Attachment B

Time to get serious about national disaster mitigation

Budgetary constraints should not be used as an excuse to continue to expose social and economic conditions to the full force of nature without some national investment in mitigation.

Bushfire – a natural hazard that can become a national disaster.

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By Bruce Thom
bruce.thom@sydney.edu.au

The Government announced its intention in December to establish a Productivity Commission Inquiry this year into national disaster funding arrangements. The Commission will be asked the best ways to reduce the impact of natural disasters on communities and how they recover in a sustainable way.

It was noted that state emergency services ministers have already expressed their support for an inquiry into disaster expenditure, and that most existing disaster funding models are weighted towards response and recovery instead of longer-term resilience. The proposed Inquiry provides an opportunity for ATSE to offer advice on options facing the nation on disaster mitigation.

There has been little discussion of how we plan and pay for mitigating the adverse impacts of natural hazards. Each year Australian communities incur losses caused by bushfires, floods, coastal storms, hail and other hazards.

Droughts can no longer be regarded as 'indignant surprises' – they are lurking around waiting for the next El Ninō phase of the climate cycle to once again achieve full impact. Annual and decadal variability in climate systems is an underlying feature of our continent and we must prepare for the next wave of shocks and suffering, not just to come along after the event to clean up the devastation. Climate change science is informing us that things are likely to get worse if they are not already.

In 2011 the Council of Australian Governments released the National Strategy for Disaster Resilience. This Strategy has the admirable goal of building disaster-resilient communities across Australia by recognising that disaster resilience is a shared responsibility for individuals, households, businesses and communities, as well as governments. COAG sees "big challenges" acknowledging "that disaster risks are likely to increase and magnify as our climate changes, our population grows and ages, and our society and economy become increasingly dependent on technology".

The report accepts that actions to implement the Strategy will have a cost, but the benefits of improved disaster resilience are expected to exceed the costs. However, the report is silent on what are the expected costs and benefits, and how in particular can the Federal Government best use its resources to gain those benefits.

Four reports have emerged in 2013 which throw more light on the scale of threats, impacts and costs of natural disasters.

In June, the **Australian Local Government Association (ALGA)**, in its 10-point plan for resourcing community priorities, called on all political parties to commit to a disaster management process that would build capacity in local and regional communities to mitigate the impact of natural disasters. Local government is at the cutting edge for managing impacts and relies heavily on the strict conditions of the Natural Disaster Relief and Recovery Arrangements (NDRRA) to repair damaged infrastructure.

ALGA pleaded for a dedicated program involving local government disaster mitigation works to build resilience and "avoid increasingly costly damage to public infrastructure and private property".

In the same week, the **Australian Business Roundtable for Disaster Resilience and Safer Communities** released a report prepared by Deloitte Access Economics which attempted to quantify

the costs now and into the future. It also advocated a governance model that would improve the nation's capacity to build a more resilient Australia. A key component of the governance model is a mechanism that would ensure "pre-disaster resilience policy coordination" supported by a "National Resilience Adviser" within the Department of Prime Minister and Cabinet.

Especially telling were some of its estimates. For instance, without action, the forecast annual cost in real terms of natural disaster is expected to reach $23 billion by 2050 (total economic costs today average around $6.3 billion per year). It indicates that an annual program of Australian Government expenditure on pre-disaster resilience of $250 million has the potential to generate budget savings of $12.2 billion for all levels of government, including $9.8 billion for the Australian Government. Such investment could reduce disaster costs by 50 per cent by 2050. These estimates cannot be ignored.

The third report which commented on these issues is that of the Productivity Commission, *Barriers to Effective Climate Change Adaptation*. The Commission noted submissions from insurers on how much greater is the proportion of Australian Government funding for disaster recovery in recent years than for disaster mitigation. Between 2005 and 2011 the Australian Government spent $182 million on mitigation while spending $6.7 billion on relief and recovery arrangements. The report offers examples of where there have been clear benefits from expenditure by various levels of government on mitigation infrastructure.

In its response to this report, the Australian Government stressed that it had a core role in the "coordination and dissemination of natural hazard information, including flood risk, coastal inundation, bushfires and extreme weather elements". But there was no indication as to how this role would change to meet the "big challenges" noted in 2011 by COAG.

In August, the Senate Environment and Communication References Committee released its report, *Recent trends in and preparedness for extreme weather events*. While the report contains some valuable information and recommendations, such as on the need for flood mapping to inform land use planning and on the need to improve building codes, it did not indicate how federal agencies should be organised and funded to address issues raised in submissions and in the other three reports.

While agreeing with the Senate Committee recommendations, the Greens made some additional comments utilising various insurers' submissions and that of the Business Roundtable. The Greens note that while mitigation expenditure remains around three per cent of what it spends on recovery, this is not "the right balance between preventing and preparing for disasters on the one hand, and responding to and recovering from them on the other". This is a similar conclusion to that of the Productivity Commission.

It is instructive to read the recent studies of the Queensland Reconstruction Authority (QRA) on *Planning for stronger, more resilient floodplains*. The Authority is a significant institutional response to 13 declared flood events between 2009 and 2013 and has committed $14.5 billion of Federal and State funds to the reconstruction effort. A one-off federal levy on taxpayers was used to assist with this funding which raised $5.6 billion.

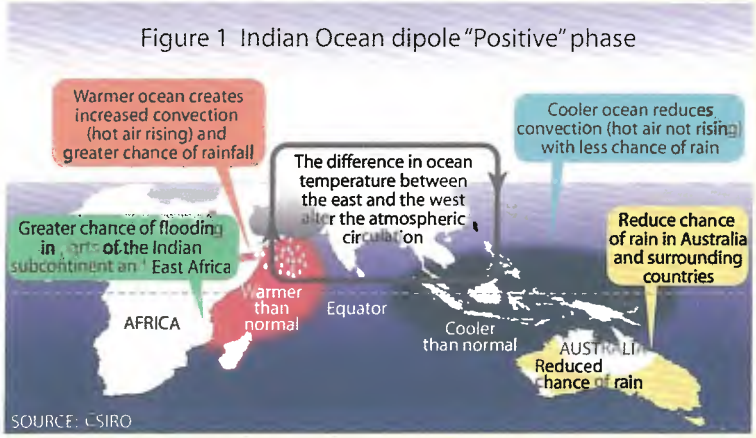
The QRA points to a way forward in its reports by demonstrating advantages of floodplain mapping in supporting the planning process. It offers guidelines that could improve the capacity of planners and policy-makers on development of appropriate land use responses to identified flood hazards. What is pertinent to these studies is the involvement of a federal agency, Geoscience Australia (GA).

INDIAN OCEAN HELPS PREDICT WEATHER EXTREMES

A phenomenon in the Indian Ocean that affects events in south-east Australia is helping to predict extreme weather up to six months in advance. The phenomenon, the Indian Ocean Dipole (IOD), is the difference in sea-surface temperatures between the western and eastern part of the Indian Ocean, and until recently has been one of the most influential but the least understood natural forces affecting Australia's climate. An international team of scientists, led by CSIRO's Dr Wenju Cai, has confirmed the link.

A better understanding of the relationship between the Indian Ocean Dipole and extreme weather events will enable Australia to better anticipate and prepare for droughts and increased bushfire risk, up to six months in advance of the event.

Figure 1 Indian Ocean dipole "Positive" phase



The IOD 'positive' phase.

Just as the El Niño Southern Oscillation (ENSO) affects weather patterns across the Pacific Ocean, the Indian Ocean Dipole influences weather and extreme events across the Indian Ocean.

While ENSO fluctuates between 'El Niño,' 'neutral' and 'La Niña' phases, the IOD fluctuates between 'positive,' 'neutral' and 'negative' phases about every three to eight years.

The positive phase is characterised by greater-than-average sea-surface temperatures, more rain in the western Indian Ocean region and cooler waters in the eastern Indian Ocean. It tends to cause droughts in east Asia and Australia. and flooding in parts of the Indian subcontinent and east Africa.

Dr Cai says the findings provide greater confidence in predicting extreme weather up to two seasons in advance, and furthermore, projecting positive IOD events into the future.

There has never been a federal agency in Australia with a mandated responsibility to plan, construct and maintain mitigation works. It has largely been left to state governments to perform this role with little consideration for national standards or coordination of effort.

The US Army Corps of Engineers performs this civil role in the US in consultation with the states and local communities. Congress appropriates funds for this purpose to help reduce adverse impacts from floods and coastal inundation and erosion.

Australia has a mixed history of planning for natural hazards. State and local governments often stand accused of not releasing or providing information on risk to communities in the face of pressure from sectors in these communities or the development industry that may threaten property values or investment opportunities.

The work of the QRA supported by GA shows that more consistent standards can be developed. The advantage of having a Federal agency engaged in the mapping and assessing the risk to private and public assets is that it is that further step removed from such pressures and in that sense is better placed to offer transparent hazard and risk information for use by decision-makers. It can also continue to coordinate research on natural hazards and exposure to risk.

If we are really serious about mitigating risk to natural hazards, it not much use if a Federal agency improves standards and availability of future modelling and mapping of floods and coastal inundation and that information is not applied by states and territories in land use planning and development assessment. Coordination and dissemination of information by itself is not enough. Agreements must be reached as to how federal funds to prepare for disaster are allocated.

One mechanism to explore is that used in the US to allocate funds to the states under the Coastal Management Act. Payments are made on the basis of a state agreeing to implement a coastal plan following Federal guidelines.

A similar scheme if introduced here could mean that each state would agree to revise flood, bushfire and coastal plans to ensure that public and private property developments recognised the potential risk from a natural hazard. Funds could be made available to communities currently at risk following evaluation of options by state and local governments under the agreed criteria to minimise political pressures.

Sufficient funds must be available on an annual basis, as suggested by the Business Roundtable, to be an incentive for state and local governments to act. Any failure to act could leave the states as the 'insurer of last resort' and not the Commonwealth as it is at present.

These are just a few ideas which could be canvassed in any submission by the Academy to what should be a very important national inquiry.

There are many ways we as a nation can potentially improve Australia's resilience to natural disasters. Budgetary constraints should not be used as an excuse to continue to expose social and economic conditions to the full force of nature without some national investment in mitigation.

PROFESSOR BRUCE THOM AM FTSE is a founding member of the Wentworth Group of Concerned Scientists and the Australian Coastal Society. He was was Chair of the Federal Government's Coasts and Climate Change Council, and formerly held positions as Chair of the NSW Coastal Council (1989–2004) and the Australian State of Environment Committee (1998–2002). Currently he is assisting the NSW Government as an adviser on coastal planning reform. In 2010 Professor Thom became a Member of the Order of Australia for his contribution to the ecological management of the coastal zone and as a contributor to public debate on natural resource policy.

WA CYCLONES STOKE UP VICTORIAN HEAT WAVES

Cyclones off the Western Australian coast can make Victorian heat waves far worse, according to new research published in the journal *Geophysical Research Letters*.

And, as shown in 2009 when Cyclone Dominic stoked up the heat wave that preceded the Black Saturday bushfires in Victoria, the size of a cyclone is not as important as its location.

"Tropical Cyclone Dominic only reached Category 2 status at its peak but it had powerful amplifying effects for the record-breaking heat wave in Victoria that led to the fatal Black Saturday bushfires," says lead author Tess Parker.

"The cyclone was right in the heart of a 1.5 million square kilometre area that we have identified as a key area for magnifying the impact of high pressure systems that generate Victoria's intense heat waves."

Like many areas in the south-east of Australia, heat waves in Victoria are caused by strong blocking high-pressure systems.

When these large, slow-moving systems hover over Victoria they bring hot northerly winds from the interior of Australia to produce extreme temperatures for several days. These blocking highs are connected to highs or ridges in the upper levels of the atmosphere, known as anticyclones.

"All heat waves in Victoria are associated with upper level anticyclones but, while the essential cause of the heat wave is the same, the impact of cyclones on their formation means not all heat waves are created equal," Ms Parker says.

Ms Parker's research was conducted with co-authors Dr Gareth Berry and Professor Michael Reeder.

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