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The impact of climate change on insuring flood risk

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Introduction

- Background on climate change
- Countering the risk of flooding
- Insurance cover in UK, USA and Australia
- Changes in Australian flood risk
- Progress in Australia
- Conclusions
- Discussion



Background on climate change

- Global warming first noted in 1896
- 1930s – just part of a natural cycle?
- 1950s – increased funding and research
- 1960s – no action needed?
- 1970s – scientists start to issue warnings
- 1988 – widespread public attention starts
- Last 20 years – increasing profile
- How vulnerable is Australia?



Types of flooding

- River flooding
- Storm surge
- Tsunami
- Flash flood
- Groundwater
- Dam burst
- Mudflow
- Ice jam

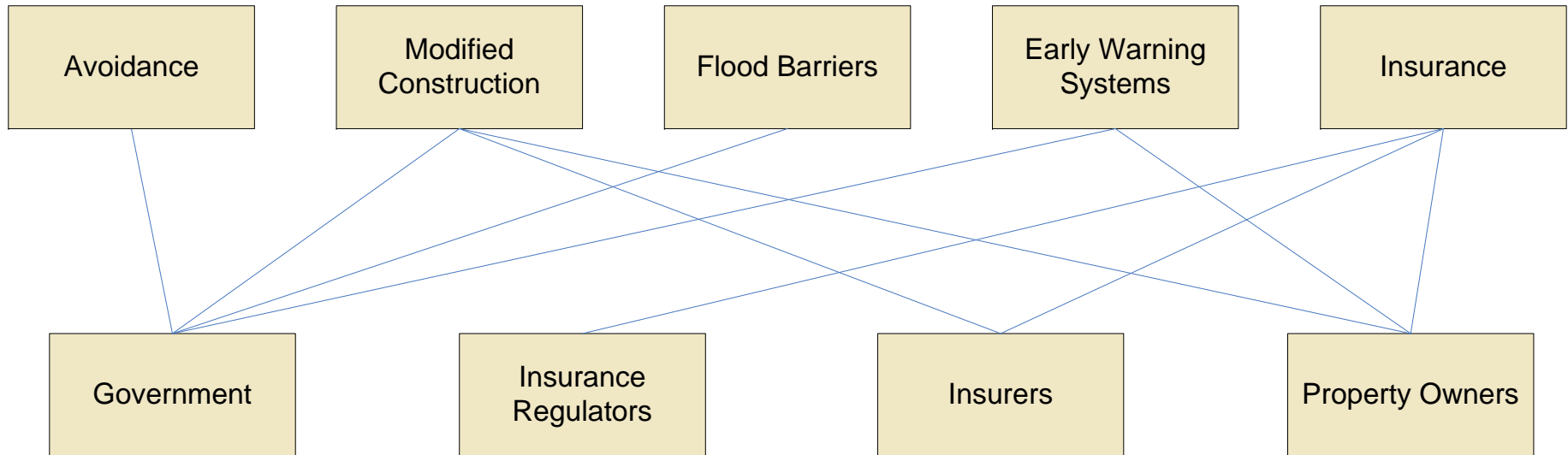


Countering the risk of flooding

- Methods of minimising flood risk:
 - Avoiding development in areas at risk
 - Modifying construction and design
 - Flood barriers
 - Early warning systems
 - Insurance
- Responsibilities:
 - Government/State
 - Insurance regulators
 - Insurers
 - Property owners



Mapping responsibilities





Are floods an insurable risk?

- Mutuality
- Need
- Accessibility
- Randomness
- Economic viability
- Similarity of threat



Insurance Cover in the UK

- Only private insurers provide flood cover
- There is no state insurance
- Cover is generally included in homeowners & household contents policies
- Premium rates are broken down by postcode
- Deductibles are widespread but typically very low
- Industrial cover includes business interruption
- Insurance penetration is high



UK Floods – July 2007

- Widespread flooding across the UK
- £3bn of damage
- Over 320% of expected rainfall in some areas
- Additional expenditure on flood defences required
- Building on flood plains
- EU assistance



Insurance Cover in USA

- NFIP provides basic cover & is the only federal insurance scheme for national disasters
- Additional cover is provided through private insurers
- Insurance penetration for household risks is low
- Insurance penetration for industrial risks is high



Hurricane Katrina – Month 2005

- Litigation centres on 2 issues
- Are insurers are liable for flood damage when levees fail?
- Proposed flood insurance reform
- Increased numbers buying flood insurance



Insurance Cover in Australia

- Most insurers do not provide household flood cover
- Cover may be provided under business a policy
- Some state insurers provide household flood cover
- Disaster aid compensation
- Flood relief money
- Insurance penetration is very low



NSW floods – June 2007

- 8 to 11 June 2007
- Hunter Region & Central Coast
- Heavy rainfall
- 63,000 claims
- Insurance costs > \$750m
- 20% of people affected had no insurance cover



Measuring floods

- Average Recurrence Interval (ARI)
- Annual Exceedance Probability (AEP)

$$AEP = 1 - \exp\left(\frac{-1}{ARI}\right)$$

ARI (years)	1	2	5	10	20	50	100
AEP	0.632	0.393	0.181	0.095	0.049	0.020	0.010

Source: Australian Government Bureau of Meteorology



Economic cost of flood

The cost of direct flood damage, Hawkesbury-Nepean corridor

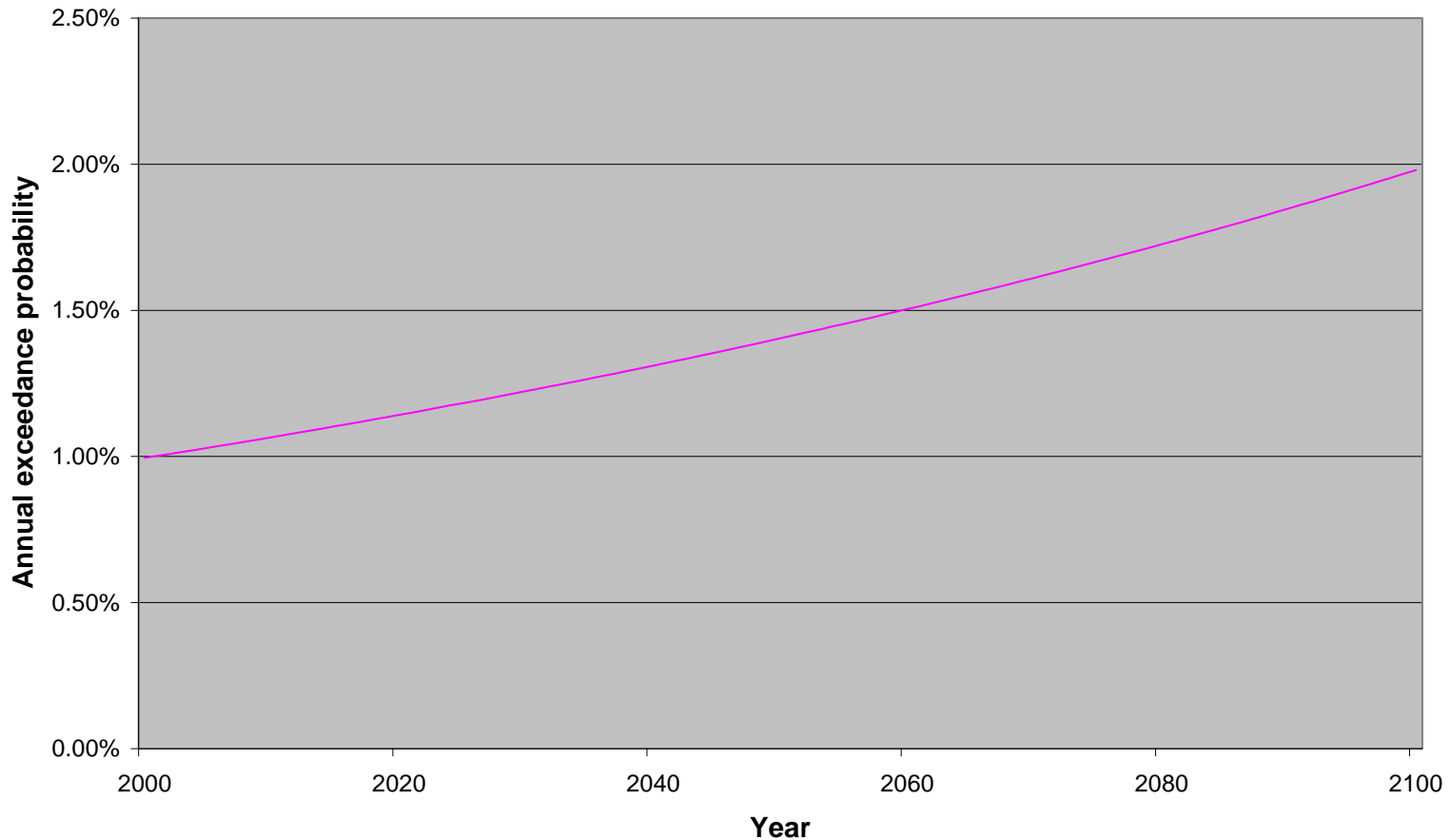
Current return period (years)	Future return period (years)	Residential damage (\$m)	Commercial damage (\$m)	Total damage (\$m)
20	7	8.05	4.43	12.48
100	25	19.34	8.27	27.61
200	50	87.22	54.49	141.71
1,000	250	360.89	247.54	608.43
10,000	2,500	475.21	433.92	909.13

Source: (Department of Environment & Climate Change NSW)



Increase in floods

Projected increase in Annual Exceedance Probability (AEP)

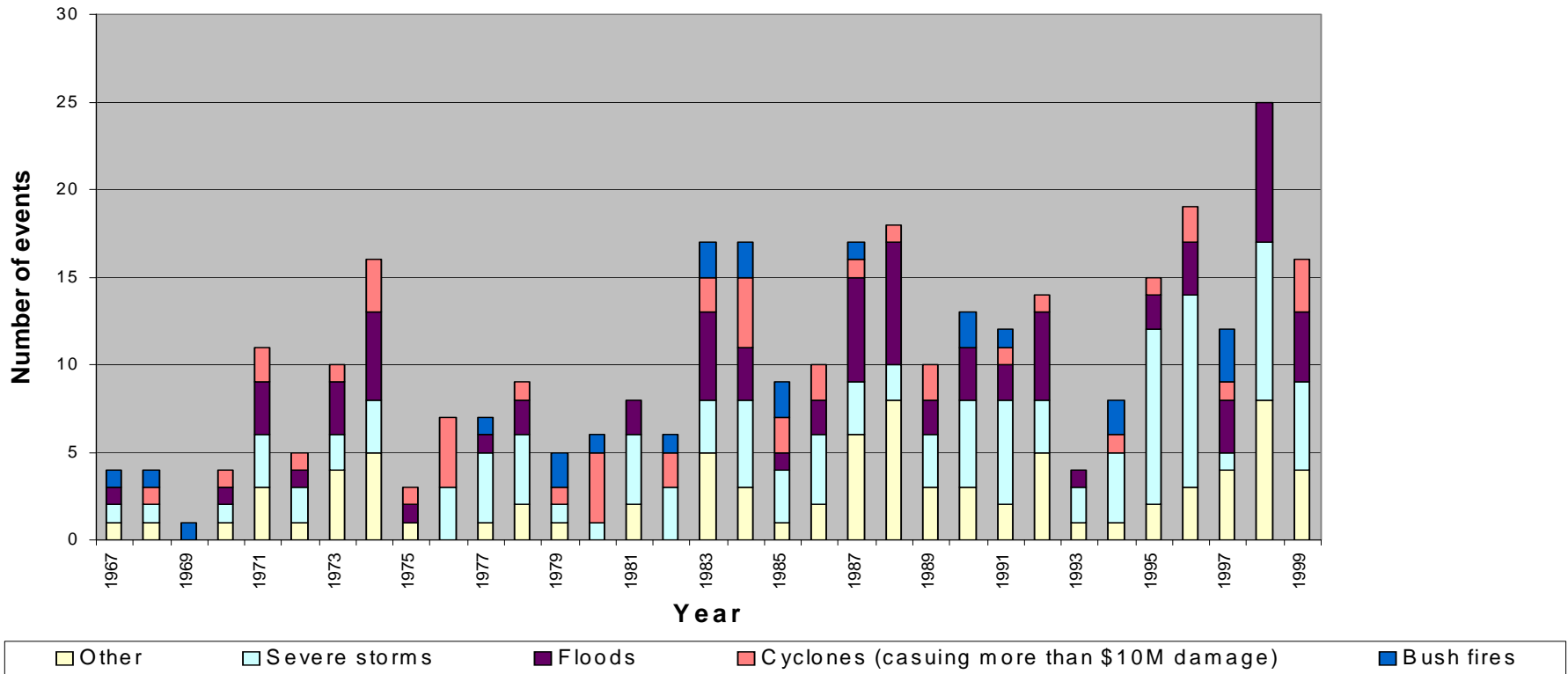


Source: Australian Government Bureau of Meteorology projection



Increasing number of events

Number of natural disasters in Australia, 1967-1999



Source: Bureau of Transport and Regional Economics



Conclusions

- Actions are required from:
 - Governments
 - Insurance regulators
 - Insurers
 - Property owners



Discussion

- Is consistent flood mapping in Australia important?
- Is a minimum standard definition of flood in Australia a good idea?
- Is further research on climate change and loss modelling needed?
- Should properties be upgraded to resist flood?
- Should emissions believed to cause climate change be curbed?