

Budget cuts over many years have compromised Australia's ability to cope with climate change

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This submission is relevant to Terms of Reference 1 & 4

Most political action to minimise the damage from global warming is focussed on the reduction of anthropogenic greenhouse gas emissions. The Interim Report of the Garnaut Review deals exclusively with this important aspect of the climate change problem. However, no matter what is done to reduce emissions, we will not be able to halt global warming immediately. We will have to cope with further warming and associated climate changes, no matter how drastically we reduce emissions. This is because we cannot immediately switch to a zero emissions economy and, even if we could, the carbon dioxide we have already added to the atmosphere will continue to warm the earth for many decades. There is no switch on the wall we can flick, to stop global warming. The Australian Government is funding research to improve how we can adapt to the climate changes we cannot avoid. Unfortunately, successive governments over more than 30 years have savagely cut the agencies that should help us adapt to climate change.

If we are to adapt to a changing climate, it is obvious that we will need first to determine how the climate is changing. This requires monitoring not just of global average temperatures, but also of regional climate changes especially of rainfall and drought. The organization that undertakes this climate monitoring is the Bureau of Meteorology, a small Australian Government agency of about 1000 permanent public servants. Budget after budget, year after year, successive governments have cut the budget of the Bureau. It now has about 45% fewer permanent staff than it did in the mid-1970s. These successive cuts (often labelled "efficiency dividends") have seriously compromised the ability of the Bureau to monitor how our regional climate is changing. The Bureau has had to cut the number of balloon-based observations of the atmosphere it makes each day. The Bureau can no longer adequately maintain and replace its automatic weather stations, which were introduced into many locations in the first place to save money by replacing more expensive manned stations. These cuts mean a poorer monitoring network than we had 30 years ago. If we don't even know if our regional climate is changing, how can we adapt?

If our ability to check how our climate is changing has deteriorated, perhaps we can still predict how it will change in the future? CSIRO and the Bureau of Meteorology once had world-leading capabilities in the development of the weather and climate models required to make such projections. But again, budget cuts over many years have crippled the modelling efforts in these two organizations. In recognition that neither organization, by itself, now has the resources to undertake world-class weather and climate modelling, they recently joined forces to form the Centre for Australian Weather and Climate Research (CAWCR). This was a last ditch effort to try to ensure that Australia retains some credibility in climate modelling. But to do this, CAWCR will have to import some parts of its new climate model from overseas organizations, because even the combined organization has insufficient resources to do world-class model development. Further budget cuts to the Bureau and CSIRO, already being

foreshadowed, will further undermine our ability to predict how Australia's regional climate is changing.

But can't we just leave the modelling to other countries? Unfortunately, the problems in Australia are different to those of the northern hemisphere countries that fund major climate modelling activity (USA, United Kingdom, France, Japan, China, India, Korea, and others). For many of these countries, the main problem is the warming and its impacts. In Australia, the major concern is rainfall, or lack of it. Australian rainfall is strongly affected by the El Niño – Southern Oscillation. If we get more or stronger El Niño events due to global warming, then we will likely get more droughts. No other country has such a need to determine how the El Niño will change in the future. At present neither we, nor anyone else, can predict this. So we still don't know how Australian droughts will change in the future (although they will get hotter). If we don't solve this, no one else will do it for us. And we need the climate models to understand and predict how the El Niño and droughts will change in the future.

What about the Australian Government's investment in improved science for climate change adaptation? This will help, but only if we know what sort of changing climate we are trying to adapt to. So, much of the increased investment in climate change adaptation science will be wasted without improved climate monitoring, modelling, and understanding.

Monitor, understand, predict, adapt. We need to do all of these if we are to cope with the unavoidable and (at the moment) unpredictable regional climate change we will see in the near future. If we cannot do this for Australia's regional climates, then we have only one option: pray that the Garnaut Review will find a magic bullet, and that the world switches quickly to a low emissions economy – no matter what the cost to the economy. A more sensible approach would be to reduce emissions but at the same time ensure that we can monitor, understand, and predict regional climate changes, so that we can adapt to the unavoidable, before it hits us. A first step would be to see the Rudd Government reverse the budget cuts of previous governments, and restore the climate monitoring and prediction capabilities and capacities of the Bureau of Meteorology and CSIRO.

Neville Nicholls is an Australian Research Council Professorial Fellow at Monash University, after spending 35 years researching climate at the Bureau of Meteorology. He was a Lead Author for the Intergovernmental Panel on Climate Change's 2007 Assessment.