

26 July 2017

**Foreign Affairs, Defence and Trade Committee**  
**Department of the Senate**  
PO Box 6100  
Parliament House Canberra  
ACT 2600

Dear Committee Secretary,

Thank you for the opportunity to provide a submission to the Committee's inquiry into the implications of climate change for Australia's national security.

The following submission addresses the terms of reference specifically with respect to the Department of Defence and the Australian Defence Force.

It does not address the implications for, or responsibilities of other Australian national security organisations.

Yours sincerely,

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**The implications of climate change for Defence with particular reference to:**

**a. The threats and long-term risks posed by climate change to Defence, including those canvassed in the 'National security implications of climate-related risks and a changing climate' report by the United States Department of Defense**

The United States Department of Defense's report, *National security implications of climate-related risks and a changing climate*, argues that climate change exacerbates existing risks (for example those caused by social, economic and/or political tensions); and that it can also 'generate new vulnerabilities (e.g. water scarcity) and thus contribute to instability and conflict even in situations not previously considered at risk'<sup>1</sup>.

It further elucidates four types of climate change-related security risks, as identified by the US military's Geographic Combatant Commands. They are:

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<sup>1</sup> United States Department of Defense, 2015 p.4

- persistently recurring conditions such as flooding, drought, and higher temperatures, which further burden fragile states and vulnerable populations;
- more frequent and/or more severe extreme weather events, which may require military involvement in humanitarian assistance and disaster relief (HA/DR);
- sea level and temperature changes, impacting coastal communities and affecting military facilities, and potentially leading to displaced populations; and
- decreases in Arctic ice cover, type and thickness, opening up greater access for 'tourism, shipping, resource exploration and extraction, and military activities'<sup>2</sup>

The threats and long-term risks posed by climate change can further be understood as broadly falling into two categories: *burden multipliers* and *threat multipliers*.

*Burden multipliers* represent direct risks to the Australian Defence Force (ADF) capabilities as they place additional stress on military resources, including ADF estate, personnel, support systems, facilities, supplies, collective training activities, and command structures.

These risks could also be described as *preparedness* risks: they threaten the ADF's ability to maintain its fundamental inputs to capability.

It will be necessary for the ADF to consider how a changed climate could impact its current assets and future acquisitions.

For instance, military assets may be impacted by sea level rise and the exposure to and damage from natural disasters; aircraft and runways may be impacted by temperature rises; and naval capabilities may be affected by changes to the sea-state.

Military personnel may experience health impacts from heat stress and the increased incidence and spread of diseases.

The ADF also relies on civilian infrastructure such as electricity, water and sewerage systems, which are impacted by weather events.

The implications of climate change for the ADF stretch across its missions; capability development and acquisition; data; adaptation and mitigation; supply chain security; interoperability; energy culture; personnel and training; and preparedness.

It is not practical to expand on each point in this short submission; some of them are set out more fully in ASPI's Special Report, *Heavy Weather: Climate and the Australian Defence Force*.<sup>3</sup>

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<sup>2</sup> United States Department of Defense, 2015 pp.4-5

<sup>3</sup> Anthony Press, Anthony Bergin & Eliza Garnsey, 2013, 'Heavy weather: climate and the Australian Defence Force', *ASPI Special Report March 2013 Issue 49*

*Threat multipliers* increase both the volume and range of threats the military may be confronted with as a result of climate change, as well as multiplying the impacts and effects of other, non-climate related social, economic, or political stressors.

For example, climate change-related temperature increases and a higher incidence and intensity of extreme weather events may lead to population displacement, conflict over resources, food and water shortages, further environmental degradation, and the further weakening of fragile states.

The significance of climate change to Australia's regional security was highlighted in the 2016 Defence White Paper, where 'state fragility, including within our immediate neighbourhood, caused by uneven economic growth, crime, social, environmental and governance challenges and climate change' was recognised as one of six key drivers that 'will shape the development of Australia's security environment to 2035'.<sup>4</sup>

This is a view shared by the Chief of Army, Lieutenant General Angus Campbell. In his address to the Chief of Army's Exercise last year, he named an unstable planet as one of the three issues he believed to be central to the security challenges we will encounter in redefining boundaries for the 21st century land force, and supported the view that climate change is the ultimate 'threat multiplier'.<sup>5</sup>

Australia's regional security interests stretch from the tropics to the Antarctic, and across three oceans; climate change-induced impacts in our neighbourhood stand to threaten Australia's regional and national security.

As General Campbell highlighted in his address, of the most at-risk countries for sea level rise by 2100, the top ten were all in the Indo-Pacific, with more than 138 million people being at risk. Many small island states in the Pacific and Indian oceans are likely to become uninhabitable between 2050 and 2100, displacing the 500,000 people who live there<sup>6</sup>.

As such, in addition to physical changes in our own environment, Australia will also be impacted by second- and third-order consequences of climate change (such as those outlined above) in other countries.

This will place immense pressure on the ADF, as it is called upon to assist in more regular and drawn-out HA/DR engagements at home and abroad.

Crucially, HA/DR activities will not necessarily always occur in a benign environment; there is a strong likelihood of an extreme weather event occurring in an unstable state in the Asia-Pacific region.

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<sup>4</sup> Defence White Paper, 2016 pp. 40-41

<sup>5</sup> Angus Campbell, 2016, 'Chief of Army closing address to the 2016 Chief of Army's Exercise', <http://103.11.78.168/Our-work/Speeches-and-transcripts/Chief-of-Army-closing-address-to-the-2016-Chief-of-Armys-Exercise>

<sup>6</sup> Campbell, 2016

There is an increased risk of extreme weather events occurring *concurrently* in the future.

Therefore, the ADF will need to be prepared to assist in responding to multiple extreme weather events both in Australia and in the region at the same time.

A higher HA/DR mission tempo will have a direct impact on ADF resources and its ability to fulfil its range of responsibilities, which in turn could place pressure on the ADF Reserve Force.

**b. The role of military response in addressing climate change, and the means by which these responses are implemented**

Part of the military's role in addressing climate change is to adapt and respond to the pressures placed on it, both in terms of direct impacts on capability, and with respect to the changes in its operating environment.

The ADF will need to be more resilient and versatile in responding to the myriad threats posed by climate change.

The role of the military in responding to climate change is four-fold:

First and foremost, it remains the frontline defence of Australia and its national interest; its role is to protect Australia from direct threats to its territory, citizens and interests. This means, among other potential actions, being prepared to lead, or support regional stabilisation missions.

Secondly, the military will be called upon to play a greater and even more regular role in HA/DR, both at home and abroad.

Thirdly, the military's role in responding to climate change is to understand the threats and risks posed to Australia and how this will impact the ADF.

Lastly, the military has a role to play in contributing to research and innovation and as part of a comprehensive whole-of-government response to climate change and its threats.

**Role of military response 1: respond to security threats in the region**

States in this region will suffer some of the most severe direct and indirect impacts of climate change.

Neighbouring states may request an increase in Defence assistance to cope with the effects of climate change.

The 2016 Defence White Paper<sup>7</sup> recognised this fact:

*Our strategic weight, proximity and resources place high expectations on us to respond to instability or natural disasters, and climate change means we will be called on to do so more often. We will continue to play that role in close collaboration with New Zealand, France, the United States, Japan and other partners.*

The ADF may also be called upon to contribute to enforcement, protection and monitoring activities in the Southern Ocean and Antarctica. Increased iceberg calving has implications for shipping, and loss of sea ice will improve access to the waters for illegal, unreported and unregulated fishing.

Naval assets may be required for fisheries enforcement work in response to a rise in illegal fishing in Australian waters due to climate change-induced fisheries migration.

## **Role of military response 2: participate in HA/DR missions**

As the rate and intensity of extreme weather events and natural disasters increases, the military will be more regularly required to participate in HA/DR missions.

This will add a burden to military assets and personnel, and requires a re-assessment of capabilities and procurement processes, whereby more disaster-specific or dual-use equipment should be considered.

At a regional level, ADF expertise should be shared with states experiencing the effects of climate change with a view to building resilience and preventing the escalation of conflict.

One way to facilitate this would be to expand the current Defence Cooperation Program to include resilience support. This may extend to providing assistance in relocating villages, or reinforcing coastal infrastructure.

The ADF could play a role by contributing to the development of regional HA/DR doctrine, joint HA/DR exercises and the joint development of capabilities that might be priority assigned to nations in times of crisis.

It may be necessary for the ADF to assign part of its ready reserve or regular force to dedicated HA/DR tasks.

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<sup>7</sup> Defence White Paper, 2016, p.56

### **Role of military response 3: be prepared**

Part of the military's response to climate change is to be adequately prepared to still be able to perform its responsibilities irrespective of climate change and to be able to respond appropriately to any risks and threats as a result of climate change.

The training conditions of personnel will need to reflect the change in operating environments, such as incorporating climate change and disaster management scenarios in training.

### **Role of military response 4: be part of a whole-of-government response**

It is critical that Defence, and the military, will be part of a whole-of-government approach to addressing climate change and the related security concerns. This should moreover be extended to regional and international cooperation and actions on climate change.

A key way, Defence can address climate change, is to leverage its extensive research, logistics, engineering, and other scientific expertise, along with its technology and equipment, to better understand potential climate change scenarios, Australia's current level of preparedness, and assist in responding to climate-related risks.

### **c. The capacity and preparedness of Defence to respond to climate change risks in our region**

Defence's capacity and preparedness to respond to climate change risks should be considered with respect to its ability to understand the vulnerabilities to climate change, which the ADF itself faces (the *burden multipliers*), and to mitigate against them, and with respect to the ADF's ability to respond to new and increasing threats in the region (the *threat multipliers*).

Changing Defence's behaviour and systems in the manner required without reducing ADF operational capability is a significant challenge.

Conventional threats and less predictable security outcomes in our region will mean that the need for ADF combat capability is not likely to fade in the future because of climate change.

This means that the ADF will either need to do more with the same amount of funding and capability, or else additional resources need to be committed to bring the ADF's capacity to the level required to meet climate change-induced threats and a changing operating environment.

Because of demands on ADF resources for maritime border security, maritime enforcement and disaster relief, climate change may give greater currency to arguments in support of a coastguard and re-vamped civilian disaster agencies.

The ADF currently deploys, at request, in the aftermath of disasters, a range of assets and capabilities in support of the domestic emergency services. It can carry out logistics and communication in the absence of infrastructure, and has assets with the versatility and endurance for non-combat tasks.

A growing HA/DR burden will necessitate expanding the ADFs logistic support corps, including engineers, medical staff, supply and transport. Climate change will also influence the type and volume of equipment and capabilities required to move and land large volumes of supplies, a critical aspect of HA/DR.

Climate change impacts on coastal zones may mean changes to amphibious landing sites: this may require a re-assessment of ship-to-shore practices.

#### **d. The role of Defence in climate change mitigation and adaptation**

The ADF will face increasing political pressure to contribute to climate change mitigation. Developing strategic partnerships with regional defence forces to mitigate and adapt to climate change, and contributing to joint capacity-building efforts will enhance regional security.

Australia should become more involved in the Multinational Planning Augmentation Team operated by the US Pacific Command (PACOM), which facilitates planning and education for natural disasters and humanitarian risks across the Asia-Pacific region.

One of the most significant adaptation challenges facing the ADF will be to manage the vast Defence estate under the effects of climate change. The vast bulk of the Defence estate and supporting infrastructure is built to tolerances based on Australian standards, which are in turn based on existing knowledge of Australian conditions. Climate-proofing the estate will become more important.

Responding to climate change may see the ADF under greater pressure to moderate its consumption of energy, reduce its impact on the environment, and continue to lead best-practice standards.

Defence's bases offer an ideal test-bed to develop and deploy the next generation of energy technologies to power built infrastructure. While operational platforms for the near and medium term will be powered by traditional liquid fuels, there will be an emerging requirement to transition mobile platforms to alternative energy sources.

Mitigating and adapting to the effects of climate change will require an increase in Defence personnel, who specialise in disaster management, infrastructure resilience, and other logistical areas. Defence will need to develop closer working relationships with climate science agencies such as CSIRO and the Bureau of Meteorology, so that scientific developments and climate change projections are more fully integrated into the ADF's policies and planning for climate change.

Defence on its own will not shape the energy market, even though it spent \$524 million on fuel in 2014/15. But there is no reason why Defence should not set an ambitious target in terms of moving towards alternative fuels by announcing its readiness to receive cost-competitive blended products.

The Royal Australian Navy (RAN) must maintain interoperability with the United States Navy (USN) as it moves towards the introduction of alternative naval fuel to meet its Great Green Fleet energy initiative, which outlines the USN's commitment to source 50% of fuel from renewable sources by 2020.

The RAN understands the interoperability issues associated with the USN moving to alternative fuels and it has made significant progress in ensuring our ships and aircraft are certified to use USN sourced blends.

But it is not as clear that Defence has understood the justifications that have led the US departments of Defense, Agriculture, and Commerce to spend in excess of US\$1 billion to assist industry to develop alternative fuels.

### **Three recommendations**

The Australian Government should look for opportunities to integrate climate change responses into Defence research, planning and development. Defence will need to factor climate change in to its long-term recapitalisation process and through-life approach to capability requirements. Defence will need to engage across government on climate change, especially under existing mechanisms of the Department of the Environment and Energy. They'll need to be a Defence commitment of resources to understand the business risks and to act on them.

- **Appoint a climate advisor**
  - Defence should now appoint a senior military leader to act as a strategic voice for climate change national security issues, including preparedness and capability.
- **Engage with climate scientists**
  - The organisation should facilitate better engagement with climate scientists through seminars, workshops and focus groups on specific issues, such as sea-level rise impacts on ports, increased bushfire, flood and storm risks to Defence bases, and changes in sea states as a result of climate change.



- Develop a climate change plan
  - A long-term strategy for developing ADF responses to climate change needs to be prepared, based on an analysis of the political, strategic, financial, and capability risks and opportunities climate change presents to the ADF business.
  - Last year, the US Department of Defense issued a directive, which dictates that climate change is to be incorporated into every aspect of US military training and preparedness. Australia should do the same.