



5th March 2016

Submission to the Senate Finance and Public Administration Committee,
Senate Select Committee into the Scrutiny of Government Budget Measures

CSIRO'S FUNDING MODEL IS INAPPROPRIATE FOR CLIMATE RESEARCH

The need for climate research in Australia has never been more pressing. Given the 2015 Paris Accord and the observed changes of Australia's temperature and rainfall records, Australian climate research capability is essential to enable Australian industries to adapt to the changing climate in the most cost-effective manner.

The type of long-term climate research that has been conducted by CSIRO is vital for Australian businesses and without it climate change will prove to be a much larger burden on our businesses and communities than it needs to be. Successful climate adaptation requires answers to the fiendishly difficult questions such as

- Will Australia's bread-basket, the Murray Darling Basin, experience increased or decreased rainfall in the future?
- Will El Nino strengthen or become more or less frequent in the future?
- How fast will drying occur in those parts of Australia that are drying?
- Where are the largest flash floods likely to occur?
- Where will our dams and irrigation channels need to be modified to handle more intense rainfall events?
- How fast will Australia's most populated cities warm; we need to know this so that we can sensibly set new engineering standards to ensure longevity of costly infrastructure?
- Where will the sea level rise be largest over the next 50 years around the Australian coastline?

Water management, bushfire control, agriculture, the insurance sector, infrastructure, fisheries and emergency services all need answers to these questions to best deliver quality of life to every day Australians and to minimize the damaging impacts of global warming to our economy. Given the state of science in the world today these questions are challenging, and they are just the type of questions that CSIRO has been working towards. It is vital for the Australian economy that this research is continued.

This type of research is just as difficult as cancer research, but there is even more reason for Australia to conduct its own research in this field of science, because unlike cancer research, if this country-specific climate research is not done in Australia then it will not be done anywhere, and we in this country will be living through the increasing effects of global warming with little clue of how we should be best adapting. A recent media article <http://www.theguardian.com/commentisfree/2016/feb/09/climate-change-has-not-been-answered-for-farmers-we-need-more-information-not-less> draws attention to the need of the farming community for long range climate forecasts. These are just the type of information that is threatened by the announced cuts to CSIRO's research programme.

There is a golden opportunity at this time to establish a new national research facility in climate science. Given the magnitude of the problem and the fact that it affects all facets of the Australian economy, the centre needs to be of some hundreds of staff. The annual cost of this centre is trivial in comparison with the impact of climate change on our economy; just think of the tens of billions of dollars of coastal property at risk in Australia, or of the annual value of the agricultural produce of the Murray Darling Basin.

Other nations will not do this country-specific climate science for us. The Paris Accord recognised the importance of climate research as a precursor to successful climate adaption, and now is the time to establish a properly resourced climate research centre in Australia.

Australia needs this facility just as it needs roads, schools and hospitals. A country without the ability to predict its future climate is a country whose steering wheel is only loosely connect to the front wheels, and whose engine is limping along on three cylinders rather than all four.

CSIRO cannot be trusted to do research as important to the country as climate research, because its funding model precludes it from actually setting its own research directions. Under the previous CEO CSIRO was promoted as an "applied research organisation" and this is continuing under the present CEO. The funding model that CSIRO has been operating in recent years has the appropriation funds being expended on administrative overheads, while essentially all the money spent on research needs to be found from other, external-to-CSIRO, income. This means that the provider of the external money controls the direction of essentially all the research that is done in CSIRO.

But climate research is a public good and needs to be funded from the public purse.

Because of the vagaries of external funding, the amount of climate research in CSIRO has varied wildly. This is incompatible with the long-term nature of climate research. For example, in 2003 CSIRO made 15 world-leading scientists redundant in atmospheric science from its Aspendale laboratory, in 2011 a CSIRO Fellow in physical oceanography was made redundant, who, a few months later was elected a Fellow of the Royal Society of London, and more recently, over the past 3 years, staff numbers in the Hobart laboratories have been decreased by ~30 positions. In this field of public good research CSIRO has become an employer of last resort where one cannot pursue a "career" in

science, and appointment into an 'indefinite' position means little. Rather, even senior scientists with world-leading reputations have been shown the door.

And now we come to 2016 when 100 of the 140 positions in climate science are earmarked for redundancy. The impact of this decision on Australia's scientific reputation can be gleaned from the articles in the New York Times over the past week, and from the fact that a large fraction of the climate research community from the whole world have signed a letter of protest to the Australian government.

For Australia to contemplate the sacking of 110 climate scientists at a time when the country is just beginning to address how the various sectors of the economy should best adapt to climate change is unbelievably stupid, and I assume this decision was taken through ignorance; a decision that is truly worthy of a bent spoon award <http://www.skeptics.com.au/features/bent-spoon>. And yet, given the CSIRO funding model, when the ACCSP (Australian Climate Change Science Program) funding is abolished in July this year and is only half replaced by NESP (Natural Environment Science Programme) funding, CSIRO's decision begins to make some internal sense. That is, given the CSIRO funding model, when the external funding is reduced, the CSIRO research activity has to be reduced accordingly.

Climate research is too important to Australia to be entrusted to CSIRO under its present funding model.

Given that CSIRO's funding model precludes it from setting its own research agenda so that CSIRO is unable to reliably undertake public good research, the government needs to take advantage of CSIRO's change of direction and to establish a new national centre to advise the Australian economy on how best to adapt to climate change.

Yours sincerely,

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