions:
  • Explore Australian (Queensland) experience that may be useful elsewhere
  • Climate change: more frequent, more intense events, but on top of the serious floods we now face
National Strategy for Disaster Resilience (COAG 2011) identifies seven priority areas (three especially relevant to managing urban floods):

1. Leading change and coordinating effort between governments, NGOs and businesses
2. Understanding risks: risk assessments with consistent methodologies and data frameworks and good information
3. Communicating with and educating people about risks
4. Linking policy, research and operational expertise
5. Empowering individuals and communities to exercise choice and take responsibility
6. Reducing risks in the built environment: translating knowledge into relevant controls and planning approaches.
7. Supporting capabilities for disaster resilience
2. Priority Challenges
Understanding Risk

- Knowledge: Mapping of floodplains, modelling floods, knowing flow characteristics – National Flood Risk Information Program from 2012
- Identifying vulnerability and the way it is changing -- demographic characteristics and demographic forecasts, mapping infrastructure, using GIS and satellite imagery
- Understanding urban growth and change
- Communicating risk to communities
Linking Research, Policy and Expertise

- Policy actions flow from clear prioritisation (QRA 2011)
- Planning for future, linking flood expertise with land use planning expertise
- Research on benefits and costs, impacts, effectiveness
- Understanding policy on funding priorities ........
For example in PPRR cycle, most attention to ‘response’ and ‘recovery’, not to ‘prevention’ or ‘preparation’

Commonwealth Expenditure on NDRRA vs Mitigation and Resilience (Source: QRA 2012, Figure 7, p. 20)
Built Environment Vulnerability

- Urban flood management must deal with:
  - Managing impacts in already vulnerable areas
  - Reducing impacts on future development
3. Current and Future Strategies
Understanding Risk

- National Flood Risk Advisory Group made up of all three levels of government, insurance industry, building regulators, emergency services and researchers
- Queensland Reconstruction Authority mapping at local government level to prioritise risk (QRA 2011)
Linking Research, Policy and Expertise

- Many researchers (e.g. Biggs 2002; Childs et al. 2010)
- Advice based on research (SCARM 2000)
- Investigation of recent floods (Queensland Flood Commission of Inquiry 2011)
- Evaluation of past efforts (QRA 2012; Thomas et al. 2011; World Bank 2011, Molino Stewart 2012)
For example, understanding benefits and costs of actions taken (Charleville levee built in 2005 after 1997 floods)

Estimate of Affected Properties in Charleville With and Without Levee in 2012 (Source: QRA 2012, Figure 6, p. 9)
Charleville levee in 2012
(http://www.abc.net.au/news/2012-02-04/flood-levee-in-charleville/3811608)
Built Environment: Existing areas

- Coordination of managing floodplains that affect urban areas, such as Hawkesbury-Nepean Rivers floodplain management strategy (H-NFMAC 1997)
- Building regulations after floods – Brisbane Temporary Planning Instrument allowing houses to be raised
- Engineering solutions such as levees (QRA 2012)
• Removal of vulnerable communities or houses
  • Number of examples in NSW in the 19th century (e.g. Gundagai, 1852) (Keys 2008)
  • Grantham in SEQ in 2011
  • Now being more openly discussed in Queensland (e.g. North Bundaberg in 2013)
  • Problems of cost of compensation, plus social costs
• Other non-structural solutions (changing land use, etc) (Lord Mayors Task Force on Suburban Flooding 2005) (see also Andjelkovic 2001)
Built Environment: Future

- State Planning Policy 1/03 (Queensland) – inclusion of flood hazards in town planning schemes
- Identifying priorities: fit-for-purpose floodplain management (QRA 2011a, b)
- National guidelines for disasters but implemented through States
- Using NDRRA funds to improve not just replace infrastructure
4. Summary
• Challenges:
  • Understanding and communicating risk
  • Linking flood management to other relevant expertise, such as demography, land use planning
  • Dealing with existing as well as future urban conditions

• Current and future actions:
  • National funding and guidelines but State initiatives, even for identifying risk
  • Many research and policy initiatives, but should include better evaluation of past policies and initiatives
  • Planning for new land development is improving but gap in dealing with existing vulnerable areas
  • Build a better future not just restore the past
Thank You

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References and Reports


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