



Australian  
National  
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# Who Pays for Disasters and How?

## Setting the Scene for Research and Action

*Findings from ANU Disaster Finance and Insurance Research  
Roundtable and Update*

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Head of Disaster Solutions

**ANU Institute for Climate Energy and Disaster Solutions**

## Roundtable Participants

Australian Reinsurance Pool Corporation  
Climate-KIC Australia  
Commonwealth Department of Prime Minister and Cabinet  
Commonwealth Department of Treasury  
Financial Counselling Victoria  
Finity Consulting  
Insurance Council of Australia  
Investor Group on Climate Change  
Landscape Finance Lab  
National Australia Bank  
National Emergency Management Agency  
Natural Hazards Research Australia  
NRMA Insurance  
NSW Reconstruction Authority  
QLD Reconstruction Authority  
Resilient Building Council  
Resilient Ready  
Suncorp  
Swiss Re  
The Australian National University  
The University of Melbourne  
The University of New South Wales  
The University of Queensland

## Sponsor

The ANU Disaster Finance and Insurance Research Roundtable was presented on Tuesday 6 August with generous support from Natural Hazards Research Australia.



## A Call to Action

The ANU Disaster Solutions Update and Roundtable 2024 convened a diverse group of experts from government, academia, and the insurance and finance industries to address the pressing challenges of financing disaster resilience, insurance, and climate adaptation. The event underscored the growing urgency for Australia to strengthen its disaster resilience in response to increasingly frequent and severe natural disasters. The discussions highlighted the complex interplay between climate change, insurance costs, finance and community resilience, with a focus on developing innovative solutions and fostering public-private collaboration to mitigate risks and protect vulnerable communities. Addressing these challenges requires a multi-faceted approach involving improved resilience, ecosystem restoration, innovative research, transformational solutions, bridging the insurance gap and decisive government action. Current disaster-related costs far outweigh investment. Investing in these areas now provides us with the necessary options to reduce the devastating human and economic costs of future disasters. However, the question of who ultimately pays and how remains a complex and contentious issue that society must urgently grapple with as the impacts of climate change intensify.

*To address this burning question the Roundtable had two main goals, to identify and discuss:*

1. The key challenges regarding funding for resilience, recovery and insurance for disaster events in Australia.
2. Research to address challenges in financing disaster resilience and providing insurance affordability.

The participants of the Roundtable identified three major research priorities to address these goals:

- How can we change the land use and building code policy framework to reflect a changing climate?
- How can we make insurance a form of climate adaptation?
- How can we decide who acts when, balancing urgent needs against future gains, given limited information?

Enabling research priorities were also identified to support overall progress in addressing all three challenges and opportunities by providing essential tools and frameworks:

- Integrated dynamic risk mapping.
- Cost-benefit analysis of adaptive measures.

- Governance frameworks to clarify responsibilities.

These priorities form a blueprint for research to ensure a resilient and sustainable future for Australia.

## Disaster Solutions Update 2024

### *Symposium on ANU Disaster Finance and Insurance Research*

#### Keynote Address by The Hon Stephen Jones MP

In his keynote address, The Hon Stephen Jones MP, Assistant Treasurer and Minister for Financial Services, laid out the Australian Government's approach to tackling the significant challenges facing the insurance sector, particularly in relation to natural hazards and climate change. He described the current situation as a "perfect storm," driven by global reinsurance pressures, rising domestic costs, continued development in high-risk areas, and the immediate impacts of climate change.

The Minister emphasised that the burden of these challenges often falls disproportionately on vulnerable and lower-income communities, particularly those living in regions most susceptible to natural hazards. He highlighted the Government's strategy of focusing on long-term risk mitigation and resilience-building rather than relying on short-term subsidies, which can mask the true risks. The Minister called for a coordinated whole-of-government approach to improve disaster resilience and reduce risks, stressing the need for informed public debate to shape effective public policy. He also underscored the importance of rewarding risk reduction efforts at the household level to make insurance more affordable and to incentivise broader participation in resilience-building activities.

#### *Key Messages from The Hon Stephen Jones MP's presentation:*

- Australia is currently facing a "perfect storm" due to global and domestic pressures affecting the insurance market.
- Vulnerable and lower-income communities are disproportionately affected by rising insurance costs and increased disaster risk.
- The government is committed to long-term risk mitigation and resilience-building over short-term subsidies that can obscure true risks.
- A coordinated whole-of-government approach is essential to effectively address these challenges.

- Public policy must be informed by a clear understanding of risks and drivers, and efforts to reduce risks at the household level should be incentivised.

## Session One: Funding a resilient Australia

### Challenges, Changes, Choices

#### **Brendan Moon AM, Coordinator-General of Emergency Management**

The Coordinator-General highlighted the increasing frequency and severity of natural disasters in Australia, attributing this trend to the compounded effects of climate change. He emphasised that national-scale crises are no longer rare but have become regular occurrences, necessitating a more proactive approach to building resilience. Moon argued that resilience-building requires a comprehensive and balanced approach to disaster funding, one that includes both recovery and risk reduction investments. He refuted outdated statistics on disaster funding that underestimate the recent progress made in resilience investments. He also stressed the importance of preparing for future challenges by modifying the systems and structures currently in place.

#### *Key Messages from Brendan Moon AM's presentation:*

- Australia is experiencing an increase in the frequency and severity of natural disasters, driven by climate change.
- National-scale crises are now regular occurrences, requiring a shift in how resilience is built and funded.
- A balanced approach to disaster funding is essential, incorporating both recovery and risk reduction investments.
- Outdated statistics should not hinder recognition of the recent significant progress made in resilience investments.
- The systems and structures for disaster management need to evolve to address future challenges effectively.

### Transformational Disaster Solutions

#### **Associate Professor Roslyn Prinsley, Head of Disaster Solutions, The Australian National University**

Associate Professor Roslyn Prinsley emphasised the immense and growing costs of disasters. The cumulative cost of natural disasters to the Australian economy is

expected to be at least \$1.35 trillion in present value terms; while by 2030, we expect that riverine flooding will result in around one in 25 homes across Australia becoming uninsurable, amounting to \$414.5b. A/Prof Prinsley explained that climate change is outpacing our ability to adapt. Australia is facing a severe shortfall in funding for recovery efforts and risk mitigation. Government resources are increasingly strained, unable to meet growing demands. The gap in insurance protection is widening, leaving more people vulnerable. Our current approaches often address symptoms, not root causes, of disaster risk.

A/Prof Prinsley focused on the necessity of developing transformational solutions to mitigate the escalating human, economic, and environmental costs associated with climate-fueled disasters. She introduced five key transformational solutions being developed at ANU, which include stopping catastrophic bushfires and cyclones, nature-based flood mitigation, relocating at-risk communities, and building human capacity through citizen science. A/Prof Prinsley advocated for urgent coordinated action across sectors and called for the establishment of a National Innovation Fund for transformational disaster solutions - as well as other four funding initiatives to complement existing programs. She contended that these innovative approaches are critical to effectively combating the rapidly rising costs and impacts of natural disasters.

*Key Messages from Associate Professor Roslyn Prinsley's presentation:*

- Transformational solutions are essential to address the growing risks and costs associated with climate-fueled disasters.
- ANU is at the forefront of developing innovative solutions, such as stopping catastrophic bushfires and cyclones and using nature-based approaches for flood mitigation.
- A National Innovation Fund for disaster solutions is needed to support, incubate and scale these transformational approaches.
- Coordinated action across sectors is critical to implementing effective disaster solutions.
- Climate change is rapidly outpacing Australia's ability to adapt, making immediate and innovative responses necessary.

## Funding for resilience

### **Kate Simmonds, Investor Group on Climate Change (IGCC)**

Kate Simmonds discussed the critical role of institutional investors in funding resilience and adaptation initiatives in response to climate change. Simmonds outlined that the

IGCC, a collaboration of over 100 institutional investors from Australia and New Zealand managing approximately \$35 trillion in assets globally, is focused on accelerating investments toward a net-zero and resilient economy. She highlighted the significant opportunities for private capital investment in adaptation projects, despite uncertainties about what qualifies as adaptation. Simmonds emphasised that adaptation presents significant investment opportunities. Institutional investors have large amounts of capital that can be deployed upfront to fund adaptation projects, which can be paid back over time with interest. Private finance can also play a crucial role in spreading risk across time and space, promoting competition, innovation, and efficiency. Simmonds emphasised the need for a clear framework to guide investment decisions and stressed the importance of public-private collaboration in addressing the systemic nature of climate adaptation. She also noted the growing interest among investors in adaptation and resilience, evidenced by recent initiatives and surveys conducted by the IGCC.

*Key Messages from Kate Simmonds' presentation:*

- Climate adaptation presents significant opportunities for institutional investors, but clear frameworks are needed to guide investment decisions.
- Private capital can play a crucial role in funding resilience and adaptation projects, provided there is clarity on what qualifies as adaptation.
- Public-private collaboration is essential to address the systemic and complex nature of climate adaptation.
- Interest in climate adaptation and resilience is growing among investors, as reflected in recent surveys and initiatives by the IGCC.
- A holistic approach is needed to integrate physical risk and resilience into existing climate change activities.

## Session Two: Closing the insurance protection gap

The insurance protection gap: a global crisis

**Andrew Hall, Insurance Council of Australia**

Andrew Hall addressed the pressing challenges facing the insurance industry in the context of increasing natural disasters and climate change. He highlighted the global insurance protection gap, where the risks posed by natural disasters are outpacing the capacity of insurance systems to cover them. Hall stressed the importance of maintaining a sustainable private insurance market in Australia, noting that rising costs and the increasing frequency of disasters are putting significant pressure on the

industry. He called for stronger building codes, smarter land use planning, and coordinated efforts to build resilience and avoid repeating past mistakes. Hall also emphasised the need for policy changes to support the insurance industry's sustainability and help close the insurance protection gap.

*Key Messages from Andrew Hall's presentation:*

- The global insurance protection gap is widening due to the escalating frequency and severity of natural disasters.
- Australia's private insurance market is under significant strain from rising costs of reinsurance and increased disaster risks.
- Stronger building codes and smarter land use planning are essential to enhance resilience and reduce risks.
- Coordinated efforts across sectors are needed to address the challenges facing the insurance industry and to prevent repeating past mistakes.
- Policy changes are necessary to support the sustainability of the insurance market and to close the protection gap.

Protection gap entities: Moral hazard or risk reduction opportunity?

**Professor Paula Jarzabkowski, University of Queensland**

Professor Jarzabkowski explained that approximately one in eight homes are either uninsured or self-insured, with many more being underinsured. These statistics underscore the urgent need for innovative solutions to address the widening insurance gap. Insurance is an essential tool for financial protection and risk management. However, as climate change continues to escalate the frequency and intensity of natural disasters, traditional insurance models are struggling to keep pace. To address these challenges, Professor Jarzabkowski explained that it is imperative to explore public-private mechanisms. When certain risks become uninsurable in the private sector, governments can step in to create insurance or reinsurance protection gap entities (PGEs), specifically focused on the disaster component. These PGEs should be viewed not just as financial instruments, but as risk reduction opportunities that can:

- Integrate disaster response to contain losses
- Incorporate improved design infrastructure
- Implement enhanced construction standards
- Integrate comprehensive risk mapping and data
- Align with and inform land-use planning



The goal in this evolving landscape is to transform insurance into a means of climate adaptation. This approach would not only provide financial protection but also incentivise and support adaptive measures to mitigate the impacts of climate change.

Professor Jarzabkowski emphasised the importance of PGEs in ensuring that insurance remains accessible, particularly for those in disaster-prone regions. She argued for an integrated risk management system that combines prevention, intervention, and insurance to reduce disaster risks and enhance recovery. She called for a joined-up government framework to support long-term resilience and climate adaptation, ensuring that insurance continues to play a vital role in disaster recovery.

*Key Messages from Professor Paula Jarzabkowski's presentation:*

- Disaster insurance is in crisis, with affordability and availability becoming increasingly challenging, particularly in high-risk areas.
- Insurance plays a critical role in disaster recovery, and innovative solutions are needed to ensure its continued effectiveness.
- By leveraging public-private partnerships, embracing innovative models like PGEs, and reframing insurance as a tool for climate adaptation, we can work towards closing the insurance gap and building a more resilient future.
- This holistic approach will require collaboration across sectors, investment in data and technology, and a commitment to long-term sustainability.
- Addressing these insurance challenges is not just about financial protection, but about safeguarding communities and adapting to our changing climate.

Associate Professor Caroline Schuster, The Australian National University

**Social impacts of alternative insurance approaches**

Associate Professor Carolyn Schuster discussed the challenges and opportunities of microinsurance in low-income communities, particularly in the context of climate change. She highlighted the potential of microinsurance to support vulnerable communities but cautioned that it can exacerbate existing inequalities if not carefully managed. A/Prof Schuster emphasized the importance of integrating informal insurance mechanisms with formal insurance solutions to build resilience in these communities. She also called for a holistic approach to disaster risk management that considers social and cultural impacts alongside technical solutions, ensuring that insurance products are equitable and effective in the long term.

*Key Messages from Associate Professor Caroline Schuster's presentation:*

- Microinsurance has the potential to support vulnerable communities but can exacerbate inequalities if not carefully managed.
- Integrating informal insurance mechanisms with formal solutions is essential for building resilience in low-income communities.
- A holistic approach to disaster risk management is necessary, considering both social and cultural impacts alongside technical solutions.
- Insurance products must be designed with equity in mind to avoid reinforcing existing social inequalities.
- Further research is needed to understand the broader impacts of microinsurance and to develop strategies that ensure it supports long-term resilience.

# Disaster Finance and Insurance Research Roundtable

*Who Pays for Disasters and How?*

**Introduced and convened by Associate Professor Roslyn Prinsley, The Australian National University**

## Aims of the Roundtable

The Roundtable had two main goals, to identify and discuss:

1. What are the key challenges regarding funding for resilience, recovery and insurance for disaster events in Australia
2. Do you have suggestions for research to address challenges in financing disaster resilience and providing insurance affordability

To set the scene for discussion in Session 1, three speakers were invited to provide challenges and opportunities from their experience.

## Session 1: Innovation in Industry and Research

**A triple threat: Financially stressed households, greater climate risk and rising costs of insurance: Challenges and Solutions**

**Dr Antonia Settle, The University of Melbourne**

The insurance landscape is rapidly evolving in response to climate change, presenting new challenges for both policyholders and insurers. This section combines insights from recent field research with financial counsellors working with flood-impacted households in Victoria, Australia, following the 2022 floods, and broader policy considerations to address the growing insurance crisis. This research was supported by the Victorian State Government and Financial Counselling Victoria.

The insurance system is under significant strain due to the increasing frequency and severity of climate-related disasters. This pressure manifests in several interconnected ways:

**Rising Premiums and Decreased Coverage:** The escalating cost of disasters is driving up insurance premiums. In response, many households are opting for cheaper policies

with reduced coverage, leading to a rise in uninsured or underinsured properties. Often, policyholders are unaware of the extent of their underinsurance until disaster strikes.

**Operational and Product Design Issues:** The insurance industry is struggling to adapt to the new reality of frequent, large-scale disasters. Operational challenges include the need to rapidly scale up staffing during crises. Additionally, traditional insurance products, such as sum insured policies, are often ill-suited to the realities of disaster recovery, failing to account for factors like higher building standards in reconstruction.

**Trust and Efficiency Concerns:** The misalignment between insurance products and disaster realities is often perceived by households as incompetence on the part of insurers and regulators. This erosion of trust, coupled with prolonged claim resolution times, creates significant stress for policyholders, especially given the critical role of home ownership in long-term economic security.

**The Cash Settlement Problem:** Increasingly, insurers are resorting to cash settlements to resolve claims. However, these settlements often result in net financial losses for households, as the provided funds are frequently insufficient to cover the full cost of repairs or rebuilding, particularly when considering improved resilience measures.

*To address these challenges, several policy proposals have been developed:*

- **Flexible Rebuilds and Repairs:** Modify sum insured policies to allow for flexibility in rebuilding or repairing homes. This could enable households to incorporate resilience measures or energy efficiency improvements, even if it means slightly reducing the overall size or scope of the rebuild.
- **Building Back Better Allowance:** Establish a mandatory allowance in all insurance policies for incorporating resilience and efficiency improvements during rebuilds and repairs. This approach would help address long-term risk exposure and align with broader goals of improved land-use planning and building codes.
- **Enhanced Training for Loss Adjusters:** Provide specialised training to loss adjusters, enabling them to assess opportunities for resilience and efficiency improvements during the claims process. This would help ensure that rebuilding efforts contribute to long-term risk reduction.
- **Improving ESG Performance:** Recognise that the current insurance system is underperforming on Environmental, Social, and Governance (ESG) criteria by not adequately supporting households in improving resilience and efficiency.

As climate change continues to reshape the risk landscape, the insurance industry must evolve to meet new challenges. This evolution requires a multifaceted approach, combining product innovation, operational improvements, and policy interventions. By addressing issues of affordability, coverage adequacy, and the incorporation of resilience measures, the insurance sector can better serve its crucial public policy role in a climate-affected world. Collaboration between insurers, policymakers, and communities will be essential in developing and implementing these solutions, ensuring a more resilient and sustainable future for all stakeholders.

## Demographics, Development and Disasters: Threats to the financial system from government policy and climate change

### Rade Musulin, Finity Consulting

There has been much to learn from the United States' experience with excessive development in high-risk areas that was enabled by underpriced insurance. This has created vulnerabilities for both property owners and economic systems. These insights are crucial for informing future policy decisions and risk management strategies in the face of growing environmental challenges and population pressures. A key lesson is that public policies, even when well-intentioned, can have significant and sometimes unintended consequences.

The growing population in the United States, combined with increasing wealth and more extreme weather, poses a significant threat to government finances and the broader financial system. This threat is exacerbated when insurance prices are below cost either due to direct price regulation or subsidies delivered by government pools, leading to two critical issues:

1. **Insurance supply shortages:** When insurers cannot charge rates commensurate with the actual risk, they may withdraw from high-risk markets, leaving property owners without adequate coverage and prompting governments to fill the gap with pools financed by debt and/or assessments on low-risk policyholders.
2. **Poor risk signals to consumers:** Artificially low insurance rates fail to communicate the true level of risk to property owners, potentially encouraging development and habitation in hazardous areas and/or inadequate investment in loss mitigation.

To address these challenges, it is crucial that policies promoting insurance availability and affordability are accompanied by strong land use planning and rigorous building codes. This integrated approach can help mitigate the risk of larger future losses by discouraging development in high-risk areas and ensuring that structures built in potentially hazardous locations are more resilient.

Furthermore, as the impacts of climate change materialise, it becomes increasingly important that land use policies and building codes are future-proofed. This includes considering both current risk levels and the potential for future changes in climate, including its impact on different geographical areas.

The U.S. experience underscores the importance of a holistic approach to risk management that encompasses insurance pricing, land use planning, and building regulations to create more resilient and sustainable communities in the face of climate change.

*Questions to be considered in Australia include:*

- How can we change the land use and building code policy framework to reflect a changing climate, which requires thinking in 100-year timeframes with non-static risk?
- How can we balance promoting affordability and sending risk signals?
- What can be done about existing properties in high-risk areas?
- What is the appropriate balance between cost today and benefit tomorrow?

## **New Technologies: New Technologies Reducing Insurance and Finance Costs**

### **Kate Cotter, Resilient Building Council**

In the face of increasing climate-related risks, innovative technologies are emerging as powerful tools to help individuals and communities adapt while simultaneously reducing insurance and finance costs. Kate outlined the Resilient Building Council's recent technological developments aimed at empowering citizens, improving risk assessment, and fostering resilience in the built environment. A pioneering Self-Assessment App has been developed, offering remote or onsite rating certification. This tool provides valuable as-built property data and shows potential for Artificial Intelligence (AI) technology integration to enhance self-assessment and certification processes. The App empowers citizens by putting assessment tools directly in their hands, ensuring national consistency in assessment methods. By providing correct market signals, it incentivises action in high-risk areas. Furthermore, the app enables assessment, verification, and measurement of residual risk, allowing for more nuanced insurance pricing recognition.

A Multihazard and Energy Onsite Expert Assessor Tool has also been developed to provide comprehensive risk assessment. The next phase of the project includes assessor and building industry training, and in engaging with households facing

insurance affordability stress. Importantly, it provides crucial data for insurance pricing integration.

These innovations allow for the construction of building-specific, component-level probabilistic models and the rating of implementable resilience actions. The scale of risk reduction achievable through these tools is expected to increase with further integration with insurance, real estate, and finance sectors.

The next phase of technological development aims to extend the free self-assessment app to include floods, storms, cyclones, and heatwaves. There are also plans to develop and pilot a community resilience ratings method. Efforts will be made to build industry training programs, develop building design codes for retrofits and new buildings, and work with states to develop onsite assessment grants.

Several key needs have been identified to maximise the impact of these technologies. Risk mitigation should be rewarded through premium discounts, and resilience and energy ratings need to be integrated. There is a need to demonstrate to reinsurers that these reforms position Australia more favourably in terms of risk mitigation. The ability to innovate, learn from failures, and scale successful initiatives is crucial. Risk mapping, engagement, and integrated policies require further attention and investment.

#### *Challenges in acceleration of risk reduction action and investment*

- Time – increasing insurance unaffordability, damage & loss, requires urgency, willingness to innovate, fail, scale
- Lack of nationally consistent, asset-level, forward looking risk mapping. Accompany with targets, action plans & solutions to address risks
- Engagement – need to win hearts & minds of individual households, cost-benefit for builders, developers, regulators, all-systems (big) task
- Integrated climate mitigation & adaptation systems, policies, investment, taxonomies to attract global capital for AU risk reduction

#### *Opportunities in acceleration of risk reduction action and investment*

- Lowest cost intervention: land use/new builds, repairs & re-builds, planned renovations
- R&D investment – resilient, low carbon systems & materials, testing & solutions, tech, AU could lead & export
- Adaptation creates new markets – finance, insurance, construction, tech, innovation

- Putting power in people's hands, all-hazards, all building types, demonstrated demand & private investment
- Everyone wins from risk reduction. Government can set high standard for public investment such as social housing, enables market & ecosystem to scale

## Session 2: Challenge and Opportunities

**Chaired by Associate Professor Roslyn Prinsley, The Australian National University**

The following Challenges and Opportunities were synthesised from both a survey of Roundtable participants and the presentations above.

- How can we change the land use and building code policy framework to reflect a changing climate?
- How can we make insurance a form of climate adaptation (not just BAU)?
- How can we decide who acts when, balancing urgent needs against future gains, given limited information?

Roundtable participants agreed that it is imperative to address the intergenerational scale of risk reduction and who pays for the future benefit. While insurance plays an important role, so does government and the finance sector. Due to the uncertainty of the impacts of climate change and disasters, we could spend a generation getting it right. Nevertheless, it was agreed that this is urgent and that it is necessary to forge a solution now. We do not have time to wait. The Roundtable participants discussed the challenges and opportunities arising from these priorities.

**Question One:** How can we change the land use and building code policy framework to reflect a changing climate?

Research priorities for adapting land use and building code policies to reflect a changing climate should focus on several interconnected areas.

First, there is a critical need for comprehensive, dynamic multi-risk mapping that combines data relating to complex and compounding risks. This mapping should inform the development of a national zoning approach, drawing inspiration from successful models like New Zealand's. Such an approach must be underpinned by robust data sources and extensive consultation to ensure its effectiveness and acceptance.



Second, building codes need to be future-proofed, designed for projected climate conditions rather than current or historical norms. This may involve applying codes developed for warmer regions to more southern areas, anticipating climate shifts over a 100-year timescale. The codes should also distinguish between requirements for new constructions and existing properties, recognising the unique challenges each presents.

Third, research should address the complex interplay between climate adaptation, housing affordability, and urban planning. This includes examining the pros and cons of building on greenfield sites versus adapting existing urban areas, considering housing density, and balancing the need for affordable housing with the imperative to avoid development in high-risk zones. Relocation must also be implemented where there are no other options.

Last, transparency and disclosure mechanisms should be developed to ensure that property buyers and renters are fully informed about climate-related risks associated with specific locations. By addressing these research priorities, policymakers can create a more resilient and adaptable framework for land use and building codes in the face of climate change.

#### *Challenges:*

- **Data complexity:** There is a lack of comprehensive, dynamic multi-risk mapping that combines data relating to complex and compounding climate-related risks.
- **Outdated building codes:** Current building codes are often based on historical climate data rather than future projections, making them inadequate for long-term resilience.
- **Balancing competing needs:** There is a complex interplay between climate adaptation, housing affordability, and urban planning that needs to be carefully managed.
- **Lack of transparency:** Property buyers and renters often lack clear information about climate-related risks associated with specific locations.
- **Existing property adaptation:** Adapting existing properties to new climate realities presents unique challenges compared to new constructions.

#### *Opportunities:*

- **National zoning approach:** Develop a comprehensive national zoning strategy informed by successful models like New Zealand's, underpinned by robust data and extensive consultation.

- **Future-proofed building codes:** Design building codes for projected climate conditions, potentially applying codes from warmer regions to more southern areas in anticipation of climate shifts over a 100-year timescale.
- **Differentiated building requirements:** Create distinct building code requirements for new constructions and existing properties, recognising their unique challenges and opportunities.
- **Sustainable urban planning:** Research and implement strategies that balance climate adaptation with housing affordability and optimal urban density.
- **Greenfield vs. existing area development:** Conduct thorough analysis of the pros and cons of building on greenfield sites versus adapting existing urban areas to inform policy decisions.
- **Enhanced disclosure mechanisms:** Develop transparency and disclosure tools to ensure property buyers and renters are fully informed about climate-related risks associated with specific locations.
- **Resilient framework development:** By addressing these research priorities, create a more resilient and adaptable framework for land use and building codes that can withstand future climate challenges.

**Question Two:** How can we make insurance a form of climate adaptation (not just BAU)?

To transform insurance into a form of climate adaptation, a multifaceted approach is necessary. Firstly, comprehensive analysis from the demand side and household perspective is crucial to understand consumer needs and behaviours. This should be coupled with widespread education about insurance, its role in risk management, and guidance on proper repair and rebuilding practices.

A key aspect is establishing the right price signals to motivate risk minimisation and encourage building back better. However, this must be balanced with consideration for vulnerable populations who may fall through the safety net, necessitating targeted support mechanisms.

The value of long-term benefits from pre-emptive disaster risk reduction investments needs to be clearly articulated and quantified. This includes developing a national view of the costs and benefits associated with various adaptation strategies. The extent to which insurance companies' premiums will be reduced by these resilience investments is important. Such an approach may also help shift the growing expectation that government will always intervene post-disaster, which currently influences consumer behaviour regarding insurance coverage.

A coordinated effort is required to establish a shared understanding of responsibility and accountability among households, businesses, government, and the insurance/finance sector. This includes clarifying the roles of each stakeholder in climate adaptation and risk management. There is a need to address the disconnect between consumer expectations of government intervention and the reality of limited public resources. This may involve fostering a culture of proactive risk management and self-reliance, while still maintaining appropriate safety nets for those most vulnerable.

By addressing these interconnected issues, insurance can evolve from a reactive financial tool to a proactive instrument for climate adaptation, encouraging resilience-building behaviours and more sustainable development practices.

### *Challenges:*

- **Lack of comprehensive understanding:** There is insufficient analysis from the demand side and household perspective regarding insurance and climate adaptation.
- **Education gap:** Many consumers lack adequate knowledge about insurance's role in climate adaptation and risk management.
- **Misaligned incentives:** Current price signals may not effectively motivate risk minimisation or encourage building back better.
- **Balancing act:** Maintaining appropriate price signals while addressing the needs of vulnerable populations who may fall through the safety net is complex.
- **Shifting expectations:** Growing consumer expectation that government will intervene post-disaster influences insurance decisions and risk-taking behaviour.
- **Role ambiguity:** There is a lack of clarity regarding the roles and responsibilities of households, businesses, government, and the insurance/finance sector in climate adaptation.

### *Opportunities:*

- **Educational initiatives:** Develop comprehensive programs to educate consumers about insurance, its role in climate adaptation, and proper repair and rebuilding practices.
- **Pre-disaster investment:** Highlight and quantify the long-term benefits of investing in risk reduction before disasters occur.
- **National cost-benefit analysis:** Create a comprehensive national view of the costs and benefits associated with various climate adaptation strategies.

- **Guidance development:** Create and disseminate clear guidelines on how to repair and rebuild in ways that enhance resilience to future climate-related events.
- **Coordinated approach:** Establish a shared understanding of responsibility and accountability among all stakeholders in climate adaptation.
- **Clarified stakeholder roles:** Clearly define and communicate the roles of households, businesses, government, and the insurance and finance sector in climate adaptation efforts.
- **Innovative pricing models:** Develop insurance products that provide the right incentives for risk reduction while remaining accessible to vulnerable populations.
- **Proactive culture shift:** Foster a culture of proactive risk management and self-reliance.

**Question Three:** How can we decide who acts when, balancing urgent needs against future gains, given limited information?

The decision-making process around climate adaptation and risk management is complex, involving multiple stakeholders and requiring a delicate balance between immediate needs and long-term benefits. This discussion explored the challenges and opportunities in determining who should act, when they should act, and how to motivate effective action in the face of climate change and its associated risks.

*Challenges:*

- **Consumer behaviour uncertainty:** There is a lack of understanding about what motivates consumer behaviour when it comes to considering long-term insurance and climate risk in housing decisions.
- **Limited information:** Decision-making is often hampered by incomplete or uncertain data about future climate impacts and the effectiveness of various adaptation strategies.
- **Balancing urgent needs and future gains:** It is difficult to prioritise long-term climate adaptation measures when faced with pressing immediate needs, especially given limited resources and political pressures.
- **Role ambiguity:** While government roles at various levels may be clear, there's a lack of clarity regarding the roles and responsibilities of consumers, industry, and the insurance and finance sectors in climate adaptation efforts.

### *Opportunities:*

- **Consumer behaviour research:** Conduct comprehensive studies to better understand what factors influence consumer decisions regarding housing, insurance, and climate risk consideration.
- **Incentive structures:** Develop and implement recognition and reward systems for risk minimisation activities to encourage proactive adaptation measures.
- **Role clarification:** Clearly define and communicate the roles and responsibilities of all stakeholders - including consumers, industry, and the finance sector - in climate adaptation and risk management.
- **Effectiveness evaluation:** Assess whether stakeholders are effectively delivering on their defined roles and identify areas for improvement or support.
- **Collaborative decision-making frameworks:** Create structures that facilitate cooperation between different levels of government, industry, and communities to make informed decisions about climate adaptation priorities.
- **Education and awareness campaigns:** Develop targeted initiatives to increase public understanding of climate risks and the importance of long-term planning in housing and insurance decisions.

## Session 3: Setting Research Priorities

**Facilitated by Andrew Gissing, CEO, Natural Hazards Research Australia**

The Roundtable participants discussed how the challenges and opportunities identified in the previous session could be addressed through research and identified research priorities. Two sets of research priorities were identified:

### **Specific Challenges and Opportunities:**

- Updating land use and building codes for climate change
- Transforming insurance into a climate adaptation tool
- Research Priorities for effective decision-making in building resilience

### **Enabling Priorities:**

- Integrated dynamic risk mapping
- Cost-benefit analysis of adaptive measures
- Governance frameworks to clarify responsibilities

The specific challenges address immediate, concrete issues in resilience to natural disasters, as discussed in the previous session. The enabling priorities support overall progress in addressing all three challenges and opportunities by providing essential

tools and frameworks. This dual approach ensures both targeted solutions and a strong foundation for ongoing efforts to build resilience to climate-fuelled disasters.

## Research Priorities for Adapting Land Use and Building Code Policies to Climate Change

The challenges and opportunities identified in our discussions highlight the urgent need for a comprehensive overhaul of land use and building code policies to reflect the realities of a changing climate. To address these issues effectively, we propose the following research priorities. This research will provide policymakers with the evidence and tools needed to implement effective disaster resilience strategies in the built environment.

### **Policy Effectiveness Analysis:**

There is a critical need to assess the efficacy of current land use and building code policies across different regions. This research should identify policies that are working well and those that are falling short, along with the reasons for their success or failure. Understanding the constraints and challenges faced by effective policies will be crucial for their broader implementation.

### **Future-Proofed Building Code Development:**

To overcome the challenge of outdated building codes, research should focus on designing a multi-peril, low-carbon building code that addresses current gaps, particularly in flood-resistant materials. While perfection may not be immediately achievable, initiating this process is crucial. This research should also investigate how codes developed for warmer regions could be applied to more southern areas in anticipation of future climate shifts.

### **Legacy Infrastructure Adaptation Strategies:**

Given the challenge of adapting existing properties, research should explore innovative approaches to upgrading legacy infrastructure. This should include both technical solutions and policy mechanisms to incentivise and facilitate these adaptations.

### **Housing Affordability and Climate Resilience:**

Research is needed to examine the complex interplay between climate adaptation measures and housing affordability. This should include strategies for balancing the need for affordable housing with the imperative to avoid development in high-risk

zones. Research on managing trade-offs, such as balancing buyback schemes with affordable housing options - balances development needs with risk reduction.

### **Enhanced Disclosure Mechanisms:**

To improve transparency, research should focus on developing effective tools and policies for disclosing climate-related risks to property buyers and renters. This could include standardised risk assessment methodologies and clear communication strategies.

### **Research Priorities for Transforming Insurance into a Form of Climate Adaptation**

The challenges and opportunities identified in our analysis underscore the need to reimagine insurance as a proactive tool for climate adaptation rather than a reactive financial instrument. To achieve this transformation, we propose the following research priorities:

#### **Reframing Insurance's Role and Value Proposition:**

To address the education gap and consumer behaviour uncertainty, research should focus on developing effective strategies to reframe the role of insurers and make insurance more accessible and better understood. This includes applied research to clearly define and communicate the value proposition of insurance in the context of climate change.

#### **Quantification of the Impact of Insurance:**

Research is needed to quantify the broader economic and social impacts of insurance, including its role in protecting livelihoods. This will help in demonstrating the full value of insurance beyond immediate financial protection.

#### **Climate-Informed Property Valuation:**

To ensure that climate risks are properly factored into property values, research should explore how professional valuers can consistently and accurately incorporate climate change considerations into their assessments.

#### **Premium Structuring for Resilience:**

Building on the opportunity for innovative pricing models, research should explore how mitigation and resilience efforts can be effectively reflected in household insurance premiums, creating tangible rewards for adaptive actions.

### **Price Signal Preservation:**

Research should explore how to provide premium relief without distorting important price signals about risk.

### **Nature-Based Solutions (NBS) Effectiveness:**

To leverage nature-based interventions in climate adaptation, further research is needed to develop robust models demonstrating the effectiveness of nature-based solutions. This should include quantifying their range of benefits and building confidence in their application.

### **Public-Private Investment Synergies:**

To maximise adaptation efforts, research should explore innovative ways to connect public and private funds, including the potential for blended finance models and market-based solutions.

### **Comparative Risk Management Analysis:**

To broaden our understanding, research should examine lessons from other types of risks and how they might be applied to climate-related insurance and adaptation strategies.

**Comparative International Analysis:** Compare the Swiss system and other ways this is being addressed overseas and apply those parts that would work in the Australian context.

By prioritising these research areas, we can address the key challenges in transforming insurance into a proactive tool for climate adaptation. This research will provide insurers, policymakers, and other stakeholders with the knowledge and tools needed to create more effective, forward-looking insurance products and policies that actively contribute to climate resilience. It will also help in striking the right balance between government intervention and market-driven solutions, ensuring that urgent needs are met while also securing long-term adaptive capacity.

## **Research Priorities for Effective Decision-Making in Developing Resilience**

The challenges and opportunities identified in our analysis highlight the complexity of balancing urgent needs against future gains in resilience efforts. To address these issues effectively and learn from international best practices we propose the following research priorities:



**Decision-Making Under Uncertainty:**

Scenario planning in risk management - research should focus on developing frameworks for making decisions in the face of uncertain information.

**Defining effective climate adaptation**

Identification of the required characteristics of effective / "best practice" adaptation / disaster resilience. A review of this with consideration for the Australian context is necessary to make decisions about what we are trying to achieve and how.

**System Interconnectedness:**

Research is needed to understand how different parts of the climate adaptation and risk management system interact, ensuring that proposed changes do not have unintended consequences.

**Community Vision Development:**

Research is needed on effective methods for engaging communities in developing desirable future states.

**Expertise Mapping:**

Research should be conducted to map existing expertise across Australia, identifying gaps and opportunities for knowledge sharing, maintaining a network of natural hazard experts.

By prioritising these research areas we can develop a more effective, comprehensive approach to climate adaptation decision-making in Australia. This research will provide policymakers, insurers, and communities with the tools and knowledge needed to make informed decisions that balance urgent needs with long-term resilience goals, while considering the unique Australian context.

## Enabling research priorities

### Research Priority One: Integrated Dynamic Risk Mapping<sup>1</sup>

To address the challenge of data complexity, priority should be given to developing comprehensive, dynamic multi-risk mapping systems that combine data relating to complex and compounding risks. This effort should focus on integrating existing data silos from various agencies (such as ACC, NEMA, DCCEE, state governments, insurance companies, and local councils) to create a unified, real-time risk assessment tool. This research should also explore the use of modern technologies to assess the impacts of coastal inundations and other dynamic risks more accurately and efficiently.

**Risk Mapping and Prioritisation:** Research should focus on developing comprehensive, high-resolution risk mapping to identify the highest-risk locations across Australia.

**Cross-Border Data Integration:** To improve decision-making, research should focus on developing methods for integrating and analysing catchment-level data across jurisdictional boundaries.

**Data Integration and Standardisation:** Research should focus on improving data capture, integration, sharing, and standardisation across all relevant sectors.

**Assessment of vulnerability to hazards.** Vulnerability curves are common in the insurance industry however they focus on buildings. Understanding how vulnerability to other types of assets such as Natural assets can be assessed is important to be able to value risks and prioritise interventions.

### Cost-Benefit Analysis of Adaptive Measures

To balance competing needs, research should examine the cost-benefit ratios of applying different climate risk mitigation thresholds in land use and building codes. This

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<sup>1</sup> Naomi Hay, Tony Fry, Roslyn Prinsley, John Handmer, Jeremy Mather, Milica Muminovic, Noam Maitless, Mathew Gill, Owen Crofts, Jessica Van Son, Liam Taylor (2024) Relocating Australian Communities at Risk: Strategies and Actions in Time. Issues Paper published by ANU.

analysis will facilitate more meaningful discussions around potential relocation strategies and help in prioritising adaptation efforts.

**Standardised Resilience Valuation:** To provide clearer incentives for adaptation, priority should be given to developing standardised methodologies for capturing and quantifying the value of resilience. This should include economic, social, and ecological benefits, providing a comprehensive understanding of the returns on investment in climate adaptation. Consistent methodologies for quantifying (/qualifying) “adaptation dividends”<sup>2</sup>: should include induced economic or development benefits (second dividend), and additional social and environmental benefits (third dividend) to improve investment cases for resilience (eg. Nature-based Solutions).

**Risk Mitigation Cost-Benefit Analysis:** To address the challenge of misaligned incentives, research should focus on quantifying and communicating the present value of risk mitigation efforts and their impact on reduced claims costs. This will help in demonstrating the long-term benefits of adaptation investments.

**Intervention Efficacy Analysis:** Priority should be given to assessing the effectiveness, costs, and benefits of various risk reduction interventions. An integrated risk management approach should be developed to include prevention, intervention, and recovery measures.

**Balancing Short-term and Long-term Priorities:** Research is needed on methods to effectively balance short-term government priorities with long-term resilience needs.

**Cost-Benefit Analysis Over Time:** Priority should be given to developing robust methodologies for comparing today's costs with future benefits, to consider long-term investment in prevention measures.

**Resilience vs. Recovery Balance:** Research should examine how to strike the right balance between investing in resilience and allocating resources for recovery, using an integrated approach to risk management.

**Quantification of costs of disruption:** Research should provide standard methods to quantify the costs of disruption. Costs of direct damage are well quantified, given the focus on insurance. Costs of disruption may grow to be larger than costs of direct

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<sup>2</sup> <https://www.wri.org/research/triple-dividend-building-climate-resilience-taking-stock-moving-forward>

damage, which will have significant economic impacts. This may cause risk spreading mechanisms like business interruption insurance to become very costly.

## Governance and Responsibility Frameworks

To address role ambiguity, research is needed to develop clear governance structures delineating responsibilities across all sectors, including individuals, communities, government, and the private sector.

**Role Clarification:** Research is needed to develop stronger frameworks for multilayer collaboration across all levels of government and with the private sector, communities and individuals - focusing on clarifying roles and responsibilities in the Australian context.

**Public-Private Partnerships:** Research should explore how to establish cross-sectoral collaborative frameworks for public and private partnerships in Australia, including the potential role of private insurers in mandatory natural hazard insurance.

**Stakeholder Engagement and Coordination:** To address role ambiguity and improve transparency, research should focus on developing effective strategies for engaging and coordinating with all stakeholders, including developers, the banking sector, and local councils. This should include exploring the potential role of banks in incentivising climate-resilient development through their lending practices.

## Conclusion

These research priorities provide an actionable framework for research to ensure Australia's resilience to disasters.

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