

**SENATE FOREIGN AFFAIRS, DEFENCE AND TRADE  
REFERENCES COMMITTEE  
ANSWERS TO QUESTIONS ON NOTICE  
CSIRO**

Inquiry into the implications of climate change for Australia's national security  
Tuesday, 20 March 2018

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**REFERENCE:** Hansard page 22 – Senator Gallacher

**QUESTION:**

Hansard extract

**CHAIR:** I just have one question of CSIRO. What is your assessment of the major national security risk posed by climate change?

If it's 15 different areas, you might need to take some of it on notice, but I'd be really interested to know where you think the main national security aspect of climate change is going to evidence itself.

**Dr James:** To tell you the truth, I don't believe we've actually done an assessment that would answer that question directly. There are a few different angles to take it from, so I think we would have to go away and have a look at it. You could look at it from an energy perspective, for which there's plenty of background material. By energy, I mean electricity supplies, for example, as opposed to the liquid fuels one that we were talking about earlier. You can certainly look at it from the humanitarian point of view, as I said earlier or food security and water issues. There are many dimensions to that.

**CHAIR:** Perhaps it's best to take it on notice. Then there's a snapshot of where you think the emerging national security issues will be.

**Dr James:** Okay.

**ANSWER**

Climate change has ecological, economic and social impacts, and as such is one of the most significant challenges facing Australia. By driving large, unprecedented, and systemic changes in climate, impacts will likely be wide-ranging with multiple feedbacks and consequences. CSIRO's view is that risks posed by climate change will occur through the compounding effect of multiple, independent scenarios playing out simultaneously. The more significant risks lie in the confluence of circumstances which arise from the consequences of climate change and the decisions we make now in response to those changes. As described below, CSIRO's research and synthesised knowledge indicates that for Australia to become well prepared for the impacts of climate change on national security, considerable attention needs to be paid to understand the systemic nature of interdependencies between elements of national security and the different decision making and implementing agencies responsible for national security.

A number of reports have been published highlighting the implications of climate change on national security. Some of these reports draw heavily on CSIRO's research on climate change in Australia and the region (e.g. CSIRO & BoM 2015 & 2016, BoM & CSIRO 2014), including

‘Heavy weather: Climate and the Australian Defence Force’ (Press et al. 2013), ‘Be prepared: climate change, security and Australia’s defence force’ (Barrie et al. 2015), and ‘Heating up the Planet: Climate change and security’ (Dupont and Pearman 2006). As noted in these reports, climate change will have impacts across multiple sectors and as such is widely regarded as a “threat multiplier”.

Natural disasters as a direct consequence of weather events are only one part of the likely impacts from climate change. Research indicates that agriculture, fisheries and forestry (Stokes and Howden 2010), water availability (Chiew and Prosser 2011), natural ecosystems (Steffen et al. 2009), biosecurity (CSIRO 2014), energy systems (CSIRO 2017a), infrastructure (CSIRO 2017b) and communities (e.g., Edwards 2013) will also be affected by both changes in weather-related extreme events and slow-onset climate change. Research also indicates that the effects of climate change are simultaneously felt in all sectors (most likely to different degrees) and there are cross-dependencies among these sectors that would cause the effects in any one sector to be multiplied (O’Connell et al. 2015; Stafford Smith et al., 2011; Wang et al., 2014; Wise et al., 2014). For these reasons, climate change impacts will be profound and widespread if the opportunity to plan for likely effects and interactions is delayed or not taken.

There are likely to be benefits from systemic, integrated and coordinated approaches to policy and planning for climate change mitigation and adaptation, but this will require cross-agency coordination as well as an understanding of the complex interdependencies across sectors and likely trajectories of change (e.g., see CSIRO 2017b). It will not be sufficient to undertake one cycle of planning and implementation, but rather it will be necessary to undertake multiple cycles of monitoring, review, remediation and further planning over time, given the scale and duration of sustained change.

It is not currently possible to undertake a scientific analysis of the specific social, environmental and economic impacts across all sectors that would enable us to determine which scenarios create the largest threats to national security. However CSIRO and various university partners have recently created the capability to undertake an exploration of the broader social, environmental and economic trajectories for Australia under different climate change scenarios – the Australian National Outlook (Hatfield-Dodds et al. 2015). A similar style of modelling capacity could potentially be developed for the purpose of exploring the comparative and cumulative effects of different scenarios on national security. Such a capability for Australia could incorporate a systems view of coincident and interacting parts to social, environmental and economic dimensions, including factors within our control in Australia and those that might exert pressure on us from outside the country. The advantage of using such a system to generate options is that it could be used to assist with making decisions about how to plan and adapt to climate change while minimising disruption to Australian society.

## **References:**

Australian Bureau of Meteorology and CSIRO (2014) Climate Variability, Extremes and Change in the Western Tropical Pacific: new Science and Updated Country Reports. Pacific-Australia Climate Change Science and Adaptation Planning Program Technical Report, Melbourne, Australia.

- Barrie, C., Steffan, W., Pearce, A. and Thomas, M. (2015) Be prepared: Climate change, Security and Australia's Defence Force. Canberra: Climate Council of Australia.  
<http://www.climatecouncil.org.au/securityreport2015>
- Chiew F. and Prosser I. (2011) Water and climate. In: Water – Science and Solutions for Australia (Editor: I Prosser), CSIRO Publishing.
- CSIRO (2104) Australia's biosecurity future: preparing for future biological challenges. CSIRO (available at <https://www.csiro.au/en/Research/Farming-food/Innovation-and-technology-for-the-future/Biosecurity-Future-Report> )
- CSIRO (2017a) Inquiry by the Senate Select Committee into Resilience of Electricity Infrastructure in a Warming World. CSIRO submission 16/577, January 2017.
- CSIRO (2017b) Inquiry into current and future impacts of climate change on housing, buildings and infrastructure by the Senate Environment and Communications References Committee. CSIRO submission 17/602, August 2017.
- CSIRO and Bureau of Meteorology (2015) Climate Change in Australia: Information for Australia's Natural Resource Management Regions: Technical Report. (CSIRO and the Bureau of Meteorology).
- CSIRO and Bureau of Meteorology (2016) State of the Climate 2016. (CSIRO and the Bureau of Meteorology).
- Dupont A, Pearman G (2006) 'Heating up the planet: climate change and security.' Lowy Institute Paper 12. Lowy Institute for International Policy.
- Edwards JB (2013) 'The Logistics of Climate-Induced Resettlement: Lessons from the Carteret Islands, Papua New Guinea.' Refugee Survey Quarterly 32, 52-78. 10.1093/rsq/hdt011.
- Hatfield-Dodds, S., Schandl, H., Adams, P.D., Baynes, T.M., Brinsmead, T.S., Bryan, B.A., Chiew, F.H.S., Graham, P.W., Grundy, M., Harwood, T., McCallum, R., McCrea, R., McKellar, L.E., Newth, D., Nolan, M., Prosser, I., Wonhas, A. (2015) Australia is 'free to choose' economic growth and falling environmental pressures. Nature 527, 49-53.
- O'Connell, D., Lin B, Capon, T., and Stafford Smith, M. (2015) Disaster Resilience and Mitigation: A short report on current and future capacity to deliver on risk assessment and mitigation needs. <https://research.csiro.au/eap/key-findings/>.
- Press, A., Bergin, A. and Garnsey, E. (2013) Heavy Weather: Climate and the Australian Defence Force. Canberra: Australian Strategic Policy Institute. <https://www.aspi.org.au/report/special-report-issue-49-heavy-weather-climate-and-australian-defence-force>
- Stafford Smith, M., Horrocks, L., Harvey, A. and Hamilton, C. (2011) Rethinking adaptation for a 4 C world. Philosophical Transactions of the Royal Society of London A: Mathematical, Physical and Engineering Sciences, 369(1934), pp.196-216.
- Steffen, W., ed. (2009) Australia's Biodiversity and Climate Change. CSIRO Publishing.
- Stokes C and Howden M. (2010) Adapting agriculture to climate change: preparing Australian agriculture, forestry and fisheries for the future. CSIRO Publishing, Melbourne.

- Wang, X., Khoo, Y.B. and Wang, C.H. (2014) Risk assessment and decision-making for residential housing adapting to increasing storm-tide inundation due to sea-level rise in South East Queensland, Australia. *Civil Engineering and Environmental Systems*, 31(2), pp.125-139.
- Wise, R. M., Fazey, I., Smith, M. S., Park, S. E., Eakin, H. C., Van Garderen, E. A., & Campbell, B. (2014) Reconceptualising adaptation to climate change as part of pathways of change and response. *Global Environmental Change*, 28, 325-336.