

**Natural Hazards Research Australia**

Incorporating the Bushfire and Natural Hazards CRC

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**Wednesday, 6 May 26**

Legislative Council Environment and Planning  
Committee  
climateresilience@parliament.vic.gov.au

To Whom it May Concern,

**Subject: Legislative Council Environment and Planning Committee – Inquiry into Climate Resilience**

Thank you for the opportunity to respond to the terms of reference of the Committee's Inquiry into Climate Resilience. Our submission specifically addresses the intersection of natural hazard risk and climate resilience.

Natural Hazards Research Australia (the Centre) is Australia's research centre for natural hazards resilience and disaster risk reduction. The Centre works closely with Victorian Government agencies and other participating organisations across Australia to deliver a strategic research agenda for the nation and to actively promote research utilisation.

The Centre undertakes research that promotes resilience to the impacts of natural hazards and reduces disaster risk, to support the needs of a variety of critical stakeholders – including government, emergency services, industry and communities.

The Centre's [10-Year Research Strategy](#) and [Biennial Research Plan](#) outline the research direction of the Centre with an emphasis on the Centre's user driven model. Now three years old the Centre has an extensive portfolio of core research ([see here](#)) and post-graduate research projects of which many are relevant to climate resilience.

***Future impacts***

We live in a time of increasing risks from natural hazards. The Royal Commission into National Natural Disaster Arrangements, among many reports both in Australia and internationally, have concluded that natural hazard emergencies are expected to become more frequent, complex, intense, more unpredictable and more difficult to manage, driven in part by climate change.

In the future we will likely see:

- widening impacts of natural hazards across societal, infrastructure, environmental and economic systems
- compounding hazards with impact greater than the sum of individual disasters
- more people living in an almost constant state of either preparation or recovery
- greater complexity of disasters as systems become more interconnected and infrastructure transforms resulting in cascading and unforeseen impacts
- rising insurance unaffordability in high-risk areas
- increased impacts on physical and mental health
- changing vulnerability due to trends such as decarbonisation, and
- increasing national scale natural hazard related disruptions reducing the ability to seek inter-jurisdictional support during crises.

These changes will result in greater demands on disaster management capabilities and recovery services that are already under pressure from the rising frequency of severe disaster impacts.

### ***Priority areas for future climate resilience***

Too often change is reactive in the aftermath of natural hazard events and incremental. To enable effective adaptation to our future climate a more proactive and ambitious model, with long-term commitment will be required. Innovation and research are essential in supporting such a model.

Research tells us the following are essential for communities to adapt to future natural hazard risks:

- 1. *Better land-use planning.*** Australian communities must adopt strategies so future development is appropriate in a changing climate. There is a need nationally for policies to incentivise development in areas of low natural hazard risk and consider the future impacts of climate change.
- 2. *Building standards.*** We already know from research how to build houses and infrastructure that is more resilient to natural hazards. Policies that mandate construction practices to ensure resilience to natural hazards in a warmer climate are essential. Existing building stock is not to be overlooked as there is a need for a risk-based national retro-fitting strategy.
- 3. *Some places are untenable for ongoing housing.*** People may not be able to live where they live now. The elimination of risk entirely is only possible by removing houses and businesses from areas at risk of natural hazards. Major buy-back schemes are now being implemented in some parts of NSW and Qld to relocate homes from floodplains, but not for the first time in Australia, and the efforts will not be without difficulties. Voluntary buyback programs are expensive, disruptive and rely of willing sellers. Not everyone will want to move. Ideally, such programs must be planned well before a major disaster strikes so that communities can decide their future (see more [here](#)).
- 4. *Mitigation.*** It will not be possible to eliminate all natural hazard risk, so reducing risk via integrated mitigation approaches considering the current and future risk profiles of local communities will continue to be key.
- 5. *Work better with natural landscapes*** including incorporating First Nations knowledge, to be open to how the environment can play a vital role in disaster risk reduction. For floods we can reforest catchments and restore wetlands. Both options will likely lower the risk of smaller floods but will also offer wider benefits such as better air and water quality.

Though accountabilities for these measures is shared across all levels of government, local government often lacks the capacity to effectively address natural hazard risk. Future plans should consider how local government will be supported to implement future climate adaptation measures. There are also significant opportunities to invest in community organisations that have significant linkages with those most vulnerable to natural hazards to drive community-led approaches.

Investigation, trialling and scaling of new technologies will aid our future response to natural hazards. For example, we can leverage trends such as artificial intelligence, sensing, advanced autonomous systems and bionic augmentation. Such investments are essential to managing demands on our future emergency management workforce. Utilisation of non-traditional organisations to complement the current workforce will also assist (see more [here](#)).

### *Natural Hazards Research Australia research*

The Centre's user-driven research projects offer opportunities to provide further evidence that is useful and useable in the context of climate resilience. The Centre has currently committed funding to 60 projects, with further research investments planned. Examples of current research projects include:

- ***Utilisation of transformative scenarios in a climate-challenged world.*** This research will enhance utilisation of resources designed for emergency services and other organisations to test their strategies and practices against a set of plausible futures that are likely to be experienced in the future.
- ***Modelling the impacts of natural hazards on interconnected infrastructure networks.*** This project is focused at establishing the context to understand the extent of direct and indirect losses relevant to infrastructure; develop better estimation methods to understand the impact of compound disasters on infrastructure losses; and provide a framework to better understand the value of infrastructure resilience investments.
- ***Evaluation of Resilient Homes Fund.*** This project is evaluating Queensland's Resilient Homes Fund, addressing four dimensions of resilience (physical, financial, social, and emotional) by assessing buy-back, retrofit and house-raising, to demonstrate the success factors and lessons learnt.
- ***Integrated solutions for bushfire-adaptive homes.*** This research will provide a better understanding of the bushfire failure rates of homes built to modern construction standards; investigate what physical building material, housing designs or additional safety measures would best reduce failure rates; and explore which social levers can be better utilised to influence and support communities to better protect homes from bushfires.
- ***Disaster resilience in Indigenous communities.*** This research is focused on three objectives: addressing the lack of knowledge and information regarding Indigenous peoples, change and disaster resilience, create an Indigenous disaster resilience community of practice; and embed Indigenous leadership in disaster resilience and climate change adaptation.

The Centre is currently completing a series of post-flood social research projects to explore community experiences of recent flooding including across Victorian communities. This research captures evidence of community attitudes towards future adaptation strategies (see more [here](#)).

The Centre has also recently launched a report on future ideas for a disaster resilient Australia called "Be Ahead of Ready" (see more [here](#)).

To enable effective adaptation there is a need to continue to invest in Australia's skilled workforce to ensure adequate capability exists. The Centre is assisting with this challenge through its scholarship, fellowship and work placement programs (see [here](#)).

The Centre welcomes further opportunities to discuss this submission.

More information on the Centre's research can be found at [naturalhazards.com.au](http://naturalhazards.com.au).

If you have any questions or require further information, please contact myself.

Yours sincerely,



**Andrew Gissing**

CEO, Natural Hazards Research Australia