Submission to inquiry into current and future impacts of climate change on housing, buildings and infrastructure

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In writing this submission I am drawing on 18 years of social science research on vulnerability and adaptation to climate change. In this time I have been chief investigator on 11 major field based research projects investigating the impacts of climate change, and climate change policies and measures, on individuals and communities in various places in the Asia-Pacific region and in Australia. I have also supervised a dozen Postgraduate research projects on these topics. Among other roles, I was the founding convenor of the National Adaptation Research Network for Social, Economic and Institutional Dimensions of climate change (NCCARF); and lead Author of the report from Working Group II of Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC). I edit the world's leading journal publishing social science research on climate change (*Global Environmental Change*). I have published 4 books and over 100 internationally peer-reviewed articles and chapters.

I wish to draw the committee's attention to the impacts arising from institutional responses to the risks of climate change, including to housing, buildings and infrastructure, and important goods and services. My intention here is to not to be comprehensive, but to highlight through a few examples that the dangers of climate change arise not just from the way environmental change affects material things in harms way, but from the way actors in markets, government, and the community respond to these risks.

It is important to recognize that markets are and will respond to climate change, and that these changes may drive significant and potentially catastrophic changes in the geography and structure of Australian society. In one sense this is already obvious, changes in electricity markets have created significant job losses in the Hunter and Latrobe valleys, and places like Port Augusta. In almost all cases these impacts were anticipated but there was no timely action to ameliorate social impacts.

Further, as the Committee is no doubt aware, the creation of water markets in the Murray-Darling Basin triggered by the Millennium drought, while generally very successful, is very likely to be having significant social impacts in some communities, and will almost certainly continue to transform agriculture in the basin in ways that create significant winners but also losers.

Changes in both water availability and cost (often driven by the costs of desalinisation) as well as in electricity markets are causing rising utility prices that disproportionately burden the poorest people, who have the least capacity to pay, and the least capacity adapt their behavior in response to price signals because they rarely own property and/or cannot afford to invest in new technologies.

The Committee may be aware of early signs of changes in insurance markets. Insurance underpins the ability of many households to live in areas at risk of flood, fire, and cyclone, and as several recent disasters have shown us, many of those households will be exposed to new levels of risk under climate change. Insurers have already indicated that they may be unwilling to insure these households in the future, or will only do so at much higher premiums that may be beyond most households. For example, after the 2011 Queensland floods major insurers were unwilling to insure properties in Roma, requiring government intervention to build a levee bank around the town. I have since heard (I do not have proof) that some households in the Lockyer Valley cannot afford the now much higher costs of insurers and premiums rise in response to reevaluation of flood risk. Widespread unavailability of insurance – and in turn possibly mortgage insurance – will have a positive effect of reducing new developments in areas at risk of climate change. However it may have a catastrophic effect on people in existing settlements facing higher disaster risk due to climate change. This is likely to be a very significant impact of climate change that cascades through our economy.

There is a significant social justice issue associated with public works to defend coastal properties against flooding. There will be increasing erosion and flooding along the coast at the same time as we are increasing the capital value of things along the coast. There will in turn be enormous political pressure to fortify coastlines, particularly in major coastal cities. Such processes get locked in. For example, once a seawall is built it creates a sense of confidence that attracts further investment, which increases the commitment to maintaining walls, and further signals to investors that risk is well managed, who further invest, and so on. So, as sea levels rise we may end up with coastlines that are increasingly fortified at increasing cost to all taxpayers for the benefit of a few (usually wealthy) coastal residents. An increasing public subsidy to defend the properties of the small proportion of people living close to the water would of course in turn mean less public spending on other services and facilities. Such a future will be very hard to avoid, and incremental adjustments in the way we plan and manage coastal development cannot avert this problem.

Markets will drive transformations in energy, water, and insurance, and these changes will drive inequality, are already unfolding, and their future social impacts can be anticipated. The existing trajectory of ad hoc and incremental coastal protection will be unjust. We are unprepared for these changes.

Thus far Commonwealth policies to assess, plan and implement adaptation have focused on investing in research and information dissemination, believing that reducing information deficits will help drive better decisions across society. This investment has been significant and very effective, though disappointingly no longer sustained. It assumes that information deficits are an important constraint to adaptation, which is not well supported by evidence from recent academic research, nor by the finings of the Productivity Commission's Inquiry into Barriers to Effective Climate Change Adaptation. The 2015 *National Climate Resilience and Adaptation Strategy* is a commendable document, though it commitment to it is lacking.

Our research demonstrates that the coastal dwelling public expects governments to lead and regulate risk along the coast in manner that is equitable, strategic, and consistent, and that they expect the Commonwealth to play a key role in information provision and funding.
The Commonwealth could do much more to address the aforementioned (and the many other) emerging social impacts of climate change, including:

- A COAG committee on climate adaptation and disaster risk management, and an associated process to foster dialogue between Commonwealth, State and Local governments.
- A public inquiry into the systems and patterns of investment in flood protection, including who pays, who benefits, and how these systems could be reformed to ensure a fairer distribution of costs and benefits.
- Closer collaboration between insurers and governments to ensure a system of insurance that provides affordable and effective insurance coverage for all households and business not in high-risk locations.
- Facilitating planned economic restructuring of communities and industries that will lose from climate change through investments in innovation and new economies, including those engaged in coal mining and coal fired power, those losing out from changes in water markets, those dependent on climate sensitive natural resources.
- Facilitating stronger and nationally consistent controls to prevent new developments and settlements in locations at risk of flooding and fire and cyclone.
- Investing in evaluations and monitoring of the social impacts of climate change.
- Investing in infrastructure that can help overcome increasing economic disadvantages in rural areas, such as a rapid rail network and high speed broadband.
- Investing in strategic adaptation planning processes in key locations to trial, learn from, and demonstrate ways in which adaptation can be efficient, effective and fair.
- Promoting awareness that the environment is changing and a change in the way Australians live in the environment necessary, and that such change represents an exciting opportunity for innovation

- Investigation of novel financial instruments to fund adaptation activities.

The country we live in is in changing, and so the way we live in it will change. We can start now so we adapt in an effective, efficient and orderly manner, or we can let it happen in far more disruptive, costly, and unfair ways.