The Senate

Foreign Affairs, Defence and Trade References Committee

Implications of climate change for Australia's national security

May 2018

ISBN 978-1-76010-760-4

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

Phone: + 61 2 6277 3535
Fax: + 61 2 6277 5818
Email: fadt.sen@aph.gov.au
Internet: http://www.aph.gov.au/senate_fadt

Printed by the Senate Printing Unit, Parliament House, Canberra.

Committee Membership

Senator Alex Gallacher, **Chair**	ALP, SA
Senator Linda Reynolds CSC, (from 5 February 2018) **Deputy Chair** (from 7 February 2018)	LP, WA
Senator the Hon Bridget McKenzie, (from 23 June 2017 to 5 February 2018) Deputy Chair (from 14 July 2017 to 20 December 2017)	NATS, VIC
Senator Chris Back, Deputy Chair (to 22 June 2017)	LP, WA
Senator David Fawcett	LP, SA
Senator Kimberley Kitching	ALP, VIC
Senator Claire Moore	ALP, QLD
Senator Rex Patrick (from 15 November 2017)	CA, SA
Senator Scott Ludlam (to 14 July 2017)	AG, WA
Senator Jacqui Lambie (from 9 August 2017 to 14 November 2017)	JLN, TAS

Substitute member

Senator Peter Whish-Wilson, AG, TAS substituted for Senator Rex Patrick

Participating member

Senator Chris Back (23 June 2017 to 31 July 2017)	LP, WA

Secretariat

Ms Lyn Beverley, Committee Secretary

Ms Margie Morrison, Acting Principal Research Officer

Ms Anna Dunkley, Senior Research Officer

Ms Margaret Cahill, Research Officer

Mr Tom Curran, Graduate

Ms Shannon Ross, Administrative Officer

Table of contents

Recommendations

Recommendation 1

6.6 **The committee recommends that the Commonwealth Government commits to providing ongoing adequate funding for climate science and research organisations.**

Recommendation 2

6.9 **The committee recommends that the Commonwealth Government develop a climate security white paper, or similar planning document, to guide a coordinated whole of government response to climate change risks.**

Recommendation 3

6.12 **The committee recommends that the Commonwealth Government develop a National Climate, Health and Well-being Plan based on the *Framework for a National Strategy on Climate, Health and Well-being for Australia*.**

Recommendation 4

6.15 **The committee recommends the Department of Defence consider releasing an unclassified version of the work undertaken by Defence to identify climate risks to its estate.**

Recommendation 5

6.20 **The committee recommends the National Aerial Firefighting Centre undertake a cost benefit analysis to assess whether leasing arrangements or government ownership of firefighting aircraft will provide the best value and support to firefighters and communities in the future.**

Recommendation 6

6.22 **The committee recommends that the Commonwealth Government consider the need for a dedicated climate security leadership position in the Home Affairs Portfolio to facilitate coordination on climate resilience issues, including disaster risk reduction, infrastructure planning, community health and well-being, and emergency management.**

Recommendation 7

6.24 **The committee recommends that the Department of Defence create a dedicated senior leadership position to assist in planning and managing the delivery of domestic and international humanitarian assistance and disaster relief as pressures increase over time.**

Recommendation 8

6.26 **The committee recommends that national security agencies increase their climate security knowledge and capability by encouraging participation of staff in available courses.**

Recommendation 9

6.30 **The committee recommends the Commonwealth Government extend the National Partnership Agreement on Natural Disaster Resilience and review after the new funding arrangements are well established and data is available on the funding available for mitigation activities.**

Recommendation 10

6.33 **The committee recommends that the Department of Defence establish emissions reductions targets across stationary and operational energy use, and report against these in its annual report.**

Recommendation 11

6.38 **The committee recommends the Commonwealth Government provide further funding for international climate adaptation and disaster risk reduction measures, in addition to the existing aid budget, to the extent that financial circumstances allow.**

Chapter 1

Referral

1.1 On 14 June 2017 the Senate referred the following to the Senate Foreign Affairs, Defence and Trade References Committee for inquiry and report by 4 December 2017:

> The implications of climate change for Australia's national security, with particular reference to:
>
> a. the threats and long-term risks posed by climate change to national security and international security, including those canvassed in the *National security implications of climate-related risks and a changing climate* report by the United States Department of Defense;
>
> b. the role of both humanitarian and military response in addressing climate change, and the means by which these responses are implemented;
>
> c. the capacity and preparedness of Australia's relevant national security agencies to respond to climate change risks in our region;
>
> d. the role of Australia's overseas development assistance in climate change mitigation and adaptation more broadly;
>
> e. the role of climate mitigation policies in reducing national security risks; and
>
> f. any other related matters.[1]

1.2 On 13 November 2017 the Senate agreed to extend the reporting date to 22 March 2018.[2] On 20 March 2018 the reporting date was extended to 20 April 2018.[3] On 17 April 2018 the reporting date was extended to 17 May 2018.[4]

Conduct of the inquiry

1.3 Details of the inquiry were placed on the committee's website at: http://www.aph.gov.au/senate_fadt. The committee also contacted a number of relevant individuals and organisations to notify them of the inquiry and invite submissions by 4 August 2017. Submissions received are listed at Appendix 1.

1.4 The committee held two public hearings in Canberra, on 8 December 2017 and 20 March 2018. A list of witnesses who gave evidence is available at Appendix 3.

1.5 Submissions and the Hansard transcripts of evidence may be accessed through the committee website.

---

1 *Journals of the Senate*, No. 43—14 June 2017, p. 1408.

2 *Journals of the Senate*, No. 68—13 November 2017, p. 2191.

3 *Journals of the Senate*, No. 89—20 March 2018, p. 2824.

4 *Journals of the Senate*, No. 95—8 May 2018, p. 3001.

Acknowledgement

1.6 The committee thanks the organisations and individuals who participated in the public hearings as well as those who made written submissions.

Structure of the report

1.7 This chapter provides information on terminology and introduces the United States Department of Defense (US DoD) report mentioned in the terms of reference. It also summarises Australia's climate security governance arrangements.

1.8 Chapter 2 provides an overview of the key ways in which climate change threatens national security. Chapter 3 discusses national measures to improve Australia's climate security, and chapter 4 includes particular suggestions for the Department of Defence (Defence) from the evidence. Chapter 5 outlines suggested initiatives to enhance climate resilience in Australia's region. Chapter 6 includes the committee's conclusions and recommendations.

Context

Terminology

Climate change

1.9 Defence's submission used the United Nations (UN) definition of 'climate change':

> …a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods (UN, UN 1992, United Nations Framework Convention on Climate Change).[5]

National security

1.10 The terms of reference focus on 'Australia's national security', which Defence defined as including 'state and human security' and being 'inherently linked to the security of health, water, energy, food and economic systems at the local, national, regional and global level'.[6] 'Human security' is a concept that:

> …shifts the political focus from states and their security to "the existential threats faced by millions of individuals around the world," including poverty, food insecurity, environmental degradation, political repression, and ill-health.[7]

5 Department of Defence (Defence), *Submission 63*, p. 3.

6 Defence, *Submission 63*, p. 3.

7 Australian Council for International Development (ACFID), *Submission 53*, p. 6.

1.11 Other submissions reiterated this broad understanding of national security.[8] Dr Paul Barnes from the Australian Strategic Policy Institute argued that national security requires communities, infrastructure and the economy to be viable and resilient.[9] The committee will take a broad view of national security that encompasses these diverse issues; however, it did not receive as much evidence on matters such as health, infrastructure, the economy or energy security.

Climate security

1.12 Submissions also used the term 'climate security', which has been defined as: 'the condition where people, communities, and states have the capacity to manage stresses emerging from climate change and variability'.[10]

Threat and risk

1.13 Though 'threat' is often used to refer to something likely to cause damage or danger, and 'risk' to describe the likelihood of this occurring, the evidence received by the committee generally used the terms interchangeably.

US Department of Defense report

1.14 The terms of reference refer to the 2015 US DoD report *National security implications of climate-related risks and a changing climate.* The report responded to a Congressional request to the US DoD to:

> …identify the most serious and likely climate-related security risks for each Combatant Command, the ways in which the Combatant Commands are integrating mitigation of these risks into their planning processes, and a description of the resources required for an effective response.[11]

1.15 As outlined in more detail in chapter 2, the report identified a range of risks to military installations, including extreme weather events, sea level rise and flooding, and temperature changes.[12] It indicated Geographic Combatant Commands considered climate risks in campaign, operation, contingency and security cooperation plans.[13]

---

8 See Dr Amrita Malhi, ACFID, *Committee Hansard*, 8 December 2017, pp. 41, 44; Ms Lucy Manne, ActionAid Australia, *Committee Hansard*, 8 December 2017, p. 41; Professor Anthony Burke and Professor Shirley Scott, *Submission 51*, p. 16.

9 *Committee Hansard*, 8 December 2017, pp. 12–13.

10 Lisa M. Dellmuth, Maria-Therese Gustafsson, Niklas Bremberg and Malin Mobjörk, 'Intergovernmental organizations and climate security: advancing the research agenda', *WIREs Climate Change*, vol. 9, 2018, p. 3.

11 US Department of Defense (US DoD), *National Security Implications of Climate-Related Risks and a Changing Climate*, July 2015, p. 1. Combatant Commands are US DoD organisations with responsibility for particular missions or geographic areas. Australia is located within the Pacific Command (USPACOM) region.

12 US DoD, *National Security Implications of Climate-Related Risks and a Changing Climate*, July 2015, pp. 4–5.

13 US DoD, *National Security Implications of Climate-Related Risks and a Changing Climate*, July 2015, p. 6.

1.16 The report also predicted 'climate change will have the greatest impact on areas and environments already prone to instability', and indicated Geographic Combatant Commands focused on cooperation and building the capacity of partner nations through infrastructure, training and equipping.[14]

Australia's climate security governance arrangements

1.17 This section provides an overview of Australia's international and national climate change and security governance structures and strategies.

Australia's involvement in international arrangements

1.18 Australia is a member of the Intergovernmental Panel on Climate Change (IPCC), which is open to all UN member countries. The IPCC aims to provide a scientific view on the current state of climate change knowledge and its environmental and socioeconomic impacts.[15] Australia is also party to coordinated global responses to climate change, including the UN Framework Convention on Climate Change (UNFCCC) and 2015 Paris Agreement.[16] Australia's other international mitigation commitments include participation in the International Civil Aviation Organization, the Montreal Protocol on Substances that Deplete the Ozone Layer, and the International Maritime Organization.[17]

1.19 Australia holds a co-chair position on the Board of the Green Climate Fund, and has also contributed funds to environmental activities in developing countries through the Global Environment Facility.[18]

1.20 International humanitarian and development agreements to which Australia has committed include the *Sendai Framework for Disaster Risk Reduction 2015–2030*, *Platform on Disaster Displacement* and the *2030 Agenda for Sustainable Development*.[19] Australia is also part of the FRANZ partnership (France, Australia and New Zealand), which provides coordinated support to Pacific Island countries that require military and humanitarian support for disaster response and early recovery.[20]

---

14 US DoD, *National Security Implications of Climate-Related Risks and a Changing Climate*, July 2015, p. 8.

15 Intergovernmental Panel on Climate Change, *Organization*, http://www.ipcc.ch/organization/organization.shtml (accessed 2 April 2018).

16 Department of Foreign Affairs and Trade (DFAT), *Submission 61*, p. 24.

17 An International Civil Aviation Organization scheme requires airlines to offset industry growth in emissions above 2020 levels and increase the uptake of sustainable alternative fuels. Australia has also ratified the Kigali Amendment to the Montreal Protocol, which will guide reductions in hydrofluorocarbons emission. Further, members of the International Maritime Organization have agreed to adopt a strategy on the reduction of greenhouse gas emissions from ships by April 2018. *Submission 61*, pp. 24–25.

18 *Submission 61*, p. 23. The co-chair position will be held by Ewen McDonald, Deputy Secretary DFAT, until December 2018. Green Climate Fund, *Overview*, http://www.greenclimate.fund/boardroom/overview (accessed 2 April 2018).

19 *Submission 61*, pp. 5, 12.

20 *Submission 61*, p. 11.

In the aftermath of Tropical Cyclone Winston in 2016, 'FRANZ coordinated our respective military assets, delivery of supplies, and agreed on a division of labour to avoid duplication of assistance and effectively support the Fiji Government's efforts'.[21]

1.21 Disaster resilience is considered by committees within the Council of Australian Governments (COAG) framework, including the Ministerial Council for Police and Emergency Management (formerly part of the Law, Crime and Community Safety Council).[22] This is supported by the Australia-New Zealand Emergency Management Committee, which 'provides strategic leadership on national priorities in disaster resilience policy and supports national capability and capacity development initiatives'.[23] It comprises senior officials from the Australian, state and territory governments, the Australian Local Government Association and New Zealand.

1.22 Australia also cooperates with regional partners and US Pacific Command through the Pacific Environmental Security Forum.[24] This forum includes representatives from Indo-Pacific nations and works to understand 'the geostrategic implications of threats to environmental security' and develop 'adaptation and mitigation strategies to counter the effects of climate change'.[25]

Commonwealth arrangements

1.23 The work of many Commonwealth Government departments and agencies is related to climate security policy. Submissions predominantly focused on the Defence portfolio, which includes the Department of Defence and the Australian Defence Force (collectively known as Defence). Defence appointed a Defence Climate and Security Adviser in mid-2016 to build climate awareness and to support the adoption of climate change considerations into 'business as usual' arrangements.[26]

1.24 Australia's national security and emergency management sectors were recently changed due to the establishment of the Home Affairs Portfolio on 20 December 2017, which 'brings together Australia's federal law enforcement, national and transport security, criminal justice, emergency management, multicultural affairs and immigration and border-related functions and agencies'.[27] This portfolio includes the Australian Border Force, Australian Criminal Intelligence Commission, Australian Federal Police and the Australian Transaction Reports and

21 *Submission 61*, p. 13.

22 Attorney-General's Department, https://www.ag.gov.au/About/CommitteesandCouncils/Law-Crime-and-Community-Safety-Council/Pages/default.aspx (accessed 6 April 2018).

23 Attorney-General's Department, *Submission 58*, p. 2.

24 Defence, *Submission 63*, p. 14.

25 *Submission 63*, p. 14.

26 *Submission 63*, p. 4.

27 Australian Government, *Australian National Security: National security agencies*, https://www.nationalsecurity.gov.au/whataustraliaisdoing/pages/nationalsecurityagencies.aspx (accessed 2 April 2018).

Analysis Centre.[28] The Australian Security Intelligence Organisation is also intended to transition into the portfolio following the passage of legislation.[29] The Department of Home Affairs leads Australian Government policy on domestic resilience and emergency management through Emergency Management Australia.[30]

1.25 Other agencies relevant to the terms of reference include the Australian Federal Police, Australian Secret Intelligence Service, Department of Foreign Affairs and Trade, Department of Health, and the Office of National Assessments (ONA).[31] The ONA website indicates it views climate change as a national security risk, and states that ONA 'first wrote about climate change in 1981'.[32] The work of ONA is not publicly available; however, during 2007 ONA confirmed it had undertaken work on the implications of climate change for national security and international relations in the region.[33] The Director General at the time stated that their 'work traversed the economic, scientific, political and strategic implications of climate change'.[34]

1.26 Pertinent bodies also include the Australian Government Secretaries Board on Climate Risk, led by the Department of the Environment and Energy (DoEE), and the Disaster and Climate Resilience Reference Group, which considers strategic issues for federal agencies caused by climate change and disasters. It is co-chaired by DoEE and the Department of Home Affairs, and includes representatives from 22 federal agencies, including Defence.[35]

National climate change and security strategies

1.27 Australia does not have a climate security strategy; however, there are some national strategies which are particularly relevant. For example, the 2011 *National Strategy for Disaster Resilience* underscored 'the increasing severity and regularity of natural disasters in Australia and the need for a coordinated and cooperative national effort to enhance Australia's capacity to withstand and recover

28 Australian Government, *Australian National Security: National security agencies*.

29 Australian Government, *Australian National Security: National security agencies*.

30 Mr Mark Crosweller, Director General of Emergency Management Australia (EMA), *Proof Committee Hansard*, 20 March 2018, pp. 2, 6–7.

31 Australian Government, *Australian National Security: National security agencies*.

32 Office of National Assessments (ONA), A Short History of the Office of National Assessments, https://www.ona.gov.au/about-ona/overview/history-ona (accessed 2 April 2018).

33 Mr Peter Varghese, Director General, ONA, *Committee Estimates Hansard*, 22 May 2007, pp. 160–162.

34 Mr Varghese, *Committee Estimates Hansard*, 22 May 2007, pp. 160–162.

35 Defence, *Submission 63*, p. 10; Mr Crosweller, Director General of EMA, *Proof Committee Hansard*, 20 March 2018, pp. 2, 23. A list of participating departments was provided by the Department of Home Affairs (answers to questions on notice, 20 March 2018 (received 9 April 2018)).

from emergencies and disasters'.[36] The 2015 *National Climate Resilience and Adaptation Strategy* identified principles to guide climate adaptation practice and resilience building.[37]

1.28 The *2016 Defence White Paper* described climate change as 'a major challenge for countries in Australia's immediate region', and committed Australia to provide leadership and support in the region, stating:

> 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.[38]

1.29 The *2017 Foreign Policy White Paper* also framed climate change as an issue requiring inter-country cooperation, and indicated responses to this threat 'will be an important influence on international affairs and Australia's economy'.[39] It argued nations 'need to factor climate change in to long-term planning and investment, including its implications for national and regional security'.[40] The *2017 Foreign Policy White Paper* warned the effects of climate change:

> …impede economic development, drive additional displacement of people and, if left unchecked, add to global stresses on the supply of food and water. Many countries in Australia's immediate region, especially small island states and those with large delta cities, will be increasingly affected.[41]

1.30 Chapter 2 provides more detail on how climate change is affecting national security.

---

36 Australian Disaster Resilience Knowledge Hub, *National Strategy for Disaster Resilience*, February 2011, https://knowledge.aidr.org.au/resources/national-strategy-for-disaster-resilience/ (accessed 2 April 2018).

37 Australian Government, *National Climate Resilience and Adaptation Strategy*, 2015.

38 Australian Government, *2016 Defence White Paper*, February 2016, pp. 55–56.

39 Australian Government, *2017 Foreign Policy White Paper*, November 2017, p. 33.

40 *2017 Foreign Policy White Paper*, p. 84.

41 *2017 Foreign Policy White Paper*, p. 84.

Chapter 2

Climate change-related threats to national security

2.1 This chapter summarises evidence received by the committee on the threats to Australia's national security posed by climate change. It begins by outlining the recognition of climate change as a current and existential national security risk. The chapter then outlines how climate change is affecting the Australian community and economy. It covers how climate change is influencing regional instability, population movement and demands for humanitarian assistance and disaster relief (HADR). Finally, the chapter notes climate change contributes to issues for Defence, including affecting personnel health and the sustainability of estate and assets.

Climate change identified as a national security risk

2.2 Leading international security organisations and defence forces have identified climate change as a significant security threat for at least the last decade.[1] For example, the United Nations (UN) Security Council first debated climate security in 2007.[2] The topic was also discussed during Senate Foreign Affairs, Defence and Trade Legislation Estimates hearings in the same year.[3] The prominence of climate security policy grew in the United States (US) from the early 2000s, though 'it was not until the Obama Administration that climate security came into its own'.[4] Since then, climate security has been a focus of many high-level national planning documents, including the 2015 *National Security Strategy*, which identified climate change as an 'urgent and growing threat' to national security.[5] The 2017 *National Security Strategy* did not focus on climate security; however it was identified as a national security threat in recent US Defense appropriation legislation.[6] An American report found approximately 70 per cent of nations have explicitly stated that climate change is a national security concern.[7]

---

1 These include the United Nations (UN) General Assembly, the Intergovernmental Panel on Climate Change (IPCC), Pentagon, United Kingdom military, NATO, Group of 7 member countries and the Global Military Advisory Council on Climate Change. Climate Council, *Submission 18*, pp. 8–9.

2 UN, 'Security Council Holds First-Ever Debate On Impact Of Climate Change On Peace, Security, Hearing Over 50 Speakers', 5663rd Meeting, *Media release*, 17 April 2007.

3 Mr Michael Pezzullo, Deputy Secretary, Strategy, Defence, *Committee Estimates Hansard*, 31 May 2007, pp. 101-105.

4 Michael Thomas, *The Securitization of Climate Change Australian and United States' Military Responses (2003–2013)*, UNSW, Springer, Canberra, Australia, 2017, p. 56.

5 President of the United States, *National Security Strategy*, February 2015, p. 12.

6 President of the United States, *National Security Strategy of the United States of America*, December 2017; *National Defense Authorization Act for Fiscal Year 2018* (US).

7 American Security Project, *The Global Security Defense Index on Climate Change*, https://www.americansecurityproject.org/climate-energy-and-security/climate-change/gsdicc/ (accessed 2 April 2018).

2.3 American climate security expert Ms Sherri Goodman described climate change as a 'direct threat to the national security of Australia', and a 'global existential risk'.[8] Other submissions also recognised climate change as an existential risk, defined as 'one that threatens the premature extinction of Earth-originating intelligent life or the permanent and drastic destruction of its potential for desirable future development'.[9] Mr Mark Crosweller, Director General of Emergency Management Australia (EMA), also referred to the 'existential nature' of climate change risks.[10]

Climate change viewed as a current threat

2.4 The 2015 United States Department of Defense (US DoD) report mentioned in the terms of reference characterised 'climate change as a present security threat, not strictly a long-term risk'.[11] Illustrating this immediacy, Ms Goodman described recent climate-related events:

> …we know now that the hurricane train that has come through the United States this fall and the wildfires that we are experiencing are, in part, due to additional climate risks. And we know that the storms that you've been experiencing in your part of the world [Australia] now are also attributable, in part, to accelerated climate risks. The problem also is not a distant one in the future but it's now. We are experiencing this in regular sunny-day flooding at military bases in the United States and in changes in the Arctic, forcing the first wave of displaced persons from villages in the Arctic.[12]

2.5 The Climate Council further stated the effects of climate change 'are already contributing to increases in the forced migration of people within and between nations, as well as playing a role in heightening social and political tensions, flowing onto conflict and violence'.[13]

2.6 A recent Australian Government report highlighted how Australia is 'already experiencing the impacts of a changing climate, particularly changes associated with increases in temperature, the frequency and intensity of extreme heat events, extreme fire weather, and drought'.[14] For example, it noted 'communities in the Torres Strait

---

8 *Submission 8*, p. 1. Other submissions that recognised climate change as an existential threat included Dr Stuart Pearson, *Submission 34*; Mr Ian Dunlop, *Submission 36*; and Honorary Professor Admiral Chris Barrie AC RAN (retired), *Submission 38*.

9 Nick Bostrom, 'Existential risk prevention as global priority', *Global Policy*, vol. 4, no. 1, 2013, p. 15.

10 *Proof Committee Hansard*, 20 March 2018, p. 7.

11 United States Department of Defense (US DoD), *National Security Implications of Climate-Related Risks and a Changing Climate*, July 2015, p. 14.

12 *Committee Hansard*, 8 December 2017, pp. 1–2.

13 *Submission 18*, p. 8.

14 Australian Government, *Australia's 7th National Communication on Climate Change*, A report under the United Nations Framework Convention on Climate Change, December 2017, p. 109.

are already being impacted by rising sea levels and many of the region's coral reefs have been severely impacted by increased sea surface temperatures'.[15]

Threats to Australian communities and economy

2.7 As outlined in chapter 1, national security can be understood broadly to include state security, human security and the viability of infrastructure and economies. This section shows how climate change is contributing to threats to the health of Australian individuals, communities, and the economy.

Extreme weather and physical effects

2.8 The committee received evidence that climate change entails a diverse range of climate effects. This report does not address these in detail, however the 2015 US DoD report identified the following areas of climate-related security risk:

- persistently recurring conditions such as flooding, drought, and higher temperatures increasing the strain on fragile states and vulnerable populations;
- more frequent and/or more severe extreme weather events which may require involvement of US DoD units, personnel and assets in humanitarian assistance and disaster relief;
- sea level rise and temperature changes leading to greater chance of flooding in coastal communities and increasing adverse impacts on navigation safety, damages to port facilities and cooperative security locations and displaced populations;
- decreases in Arctic ice cover, type, and thickness leading to greater access for tourism, shipping, resource exploration and extraction and military activities.[16]

2.9 This summary shows climate change is contributing to adverse events across different time-scales, including slower-onset changes such as sea level rise, and sudden events such as floods.[17]

2.10 The US DoD report warned '[a]lthough climate-related stress will disproportionately affect fragile and conflict-affected states, even resilient, well-developed countries are subject to the effects of climate change in significant and consequential ways'.[18] The committee heard how climate change is already influencing Australian conditions. Mr Crosweller explained:

> Climate change is heightening the severity of natural hazards. We are already seeing increasingly frequent and intense extreme heat events, and

15 *Australia's 7th National Communication on Climate Change*, December 2017, p. 113.

16 US DoD, *National Security Implications of Climate-Related Risks and a Changing Climate*, July 2015, pp. 4–5.

17 Department of Foreign Affairs and Trade (DFAT), *Submission 61*, p. 10.

18 US DoD, *National Security Implications of Climate-Related Risks and a Changing Climate*, July 2015, p. 14.

> we will see more extreme fire weather and a longer fire season, increased rainfall and rises in sea level amplifying the effects of high tides and storm surges.[19]

2.11 Dr Simon Bradshaw of Oxfam Australia reiterated 'this is not a future scenario; we're looking at very serious impacts now and projections of far more serious impacts in the future'.[20] The Department of the Environment and Energy summarised some of the projected impacts of climate change in Australia, including:

> …an increase in the number of days with weather conducive to fire in southern and eastern Australia; extreme rainfall events are likely to increase in intensity by the end of the century across most of Australia; a decrease in winter and spring rainfall across southern continental Australia; fewer tropical cyclones form in the southern hemisphere than are currently observed, but a higher proportion of those will be more intense, with ongoing large variability from decade to decade; and further sea-level rise around Australia in coming decades.[21]

2.12 The Climate Council cautioned 'as climate change continues to affect extreme weather events, societal resilience and government service delivery will be increasingly tested'.[22] Mr Crosweller reflected on climate-related changes to recent fire conditions:

> What we saw emerge this summer was the potential for something we had modelled and spoken about for some time: four states under extreme pressure from severe fire weather and potentially severe fire in the landscape simultaneously. That puts all states under extreme pressure to not only respond to the effects but also to pick up the recovery aspects afterwards. We do a lot of this work, particularly with cyclones as well as they move south and intensify into the Gold Coast and northern New South Wales…I've been in the industry for 34 years, and it's only the last five years where I've seen deployments from other states into Western Australia for firefighting. It just hadn't been necessary up until five years ago; now it's a regular event.[23]

2.13 A recent Australian Government report similarly noted:

> Although Australia is experienced at preparing for and responding to natural disasters, the influence of climate change on extreme weather will place pressure on our capacity to manage these events. For example, the changing frequency, magnitude and distribution of extreme weather may

---

19 Mr Mark Crosweller, Director General of Emergency Management Australia (EMA), *Proof Committee Hansard*, 20 March 2018, p. 2.

20 *Committee Hansard*, 8 December 2017, p. 42.

21 Department of the Environment and Energy, *Submission 60*, p. 3. See Australian Government, *State of the Climate 2016*, Australian Bureau of Meteorology and Commonwealth Scientific and Industrial Research Organisation (CSIRO), 2016.

22 *Submission 18 Attachment 1*, p. 47.

23 Mr Crosweller, *Proof Committee Hansard*, 20 March 2018, p. 7.

> result in natural disasters occurring in new areas and where emergency management experience is limited. Natural disasters could increasingly occur in close succession, limiting the time available for a community to recover between events.[24]

2.14 The Australian Strategic Policy Institute (ASPI) described how the physical effects of climate change have:

> …the potential to affect water shortages, increase health problems including the spread of disease, and increase potential for property damage, (for example, through more flooding, coastal erosion, storm surges and extreme weather events) and disrupt critical infrastructure...Increased heat, pests, water stress and diseases will pose adaptation challenges for crop and livestock production...[25]

2.15 ASPI therefore argued Australian agencies should consider the 'potentially devastating climate change impacts on Australian lives and property' as a significant national security threat.[26]

Health and wellbeing

2.16 Climate change contributes to a range of negative health consequences.[27] Jesuit Social Services observed these 'are not limited to third world or war torn countries. We have already seen examples of adverse community health impacts from extreme climate events here in Australia'.[28] The Australian Climate and Health Alliance 2017 *Framework for a National Strategy on Climate, Health and Well-being for Australia* detailed the following current and projected health impacts:

> EXTREME WEATHER EVENTS
>
> Increased intensity, duration and frequency of extreme weather events such as floods, storms and heatwaves, are placing increasing pressure on health services and infrastructure and putting more Australians at risk of illness, death and post-traumatic stress…
>
> INFECTIOUS DISEASES
>
> A warmer climate and changing rainfall patterns will increase the range and prevalence of food, water and vector-borne diseases such as dengue fever (which is expected to reach northern NSW by 2100), parasitic (zoonotic) diseases, and the prevalence of illnesses resulting from exposure to pathogens…

---

24 Australian Government, *Australia's 7th National Communication on Climate Change*, A report under the United Nations Framework Convention on Climate Change, December 2017, p. 120.

25 Athol Yates and Anthony Bergin, *Hardening Australia: Climate change and national disaster resilience*, Australian Strategic Policy Institute (ASPI), Special Report, August 2009, 24, p. 2.

26 *Hardening Australia: Climate change and national disaster resilience*, ASPI, p. 2.

27 Lancet Countdown, *The Lancet Countdown on health and climate change: from 25 years of inaction to a global transformation for public health*, October 2017.

28 *Submission 52*, p. 4.

> FOOD AND WATER SECURITY
>
> Changes in prevailing weather patterns may threaten the security and quality of water sources and the productivity of major agricultural regions in Australia, with implications for ensuring food and water security for a growing population…
>
> OCCUPATIONAL HEALTH IMPACTS
>
> Hotter temperatures place outdoor and manual labourers at increased risk of heat-related illnesses, work accidents and death, while the increased incidence of extreme weather events increases occupational risks for emergency services…
>
> MENTAL ILLNESS AND STRESS
>
> Ongoing environmental change and more frequent and severe weather events, combined with the social and economic impacts of climate change, increase the risk that Australians will experience mental illness and stress…
>
> AEROALLERGENS AND AIR POLLUTION
>
> Increases in atmospheric temperatures may lengthen the pollen season and alter chemical reactions of some air pollutants such as ozone and particulate matter, increasing exposure to aeroallergens and aggravating conditions such as allergic rhinitis, as well as heart and lung conditions including asthma, while increasing the risk of mortality…
>
> VULNERABLE POPULATIONS
>
> Vulnerable populations will suffer disproportionately the adverse health impacts of climate change in Australia, with people with pre-existing medical conditions, older people, young, disabled, socioeconomically disadvantaged and Indigenous Australians identified as being particularly vulnerable. Climate change places undue burden on those least responsible and least able to respond…[29]

2.17 The framework noted heatwaves in Victoria in 2009 and 2014 'contributed to 374 and 167 excess deaths, respectively', and the 2016 thunderstorm asthma event 'caused a 3,000% increase in asthma-related admissions to intensive care and is thought to have contributed to the death of nine people'.[30] It also highlighted the economic costs of climate-mediated events, noting 'the health and social costs of the Black Saturday bushfires and 2011 Queensland floods total[led] AUD$3.9 and $7.4 billion respectively'.[31]

2.18 Dr Craig James, Research Program Director, CSIRO, also noted rising temperatures contribute to 'the heat island effect in cities', which results in 'heightened

---

29 Climate and Health Alliance, *Framework for a National Strategy on Climate, Health and Well-being for Australia*, June 2017, p. 18.

30 *Framework for a National Strategy on Climate, Health and Well-being for Australia*, p. 5, [original emphasis removed].

31 *Framework for a National Strategy on Climate, Health and Well-being for Australia*, p. 5, [original emphasis removed].

death rates during heatwaves and those sorts of impacts'.[32] Mr Crosweller similarly stated 'that heat's effect on infrastructure is a significant concern domestically'.[33] Dr James described how extreme heat can also affect Australia's economy, and explained that it has occupational health and safety ramifications, partly because it is 'pretty hard to continue to labour for a full normal working day when the temperatures are exceeding 40 degrees'.[34]

2.19 Dr James mentioned how climate change can contribute to low water quality and supply, negatively affecting health, food security and agricultural production.[35] He also noted 'there's other direct effects on food supply that aren't related to water—for example, CO2 fertilisation changes the quality of the actual food products'.[36]

Economy

2.20 Sustainable Business Australia argued 'the notion of national security transcends beyond the military paradigm, and incorporates the threats to the social and economic well-being of Australia'.[37] The 2015 Australian Government *National Climate Resilience and Adaptation Strategy* stated the 'Australian community is financially exposed to the impacts of natural disasters, and this risk is increasing'.[38] In 2017, the Australian Prudential Regulation Authority (APRA) identified risks to businesses from the physical effects of climate change, transition risks as societies shift to a low-carbon economy, and liability risks for leaders who fail to respond to climate change.[39] The Centre for Policy Development (CPD) provided examples of physical climate risks, such as direct damage to a company's assets, and transition risks, such as collapse in demand for products and the 'stranding' of assets due to market shifts.[40] The Senate Economics References Committee has also recently inquired into the financial risk associated with carbon for Australian businesses, and climate change-related insurance issues.[41] In 2017, a leading international task force on climate-related financial disclosures cautioned '[t]he potential impacts of climate

---

32 *Proof Committee Hansard*, 20 March 2018, p. 5.

33 Mr Crosweller, *Proof Committee Hansard*, 20 March 2018, p.7.

34 *Proof Committee Hansard*, 20 March 2018, p. 5.

35 *Proof Committee Hansard*, 20 March 2018, p. 5.

36 *Proof Committee Hansard*, 20 March 2018, p. 5.

37 *Submission 48*, p. 1. See also Dr Paul Barnes, ASPI, *Committee Hansard*, 8 December 2017, pp. 12–13.

38 Australian Government, *National Climate Resilience and Adaptation Strategy*, 2015, p. 63.

39 Mr Geoff Summerhayes, Executive Board Member, 'Australia's new horizon: Climate change challenges and prudential risk', Australian Prudential Regulation Authority, *Speech*, Insurance Council of Australia Annual Forum, Sydney, February 2017.

40 Mr Sam Hurley and Ms Kate Mackenzie, *Climate horizons: next steps for scenario analysis in Australia*, Centre for Policy Development (CPD), November 2017, p. 5.

41 Senate Economics References Committee, *Carbon risk: a burning issue*, April 2017; *Australia's general insurance industry: sapping consumers of the will to compare*, August 2017, pp. 70–74.

change on organizations…are not only physical and do not manifest only in the long term'.[42]

2.21 The US National Centers for Environmental Information (NCEI) reported that in 2017, the US 'was impacted by 16 separate billion-dollar disaster events'.[43] These included freeze and drought events, floods, wildfires, storms and hurricanes Harvey, Irma and Maria. NCEI illustrated the recent change in average number of events causing losses exceeding $1 billion in the US, stating that the '1980–2017 annual average is 6.0 events (CPI-adjusted); the annual average for the most recent 5 years (2013–2017) is 11.6 events (CPI-adjusted)'.[44] NCEI argued '[m]ore notable than the high frequency of these events was the cumulative cost', estimated to be US$309.5 billion (CPI-adjusted to present).[45]

2.22 A 2016 report considered the social impacts of disasters in Australia, and estimated 'in 2015, the total economic cost of natural disasters in an average year– including tangible and intangible costs – exceeded $9 billion, which is equivalent to about 0.6% of gross domestic product (GDP) in the same year'.[46] A 2017 report estimated the 'total economic cost of natural disasters is growing and will reach $39 billion per year by 2050' in Australia without including the effects of climate change, indicating the actual cost is likely to be significantly higher.[47]

2.23 Specific sectors are also threatened by climate change. For example, participants raised the increasing costs of insurance and reinsurance due to extreme weather events.[48] In 2017, APRA stated:

> Several smaller insurers are already reluctant to underwrite policies for some customers in high-risk parts of Australia, while general insurers have come under intense political and consumer pressure to justify substantial

42 Task Force on Climate-related Financial Disclosures, *Final Report: Recommendations of the Task Force on Climate-related Financial Disclosures (June 2017)*, Financial Stability Board, p. ii.

43 National Centers for Environmental Information, National Oceanic and Atmospheric Administration (NCEI), *Billion-Dollar Weather and Climate Disasters: Overview*, https://www.ncdc.noaa.gov/billions/ (accessed 14 May 2018).

44 NCEI, *Billion-Dollar Weather and Climate Disasters: Overview*.

45 NCEI, *Billion-Dollar Weather and Climate Disasters: Overview*.

46 Australian Business Roundtable for Disaster Resilience & Safer Communities, *Economic Cost of the Social Impact of Natural Disasters*, Deloitte Access Economics, 2016, p. 12.

47 Australian Business Roundtable for Disaster Resilience & Safer Communities, *Building resilience to natural disasters in our states and territories*, Deloitte Access Economics, 2017, p. 7.

48 Rear Admiral Titley, *Committee Hansard*, 8 December 2017, p. 11; Dr Barnes, *Committee Hansard*, 8 December 2017, pp. 12–13; Mr Dunlop, *Committee Hansard*, 8 December 2017, pp. 53–56.

> premium rises that have made insurance in high-risk areas harder to afford.[49]

2.24 Sustainable Business Australia described how climate change is affecting other industries, including agriculture:

> The agricultural industry is heavily dependent on the availability of resources such as water and fertile land….A reduction in the supply of agricultural products and water availability may threaten Australia's food security, increase commodity prices, create social and political unrest, inflation, and eventually an economic slowdown….The challenges climate change will impose may significantly disrupt supply and the quality of produce and foodstuff, potentially creating regional instability.[50]

2.25 The Climate Council illustrated how Australia's tourism sector is being adversely affected by the effects of climate change. Its 2018 report identified the degradation of popular destinations, including bleaching of the Great Barrier Reef, extreme heat and water scarcity in the Red Centre, rising sea levels and extreme heat in the Top End, sea level rise affecting Australia's beaches and a decreasing snow season affecting Australia's ski tourism.[51] The report argued the 'tourism industry in Australia is extremely vulnerable, mainly due to its reliance on nature-based attractions that are already feeling the impacts of sea level rise and increasing extreme weather events'.[52]

2.26 More positively, Mr Ian Dunlop described the transition to renewable energy sources as 'the biggest investment opportunity the world has ever seen'.[53] The *2017 Foreign Policy White Paper* also recognised the Australian economy could benefit from a transition to renewable energy, contending:

> Australia stands to benefit from these trends because of our abundant renewable resources and expertise in low emissions, clean energy and renewable technology. We will have the opportunity to boost exports of climate services and technologies and to attract investment. Australia also has expertise in sustainable agriculture and cities, climate smart infrastructure, water management and climate finance.[54]

---

49 Mr Summerhayes, *The weight of money: A business case for climate risk resilience*, CPD, Sydney, 29 November 2017, p. 3. The issue of Australians experiencing difficulties accessing insurance has also been covered recently in the media (see, for example: Sarah Ferguson and Michael Brissenden, 'Weather alert', *Four Corners*, ABC, 5 March 2018; Alice Uribe, 'Deloitte climate expert says large parts of Australia could become 'uninsurable'', *Australian Financial Review*, 24 October 2017).

50 *Submission 48*, p. 2.

51 Professor Lesley Hughes, Petra Stock, Louis Brailsford and Dr David Alexander, *Icons At Risk: Climate Change Threatening Australian Tourism*, Climate Council, 2018, p. III.

52 *Icons At Risk: Climate Change Threatening Australian Tourism*, Climate Council, 2018, p. IV.

53 *Committee Hansard*, 8 December 2017, p. 53.

54 *2017 Foreign Policy White Paper*, p. 87.

Threats to Australia's region

2.27 Former Chief of the Defence Force, Honorary Professor Admiral Chris Barrie AC RAN (retired) predicted that of all seven continents, Australia is likely to be the most affected by a changing climate.[55] Other submissions also noted the impacts of climate change are likely to be particularly severe in Australia's region (variously considered to be the Asia-Pacific or Indo-Pacific region).[56] The committee heard that climate change is acting as a 'threat multiplier' by compounding existing threats in the region.[57] Departmental representatives agreed climate change is a threat multiplier, 'exacerbating existing threats to human security, including geopolitical, socioeconomic, water, energy, food and health challenges that diminish resilience and increase the likelihood of conflict'.[58] Dr Anthony Bergin and Ms Zoe Glasson from ASPI stated:

> …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.[59]

2.28 This section summarises views on climate change's contribution to demands for Australia to provide overseas HADR, manage population movements, and address regional instability.

Regional vulnerability to climate effects

2.29 Australia's Official Statement to the 2017 Global Platform for Disaster Risk Reduction stated: 'Our region is already the most disaster-prone in the world but climate change is affecting the frequency, intensity, magnitude and location of natural hazards'.[60] The CPD summarised some regional vulnerabilities:

> Asia is the most exposed region to low elevation climatic impacts like flooding and displacement…and has more than 90 per cent of the world's exposure to tropical cyclones…The Indo-Pacific region has the world's fastest growing economic hubs, its most populated cities, and the majority of the world's poor. It also has the greatest vulnerability to climate-induced humanitarian and natural disasters such as severe storms, flooding and extreme heat, as well as the flow-on effects such as damage to economic and social infrastructure, disease outbreak, malnutrition and food and water

55 Admiral Barrie, *Submission 38*, [p. 3].

56 Breakthrough National Centre for Climate Restoration (Breakthrough), *Submission 36 Attachment 2*.

57 Professor Anthony Burke and Professor Shirley Scott, *Submission 51*, p. 7. The phrase 'threat multiplier' was 'personally coined' by Ms Goodman, *Submission 8*, p. 2.

58 Mr Crosweller, *Proof Committee Hansard*, 20 March 2018, p. 2; Air Vice Marshal Mel Hupfeld, Head Force Design, Defence, *Proof Committee Hansard*, 20 March 2018, p. 3.

59 *Submission 3*, p. 3.

60 Australian Government, *Australia's Official Statement to the 2017 Global Platform for Disaster Risk Reduction*, Cancun, Mexico, 24 May 2017, p. 1.

> shortages. This is a volatile mix of factors that heightens the security risk posed to Australia.[61]

2.30 Former United Kingdom (UK) Government Climate and Security Envoy and retired Rear Admiral Neil Morisetti reiterated:

> Australia lies in the region most vulnerable to the impact of a changing climate, including security threats, resulting from both the onset of long term trends and increased extreme weather events. The security and humanitarian risk is significantly higher than in other regions of the world. Australia's geographic position means it cannot afford to take climate security lightly.[62]

2.31 The *Framework for Resilient Development in the Pacific* warned the 'existence of some Pacific Island countries (PICs) is threatened by climate change'.[63] It cautioned:

> Pacific Island countries and territories (PICTs) are highly exposed to a range of natural hazards of hydro-meteorological origin (such as cyclones, droughts, landslides and floods) and geological origin (including volcanic eruptions, earthquakes and tsunamis). These hazards often lead to disasters, which affect thousands of people and exacerbate existing development challenges in the region. Climate change predictions identify changes for the Pacific including an increase in extreme hot days and warm nights, extreme rainfall events, intensity of tropical cyclones in the South Pacific, sea level rise and ocean acidification. [64]

2.32 While 'communities in the South Pacific have survived environmental hardships and have a high degree of local resilience', climate change can 'make it more difficult for communities and governments to recover from disasters and resolve issues'.[65] For example:

> Tropical Cyclone Pam affected 188,000 people in Vanuatu (70 percent of total population) and cost an estimated AUD 600 million or 64 per cent of their GDP. Tropical Cyclone Winston affected 540,400 people in Fiji (62 percent of total population) and cost an estimated USD 0.9 billion or 20 percent of their GDP.[66]

---

61 *Submission 24*, [p. 3].

62 CPD, *Submission 24 Attachment 1*, p. 10.

63 *Framework for Resilient Development in the Pacific An Integrated Approach to Address Climate Change and Disaster Risk Management (FRDP) 2017-2030*, Voluntary Guidelines for the Pacific Islands Region, p. 14.

64 *Framework for Resilient Development in the Pacific*, p. 2.

65 Mr Greg MacPherson, Defence, 'Regional security implications of climate change and natural disasters in the South Pacific', *Indo-Pacific Strategic Digest 2017*, p. 260.

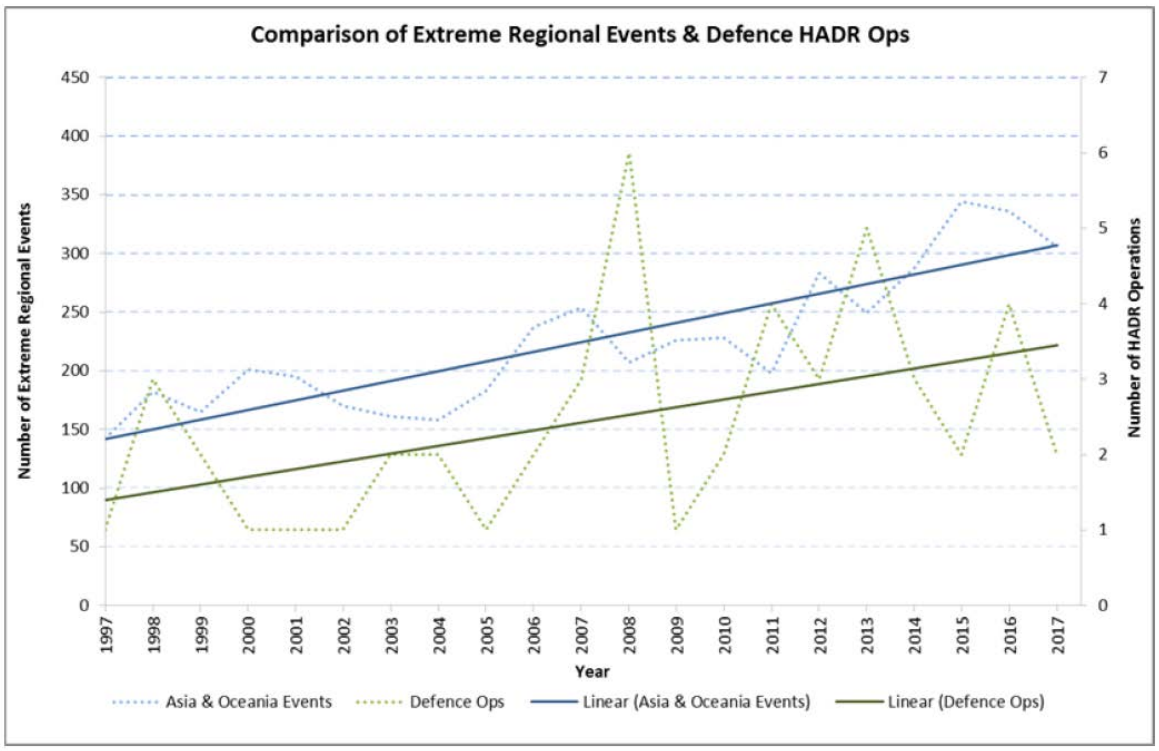
66 Australian Government, *Australia's Official Statement to the 2017 Global Platform for Disaster Risk Reduction*, Cancun, Mexico, 24 May 2017, p. 2.

Overseas humanitarian assistance and disaster relief

2.33 Australia takes responsibility for providing HADR to vulnerable communities in the Indo-Pacific region in the context of climate change.[67] In 2016, the Chief of Army Lieutenant General Angus Campbell DSC AM referred to the challenge of 'an unstable planet…caused by climate change associated with global warming'.[68] He reasoned as 'weather events intensify we can reasonably expect to see the increasing use of Defence assets in support of humanitarian assistance and disaster relief (HADR) operations'.[69] The Department of Foreign Affairs and Trade confirmed that during 'the last 15 years there has been an increase in the ADF's [Australian Defence Force] involvement in regional humanitarian response'.[70]

2.34 The Department of Defence (Defence) further illustrated that there has been a comparable upwards trend for both disaster-related events in the region and Defence HADR operations over the past 20 years, as shown below.

Figure 1—Comparison of Extreme Regional Events and Defence HADR Operations



Defence, answer to question taken on notice (number 1) at 20 March 2018 hearing in Canberra (received 17 April 2018).

67 DFAT, *Submission 61*, pp. 6–7.

68 'Chief of Army opening address to the 2016 Chief of Army's Exercise', *Speech*, Adelaide Convention Centre, Adelaide, 6 September 2016.

69 Chief of Army opening address to the 2016 Chief of Army's Exercise'.

70 DFAT, *Submission 61*, p. 14.

2.35 The committee heard details of the deployment of 'relatively large-scale ADF contingents in response to natural disasters' in the region.[71] For example, after Tropical Cyclone Winston affected Fiji in February 2016, Australia deployed HMAS Canberra and approximately 1000 personnel, as well as providing aerial assessments by surveillance aircraft, seven MRH-90 helicopters to assist with response efforts and deliver humanitarian stores, and C-17 and C-130 flights that delivered over 520 tonnes of humanitarian supplies and equipment.[72] Australia also provided $35 million in assistance including funds for immediate supplies, support services and longer-term recovery and reconstruction.[73]

2.36 More recently, Australia provided support to Tonga and Samoa in the aftermath of Tropical Cyclone Gita.[74] This included the provision of $14 million in assistance to support the response to the crisis in Tonga, emergency supplies, and longer-term reconstruction activities, 'particularly in restoring critical infrastructure and social services'.[75] The ADF also delivered approximately 140,000 kilograms of humanitarian aid from Brisbane using a Royal Australian Air Force C-17A Globemaster.[76]

2.37 The costs 'directly attributable to international HADR and major DACC [Defence Assistance to the Civil Community] operations' between 2012–13 and December 2017–18 totalled approximately $18.2 million.[77] When asked by the committee whether this expenditure data could be used to forecast future expenditure, Mr Dunlop explained climate change is not a linear process amenable to such predictions, because the effects of climate change do not increase gradually.[78]

2.38 Non-military organisations are also being required to provide additional responses to extreme weather events in Australia and across the region. For example, the Australian Federal Police (AFP) has recognised:

> The calls on AFP resources to assist the development of policing in Australia's nearby region are also likely to continue. Policing expertise and community engagement will be increasingly important in helping to manage instability in many regional countries. Climate change and more

71 Defence, *Submission 63*, p. 9.

72 DFAT, *Submission 61*, p. 13.

73 DFAT, *Submission 61*, p. 13.

74 DFAT, Crisis Hub—Tropical Cyclone Gita, 20 February 2018, http://dfat.gov.au/crisis-hub/Pages/cyclone-gita.aspx (accessed 21 February 2018).

75 DFAT, Crisis Hub—Tropical Cyclone Gita, 20 February 2018; the Hon Julie Bishop MP, Minister for Foreign Affairs, 'Additional humanitarian assistance to Tonga', *Media release*, 23 March 2018.

76 Senator the Hon Marise Payne, Minister for Defence, 'Conclusion of Defence emergency assistance to Tonga and Fiji', *Media release*, 23 February 2018.

77 Defence, answer to written question on notice (number 1) following 8 December hearing in Canberra (received 27 February 2018).

78 *Committee Hansard*, 8 December 2017, p. 56.

> intense weather patterns will disproportionately affect fragile states in Asia and the Pacific, leading to likely requirements for AFP contributions to humanitarian assistance and disaster relief. [79]

Human mobility

2.39 The Climate Change, Development and Mobility (CCDM) Research Group observed:

> Human mobility (encompassing migration, displacement, relocation and resettlement) has been identified as an important strategy for adapting to climate change in the face of growing concerns about rising global temperatures and its associated impacts, particularly sea level rise and more severe and frequent extreme weather events.[80]

2.40 The former Department of Immigration and Border Protection (DIBP) stated 'climate change effects could permanently alter normal business, including the accessibility of assets and capability and the nature of challenges to our management of the border and migration'.[81] Submissions agreed that climate-related displacement and migration is likely to occur in Australia's region. However, as illustrated below, the committee heard varying evidence regarding the nature and scale of this migration, and the extent to which it will be problematic for Australia's national security.

The influence of climate change on patterns of population displacement

2.41 DIBP contended that the relationship between climate change and migration is 'non-linear, complex and unpredictable' and 'will not eventuate as straightforward cause and effect'.[82] The Kaldor Centre for International Refugee Law at the University of New South Wales similarly recognised that the effects of climate change:

> …do not cause displacement on their own, but rather interact with other economic, social, and political drivers that themselves affect migration – like impoverishment, environmental degradation, recourse [sic] scarcity, lack of livelihood opportunities, and so on.[83]

2.42 According to World Vision Australia, Professor Walter Kälin identified the following five climate-related scenarios that may contribute to human displacement:

> …hydro-meteorological disasters (i.e. flooding/cyclones); zones designated by governments as being too high-risk or dangerous for human habitation; environmental degradation and slow onset disasters (i.e. desertification, salinization of coastal zones); 'sinking' small island states; and violent

79 Australian Federal Police, Futures Centre, https://www.afp.gov.au/futures/implications (accessed 21 February 2018).

80 Climate Change, Development and Mobility Research Group, *Submission 45*, p. 2.

81 *Submission 59*, p. 1.

82 Department of Immigration and Border Protection, *Submission 59*, pp. 1–2.

83 Kaldor Centre for International Refugee Law, *Submission 1*, p. 2.

> conflict triggered by a decrease in essential resources due to climate change.[84]

Climate-related displacement in the region

2.43 Oxfam Australia emphasised that '[d]isplacement linked to climate change is not a future threat but a current and growing reality, affecting millions of women, men, boys and girls around the world'.[85] Its 2017 report found:

> Climate change is already forcing millions of people from their land and homes, and putting many more at risk of displacement in the future. Supercharged storms, more intense and prolonged droughts, rising seas and other impacts of climate change all exacerbate people's existing vulnerabilities and increase the likelihood of being forced to move.[86]

2.44 The CPD commented that there is a high risk of internal displacement due to climate-related effects in some Asian countries 'because of dense populations residing in coastal and/or floodplain areas that are vulnerable to the onsets of climate change, such as Bangladesh'.[87] Ms Goodman similarly warned rising sea levels could lead to mass displacement of populations near the coast in particularly the 'disaster alley' Asia-Pacific region.[88]

2.45 Other submissions focused on population movements from PICs. For example, the Australian Council for International Development (ACFID) asserted that 'for Pacific nations such as Tuvalu, Kiribati and Micronesia, climate change is already a genuine existential threat with the capacity to diminish their livelihoods and even erase their states' territorial footprints'.[89] The Climate Council explained that PICs are generally 'highly vulnerable to extreme weather events as many are low lying, remote and have limited disaster mitigation and adaptation capacity'.[90] The non-government organisation Peacifica described how people from PICs are already undertaking migration activities in response to climate change, including moving to urban areas and purchasing land in other PICs.[91] It posited that while PICs have relatively small populations, such movements 'may lead to cascading and destabilising population movements and pressures across the South Pacific region'.[92]

---

84 World Vision Australia, *Submission 28*, p. 3.

85 Oxfam Australia, *Submission 40 Supplementary Submission 1*, p. 10.

86 Oxfam Australia, *Submission 40 Supplementary Submission 1*, p. 3.

87 *Submission 24 Attachment 1*, p. 20.

88 *Submission 8*, p. 7.

89 *Submission 53*, p. 7.

90 *Submission 18 Attachment 1*, p. 38.

91 *Submission 30*, pp. 4–5, 11.

92 *Submission 30*, pp. 4–5.

Scale of inter-country movement

2.46 Some submissions warned that climate change may contribute to mass migration.[93] Ms Goodman suggested Australia's region is 'most likely to see increasing waves of migration from small island states or storm-affected, highly populated areas in Asia that can't accommodate people when a very strong storm hits'.[94] Admiral Barrie described a scenario in which millions of migrants may 'seek better fortunes in Australia' due to water and food insecurity in Asia.[95]

2.47 In contrast, the Kaldor Centre cautioned that the prospect of developed states such as Australia being inundated by people fleeing the impacts of climate change is a 'flawed notion' that will 'result in ill-attuned and inappropriate policy responses'.[96] The CCDM Research Group similarly cautioned 'studies announcing large numbers of so-called climate refugees crossing international borders have largely been discredited'.[97] Instead, the Kaldor Centre stated most climate-related displacement is likely to take place within countries, rather than across international borders.[98] Such 'internal displacement' may 'generate low-level social tensions and potential conflict over key resources such as land, housing, food, water and employment, and increase the human insecurity of the poor'.[99] The Climate Council concurred that the effects of climate change are more likely to result in internal displacement, at least in the short term.[100]

Focus on human security

2.48 The Kaldor Centre found 'there is little evidence to suggest that climate change-related movement will threaten national, regional or international security'.[101] Some reasoned the committee should not 'securitise migration and treat climate migrants as a threat', but rather 'avoid the border-protection paradigm' and focus on the human security challenges caused by climate-related migration.[102] For example, Oxfam Australia advocated that Australia support long-term strategies to allow 'the safe and dignified movement for those whom it becomes the only option'.[103] Suggestions are further outlined in chapter 5.

93 See DFAT, *Submission 61*, p. 7.

94 *Committee Hansard*, 8 December 2017, p. 7.

95 *Submission 38*, [pp. 7–8]; *Committee Hansard*, 8 December 2017, p. 30.

96 *Submission 1*, p. 3.

97 *Submission 45*, p. 2.

98 *Submission 1*, p. 3.

99 *Submission 1*, pp. 3–4.

100 *Submission 18 Attachment 1*, p. 38.

101 *Submission 1*, p. 3.

102 Professor Burke, *Committee Hansard*, 8 December 2017, pp. 25–26.

103 *Submission 40*, pp. 5–6.

Conflict

2.49 Australian agencies may be required to undertake domestic and international operations relating to conflict, crime and terrorism exacerbated by climate change. American Rear Admiral David Titley (retired) told the committee the 'rapidly changing climate may create, accelerate and exacerbate already unstable situations throughout the world'.[104] He warned the 'security of both our nations rests on a stable world order' and '[c]limate change has the potential to disrupt that stability on a scale rarely seen'.[105] Conflict may result from food and water scarcity, pressures on social welfare and HADR agencies, and maritime border disputes.[106]

2.50 Defence outlined how climate change can contribute to conflict:

> When climate impacts are combined with ethnic or other social grievances, they can contribute to increased migration, internal instability or intra-state insurgencies, often over greater competition for natural resources. These developments may foster terrorism or cross-border conflict.[107]

2.51 DFAT further explained:

> Potential climate-induced resource competition that increase tensions within and between (particularly fragile) states, where international intervention may be required in the form of stabilisation, peacekeeping or post-conflict operations…Climate-related adverse impacts add to challenges for governments of fragile states, raising the risk of state failure and associated familiar threats of conflict, transnational crime and terrorism.[108]

2.52 These factors 'could lead to an increase in the demand for a wide spectrum of Defence responses', both within Australia and overseas.[109] The committee heard that national security agencies may be required to maintain law and order following disasters in Australia, though Admiral Barrie emphasised it is more appropriate for the police to perform this type of role than the military.[110]

2.53 Some submissions provided examples of international conflicts to which climate change had been found to contribute.[111] For instance, climate change exacerbated drought and desertification in Mali, and contributed to increases in food

---

104 *Committee Hansard*, 8 December 2017, p. 2.

105 *Committee Hansard*, 8 December 2017, p. 3.

106 Climate Council, *Submission 18 Attachment 1*, p. 41.

107 *Submission 63*, p. 4.

108 *Submission 61*, p. 7.

109 Defence, *Submission 63*, p. 3.

110 *Committee Hansard*, 8 December 2017, p. 32.

111 For example, Professor Burke and Professor Scott, *Submission 51*, p. 10; Public Health Association of Australia, *Submission 43*, p. 5; Dr Kumuda Simpson-Gray, *Submission 68*, p. 2.

prices in Syria, thereby contributing to the destabilisation of fragile states.[112] A recent report from a research organisation founded by Ms Goodman noted climate change is driving water stress, and has 'already proven to be a trigger in refugee dynamics and political instability'.[113]

2.54 A number of submissions also noted Australia's naval assets may take on a larger maritime security role, including managing activities in the Southern Ocean and Antarctica such as illegal fishing 'due to climate change-induced fisheries migration'.[114] The Climate Council suggested 'sea-level rise, coastline retreat and the eventual submergence of small low-lying islands may affect the maritime boundaries of nations and alter exclusive economic zones in which natural resources are located'.[115] It speculated that the South China Sea dispute may be intensified by climate change.[116]

Threats to Defence

2.55 While the previous sections outlined how climate change functions as a 'threat multiplier' and exacerbates existing threats, this section illustrates how climate change also works as a 'burden multiplier' and creates direct capability threats for Defence.[117] Dr Bergin and Ms Glasson described how the effects of climate change 'place additional stress on military resources, including ADF estate, personnel, support systems, facilities, supplies, collective training activities and command structures'.[118] Air Vice Marshal Mel Hupfeld, Head Force Design, Defence, told the committee climate change 'can certainly directly affect Defence's operations, our bases, our infrastructure, our equipment and our personnel'.[119]

Personnel health

2.56 Climate change has a range of negative health consequences, and these can affect Defence personnel. For example, climate change affects the spread of

---

112 Mr Dunlop, *Submission 36 Attachment 2*, p. 13; Climate Council, *Submission 18 Attachment 1*, p. 21.

113 CNA Military Advisory Board, *The Role of Water Stress in Instability and Conflict*, 2017, p. 9.

114 Dr Anthony Bergin and Ms Zoe Glasson, *Submission 3*, p. 5. See also: DFAT, *Submission 61*; Defence, *Submission 63*, p. 6; Dr Md Saiful Karim, *Submission 44*.

115 Climate Council, *Submission 18 Attachment 1*, p. 42. The committee is aware of research that found a small net land increase for some of Tuvalu's islands, despite sea level rise. The committee notes the research's statement that this 'does not negate the need to still vigorously support ongoing mitigation action to curtail future sea level impacts and climatic changes on small island nations or to undertake robust efforts to better define the constraints and thresholds of habitability (such as water resources and food supply) on atoll islands'. Paul S Kench, Murray R Ford and Susan D Owen, 'Patterns of island change and persistence offer alternate adaptation pathways for atoll nations', *Nature Communications*, article no. 605, 2018.

116 Climate Council, *Submission 18 Attachment 1*, p. 42.

117 Dr Bergin and Ms Glasson, *Submission 3*, p. 2; Climate Council, *Submission 18*, p. 6.

118 *Submission 3*, p. 2.

119 Air Vice Marshal Hupfeld, *Proof Committee Hansard*, 20 March 2018, p. 3.

conditions such as malaria, infectious diseases, respiratory issues and food-borne infections, all of which may undermine the health of Defence personnel.[120]

2.57 The Climate Council expressed concern that personnel undertaking training and exercises will be subjected to extreme weather events and more frequent and intense heatwaves, undermining ADF capability.[121] Ms Goodman said increasing temperatures are already 'affecting training days' for the US military.[122]

2.58 The Australian Psychological Society and Defence also described how mental health problems can be exacerbated by climate change, for example, following disasters or prolonged exposure to difficult operational conditions.[123]

Estate and assets

2.59 Rear Admiral Titley told the committee that climate change is also likely to impact national security 'by posing increasing risks to the Department of Defence's estate and infrastructure group'.[124] For example, Defence's bases and equipment could be damaged by sea level rise, storm surge, coastal erosion and drought.[125] Defence submitted:

> A large number of key Defence installations are at or just above sea level and much of Australia's infrastructure is ageing so there is an increased likelihood of climate change impacting Defence base operations in the short to medium term.[126]

2.60 Extreme weather events such as flooding and bushfires also have the potential to impede operations, 'disabling critical military infrastructure at times when rapid mobilisation is needed'.[127] The Climate Council also pointed out 'military bases rely on civilian infrastructure, such as water, power and transportation networks'.[128] Dr Michael Thomas, representing the Climate Council, advised that Defence:

> …can't act in isolation about islanding their bases from this; they need to work with local communities, local councils, the local authorities—

120 Anthony Press, Anthony Bergin and Eliza Garnsey, *Heavy Weather: Climate and the Australian Defence Force*, ASPI, Special Report no. 49, March 2013, pp. 29–30.

121 *Submission 18*, p, 6.

122 *Committee Hansard*, 8 December 2017, p. 4.

123 *Submission 16*; *Submission 63*, p. 6.

124 *Committee Hansard*, 8 December 2017, p. 2.

125 Athol Yates and Anthony Bergin, *Hardening Australia: Climate change and national disaster resilience*, ASPI, Special Report, August 2009, 24, p. 2; Climate Council, *Submission 18*, p, 7; Defence, *Submission 61*, p. 7.

126 *Submission 63*, p. 7.

127 Climate Council, *Submission 18*, p, 6.

128 *Submission 18*, p. 7.

> electricity, water and all the utilities that enable Defence to mobilise in times of need.[129]

2.61 Defence reported that increased temperatures and the prevalence of natural hazards could also affect current and planned training grounds and facilities.[130]

2.62 The CPD raised the impact of rising sea levels on the current naval shipbuilding program, suggesting the 'vulnerability to natural disasters…could shut down shipbuilding capacity for periods of time'.[131]

2.63 The Defence submission outlined additional risks to assets, including the potential for increased temperatures and changes to the chemical composition of the atmosphere and oceans affecting the 'maintenance requirements and possibly the operational performance of major ADF assets'.[132]

129 *Committee Hansard*, 8 December 2017, p. 38.

130 *Submission 63*, p. 7.

131 *Submission 24*, p. 5.

132 *Submission 63*, p. 7.

Chapter 3

Suggestions for improving domestic coordination

Introduction

3.1 This chapter summarises suggestions heard by the committee for how Australia could better respond to climate threats, and reduce the future risks of climate change. Many of these involved further integrating climate security considerations across Commonwealth agencies, including by developing strategic documents and creating dedicated leadership roles. Submissions also made suggestions for improving coordination between agencies, other Australian governments and stakeholders outside government.

Commonwealth coordination

3.2 The committee heard criticism that the government response to climate security concerns has not been sufficiently coordinated, including in comparison with other countries.[1] This section notes suggestions for improving policy coordination, including integrating climate security in agency planning and reporting processes, developing a white paper, establishing new entities, and improving departmental awareness.

Australia's response to climate security concerns

3.3 The Centre for Policy Development (CPD) argued that Australia's climate security 'policy responses overall can be described as parts lacking a whole'.[2] The Center for Climate and Security from the US argued that climate change remains 'underexplored' as a security threat, leaving Australian security agencies 'under-prepared'.[3] In contrast, Professor Anthony Burke of the Australian Defence Force Academy (ADFA) suggested the submissions from government agencies demonstrated 'a widespread and very clear-headed awareness of the dangers of climate change and its relevance to national security', and applauded the 'active thinking and positive effort'.[4] Air Vice Marshal Mel Hupfeld, Head Force Design, Defence, described how the Commonwealth is 'embarking on a whole-of-government response to both climate [mitigation] and climate adaptation'.[5]

---

1 See Breakthrough National Centre for Climate Restoration (Breakthrough), *Submission 20*, p. 9; Associate Professor Matt McDonald, *Submission 23*, [p. 4]; AGL Energy Limited, *Submission 33*, p. 3.

2 The Centre for Policy Development (CPD), *Submission 24*, [p. 8].

3 *Submission 22*, [p. 5].

4 *Committee Hansard*, 8 December 2017, p. 21.

5 Air Vice Marshal Mel Hupfeld, *Proof Committee Hansard*, 20 March 2018, p. 3; Defence, *Submission 63*, pp. 7–8.

3.4 A number of submissions compared Australia's action on climate security unfavourably with that of the United States (US) and United Kingdom (UK).[6] Former Chief of the Defence Force, Honorary Professor Admiral Chris Barrie AC RAN (retired) argued that by 2015 Australia's key allies and partners had 'overtaken us comprehensively in terms of including climate change priorities in national security assessments and integrating climate change impacts fully into their defence planning'.[7]

3.5 The Climate Council similarly advised Defence must 'follow their strategic allies and increase military preparedness and resilience in the face [of] growing climate risks'.[8] The CPD described the *2016 Defence White Paper* as 'only a first step' that did not establish a 'comprehensive strategy for climate security challenges'.[9] However, the CPD also commented on recent positive developments, noting:

> …senior ranks of our military have shown greater acceptance of the challenges, and defence colleges conduct training on the topic. But we have a long way to go still to catch up to best practice of the US and the UK.[10]

3.6 While submissions perceived that the US Department of Defense (US DoD) exemplified best practice on issues of climate security, some recent US policy documents have not raised it as a central issue.[11] Dr Michael Thomas described the US President's *National Security Strategy* as having 'airbrushed climate change out of existence'.[12] The Climate Council suggested 'future progression of some programs and case studies are uncertain under the Trump administration'.[13] However, climate change was still identified as 'a direct threat to the national security' of the US in the most recent US Defense appropriation legislation, which calls for a report 'on vulnerabilities to military installations and combatant commander requirements resulting from climate change over the next 20 years'.[14] American Rear Admiral David Titley (retired) suggested the current US approach to climate security could be awarded a 'B' grade, while he granted Australia a 'B-plus'.[15]

---

6 See Climate Council, *Submission 18 Attachment 1*, p. 51; Dr Stuart Pearson, *Submission 34*, p. 2; Admiral Barrie, *Submission 38*, [p. 9]; Professor Anthony Burke and Professor Shirley Scott, *Submission 51*, p. 7.

7 *Submission 38*, [p. 5].

8 Climate Council, *Submission 18*, p. 4.

9 *Submission 24*, [p.8].

10 CPD, *Submission 24*, p. 1.

11 See, for example, President of the United States, *National Security Strategy of the United States of America*, December 2017; US Department of Defense, *Summary of the 2018 National Defense Strategy of the United States of America: Sharpening the American Military's Competitive Edge*, 2018.

12 'Climate security in the Trumpian era', *The Strategist*, Australian Strategic Policy Institute (ASPI), 28 February 2018.

13 Climate Council, *Submission 18*, p. 4.

14 *National Defense Authorization Act for Fiscal Year 2018* (US).

15 *Committee Hansard*, 8 December 2017, p. 4.

Commonwealth agency planning and reporting

3.7 Submissions recommended climate security should be further integrated across the policy frameworks, scenario planning and reporting processes of government agencies. American climate security expert, Ms Sherri Goodman, urged:

> Make climate-fragility risks a central foreign policy priority by integrating climate-fragility responses into planning, implementation, and evaluation processes across Australian Government departments, recognising that this requires new capacities within departments and new cross-sectoral policy processes, and direct the government to report regularly on the development of climate-strategic evaluation capacity, and policy and process integration.[16]

3.8 Submissions advocated Australian agencies undertake scenario planning as part of a risk-management approach to climate security.[17] The ARC Centres of Excellence for Climate System Science and Climate Extremes described the limitations of '[t]raditional assessments of climate extremes and their impacts' which examine each climatic driver in isolation, instead of considering how these interact to exacerbate the risk of compound events and catastrophic system failure.[18] Dr Paul Barnes, Australian Strategic Policy Institute (ASPI), recommended that strategic horizon scanning capabilities should be developed to support 'both general policy development and specific climate impact assessments operating at two levels—an agency focus and a strategic focus (national)'.[19]

3.9 The Home Affairs Portfolio 'recognises climate change as both a threat or risk multiplier, and as a risk in its own right'.[20] It described how:

> …the Portfolio is proactively responding to, and positioning the nation to prepare for, changes in natural hazard intensity and frequency triggered by climate change. For example, the Portfolio engages in scenario exercises designed to further our understanding of climate change implications across multiple areas of policy and what can be done to address these.[21]

3.10 Mr Mark Crosweller, Director General of Emergency Management Australia (EMA) expanded on this, noting:

> We have participated in many exercises involving many government departments at state and federal level to fully understand the context of

16 *Submission 8*, p. 10. This recommendation was echoed by Breakthrough, *Submission 20*, p. 1.

17 See, for example, Rear Admiral David Titley, *Submission 11*, p. 3; CPD, *Submission 24*, [pp. 9–10].

18 *Submission 14*, [pp. 2–3].

19 *Submission 46*, p. 3.

20 Department of Home Affairs (Home Affairs), answers to questions on notice, 20 March 2018 (received 9 April 2018).

21 Home Affairs, answers to questions on notice, 20 March 2018 (received 9 April 2018).

> what we're dealing with and, I stress, to understand the limitations in the system and how we can move past those limitations when these things manifest. So it's probably best to say it's an unfolding space of complexity but also an unfolding space of competency.[22]

3.11 When asked if scenario contingency planning for worst-case scenarios was available, Air Vice Marshal Hupfeld indicated they were being developed:

> We're using simulation modelling and testing to assess the scenarios and the work to try and answer the questions that you're asking…and we use the terms 'most likely' and 'most dangerous'. 'Most dangerous' is 1½ to two degrees. We're still looking at three degrees; I think there's more work to be done on that. That is across all agencies, particularly Home Affairs and the Department of the Environment and Energy, when we work through these. There are scenarios conducted at the secretaries group level on the climate risk; we actually put some of these scenarios in front of the secretaries of the departments to assess their response.[23]

3.12 Some submissions highlighted the need for agencies, particularly Defence, to report on climate security planning, analysis and adaptation. For example, Ms Goodman recommended Defence 'report regularly on vulnerabilities to military installations, and combatant commander requirements, across the full spectrum of planning and operations'.[24] The CPD similarly called for an 'audit of all military installations, physical infrastructure and other key assets that are vital to maintain the readiness, capability and capacity of the ADF'.[25] This could be partly modelled on the recent US DoD report on climate-related risk to military infrastructure.[26] As further detailed in chapter 4, Defence has undertaken preliminary investigations into climate-related risks to Defence estate.[27]

Climate security white paper

3.13 As outlined in chapter 1, the Australian Government has acknowledged climate security threats in a number of strategic documents, including the 2015 *National Climate Resilience and Adaptation Strategy*, *2016 Defence White Paper* and *2017 Foreign Policy White Paper*. Some submissions called for a climate security white paper or a Defence strategy, or both, to further incorporate climate security considerations into national security and Defence planning.

3.14 For example, the Center for Climate and Security from the US and the Climate Council called for the release of a white paper on the national security

---

22 *Committee Hansard*, 20 March 2018, p. 7.

23 *Proof Committee Hansard*, 20 March 2018, p. 3; Defence, *Submission 63*, p. 8.

24 *Submission 8*, p. 9.

25 *Submission 24 Attachment 1*, p. 38.

26 Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, *Climate-Related Risk to DoD Infrastructure Initial Vulnerability Assessment Survey (SLVAS) Report*, Department of Defense, January 2018.

27 Defence, *Submission 63*, p. 7.

implications of climate change.[28] The former suggested this would 'act as an overarching document to guide security agency responses to climate change', and:

> a. establish the basis and context of the climate security risks to Australia and the region; b. identify the key agencies and their roles to deal with climate risks in a more coordinated, systemic and strategic fashion; c. synthesize the national security effort into a whole-of-nation and whole-of-region framework; and d. clearly communicate the security risks to the Australian public.[29]

3.15 Dr Thomas, representing the Climate Council, explained a white paper was required because the current policy response is 'so fragmented', stating:

> …there is no central driving narrative that gives an institution like the ADF [Australian Defence Force] a requirement—a green light, if you like—to discuss the ideas in open forums, to discuss what their strategic response will be…something to actually draw all these disparate matters together into a coherent form I think would be really important.[30]

3.16 The Climate Council nominated the Department of Prime Minister and Cabinet and the Department of Defence to coordinate a climate security white paper.[31]

3.17 Alternatively, the CPD proposed the development of an 'integrated policy framework on climate change preparedness across defence, foreign affairs and aid'.[32]

New climate security entities

3.18 Submissions advocated the establishment of new bodies and roles with explicit responsibility for coordinating climate and security policy. For example, Professor Anthony Burke and Professor Shirley Scott of ADFA argued for the re-establishment of the Department for Climate Change, to coordinate Australia's broad response to climate change, including change mitigation and adaptation activities.[33] This proposal was reiterated by Dr Thomas, who supported 'having a centralised, coordinated government agency or portfolio—whatever that may be—to drive the necessary changes that are needed at a national level on climate change'.[34]

3.19 Submissions proposed the establishment of an additional interagency taskforce or working group focused specifically on climate security. For example, Professor Jon Barnett, University of Melbourne, commented:

> A whole of government response would improve the range and effectiveness of Australia's efforts to enhance climate security, and to this

28 *Submission 22*, p. 1; *Submission 18*, p. 11.

29 The Center for Climate and Security, *Submission 22*, p. 7.

30 *Committee Hansard*, 8 December 2017, p. 36.

31 *Submission 18*, p. 11.

32 *Submission 24*, [p. 11].

33 Professor Burke and Professor Scott, *Submission 51*, p. 15.

34 *Committee Hansard*, 8 December 2017, p. 37.

> end there is value in an interagency working group that meets regularly, and is comprised of members from relevant [departments].[35]

3.20 Mr Ian Dunlop recommended the creation of a new climate and conflict taskforce, to report to the Parliament within six months.[36] The ARC Centres of Excellence suggested the establishment of a 'high-level taskforce to examine risks associated with climate change and national security' and undertake modelling and scenario planning to understand these risks as a matter of urgency.[37] An international example of a climate security taskforce is the US Navy Task Force Climate Change, which was established in 2009 to prepare for the challenge of sea-ice collapse in the Arctic.[38] This included representatives from 'various naval staff and program offices and the operational fleet, with the close collaboration of the U.S. Coast Guard and the National Oceanic and Atmospheric Administration'.[39]

3.21 Other submissions recommended incorporating climate security policy responsibility into the structure of the Australian Public Service. For example, The Center for Climate and Security suggested the creation of a Climate and Security Office in the Department of Foreign Affairs and Trade (DFAT).[40] This would be responsible for interdepartmental 'integration of climate change and security concerns, working with international partners and embassies on climate change and security issues'.[41] If established, this could support the climate security envoy with responsibility for international engagement proposed by the CPD.

Existing interagency coordination

3.22 There are already some formal mechanisms for coordination on climate security matters across Commonwealth agencies, including through the Disaster and Climate Resilience Reference Group (Reference Group) and the Maritime Border Command.

3.23 Some national security agencies are involved in the Reference Group, including Defence and the Department of Home Affairs (Home Affairs).[42] The rationale provided for establishing this Reference Group noted:

---

35 Professor Jon Barnett, *Submission 12*, p. 3.

36 *Submission 36*, p. 7. See also the Breakthrough National Centre for Climate Restoration (Breakthrough), *Submission 20*, p. 1.

37 ARC Centres of Excellence for Climate System Science and Climate Extremes, *Submission 14*, [pp. 4–5].

38 Rear Admiral Titley, *Submission 11*, p. 7.

39 Bob Freeman, *Navy Releases Roadmap for Global Climate Change*, Office of the Oceanographer of the Navy, 24 May 2010, http://www.navy.mil/submit/display.asp?story_id=53562 (accessed 2 April 2018).

40 *Submission 22*, p. 1.

41 *Submission 22*, p. 7.

42 Defence, *Submission 63*, pp. 10–11.

> Improved integration of disaster and climate resilience planning, policies and programmes at the national level can help to deliver a sustainable and coordinated national approach to natural disasters and climate change…. The benefits of a coordinated approach to natural disasters and climate change could be achieved through the formation of the Australian Government Disaster and Climate Resilience Reference Group.[43]

3.24 Departments are represented in the Reference Group by people at the deputy secretary or first assistant secretary level, and the Reference Group is supported by an Officer Group on Climate Risk coordinated by DoEE.[44] The Reference Group 'is particularly focussed on the strategic implications of climate change and natural hazards across portfolios, including complex issues that affect multiple agencies'.[45] Mr Crosweller stated that the Reference Group 'has a progressive agenda', and is:

> …deepening understanding of the current and future impacts of climate change and provides a forum for sharing experiences of how we can respond through engagement with the Commonwealth's expert science and research organisations in the private sector.[46]

3.25 The Reference Group's current activities include:

> • Developing and endorsing a set of guiding principles to assist Australian Government agencies to consider disaster and climate resilience in policies and programs and for assets.
>
> • Identifying tools, guidance and case studies that are required to enable Australian Government agencies to consider disaster and climate resilience in policies and programs, and for assets.
>
> • Developing and endorsing tools, guidance and case studies as required.
>
> • Overseeing the mapping of Australian Government policies, programs and assets that relate to disaster and climate resilience, and identify linkages and interdependencies.
>
> • Establishing an Officer-Level Network with representatives from all member agencies.
>
> • Identifying existing mechanisms that members use to engage with the private sector.

---

43 *Australian Government Disaster and Climate Resilience Reference Group, Terms of Reference: Rationale (Attachment A)*, Home Affairs, answers to questions on notice, 20 March 2018 (received 9 April 2018).

44 Mr Crosweller, *Proof Committee Hansard*, 20 March 2018, p. 23; Home Affairs, answers to questions on notice, 20 March 2018 (received 9 April 2018).

45 Department of the Environment and Energy (DoEE), *Submission 60*, p. 6; Home Affairs, answers to questions on notice, 20 March 2018 (received 9 April 2018).

46 Mr Crosweller, *Proof Committee Hansard*, 20 March 2018, p. 2. Home Affairs provided a copy of the Terms of Reference for the Reference Group, which set out a full list of participating departments and its role and purpose. Home Affairs, answers to questions on notice, 20 March 2018 (received 9 April 2018).

• Developing and agreeing an approach for further engagement with the private sector on disaster and climate issues.

• Inviting Geoscience Australia, CSIRO, the Bureau of Meteorology, the Australian Bureau of Statistics and others to deliver briefings to the Reference Group on disaster and climate science and research.[47]

3.26 At the time of writing, the Reference Group had met six times since its establishment in July 2016.[48]

3.27 Defence noted the 'impact on future operations from climate change related security challenges cannot be solely met by the ADF and is more likely to require an inter-agency response such as the Maritime Border Command (MBC)'.[49] The MBC is a multi-agency taskforce 'within the Australian Border Force [ABF], which utilises assets assigned from ABF and the Australian Defence Force (ADF) to protect Australia against civil maritime security threats within its maritime jurisdiction'.[50] Home Affairs noted these threats include:

• Illegal exploitation of natural resources;

• Illegal activity in protected areas;

• Illegal maritime arrivals;

• Prohibited imports/exports;

• Maritime terrorism;

• Piracy, robbery and violence at sea;

• Compromise to bio-security; and

• Maritime pollution.[51]

3.28 The Commander of the MBC is a Navy (two-star) Rear Admiral whose dual command authority allows them to control both ADF and ABF assets.[52]

3.29 As outlined in chapter 2, the Australian Federal Police (AFP) are also expected to face additional challenges in the context of climate change, and establish more multidisciplinary and multi-agency teams in response. In addition to responding to regional instability, the AFP can expect an increase in operational missions related to global fragility and the mass movement of people, critical infrastructure, environmental crime, and fraud and corruption.[53] Home Affairs stated:

47 Home Affairs, answers to questions on notice, 20 March 2018 (received 9 April 2018).

48 Home Affairs, answers to questions on notice, 20 March 2018 (received 9 April 2018).

49 Defence, *Submission 63*, p. 6.

50 Home Affairs, answers to questions on notice, 20 March 2018 (received 9 April 2018).

51 Home Affairs, answers to questions on notice, 20 March 2018 (received 9 April 2018).

52 Home Affairs, answers to questions on notice, 20 March 2018 (received 9 April 2018).

53 Home Affairs, answers to questions on notice, 20 March 2018 (received 9 April 2018).

> The use of multidisciplinary and multi-agency teams, comprising detectives and specialist investigative capabilities, to resolve standard investigations will become the norm. This will require a recalibration of the AFP's existing workforce and greater public sector partnerships.[54]

Knowledge and skills

3.30 Some submissions identified a need to improve climate security capability and knowledge across government and Defence.[55] Defence introduced a Climate Change and Security elective in its Centre for Defence and Strategic Studies course in 2016.[56] In addition, Defence partnered with the Australian National University (ANU) Climate Change and Energy Change Institutes to develop short courses on climate change and security and energy literacy.[57] Defence also worked with ASPI to develop a whole-of-government 'executive master-class in risk and resilience'.[58] Professor Scott said:

> …it's an area we are hoping to expand on in the education of the training officers and the midshipmen—a greater understanding of the interaction between the different issues which can come under the umbrella of climate security.[59]

Emissions reductions

3.31 Submissions strongly recommended the Australian Government reduce national greenhouse gas emissions through mitigation activities to avoid the effects of climate change as far as possible. Submissions described effective emissions reductions as 'critical', 'necessary' and 'essential' for limiting the national security risks of climate change.[60] Professor Matt McDonald reasoned 'addressing climate insecurity should ultimately focus on addressing the problems itself rather than simply responding defensively to manifestations of it'.[61] The Public Health Association of Australia noted mitigation 'has multiple benefits for the ecological and social determinants of health and for security'.[62]

---

54 Home Affairs, answers to questions on notice, 20 March 2018 (received 9 April 2018).

55 The Center for Climate and Security, *Submission 22*, [p. 8].

56 Defence, *Submission 63*, p. 10.

57 Defence, *Submission 63*, p. 10.

58 Defence, *Submission 63*, p. 11.

59 *Committee Hansard*, 8 December 2017, p. 24.

60 See, for example: Climate Council, *Submission 18*, p. 8; Professor Timothy Stephens, *Submission 13*, p. 3; The Center for Climate and Security, *Submission 22*, p. 7; Queensland Government, *Submission 64*, p. 6.

61 *Submission 23*, [p. 5], [original emphasis removed].

62 *Submission 43*, p. 7.

National emissions reduction targets

3.32 The Paris Agreement is the 'international community's core vehicle for addressing climate change'.[63] Australia has committed to a target of reducing greenhouse gas emissions to 26-28 per cent below 2005 levels by 2030.[64] Mr Patrick Suckling, Ambassador for the Environment, described Australia's commitments as 'among the more ambitious of those of G20 countries, effectively representing a halving of emissions per person in Australia by 2030, or a two-thirds reduction per unit of GDP'.[65] The Department of the Environment and Energy (DoEE) asserted this 'is in step with the efforts of other developed countries'.[66] However, this was rejected by many submissions. Mr Dunlop described the targets as 'far below a reasonable contribution in comparison with other countries, and even further from proportionally meeting the Paris 1.5-2.0°C temperature limit objective'.[67] Submissions were also critical of the likely effectiveness of the nationally determined contributions under the Paris Agreement. For example, Ms Goodman stated:

> Whilst the Paris climate accord's goal are to "keeping the increase in global average temperature to well below 2°C above pre-industrial levels [and] to aim to limit the increase to 1.5°C", the present commitment by governments will result in warming of 3°C or more. Such an outcome would have national security consequences so severe that some nations would cease to exist and the viability of many others would be severely challenged.[68]

3.33 Professor Timothy Stephens, University of Sydney, similarly characterised Australia's targets as 'weak' and 'inconsistent with the Paris Agreement's 1.5/2°C temperature goal'.[69] Many submissions urged the Australian Government to strengthen greenhouse gas emissions reductions to protect Australia's national security.[70] Recommended targets included reducing greenhouse gas emissions by at least 40 per cent below 2000 levels by 2025, and 60 per cent below 2000 levels by 2030.[71]

---

63 DFAT, *Submission 61*, p. 3.

64 DoEE, *Submission 60*, p. 2.

65 *Proof Committee Hansard*, 20 March 2018, p. 4.

66 DoEE, *Submission 60*, p. 6.

67 *Submission 36*, p. 5. See also Breakthrough, *Submission 20*, p. 12.

68 *Submission 8*, p. 7. See also Professor Burke and Professor Scott, *Submission 51*, pp. 12–13; Mr Dunlop, *Committee Hansard*, 8 December 2017, pp. 49–50.

69 *Submission 13*, p. 3.

70 See, for example, Breakthrough, *Submission 20*, p. 2; The Public Health Association of Australia, *Submission 43*, p. 8; ACFID, *Submission 53*, p. 14.

71 ACFID, *Submission 53*, p. 14; Plan International Australia, *Submission 29*, p. 11. The Australian Government *Final report on Australia's future emissions reduction targets* recommended a 2025 target of 30 per cent below 2000 levels, and further reductions by 2030 of 40 to 60 per cent below 2000 levels (Climate Change Authority, 2015, p. 1). Other submissions recommended stronger targets, including ActionAid Australia, *Submission 49*, p. 7.

3.34 Ms Helen Wilson, Acting Deputy Secretary, Climate Change and Energy Innovation, DoEE, explained to the committee:

> While it is true that, globally, we are not yet on track to achieve the goals set out in the Paris Agreement, the agreement is designed so that all countries ratchet up ambition through five-yearly submissions of nationally determined contributions. The Australian government has decided, as part of the 2017 review of climate change policies, to establish a five-yearly review and refine cycle in line with the Paris Agreement review cycle. [72]

3.35 Rear Admiral Titley encouraged the committee to 'not lose sight of the big picture: how to move the world's energy system to a predominantly non-carbon based energy source to power the world'.[73] A number of submissions shared this view, variously recommending a target of net zero emissions and a decarbonised economy by 2030, 2040 or 2050.[74]

Energy sources

3.36 Some participants discussed the use of specific energy sources, including coal, nuclear power, and liquid fuels. Mr Dunlop warned 'by continuing to invest heavily in fossil fuels, which is what Australia is doing, we are effectively locking in catastrophic outcomes today which you won't be able to unwind'.[75] When asked whether the 'vested interests that are keeping fossil fuels front and centre' of Australia's economy are 'a threat to climate change action and a threat to national security', Mr Dunlop agreed 'those vested interests are themselves a major threat to national security.[76] He told the committee 'we are hinging our foreign policy argument about the future development of our industries on something that is completely unsustainable from a climate point of view'.[77] Oxfam Australia argued there is 'certainly no space for new coal', and called for a ban on 'new coalmines or coalmine expansions in Australia'.[78]

3.37 The committee also sought some witnesses' views on the use of nuclear power. Admiral Barrie cautioned the use of nuclear power as 'a stopgap measure to bridge Australia away from its current dependence on coal into renewable energy'

---

72 *Proof Committee Hansard*, 20 March 2018, p. 2.

73 *Submission 11*, p. 10.

74 Submissions calling for decarbonisation of the Australian economy by 2030 included Breakthrough, *Submission 20*, p. 2; Darebin Climate Action Now, *Submission 25*, p. 13. By 2040: Oxfam Australia, *Submission 40*, p. 12; Climate and Health Alliance, *Submission 26*, p. 8. By 2050: ACFID, *Submission 53*, p. 14; Professor Burke and Professor Scott, *Submission 51*, pp 3, 11; ActionAid Australia, *Submission 49*, p. 7. The Climate and Health Alliance advocated negative net emissions by 2050 (*Submission 26*, p. 8).

75 *Committee Hansard*, 8 December 2017, p. 50.

76 *Committee Hansard*, 8 December 2017, p. 52.

77 *Committee Hansard*, 8 December 2017, p. 54.

78 Dr Bradshaw, *Committee Hansard*, 8 December 2017, p. 40; Oxfam Australia, *Submission 40*, p. 12. See the Quaker Peace and Legislation Committee, *Submission 27*, p. 3.

would entail 'building a very, very long-term eventual problem, even though these days, with new technologies, the amount of residual waste is very much reduced from the earlier years'.[79] Dr Simon Bradshaw, Oxfam Australia, described nuclear power as 'a very expensive solution' and 'not a solution for people who don't currently live with electricity'.[80] Acknowledging the dangers of nuclear proliferation, Mr Dunlop stated:

> My personal view is that the problem is so acute that you cannot actually ignore any option at this point. I think nuclear has to be a consideration. I personally don't think it will stack up….the nuclear industry hasn't been able to actually demonstrate a clear-cut business case and technological case on a lot of these new developments anywhere. If it can happen, then fine. I think we should look at it carefully.[81]

3.38 The ANU Climate Change Institute also raised the risk of nuclear proliferation.[82]

3.39 Following the hearing on 20 March 2018, Commonwealth agencies provided an overview of their approach to Australia's liquid fuel supply chain. This includes working to implement Australia's compliance plan to address the current shortfall in oil stockholdings, and preparing to respond in the event of an emergency in accordance with relevant legislation and the National Liquid Fuel Emergency Response Plan.[83] The Commonwealth encourages the development and use of alternative fuels through grants, emissions reductions policies and excise relief, and is supporting research into hydrogen technologies.[84] Chapter 4 provides some information on Defence's energy use, including non-traditional fuel sources.

Commonwealth leadership roles

3.40 Participants recommended the appointment of senior climate security leaders. Proposals included a climate security envoy with responsibility for international engagement, and an adviser within the Home Affairs Portfolio to facilitate interagency coordination on national security and resilience.

3.41 The committee heard the Australian Government should consider establishing new climate security roles modelled on international examples. In 2009, the UK Ministry of Defence and the Foreign and Commonwealth Office jointly appointed a Climate and Energy Security Envoy as the UK 'voice' on climate and resource security. The Envoy was tasked with broadening and deepening the climate security debate, and integrating the Ministry's climate strategy across government

79 *Committee Hansard*, 8 December 2017, p. 29.

80 *Committee Hansard*, 8 December 2017, pp. 43–44.

81 *Committee Hansard*, 8 December 2017, p. 51.

82 *Submission 50*, p. 22.

83 DoEE and Defence, joint answer to question on notice, 20 March 2018 (received 6 April 2018), [pp. 2–3].

84 DoEE and Defence, joint answer to question on notice, 20 March 2018 (received 6 April 2018), [pp. 4–6].

departments.[85] Both CPD and the Climate Council suggested Australia establish a similar envoy role responsible for facilitating policy integration across government and representing Australia internationally on climate security policy.[86]

3.42 CPD recommended the creation of a Climate and Resource Security Envoy jointly funded by DFAT and Defence, and emphasised adequate resourcing would be required to signal Australia's prioritisation of climate security.[87] The Climate Council recommended the appointment of a Military Climate Change Envoy, with the 'ability to be engaged, particularly regionally, to act with confidence and authority throughout the region when we are engaging, particularly with other militaries, on the matters of climate change".[88] The Center for Climate and Security recommended assigning a 'Departmental Secretary to assume a publicly visible leadership role on domestic and regional climate change and security issues', and coordinate with the Prime Minister, the National Security Committee of Cabinet, and national security agencies.[89]

3.43 Domestically, Dr Anthony Bergin of ASPI raised the possibility of appointing a climate security adviser within the Home Affairs Portfolio, with broad responsibility for considering the national security implications of climate change.[90] Another proposal was made by Dr Barnes, who suggested a new statutory authority or a senior advisory role could be established within the Home Affairs Portfolio to focus on climate resilience and infrastructure planning.[91] He emphasised:

> …the individual needs to be able to coordinate with state governments and local governments and within the federal sphere, obviously, with central agencies, but the critical issue is that a national climate resilience strategy also has to look at continuity planning in terms of national continuity.[92]

Coordination between the Commonwealth and domestic stakeholders

3.44 This chapter ends with an overview of suggestions for improving Australia's national resilience, including establishing communities of practice, sharing climate information, increasing funding for pre-disaster resilience measures, and adopting a national climate health strategy.

National communities of practice

3.45 Submissions suggested Commonwealth agencies should improve their cooperation on climate security issues with non-government organisations,

85 Climate Council, *Submission 18 Attachment 1*, p. 73.

86 *Submission 24*, [p. 10]; *Submission 18*, p. 10.

87 *Submission 24*, [p. 10].

88 *Submission 18*, p. 10; Dr Thomas, *Committee Hansard*, 8 December 2017, p. 38.

89 *Submission 22*, p. 7.

90 *Committee Hansard*, 8 December 2017, p. 15.

91 *Committee Hansard*, 8 December 2017, pp. 14–15.

92 *Committee Hansard*, 8 December 2017, p. 14.

communities and the private sector.[93] Dr Barnes proposed the development of a new national climate resilience strategy, to be overseen by a coordinator with 'advisory and collaborative obligations to all three levels of government, representative industry groups and dedicated national security agencies'.[94] He further suggested the development of 'communities of practice' involving all levels of government and the private sector to 'provide joined-up thinking on current and future vulnerability and mitigation strategies for addressing climate impacts'.[95]

3.46 CPD proposed Defence create 'an informal working group' to draw on the 'expertise and resources of relevant actors outside government' to 'improve strategic planning and preparedness activities'.[96] It suggested participants should include Australian corporations from industries affected by climate change, such as the transport, agribusiness, and property development sectors.[97]

3.47 A review of the 2011 *National strategy for disaster resilience* described existing multi-stakeholder groups, including the Australian Business Roundtable for Disaster Resilience and Safer Communities, which 'was formed with the aim of supporting the development of a more sustainable, coordinated national approach to making our communities more resilient and Australian people safer'.[98] It also noted the Australia-New Zealand Emergency Management Committee (ANZEMC) 'has been successful in driving partnerships across governments, enabling high levels of cross-jurisdictional engagement'.[99] The review identified a future focus 'on developing meaningful partnerships between governments and stakeholders outside the traditional emergency management governance structure, such as with local government, the private sector and non-government organisations'.[100]

Sharing climate science, data and expertise

3.48 Submissions agreed that agencies should share information on climate science and risks with other stakeholders, such as industry groups and scientists, to better inform responses to climate security threats. The committee raised the issue of information sharing between government agencies and insurance and reinsurance companies.[101] At the most recent Disaster and Climate Resilience Reference Group meetings members discussed:

---

93 CPD, *Submission 24*, [p. 10].

94 *Submission 46*, p. 3.

95 *Submission 46*, p. 3.

96 *Submission 24*, [p. 10].

97 *Submission 24*, [p. 10].

98 Australian Government, *National strategy for disaster resilience: Implementation review*, 2015, p. 11.

99 *National strategy for disaster resilience: Implementation review*, 2015, p. 11.

100 *National strategy for disaster resilience: Implementation review*, 2015, p. 27.

101 *Proof Committee Hansard*, 20 March 2018, p. 10.

> • the role of the insurance industry in climate and disaster risk management and ways of addressing climate risks within the public service and how to better identify them, and
>
> • risk management within the public service, and considered tools and scenarios that can assist with public service climate risk decision making.[102]

3.49 Mr Crosweller described how the Reference Group has an 'ongoing dialogue' with 'the Australian Business Roundtable, which includes a reinsurer, plus an insurer, plus the banking sector, plus the telecommunications sector'.[103] He stated:

> EMA is working, through Home Affairs, on specific initiatives around knowledge and data. Part of that is about knowledge and exchange with the private sector, with insurance and other sectors, of government data that can assist them and insurance data that can assist us in terms of better positioning for government programs and investments….They're certainly ahead on the insurance data, but we're probably well ahead on the natural hazard data and the impacts and effects. There's a very open and generous dialogue that's currently occurring, which is being formalised through good program development and policy advice.[104]

3.50 He further explained:

> For example, at the last meeting, we engaged the insurance industry through IAG [Insurance Australia Group], and the chief executive of IAG will talk about the insurance challenges in climate change and what they might mean for the federal government, particularly around the release of federal government data that may assist insurance in doing better-quality assessments around risk.[105]

3.51 Dr Craig James, Research Program Director, CSIRO, added:

> …we're looking at scenarios of complex interactions between events, so multiple events at the same time and maybe different sorts of events—fires in one spot, floods in another. Those [insurance] industries do not have access to the data that's necessary to try to do that more complex assessment of hot spots of where activities are going to basically become problematic… It's a good partnership to think about accessing some of what they've got, but putting it into the context of information that would be held by the people on this panel [departments].[106]

3.52 Many submissions emphasised the importance of Defence cooperating with climate scientists. For example, Rear Admiral Titley called for Australia to leverage its civilian scientific investments to 'support wise climate related decisions in the

---

102 Home Affairs, answers to questions on notice, 20 March 2018 (received 9 April 2018).

103 *Proof Committee Hansard*, 20 March 2018, p. 10.

104 *Proof Committee Hansard*, 20 March 2018, p. 10.

105 *Proof Committee Hansard*, 20 March 2018, p. 23.

106 *Proof Committee Hansard*, 20 March 2018, p. 11.

security enterprise'.[107] Ms Goodman noted the military is 'not the place where we should be doing primary climate science, but we need to understand how climate change affects military operations, military strategy and military bases'.[108] Dr Bergin and Ms Glasson recommended that Defence further engage with climate scientists through 'seminars, workshops and focus groups on specific issues'.[109]

3.53 Dr Bergin noted many military assets collect environmental data, and called for this to be shared with other Australian agencies involved in climate research and emergency management, potentially through a formal communication mechanism.[110] The Center for Climate and Security extended this proposal, advocating the release of climate security analysis publicly to develop 'national awareness and knowledge of the risks'.[111] It suggested the establishment of 'a central government-wide climate change information repository for consolidating and assessing multiple climate forecasts and associated risks (including data from both the physical and social sciences)'.[112]

3.54 Defence described its ongoing collaboration on climate change with various government and non-government bodies, including 'CSIRO, Bureau of Meteorology, Geoscience Australia, the Australian National University, the University of New South Wales, ASPI and the Centre for Policy Development and Engineers Australia'.[113] Dr Stuart Pearson spoke highly of Defence's work with the National Climate Change Adaptation Research Framework.[114] Mr Crosweller told the committee a series of modelling on climate change risks had been undertaken with states and territories and the Bureau of Meteorology, Geoscience Australia and CSIRO.[115]

3.55 Some submissions recommended increases to government funding for climate research, noting the importance of evidence for Australia's national security.[116] The Crawford Fund, an Australian non-profit organisation, cautioned 'cuts to the agricultural and natural resource management areas of the CSIRO have eroded our capacity to deal with climate change impacts'.[117] Rear Admiral Titley asked the committee to support the CSIRO 'to better understand and forecast the complex ice, ocean and glacier dynamics on Antarctica…Both our countries' long-term security

---

107 *Submission 11*, p. 10.

108 *Committee Hansard*, 8 December 2017, p. 9.

109 *Submission 3*, p. 8.

110 *Committee Hansard*, 8 December 2017, pp. 18–19.

111 *Submission 22*, [p. 7].

112 *Submission 22*, [p. 7].

113 *Submission 63*, p. 11.

114 *Committee Hansard*, 8 December 2017, pp. 22–23.

115 *Proof Committee Hansard*, 20 March 2018, p. 7.

116 See, for example, Ms Goodman, *Submission 8*, p. 1; Mr Dunlop, *Submission 36*, p. 8; Professor Burke and Professor Scott, *Submission 51*, p. 4.

117 The Crawford Fund Ltd, *Submission 31*, p. 6.

depends on understanding the magnitude and rate of rapid sea level rise'.[118] Expanding on this point, Ms Goodman said:

> I'm deeply, deeply concerned that we will underfund science and research in this area and that we also are at risk of underfunding the social science research that needs to accompany the physical science to give us a better understanding of how these climate risks are evolving.[119]

Funding for domestic disaster prevention, response and recovery

3.56 The Commonwealth, state and territory governments contribute funding relating to domestic disasters such as extreme weather events. Through the Natural Disaster Relief and Recovery Arrangements (NDRAA) the Commonwealth Government provides financial assistance directly to the states to assist them with the costs associated with disaster relief and recovery assistance measures.[120]

Disaster prevention

3.57 The Commonwealth Government supports domestic resilience in partnership with state and territory governments, which have 'primary responsibility for protecting life, property and environment within their borders'.[121]

3.58 A report by the Productivity Commission (PC) into national disaster funding arrangements found governments over-invest in post-disaster reconstruction but under-invest in mitigation to reduce the impact of disasters.[122] After consultation with states and territories, the Commonwealth Government did not support the recommendation to reduce its funding for post-disaster recovery while increasing its funding for disaster mitigation to $200 million per year over time.[123] However, in its response the Government indicated that it 'is actively exploring the option of states using any efficiencies realised following the actual reconstruction of essential public assets on future disaster mitigation activities'.[124]

3.59 Home Affairs noted that the proposed reforms to the Natural Disaster Relief and Recovery Arrangements will:

---

118 *Committee Hansard*, 8 December 2017, p. 3.

119 *Committee Hansard*, 8 December 2017, pp. 7–8. See Professor Burke, *Committee Hansard*, 8 December 2017, p. 25.

120 NDRRA Fact Sheet, accessed 10 April 2018.

121 Attorney-General's Department, Emergency response plans, https://www.ag.gov.au/EmergencyManagement/Emergency-response-plans/Pages/default.aspx (accessed 2 April 2018).

122 Productivity Commission, *Natural Disaster Funding Arrangements*, volume 1, no. 74, December 2014, publicly released May 2015, p 2.

123 Australian Government response to the Senate Economics References Committee report: *Australia's general insurance industry: sapping consumers of the will to compare*, December 2017, [p. 6]; Productivity Commission, *Natural Disaster Funding Arrangements*, May 2015.

124 Australian Government response to the Productivity Commission Inquiry into Natural Disaster Funding Arrangements, December 2016.

> …see Australian Government funding provided to states for the rebuilding of essential public infrastructure based on upfront assessments of damage and estimated reconstruction costs, rather than on actual costs some years after the severe weather event. The proposed reforms also provide incentives for the states to deliver their reconstruction projects more efficiently in order to realise efficiencies that can be put towards mitigation activities and projects.[125]

3.60 The Australian Business Roundtable for Disaster Resilience and Safer Communities supported the PC recommendation and called on the Australian Government to:

> 1. Increase the total Australian Government investment in disaster risk reduction and mitigation to $200 million per year or takes a first and significant step toward this total; and
>
> 2. Continue the National Partnership Agreement beyond June 2017 with appropriate funding attached as a part of its overall commitment to mitigation.[126]

3.61 The National Partnership Agreement on Natural Disaster Resilience is designed to 'strengthen community resilience and minimise the impact of a range of natural disasters in Australia'.[127] The National Partnership Agreement:

> …is a joint funding arrangement that provides the flexibility for States to address their specific natural disaster risk priorities. This arrangement recognises that the Commonwealth and the States have a mutual interest in reducing the impact of, and increasing resilience to, natural disasters.[128]

3.62 It contributes to delivering the strategic priorities under the National Strategy for Disaster Resilience, but is expected to cease at the end of 2017–18.[129]

3.63 Home Affairs provided examples of other Commonwealth initiatives that support resilience building, including those relating to infrastructure, noting:

> In total, the Australian Government has committed over $75 billion to transport infrastructure over the next decade. This commitment includes projects and programs that mitigate the impacts of natural hazards on Australian communities, infrastructure, and the economy. For example, the Government is investing $700 million on Northern Australian roads through programs announced as part of the Northern Australia White Paper.

---

125 Home Affairs, answers to questions on notice, 20 March 2018 (received 9 April 2018).

126 Australian Business Roundtable for Disaster Resilience and Safer Communities, *Pre-Budget Submission 2017–18: Australian Business Roundtable for Disaster Resilience and Safer Communities*, January 2017, p. 2.

127 Commonwealth of Australia, *Federal Financial Relations: Budget Paper No. 3 2017–18*, p. 58.

128 *Federal Financial Relations: Budget Paper No. 3 2017–18*, p. 58.

129 Home Affairs, answers to questions on notice, 20 March 2018 (received 9 April 2018). Funding for three states is to be provided under the National Partnership in the 2018–19 financial year, and negotiations are yet to be finalised regarding any future funding. Commonwealth of Australia, *Federal Financial Relations: Budget Paper No. 3 2018–19*, p. 58.

> The Government, in partnership with the Queensland Government, has also committed $6.7 billion to an $8.5 billion program of works on the Bruce Highway, which is providing, among a range of other improvements, greater flood immunity to this critical freight route.[130]

3.64 Home Affairs also outlined the following disaster resilience initiatives:

> • The Australian Government has provided $7.25 million since 2015 to the Australian Institute for Disaster Resilience (AIDR), which provides guidance material to states and territories, business, NGOs and communities, in the implementation and adoption of disaster resilience strategies.
>
> • Approximately $2.1 million per annum is provided under the Disaster Resilience Australia Package to support emergency management projects of national significance that improve the ability to prevent, prepare, respond to and recover from disasters across social, economic, environmental and governance elements. Funds are provided to both state and non-state agencies to assist in building communities' resilience across Australia.[131]

Disaster response

3.65 Commonwealth and state and territory governments also contribute to funding for emergency responses to disasters. While these broad arrangements were not a focus of submissions, the committee received evidence specifically relating to firefighting aircraft. Home Affairs outlined:

> The National Aerial Firefighting Centre (NAFC) is responsible for managing the seasonal contracts for firefighting aircraft across Australia. Contracted aircraft are based in a particular state and that state pays a substantial proportion of the cost of the contract for that season. NAFC currently contracts a fleet of 132 specialised aircraft to support firefighters.[132]

3.66 The Commonwealth currently contributes $14.8 million annually to the standing cost of the fleet of at least $65 million, while the rest is provided by states and territories.[133] States and territories also fund the variable annual operating costs of the fleet, which vary significantly, and have exceeded $100 million in total on occasion.[134] For the 2017–18 bushfire season, the fleet of 132 aircraft included:

> …six Erickson Aircranes as well as a number of other heavy lift helicopters. The fleet incorporated four large fixed wing airtankers, including a DC-10 Very Large Airtanker, alongside more than forty other fixed wing firebombing aircraft. The fleet also included four, very fast,

130 Home Affairs, answers to questions on notice, 20 March 2018 (received 9 April 2018).

131 Home Affairs, answers to questions on notice, 20 March 2018 (received 9 April 2018).

132 Home Affairs, answers to questions on notice, 20 March 2018 (received 9 April 2018).

133 Home Affairs, answers to questions on notice, 20 March 2018 (received 9 April 2018).

134 Home Affairs, answers to questions on notice, 20 March 2018 (received 9 April 2018).

> specialist fixed wing mapping aircraft, equipped with infra-red scanners to rapidly locate and map bushfires.[135]

3.67 Home Affairs explained that the 'nationally contracted fleet is complemented by around 20 specialised aircraft that are owned or contracted by individual state or territory agencies', and approximately '300 additional aircraft across Australia are registered for Call When Needed engagement'.[136]

Disaster recovery

3.68 The committee understands new disaster recovery funding arrangements are expected to be implemented from July 2018, including funding based on an upfront assessment of damages and estimated costs, rather than the current reimbursement model.[137] The committee did not receive a great deal of evidence regarding these arrangements, though Home Affairs noted the proposed arrangements:

> …provide incentives for the states to deliver their reconstruction projects more efficiently in order to realise efficiencies that can be put towards mitigation activities and projects.[138]

Climate-related health effects

3.69 As outlined in chapter 2, the health and wellbeing of Australians is threatened by longer-term changes to the climate as well as extreme weather events and emergencies. However, the Australian Government *National Climate Resilience and Adaptation Strategy* stated in 2015 that there were 'no national programmes specifically targeting the health effects of climate change'.[139] The 2017 Climate and Health Alliance *Framework for a National Strategy on Climate, Health and Well-being for Australia* similarly stated that 'human health has not yet been afforded sufficient priority in Australia's mitigation and adaptation policies and strategies'.[140] This Framework may offer an opportunity to implement greater coordination between all levels of government, the health sector and community to 'to work collaboratively to both protect the health and well-being of present and future generations'.[141]

Australian economy

3.70 As noted in chapter 2, some submissions took a broad view of climate security that included a resilient national economy and infrastructure. Dr Barnes explained:

---

135 Home Affairs, answers to questions on notice, 20 March 2018 (received 9 April 2018).

136 Home Affairs, answers to questions on notice, 20 March 2018 (received 9 April 2018).

137 Australian Government response to the Senate Economics References Committee report: *Australia's general insurance industry: sapping consumers of the will to compare*, December 2017, [p. 6].

138 Home Affairs, answers to questions on notice, 20 March 2018 (received 9 April 2018).

139 Australian Government, *National Climate Resilience and Adaptation Strategy*, 2015, p. 61.

140 Climate and Health Alliance, *Framework for a National Strategy on Climate, Health and Well-being for Australia*, June 2017, p. 4.

141 *Framework for a National Strategy on Climate, Health and Well-being for Australia*, p. 13.

> …there are different tones and colours to the notion of being a secure economy from a national perspective—the notion of viable economies, the notion of viable environmental conditions and the notion of viable communities. With that slightly different lens, the notion of climate variability and weather impacts on our financial systems are critical.[142]

3.71 The committee notes that many of these issues are being considered through other parliamentary processes, such as the recent Senate Economics References Committee reports into the financial risk associated with carbon for Australian businesses and climate change-related insurance issues.[143] The Senate Environment and Communications References Committee is currently inquiring into the current and future impacts of climate change on housing, buildings and infrastructure and is expected to report on 27 June 2018.

142 *Committee Hansard*, 8 December 2017, pp. 12–13.

143 Senate Economics References Committee, *Carbon risk: a burning issue*, April 2017; *Australia's general insurance industry: sapping consumers of the will to compare*, August 2017, pp. 70–74.

Chapter 4

Suggestions for improving coordination within Defence

4.1 In addition to advocating better climate security policy coordination at a whole of government level, submissions provided specific suggestions for Defence. This chapter outlines proposals, including developing a strategy, establishing a new leadership position, and considering climate security issues in relation to estate management, capabilities, and energy security. This chapter ends with perspectives on whether Defence should be restructured to respond to increasing demands to provide humanitarian assistance and disaster relief (HADR).

Consideration of climate security issues

4.2 The committee heard varying views regarding the extent to which climate security considerations have been integrated across Defence. For example, the Climate Council indicated Defence should further embed climate security considerations into its planning and reporting activities, and proposed Defence 'mainstream climate change into…all key national strategic (military) planning'.[1] This could include analysis and risk assessments of the impacts of climate change on:

- force posture (military base locations and capacity);
- force structure (how the military is organised for combat missions, stabilisation operations and disaster relief);
- military training of Australian personnel; and
- military preparedness to respond to operational requirements, including emergencies on multiple fronts.[2]

4.3 Dr Anthony Bergin and Ms Zoe Glasson of the Australian Strategic Policy Institute (ASPI) identified the United States Department of Defense (US DoD) 2016 directive as a potential model.[3] This stated that US DoD mission planning and execution must include:

> a. Identification and assessment of the effects of climate change on the DoD mission. b. Taking those effects into consideration when developing plans and implementing procedures. c. Anticipating and managing any risks that develop as a result of climate change to build resilience.[4]

---

1 *Submission 18*, p. 10.

2 Climate Council, *Submission 18*, pp. 10–12.

3 Dr Anthony Bergin and Ms Zoe Glasson, *Submission 3*, p. 9.

4 United States Department of Defense (US DoD), *Directive 4715.21 Climate Change Adaptation and Resilience*, 14 January 2016, p. 3, http://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodd/471521p.pdf (accessed 23 January 2018).

4.4 Dr Michael Thomas, representing the Climate Council, reiterated the importance of considering climate change in military planning. He described 'reading the Australian Defence Force posture review in 2012 and being aghast that climate change was not a consideration in that'.[5] Dr Thomas was also critical of the Global Change and Energy Security Initiative (GCESI).[6] This initiative was intended to 'raise awareness, develop an integrated energy strategy and link the military with scientific, industry and academic experts on global change'.[7] While Defence indicated the GCESI supported the integration of climate change in Defence's core business functions, Dr Thomas found 'no major policy documents or reforms changes were identified as flowing from the GCESI', suggesting it 'was really an information-scoping initiative rather than a major effort to mainstream climate change via reformation of ADF [Australian Defence Force] policies, practices and doctrine'.[8]

4.5 Defence stated the work of 'progressively embedding climate change in its core business functions' is now undertaken by the Defence Climate and Security Adviser.[9] Air Vice Marshal Mel Hupfeld, Head Force Design, explained how Defence is considering the impact of climate change in its policy settings:

> These settings inform planning for operations, preparedness, our capability life cycle and the estate and environmental management. Defence's force design process considers climate changes as a key element of the future operating environment. Currently, Defence is reviewing its investment business processes and our Smart Buyer framework to ensure that there is adequate consideration of climate change and assessment of risks in future capability and infrastructure decisions.[10]

4.6 He further stated:

> The Chief of Defence Force provides a preparedness directive to the ADF that outlines the level of readiness and what we call the notice to move will be for various elements of capability and for various missions and roles. That direction is provided each year. Within that, when we look at the full range of security capabilities and the risk that we need to be able to manage, then it does include the opportunity to deliver against those threats. We include climate change and the impacts of climate change in our assessments for preparedness, and of course that then allows us to assess what the likelihood would be during a high-risk weather season not just

---

5 *Committee Hansard*, 8 December 2017, p. 38. See Defence, *Australian Defence Force Posture Review: Final Report*, May 2012.

6 Michael Thomas, *The Securitization of Climate Change Australian and United States' Military Responses (2003–2013)*, UNSW, Springer, Canberra, Australia, 2017, pp. 140–141.

7 Climate Council, *Submission 18 Attachment 1*, p. 53.

8 Defence, *Submission 63*, p. 4; *The Securitization of Climate Change Australian and United States' Military Responses (2003–2013)*, pp. 140–141.

9 Defence, *Submission 63*, p. 4.

10 *Proof Committee Hansard*, 20 March 2018, p. 3; Defence, *Submission 63*, pp. 3–4.

> domestically but within the region, in particular, to assess where we may be called upon for humanitarian assistance and disaster relief.[11]

4.7 Air Vice Marshal Hupfeld also noted:

> Our preparedness directive is an annual document that Chief of the Defence Force provides, but he will update the level of readiness as he assesses the threats that might be there, whether that is a climate related risk or a more-strategic or other state or non-state based risk, depending on the security environment at the time.[12]

Climate security strategy

4.8 The Climate Council recommended that Australia emulate the US DoD and United Kingdom Ministry of Defence (UK MoD) by 'mainstreaming climate change into *public* national strategic documents such as the Defence White Paper as well as in key *internal* national strategic documents used by Defence'.[13] Therefore, the Climate Council recommended Defence regularly release a climate adaptation strategy to complement a climate security white paper.[14]

4.9 Other participants similarly supported the development of a Defence-specific climate security strategy. For example, Dr Bergin and Ms Glasson advocated the release of a 'long-term strategy for developing ADF responses to climate change…based on an analysis of the political, strategic, financial, and capability risks and opportunities climate change presents to the ADF business'.[15]

4.10 The Centre for Policy Development (CPD) recommended the development of a broader national climate security strategy that would both 'provide the overarching direction for the DoD to ensure the ADF's effectiveness, readiness and resilience, as well as position Australia to be a strategic leader in climate security'.[16] This should cover climate-related risks to Defence including increasing HADR and stabilisation responsibilities, potential geopolitical 'hotspots', and 'the overall effect of climate change on the defence estate including preparedness of the ADF across capacity, capability and resilience'.[17] CPD envisaged this strategy would establish specific 'roles, responsibilities, actionable timeframes and internal reporting requirements', and suggested linking it to the Defence Corporate Plan cycle.[18]

---

11 *Proof Committee Hansard*, 20 March 2018, p. 3; Defence, *Submission 63*, p. 21.

12 *Proof Committee Hansard*, 20 March 2018, p. 3; Defence, *Submission 63*, p. 24.

13 *Submission 18*, p. 10.

14 *Submission 18*, p. 10.

15 *Submission 3*, p. 9.

16 *Submission 24*, [p. 9].

17 CPD, *Submission 24*, [p. 9].

18 *Submission 24 Attachment 1*, pp. 36–37.

Climate security leaders

4.11 Participants recommended the elevation of a senior Defence leader responsible for climate security. Defence appointed a Defence Climate and Security Adviser in mid-2016 to build climate change awareness.[19] The Adviser is tasked with supporting the adoption of climate change consideration into business as usual activities, and ensuring guidance from the *2016 Defence White Paper* is 'integrated and synchronised into all relevant areas of Defence business'.[20] However, the committee heard the scope and seniority of this role should be expanded. Dr Thomas emphasised that climate security is:

> …a big enough issue to warrant having someone who's the voice on behalf of the ADF that can act, both in a national domestic sense but also in a regional international sense, and speak with authority on the issues. I think it's really important….Whilst Defence has a climate adviser—and no disrespect to that position—I think elevating that to a more senior position, with more prominence in the organisation, would give some drive and some impetus within the ADF to pull those threads together so that it does act against the risks.[21]

4.12 Dr Bergin similarly stated:

> What I had in mind was a senior leadership position that could look at the impacts of climate across defence procurement, strategic policy, operations, training and military health. I'm not at all critical of the fact that Defence have appointed someone to try and hoist in some of the impacts of climate. My suspicion is that it is mainly focused around, as I say, the environmental aspects…I'd also see energy security as being part of the responsibility of a senior climate adviser.[22]

4.13 The Center for Climate and Security highlighted the importance of providing the senior Defence climate security leader with an 'appropriately staffed office', and suggested it could be positioned within the 'Head Force Design within Vice Chief of Defence Force Group, responsible amongst other things for ADF preparedness and future force design'.[23]

4.14 Air Vice Marshal Hupfeld argued that while the Defence Climate and Security Adviser 'does the legwork', he is 'only one part of the machinery of considering all aspects of the security risks that we face'.[24] He explained Defence cooperates with Commonwealth agencies on climate risk and adaptation at all staff

---

19 *Submission 63*, p. 10.

20 *Submission 63*, p. 13.

21 *Committee Hansard*, 8 December 2017, p. 36.

22 *Committee Hansard*, 8 December 2017, p. 14.

23 The Center for Climate and Security, *Submission 22*, [pp. 6–7].

24 *Proof Committee Hansard*, 20 March 2018, p. 3; Defence, *Submission 63*, pp. 24–25.

levels 'the same as we do for any other activity that we perform'.[25] For example, he observed:

> In terms of an accountability point, the Vice Chief of Defence takes a very strong look and is an accountable officer in the department. He includes the climate elements both as my boss and in preparing our work for the Chief of Defence Force. So the preparedness statements are the vice chief's responsibility—to prepare for the Chief of Defence.[26]

4.15 The Vice Chief holds other climate-related responsibilities, including:

> …a function that we call the Joint Force Authority. He has and takes the authority to prioritise the joint force integration and options that we might use as we operate the force and prepare it for operations prior to then passing them to the Chief of Joint Operations for the conduct of operations. The vice chief also sits on the Secretaries Group on Climate Risk, which is the group above the Disaster and Climate Resilience Reference Group....[27]

4.16 The committee heard that the Deputy Secretary Strategic Policy and Intelligence 'is the policy lead within Defence who looks at the climate change aspects…[and] the policy settings by which we will contribute to and conform to the whole-of-government policy agenda'.[28] Air Vice Marshal Hupfeld reiterated:

> …we structure for the key war-fighting activities that we need to perform, and then work out our capabilities to meet those. But there is no doubt that the senior leadership is focused on the climate change elements as one of the security threats we face, so that will continue to be our normal activity. As for whether we set up a deliberate office or some other structure, as I think you are suggesting, that is yet to be seen.[29]

Estate management

4.17 As outlined in the US DoD report mentioned in the terms of reference, climate change responses are being implemented across American military planning, operations, training, testing, estate and acquisition and supply chains.[30] Ms Sherri Goodman explained American agencies including the US DoD have been required over the last decade to 'address the national security implications of climate change as they apply to both military planning and military bases'.[31] She went on:

---

25 *Proof Committee Hansard*, 20 March 2018, p. 3; Defence, *Submission 63*, p. 25.

26 *Proof Committee Hansard*, 20 March 2018, p. 3; Defence, *Submission 63*, p. 24.

27 Air Vice Marshal Hupfeld, *Proof Committee Hansard*, 20 March 2018, p. 3; Defence, *Submission 63*, p. 24.

28 Air Vice Marshal Hupfeld, *Proof Committee Hansard*, 20 March 2018, p. 3; Defence, *Submission 63*, p. 24.

29 *Proof Committee Hansard*, 20 March 2018, p. 3; Defence, *Submission 63*, p. 25.

30 US DoD, *National Security Implications of Climate-Related Risks and a Changing Climate*, July 2015; Climate Council, *Submission 18 Attachment 1*, p. 68.

31 *Committee Hansard*, 8 December 2017, p. 2.

> ...the Defense department is leading in assessing the impacts to its military infrastructure, particularly its coastal military bases. At Norfolk/Hampton Rhodes on the east coast of the United States, the US's largest complex of military facilities—that includes many bases—there is a combination of sea level rise, coastal erosion and storm surge that are affecting many of the military facilities down there. They already have extensive sunny-day flooding. The infrastructure there needs to be adjusted and made resilient. There are extensive efforts under way by all the military departments to address the climate impacts that are affecting the operation of that large complex of naval and other military facilities. That's being replicated across particularly the east coast of the United States.[32]

4.18 Chapter 2 described how Australian Defence bases and equipment could also be damaged by the physical effects of climate change. However, the CPD suggested Australia 'has still not seen anything like the long-standing, on-the-ground action' the US DoD has undertaken to prepare for sea level rise and climate change.[33] Dr Bergin and Ms Glasson reiterated Defence needs to adapt its estate management in response to climate change, stating '[c]limate proofing the estate will become more important'.[34]

4.19 Defence undertook 'preliminary investigations that identified the risks from climate change on Defence activities, personnel, and assets' between 2011 and 2015.[35] Retired American Rear Admiral Titley endorsed this preliminary work, and suggested there has been a recent re-emergence of attention of this topic.[36] Dr Thomas noted that, 'problematically', some relevant Defence studies remain classified.[37] Defence suggested these preliminary investigations inform the estate planning processes, and that it 'is already moving to adapt, plan and prepare for potential climate change impacts on its infrastructure'.[38] It further stated:

> Defence has factored climate change risks into estate planning processes including conducting bushfire hazard reduction land management practices in accordance with approved bushfire management plans, noting requirements to meet other biodiversity, flora and fauna protection obligations. Defence has joined the Bushfire and Natural Hazards Cooperative Research Centre...[39]

4.20 The *2016 Defence White Paper* noted:

---

32 *Committee Hansard*, 8 December 2017, p. 4.

33 *Submission 24*, p. 5.

34 Dr Bergin and Ms Glasson, *Submission 3*, p. 7.

35 *Submission 63*, p. 7; Climate Council, *Submission 18 Attachment 1*, p. 53.

36 *Committee Hansard*, 8 December 2017, p. 4.

37 Michael Thomas, *The Securitization of Climate Change Australian and United States' Military Responses (2003–2013)*, UNSW, Springer, Canberra, Australia, 2017, p. 142.

38 *Submission 63*, p. 13.

39 *Submission 63*, p. 13.

> Beyond 2025, the Defence estate footprint will need to be further developed to accommodate our new high technology capabilities and ensure that Defence is appropriately postured for future strategic requirements and the implications of climate change. This will involve developing new bases, wharves, airfields and training and weapons testing ranges.[40]

4.21 Defence confirmed it 'will continue to incorporate climate change into existing risk frameworks and processes as they develop across government for projects and planning'.[41]

Capabilities

4.22 In 2007, Mr Michael Pezullo, then Defence Deputy Secretary, Strategy, told the committee that climate change effects:

> …will probably not affect the force that is being developed over the current 10-year period, which is our acquisition period of 2007-17. Beyond that, we do need to give consideration to those kinds of non-traditional security dynamics in relation to the force that we will develop...[42]

4.23 The committee heard during the current inquiry that Defence should now consider climate change and the increasing demand for HADR:

> 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.[43]

4.24 Air Vice Marshal Hupfeld noted that versatile vehicles can be adapted to provide HADR.[44] Defence indicated it is investing in these capabilities, stating:

> The Government will acquire enhanced aero-medical evacuation and search and rescue capabilities, commencing with upgrades to Chinook helicopters to improve their ability to conduct aero-medical evacuation. In the longer-term, the Government will investigate options to enable the ADF to undertake combat search and rescue tasks more speedily and at longer range….The 2016 Defence White Paper included new Defence capabilities which will enhance the ADF's amphibious, air and sea lift, and maritime surveillance and response warfighting capabilities. As with existing capabilities, these will be able to adapt to respond to future HADR operations both in our region or further afield. Defence is also reviewing the potential impact of additional responses to climate change related events

40 Defence, *2016 Defence White Paper*, February 2016, p. 102.

41 *Submission 61*, p. 13.

42 *Committee Estimates Hansard*, 31 May 2007, pp. 102-103.

43 Dr Bergin and Ms Glasson, *Submission 3*, p. 7.

44 *Proof Committee Hansard*, 20 March 2018, p. 14.

> on concurrent tasks and training to sustain Defence preparedness for its warfighting and other response options.[45]

4.25 Defence further noted the physical effects of climate change can negatively affect the maintenance and operational performance of its assets.[46] It asserted it 'will incorporate input from agencies monitoring changes in biophysical geography…into capability development planning and risk assessment processes'.[47]

Emissions reductions

4.26 While all Commonwealth agencies contribute to Australia's total greenhouse gas emissions, submissions focused on how the major emitter, Defence, could reduce its emissions. Defence emissions are typically grouped into those resulting from estate/establishments (infrastructure, facilities and buildings) and operations (the use of military equipment such as aircraft, tanks, ships and submarines).[48] In 2011–12, Defence Operational Fuel accounted for 56 per cent of the total energy used within the Australian Government's operations, while Defence Establishments accounted for 15 per cent of the total Australian Government energy use.[49] Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure Group, explained:

> Within Defence, we track our fuel usage across the range of uses and types of fuel….My latest information for the 2016-17 financial year was that the net emissions from Australian Defence use of fuel was 1,705,000 tonnes of CO2. That's actually a 10 per cent reduction from the previous year. What tends to drive that is Defence's operational posture. The bulk of that comes from what we refer to as operational fuel use for our warships, our fighter planes and our military vehicles. We also track what we call our stationary energy use, so that's electricity and gas mainly for our Defence bases, but that is a small fraction of the overall total.[50]

4.27 Submissions were generally critical of Defence's emissions reductions efforts. Defence's *Combat Climate Change* program, launched in 2008 'to raise awareness about the issue across Defence and to restrict non-essential energy use', was described by Dr Thomas as 'more rhetoric than reality'.[51] CPD noted the program 'sought to reduce the ADF's greenhouse gas emissions yet excluded large and significant parts of

---

45 *Submission 63*, p. 9.

46 *Submission 63*, p. 7.

47 *Submission 63*, p. 6.

48 Anthony Press, Anthony Bergin and Eliza Garnsey, *Heavy Weather: Climate and the Australian Defence Force*, ASPI, Special Report no. 49, March 2013, p. 24.

49 Department of Resources, Energy and Tourism, *Energy Use in the Australian Government's Operations 2011–12*, p. 30.

50 *Proof Committee Hansard*, 20 March 2018, p. 12.

51 Climate Council, *Submission 18 Attachment 1*, p. 53; Michael Thomas, *The Securitization of Climate Change Australian and United States' Military Responses (2003–2013)*, UNSW, Springer, Canberra, Australia, 2017, p. 137.

the organisation such as operational fuel use'.[52] CPD also highlighted that 'the ADF's emissions actually increased over the life of the program'.[53]

Estate

4.28 The *Defence Estate Energy Policy* committed Defence to exploring renewable energy generation options and reducing carbon emissions, among other objectives.[54] The *Defence Estate Energy Strategy 2014–2019* stated 'energy efficiency and harnessing energy from alternative sources will allow Defence to deliver value for money, reduce climate change impacts and minimise other environmental consequences arising from fossil fuel use'.[55] Defence also asserted the 'Defence Estate and Infrastructure Group is actively pursuing best practice in delivering energy to bases'.[56] As examples of renewable energy use, the Defence submission nominated the 'numerous solar sites operational across northern Australia and the Carnegie Wave Project undertaken at HMAS Stirling'.[57] This 'is the world's first commercial-scale wave energy array that is connected to the grid and has the ability to produce desalinated water'.[58] Defence is implementing a broader mitigation program including:

> a. An extensive energy sub metering program to understand consumption and identify opportunities.
>
> b. Consideration and installation of alternative renewable sources, with a current focus on remote sites.
>
> c. Investigation of large scale solar arrays.
>
> d. Integrating sustainability initiatives into the estate, through energy efficient designs, fittings and equipment, and the installation of solar systems on Defence bases, where appropriate.[59]

4.29 Mr Grzeskowiak described the outcomes of Defence's mitigation efforts:

> In the things where we have more control—for example, the stationary energy and the cost of running our bases in Australia—we are seeing a reasonably flat line in terms of usage. We're fractionally above our baseline of 2006-07. When you consider the number of more modern facilities we're building, every new capability that we've introduced in the last 10 years

52 *Submission 24 Attachment 1*, p. 33.

53 *Submission 24 Attachment 1*, p. 33.

54 Defence, *Defence Estate Energy Policy*. Defence's *2016 Defence Environmental Policy* does not mention climate change or greenhouse gas emissions, and these issues are not a focus of the *Environmental Strategy 2016–2036*.[54] The *2016-2020 Defence Environmental Plan* is yet to be endorsed at the time of writing.

55 Defence, *Defence Estate Energy Strategy 2014–2019*, 2014, p. 5.

56 *Submission 63*, p. 13.

57 *Submission 63*, p. 12.

58 Australian Renewable Energy Agency, *Perth Wave Energy Project*, https://arena.gov.au/projects/perth-wave-energy-project/ (accessed 22 January 2018).

59 *Submission 63*, pp. 12–13.

> comes with extensive use of simulators and the like, which are energy heavy, then the fact that we're only using a small amount more energy than 10 years ago is quite positive.[60]

4.30 The Climate Council supported some of Defence's environmental initiatives, such as 'strategies to minimise its environmental footprint that include recent enhancements to energy monitoring, 'green' procurement, energy efficiency building codes (including 5-star rated buildings) and fuel efficient commercial vehicle fleets'.[61] It also recommended Defence implement further initiatives, including specific targets for emissions reductions or renewable energy use on military bases.[62] The US DoD implemented mandated renewable energy targets for military bases, and the US Army 'Net Zero' initiative aims to further reduce base energy emissions and produce as much renewable energy on military bases as it uses over the course of a year.[63] Dr Thomas described reducing base emissions and taking bases off the grid as 'almost low-hanging fruit', and identified the opportunity to create local industry jobs.[64]

Operations

4.31 Defence has been considering further 'capability changes to incorporate changing energy options', including alternative fuel sources.[65] Mr Patrick Suckling, Ambassador for the Environment, suggested military vessels contribute a relatively small proportion of greenhouse gas emissions compared to civilian fleets.[66] Elsewhere, Dr Bergin noted 'Defence use of liquid fuels is a drop in the ocean of the nation's overall fuels consumption (industry and mining are much bigger users)'.[67] Nevertheless, Commonwealth agencies informed the committee that '[d]evelopments in alternative fuels and their certification for sea, land and air platforms have the potential to improve future interoperability, cost effectiveness and resilience'.[68]

4.32 Elements of the US military services are implementing measures to reduce emissions relating to operations. The *US Navy Energy Program for Security and Independence* focuses on energy efficiency and security initiatives in the Navy and

---

60 *Proof Committee Hansard,* 20 March 2018, p. 12.

61 *Submission 18 Attachment 1*, p. 53; *Submission 18*, p. 13.

62 *Submission 18,* p. 12.

63 *Submission 18 Attachment 1*, pp. 66, 69. See, Michael Thomas, *The Securitization of Climate Change Australian and United States' Military Responses (2003–2013)*, UNSW, Springer, Canberra, Australia, 2017, p. 244; Office of the Assistant Secretary of Defense (Energy, Installations and Environment), *Department of Defense Guidance for Executive Order 13693: Planning for Federal Sustainability in the Next Decade*, March 2016.

64 *Committee Hansard*, 8 December 2017, p. 37.

65 *Submission 63*, p. 13.

66 DFAT, *Proof Committee Hansard*, 20 March 2018, p. 12.

67 Dr Bergin, 'Defence and liquid transport fuel resilience', *The Strategist*, ASPI, 30 August 2016.

68 Department of the Environment and Energy (DoEE) and Defence, joint answer to question on notice, 20 March 2018 (received 6 April 2018).

Marine Corps.[69] The US Navy has committed to drawing 50 per cent of its energy from alternative sources by 2020 through the Great Green Fleet energy initiative, and aims to ensure 50 per cent of shore installations will be carbon neutral.[70] Commonwealth agencies informed the committee that in 2016 'the Great Green Fleet sailed to Australia to participate in Exercise Pacific Rim on a 90 per cent regular ship diesel and 10 per cent biofuel blend'.[71]

4.33 Dr Bergin and Ms Glasson described how the Australian Navy has sought to ensure ongoing interoperability with the US Navy, stating it 'has made significant progress in ensuring our ships and aircraft are certified to use USN sourced [fuel] blends'.[72] For example, Commonwealth agencies noted:

> …in May 2017 the Australian Defence Standard (DEF(AUST)5213C AM1) for Navy Fuels was amended to include provision for alternative fuels obtained from blending conventional fuels with synthetic fuels manufactured by approved methods. The standard was endorsed by the Royal Australian Navy (RAN) and is available to suppliers, noting that current approved processes require blending of conventional fuel with up to 50 per cent synthetic fuels to meet the required physical and chemical properties for naval distillate.[73]

4.34 However, unlike the US, Defence has not specified targets for alternative fuel use or emissions reductions.[74] Dr Bergin and Ms Glasson asserted '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'.[75] The Climate Council recommended Defence should:

> Continue to promote the uptake of energy efficient military hardware and implement sustainable procurement practises. Promoting the uptake of energy efficient major military hardware platforms (e.g the use of biofuels and hybrids) will play a role in helping to mitigate the climate change threat. Sustainable procurement practises such as energy efficient civilian fleets, energy efficient lighting, heating and waste reduction strategies will also be key.[76]

---

69 Climate Council, *Submission 18 Attachment 1*, p. 68.

70 Dr Bergin and Ms Glasson, *Submission 3*, p. 8; Climate Council, *Submission 18 Attachment 1*, p. 57.

71 DoEE and Defence, joint answer to question on notice, 20 March 2018 (received 6 April 2018), [p. 5].

72 *Submission 3*, p. 8.

73 DoEE and Defence, joint answer to question on notice, 20 March 2018 (received 6 April 2018), [p. 5].

74 See CPD, *Submission 24 Attachment 1*, p. 11.

75 *Submission 3*, p. 8.

76 *Submission 18*, p. 13.

4.35 The Defence Science and Technology Group is 'exploring the potential for new energy technologies for Defence'.[77] The Army is 'examining innovative energy approaches in the Deployable Force Infrastructure projects' and 'Airforce is also examining potential alternative sources for fuel'.[78] Commonwealth agencies also noted that, for example, the Defence Capability Technology Demonstrator program has funded research and development into hydrogen-based technologies, including 'portable light-weight fuel cells that can be recharged through solar energy, for use in forward operating bases and mobile units, peace-keeping and emergency relief'.[79] However, '[c]ost and availability through commercial suppliers is still considered a barrier and wholesale commercialisation of alternative fuel products is not expected in Australia for several years'.[80]

Energy security

4.36 Defence described 'a secure electricity system' as 'one that continues to operate across the entire region despite disruptions'.[81] Energy insecurity 'has potential to disrupt supply chains and immobilise military assets'.[82] Defence stated:

> Given Defence's reliance on energy sources provided and managed by external parties, it is critical that Defence's energy security and resilience requirements are reflected by Australian Government energy security legislation and regulation at both the state and national level.[83]

4.37 Submissions suggested transitioning to renewable energy sources will improve Defence's energy security by ensuring it has access to diverse energy sources under Australian control.[84] ASPI stated that eliminating Defence's reliance on domestic power grids 'may assist operational autonomy and overall capacity'.[85] ASPI further noted using alternative fuel sources 'to decrease the ADF's reliance on external supplies in times of international crisis that may make supplies of crude difficult to obtain, or even unavailable, will increase operational resilience'.[86] The ANU Climate

77 *Submission 63*, p. 13.

78 *Submission 63*, p. 13.

79 DoEE and Defence, joint answer to question on notice, 20 March 2018 (received 6 April 2018), [p. 6].

80 DoEE and Defence, joint answer to question on notice, 20 March 2018 (received 6 April 2018).

81 *Submission 63*, p. 8.

82 *Submission 24*, [p. 6].

83 *Submission 63*, p. 8.

84 CPD, *Submission 24 Attachment 1*, p. 22; Climate Council, *Submission 18*, p. 12; AGL, *Submission 33*, p. 2; ANU Climate Change Institute, *Submission 50*, p. 22.

85 Anthony Press, Anthony Bergin and Eliza Garnsey, *Heavy Weather: Climate and the Australian Defence Force*, ASPI, Special Report no. 49, March 2013, p. 25.

86 *Heavy Weather: Climate and the Australian Defence Force*, p. 26.

Change Institute also identified the broader national security benefits of diversification and additional domestic energy availability.[87]

Response to domestic disasters

4.38 As outlined in chapter 2, climate change is contributing to extreme weather events that endanger the health and wellbeing of Australian individuals and communities. The ADF is currently structured around its warfighting role, and adapts existing capabilities to assist lead agencies through the provision of HADR, rather than making HADR a central Defence priority.[88] As detailed below, the committee heard various suggestions about the appropriate Defence response to disasters.

Defence Assistance to the Civil Community

4.39 Defence emphasised that it is 'committed to supporting the interagency coordinating mechanisms…under the resilience and adaptation framework'.[89] Defence stated the 'continuation of whole of nation approach and engagement with international partners is essential as most of Defence's climate change and adaptation risks are shared with other Government agencies, business and communities'.[90] The Department of Home Affairs has primary responsibility for domestic resilience and emergency management within the Commonwealth through Emergency Management Australia (EMA). Defence collaborates with EMA to improve Australia's domestic disaster resilience, including through:

> a. Participation through the EMA in scenario planning and preparedness activities.
>
> b. Participation in EMA led pre-disaster briefings for state and territory governments and Emergency Services agencies.
>
> c. A review of regional humanitarian assistance/disaster response and national DACC response plans.
>
> d. Analysis of likely domestic support contingencies and likely response requirements to ensure ADF preparedness to respond.[91]

4.40 Admiral Barrie noted that Defence has good relationships with EMA and the various state and territory emergency services.[92]

4.41 Defence provides support to the Australian community in emergencies under Defence Assistance to the Civil Community (DACC) arrangements:

> State and territory governments have primary responsibility for the protection of life, property and the environment, and for coordinating and

87 *Submission 50*, p. 23.

88 *Submission 63*, p. 3.

89 *Submission 63*, p. 10.

90 Defence, *Submission 63*, p. 14.

91 Defence, *Submission 63*, pp. 12–13.

92 *Committee Hansard*, 8 December 2017, p. 32.

> planning an emergency response or recovery within their jurisdictions. Where the scale of an emergency or disaster exceeds their response capacity or where resources cannot be mobilised in sufficient time, a state or territory may seek Commonwealth assistance, including from Defence.[93]

4.42 Defence assistance can include the 'airlift of equipment and personnel; engineering support; search and support; temporary accommodation and general support; health and psychological support; aviation refuelling; and communications'.[94] The ANAO noted:

> …Defence is often able to deploy Australian Defence Force (ADF) personnel (including Reserve personnel) with relevant expertise and skills (for example, engineers), as well as equipment (from transport aircraft to water purification units). Defence may also have the capacity to deploy its personnel and equipment at relatively short notice due to the geographical proximity of certain bases to incident areas and its access to transport assets. Further, Defence has developed approaches to the planning, coordination and conduct of operations, which may be readily adapted to emergency responses.[95]

4.43 The ADF was deployed approximately 275 times to provide emergency assistance from 2005–06 to 2012–13.[96] Examples included:

> Victoria Black Saturday bushfires, 2009: Defence support to the 2009 bushfires reached a peak operational strength of about 800 military personnel per day, with more than 1,250 Defence personnel providing assistance over the seven weeks of the operation.
>
> NSW bushfires, 2011: The Army Engineer Remediation Force conducted over 200 demolition tasks, 338 tree felling tasks, 21 pool drainage tasks and over 200 site reconnaissance tasks.
>
> Queensland floods, 2011: Defence deployed some 1,440 personnel with 26 aircraft flying 572 hours transporting about 1,000 people with more than one-half million kilograms of stores.
>
> Queensland Tropical Cyclone Yasi, 2011: Operation Yasi Assist involved more than 1200 soldiers, sailors and aircrew deployed to assist with the recovery.[97]

4.44 During the response to the Black Saturday bushfires Defence 'recorded supplier expenses totalling some $6.7 million, for items such as travel, consumable

---

93 Defence, *Submission 63*, pp. 8–9.

94 The Auditor-General, *Emergency Defence Assistance to the Civil Community*, Australian National Audit Office (ANAO), Audit Report No. 24 2013–2014, April 2014, p. 12.

95 The Auditor-General, *Emergency Defence Assistance to the Civil Community*, ANAO, Audit Report No. 24 2013–2014, April 2014, pp. 11–12.

96 *Emergency Defence Assistance to the Civil Community*, p. 32.

97 Climate Council, *Submission 18 Attachment 1*, p. 55.

goods and garrison support'.[98] More recently, Defence responded to Tropical Cyclone Debbie in Queensland in 2017, at a cost to Defence of $306,600.[99] At the time of writing, a Joint Task Force of over 400 Navy, Army and Air Force personnel had been established to assist the Northern Territory and local governments in recovery efforts following Tropical Cyclone Marcus in March 2018, alongside 50 US marines.[100]

4.45 Defence does not currently have personnel solely responsible for responding to international HADR or domestic DACC policy, planning or coordination.[101] Instead, extant personnel are tasked with managing Defence's response once it has committed to an operation.[102] However, as Air Vice Marshal Hupfeld explained:

> …in doing analysis around the high-risk weather season, Defence works with Home Affairs to examine what that risk analysis would be so that we can prepare in advance. We certainly pre-plan, we adjust and the Chief of the Defence Force will adjust the preparedness requirements if he thinks it's necessary based on those risks. So there are staff that are allocated to those functions and we perform those activities in planning and policy.[103]

4.46 From October 2017 to April 2018 a range of capabilities were available to provide DACC and HADR, including:

> …an amphibious ship (HMAS *Canberra*)…Operational Response Vessels, which are available to provide assistance for Search and Rescue (SAR) and civil emergencies. A helicopter response capability….a range of air mobility assets…surveillance, aero-medical evacuation, communications, logistics support and limited plant operators and tradespersons, depending on the emergency…The 3rd Brigade, based in Townsville, is the primary on-call Army unit over the high-risk weather period 2017-18. Army also maintains scalable Emergency Support Force units around Australia...[104]

Capacity of Defence to continue responding to disasters

4.47 Many submissions questioned whether Defence will have the capacity to fulfil its military and HADR responsibilities in the future due to the additional commitments and climate-related threats outlined in chapter 2.[105] Submissions agreed

---

98 The Auditor-General, *Emergency Defence Assistance to the Civil Community*, ANAO, Audit Report No. 24 2013–2014, April 2014, p.15.

99 Department of Defence, *Annual Report 2016–17*, p. 39; Defence, answer to written question on notice, (received 27 February 2018).

100 Defence, 'Australian Defence Force stands up Joint Task Force to help cyclone recovery', *Defence News and Media*, 23 March 2018; Senator the Hon Marise Payne, Minister for Defence, *Senate Hansard*, 27 March 2018, p. 20.

101 Defence, answer to written question on notice, (received 27 February 2018).

102 Air Vice Marshal Hupfeld, *Proof Committee Hansard*, 20 March 2018, p. 3; Defence, *Submission 63*, p. 20.

103 *Proof Committee Hansard*, 20 March 2018, p. 3; Defence, *Submission 63*, p. 20.

104 Defence, answer to written question on notice, (received 27 February 2018).

105 Dr Bergin and Ms Glasson, *Submission 3*; Dr Barnes, *Submission 46*; CPD, *Submission 24*.

'it is reasonable to expect increasing pressure on ADF resources to respond to such crises in terms of relocating affected populations and managing the clean-up'.[106]

4.48 The committee heard Defence has not always been able to respond to domestic emergencies, such as when the Navy was 'unable to deploy HMAS *Manoora*, *Kanimbla* or *Tobruk*' following Cyclone Yasi.[107] Admiral Barrie suggested:

> *Tobruk*'s failure was certainly an issue with support arrangements inside Navy and, in my view, a failure to take preparedness seriously. I spent some time saying to the people who ran the Navy, 'You really dropped the ball on this.' There is a report, as well [as] other changes inside the organisation, and they have really tried to correct those omissions.[108]

4.49 Admiral Barrie questioned whether Defence has 'sufficient personnel in the present force' to respond to the increasing HADR requirements.[109] ASPI predicted the ADF will not have the capacity to fulfil its range of military, HADR and other responsibilities in the changing operating environment without additional resources.[110] Defence does not currently pre-allocate funding for HADR tasks 'due to the unpredictability of these events'.[111] Instead, 'costs are usually absorbed within the existing Defence budget'.[112] Air Vice Marshal Hupfeld noted once a certain threshold is reached the government may consider refunding Defence's costs.[113]

4.50 Modelling of Defence's future preparedness posture indicates a manageable increase in the frequency, scale and operational risk of climate commitments in the near term.[114] However, Defence cautioned 'concurrency pressures' could become apparent from as early as the middle of the next decade.[115] Also referred to as the risk of 'compound events' or 'simultaneity', concurrency refers to a combination of disasters or military missions requiring responses simultaneously.[116] The CPD identified concurrency pressures as the 'key risk to the ADF', noting:

---

106 Associate Professor Matt McDonald, *Submission 23*, p. 3.

107 *Committee Hansard*, 8 December 2017, p. 17. See Hayden Cooper, 'Call for heads to roll over rust-bucket Navy', *ABC News*, 7 March 2011.

108 Admiral Barrie, *Committee Hansard*, 8 December 2017, p. 31. See Paul J Rizzo, *Plan to Reform Support Ship Repair and Management Practices*, July 2011.

109 *Submission 38*, p. 9.

110 Dr Bergin and Ms Glasson, *Submission 3*, p. 6; Dr Barnes, *Submission 46*, p. 2.

111 Defence, answer to written question on notice, (received 27 February 2018).

112 Defence, answer to written question on notice, (received 27 February 2018).

113 *Proof Committee Hansard*, 20 March 2018, p. 3; Defence, *Submission 63*, p. 20.

114 *Submission 61*, p. 14; *Submission 63*, p. 6.

115 *Submission 61*, p. 14; *Submission 63*, p. 6; Air Vice Marshal Hupfeld, *Proof Committee Hansard*, 20 March 2018, p. 3.

116 ARC Centres of Excellence for Climate System Science and Climate Extremes, *Submission 14*, [pp. 2–3]; The Center for Climate and Security, *Submission 22*, p. 4.

> One scenario, for example, is the ADF needing to respond to a regional request for a large-scale HADR deployment in the aftermath of a severe tropical storm, whilst also responding to a natural disaster domestically.[117]

4.51 Ms Goodman related actual examples of such events:

> In the western part of the United States, we have extensive wildfires. Temperatures are rising, and that's affecting training days. It's also diverting the military from its war missions to be able to perform Defense support to civil authorities, either to address wildfires in the west or to provide support for the hurricanes that came through Puerto Rico, Florida and Texas earlier this year…We even experienced a case where we had to slow the flow of forces into Afghanistan, because they were stretched in responding to the hurricanes in Texas, then Florida and then Puerto Rico.[118]

4.52 Dr Bergin suggested Australia needs to prepare for concurrency pressures, and 'test our military systems to see how we would go in the event that we did have to do what the Americans have just done'.[119] The committee heard the potential long-term impacts of such concurrency pressures:

> Greater demand on our agencies (including defence forces) domestically will potentially limit our security forces' ability to respond to disasters in our region. If our capability to provide assistance becomes increasingly constrained, the resilience of vulnerable states in our region will be further undermined and their infrastructure weakened as the result of a reduced Australian capacity to help protect and rebuilding. This will translate as greater potential for insecurity or state collapse, in turn further increasing demands on our military.[120]

4.53 Air Vice Marshal Hupfeld agreed there is 'scope in the future for Defence to be reorientated more towards other threats to national security' if required.[121] He elaborated:

> The key point, from my perspective, is we identify that the risks and impacts from climate change are a threat multiplier—there's no doubt. Things like sea level rising, resulting in migration, arguably can lead to conflict as you get unsettled nations and displaced people…In our force design outcomes, we include these planning factors in our future operating environment assessments. We match that to our operating concepts both for the next 10 years and further out, under our future joint operating concept, to examine what we think those impacts may be. We are including that in

117 *Submission 24*, [p. 5].

118 *Committee Hansard*, 8 December 2017, pp. 4, 6.

119 *Proof Committee Hansard*, 8 December 2017, p. 16.

120 Griffith Climate Change Response Program and Griffith Policy Innovation Hub, *Submission 37*, p. 7.

121 *Proof Committee Hansard*, 20 March 2018, p. 3; Defence, *Submission 63*, pp. 5–6.

> the design of our force to ensure that we can meet all nature of security threats that this nation may be forced to follow. [122]

4.54 The Center for Climate and Security predicted the increasing demand for Defence to deliver HADR due to climate change:

> ...may impose downstream changes; from what type of equipment and capability the ADF uses and procures, to 'how' and for 'what' the ADF trains. Through time, these facets may alter the actual force structure of the ADF, or as a minimum, increase inter-operability requirements with domestic and regional emergency services.[123]

Proposals for preparing Defence to respond to disasters

4.55 The committee heard various proposals for addressing this issue, including that Defence readjust its priorities, invest in versatile personnel and assets, or further support non-military forces to respond to climate-related events.

4.56 A number of submissions argued Defence should equally prioritise its warfighting and non-warfighting responsibilities, and adjust procurement and training policies accordingly. CPD recommended equally prioritising 'non-war functions alongside war functions', namely:

> …responding effectively to demands for humanitarian and disaster relief from neighbouring countries; undertaking peace keeping and stabilisation missions to countries of direct relevance to Australia's national security; and protecting Australia's supply of, and access to, natural resources including food, water and energy.[124]

4.57 As an example, the committee raised the example of whether Defence should own and operate a fleet of aircraft for firefighting purposes.[125] Mr Mark Crosweller, Director General of EMA, suggested there are good reasons for contracting rather than owning such aircraft:

> We're able to contract the best and the brightest and the latest aircraft into Australia that suit Australian conditions…They're not required in Australia for 12 months of the year, so we bring the expertise in from overseas when we need it. It goes back when we don't need it. That's managed through the

---

122 *Proof Committee Hansard*, 20 March 2018, p. 3; Defence, *Submission 63*, pp. 5–6.

123 The Center for Climate and Security, *Submission 22*, p. 4 [original emphasis removed].

124 CPD, *Submission 24*, [p. 4].

125 *Proof Committee Hansard*, 20 March 2018, p. 16. The example of the US Marine Corps was raised, which can adapt existing helicopter and fixed-wing fleets for firefighting purposes using technology such as the Modular Airborne FireFighting System. See http://www.maffs.com/ (accessed 4 April 2018). Some Canadian provincial governments operate purpose-built firefighting aircraft, and lease them to the US for limited, high fire risk periods each year. See, for example, Ontario Ministry of Natural Resources and Forestry, https://www.ontario.ca/page/forest-fires (accessed 4 April 2018).

> National Aerial Firefighting Centre, which is a cooperative arrangement between the federal government and the states.[126]

4.58 He further added:

> …we are well-serviced by a volunteer firefighting force that is the envy of the world...We've often talked to Defence about supplementation of capabilities in that particular space. We don't believe that it's necessary to train soldiers to that level of firefighting capability, and I think Defence would agree with that.[127]

4.59 A possible compromise may entail Defence investing in 'dual-use-styled forces' that could be available for HADR or war fighting.[128] Dr Bergin clarified his view regarding the use of Defence assets to respond to non-conflict emergencies:

> …I'm certainly not suggesting we invest in specific capabilities designed for these missions. What I'm suggesting is that capabilities, obviously like the [amphibious] ships, should be deployed and used and so forth and be maintained for these sorts of purposes and that they should not be seen both domestically, for domestic disaster response, or regionally as add-ons, as it were. They should be seen as absolutely core missions of the ADF…There is an array of areas that Defence, as an institution with investments in things that fly and go into the water, can be of benefit in terms of pre-disaster preparation and information, adding to civil authorities.[129]

4.60 Some submissions raised alternative structural changes to the ADF, such as the creation of a dedicated 'green helmet' force or separate 'wake force' focussed on responding to humanitarian needs in climate emergency scenarios.[130] Dr Bergin and Ms Glasson noted that it 'may be necessary for the ADF to assign part of its ready reserve or regular force to dedicated HA/DR tasks'.[131] The committee is aware of other calls for the ADF to develop its reserve forces to provide HADR.[132]

4.61 The committee also heard that, instead of positioning dedicated HADR forces within the ADF, the role of non-military forces could be expanded. Dr Bergin and Ms Glasson suggested:

---

126 *Proof Committee Hansard,* 20 March 2018, p. 16. The Department of Home Affairs provided additional information on the National Aerial Firefighting Centre. Department of Home Affairs, answers to questions on notice, 20 March 2018 (received 9 April 2018).

127 *Proof Committee Hansard,* 20 March 2018, pp. 16–17.

128 Dr Thomas, *Committee Hansard,* 8 December 2017, p. 38; Dr Bergin and Ms Glasson, *Submission 3*, p. 5.

129 *Committee Hansard*, 8 December 2017, p. 17.

130 Friends of the Earth Brisbane, *Submission 15*, [p. 1]; Ms Elizabeth Boulton, *Submission 47,* pp. 9-10.

131 *Submission 3*, p. 5.

132 For example, Mr Geoffrey Craggs, *Australian Defence Response to a Changing Climate*, Future Directions International, February 2018.

> 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.[133]

4.62 Rear Admiral Titley also addressed the idea of a dedicated HADR force:

> Your question gets to what we sometimes refer to as a constabulary force. It's not maybe high-end military, high-end war fighting, but they are able to go into these uncertain security situations, disasters, and re-establish some sort of order, communications, intelligence, logistics and all that…it's a very good idea that needs to be kept on the table and really thought through, but at what level—how much of that do you need to do to really make it worthwhile? If it's below that level, then maybe it's more efficient to simply have the ADF, who is exceptionally good at this, to just simply achieve that mission.[134]

4.63 Admiral Barrie responded:

> I would say that members of the Australian Defence Force are the most expensive assets that the government funds to get jobs done, whatever they are. And I think if you can find someone else to do that work and you don't have to spend that amount of money, you should go and find it…I worry that we see the emergence of these paramilitary forces, and I would put Border Protection in one of those classes. Paramilitary forces are there to do jobs that essentially look very military to me, but I wouldn't go so far as to say that becomes 50 per cent of the defence function; I think that would be a total misuse of resources.[135]

4.64 On the broad topic of how Defence responds to climate change, Air Vice Marshal Hupfeld reiterated it is being considered across Defence as part of its normal activity, and noted Defence continues 'to review our structures to see what is the most efficient and effective way of delivering the capabilities that are required'.[136]

133 *Submission 3*, p. 7.

134 *Committee Hansard*, 8 December 2017, p. 7.

135 *Committee Hansard*, 8 December 2017, p. 32.

136 *Proof Committee Hansard*, 20 March 2018, p. 25.

Chapter 5

Opportunities to increase regional resilience

5.1 The effects of climate change on national and regional security:

> …depend not only on the magnitude of climate change but largely on context-based vulnerabilities related to water and energy infrastructure, interdependencies in supply chain of key commodities, social and political institutions, and ultimately, societies' adaptive capacity.[1]

5.2 The committee heard Australia's official development assistance (ODA) supports climate change mitigation and adaptation, and that this improves Australia's national security by increasing stability and resilience in the region.[2] Resilience in this context has been defined as 'the ability of a system, community or society exposed to hazards, and/or climate change, to resist, absorb, accommodate, recover and transfer the consequences…in a timely and efficient manner'.[3]

5.3 The Department of Foreign Affairs and Trade (DFAT) explained its programs 'play a part in reducing climate change's threat multiplier effect', including those supporting 'economic diplomacy, water, agriculture, disaster risk reduction, education, health, infrastructure, trade, governance, disability and gender equality'.[4] This chapter summarises suggestions for Australia to lead on climate security in the region, increase its ODA, and respond to climate-related population displacement and migration.

Increase regional resilience through greater climate security leadership

5.4 Chapter 2 noted that some submissions proposed the creation of a diplomatic or military climate security envoy with responsibility for international engagement, and the establishment of a Climate and Security Office in DFAT to support international coordination.[5] The committee also heard other opportunities for

---

1 Lisa M. Dellmuth, Maria-Therese Gustafsson, Niklas Bremberg and Malin Mobjörk, 'Intergovernmental organizations and climate security: advancing the research agenda', *WIREs Climate Change*, vol. 9, 2018, p. 3.

2 Centre for Policy Development (CPD), *Submission 24*, [pp. 11–12]; The Center for Climate and Security, *Submission 22*, p. 6.

3 Pacific Community, Secretariat of the Pacific Regional Environment Programme, Pacific Islands Forum Secretariat, United Nations (UN) Development Programme, UN Office for Disaster Risk Reduction (UNISDR) and University of the South Pacific, *Framework for Resilient Development in the Pacific An Integrated Approach to Address Climate Change and Disaster Risk Management (FRDP) 2017-2030*, Voluntary Guidelines for the Pacific Islands Region, p. 7.

4 *Submission 61*, p. 18.

5 CPD, *Submission 24*, [p. 10]; Climate Council; *Submission 18*, p. 10; The Center for Climate and Security, *Submission 22*, pp. 1, 7.

Australia to adopt a greater international leadership role to improve Australia's diplomatic relationships and promote climate security, as outlined below.

Diplomatic cooperation

5.5 The committee heard countries other than Australia are demonstrating more climate leadership in the region, including the United Kingdom (UK), France, New Zealand (NZ) and the United States (US).[6] World Vision warned '[i]nadequate support in addressing the potential impact of climate change, may have diplomatic consequences for Australia'.[7] Peacifica quoted Pacific Islanders who described Australia as 'part of a "coalition of the selfish"[10] due to its climate change policies'.[8] Professor Anthony Burke and Professor Shirley Scott of the Australian Defence Force Academy (ADFA) characterised climate change as an opportunity to strengthen diplomatic ties with Pacific Island countries (PICs):

> The competition for strategic influence that is under way in the South Pacific is a significant national security concern that can be met through active partnership with the region in addressing the threat and effects of climate change.[9]

5.6 The Center for Climate and Security from the US recommended Australia extend its regional leadership by prioritising climate security within existing regional fora, such as ASEAN, ASEAN Regional Forum, the East Asia Summit, Asia-Pacific Roundtable, Jakarta and Seoul Defence Dialogues.[10]

5.7 Some submissions called for Australia to increase its climate security leadership beyond the region. American climate security expert, Ms Sherri Goodman, called for Australia to engage broadly in an international community of practice on climate security issues, including disaster risk reduction and humanitarian assistance and disaster relief (HADR).[11] Professor Scott indicated Australia should promote international consideration of climate security issues to support its application to the United Nations (UN) Security Council as a non-permanent member in 2029-30.[12] Submissions also emphasised opportunities for Australia to share expertise across the region, including in climate change risk assessment; climate change mitigation; tropical health; and agriculture, construction and energy sectors.[13]

---

6 CPD, *Submission 24*, [p. 11]; Admiral Barrie, *Submission 38*, [p. 8].

7 *Submission 28*, p. 5

8 *Submission 30*, p. 4.

9 Professor Burke and Professor Scott, *Submission 51*, p. 4.

10 *Submission 22*, [p. 6].

11 *Submission 8*, p. 10.

12 *Committee Hansard*, 8 December 2017, p. 22.

13 ARC Centres of Excellence for Climate System Science and Climate Extremes, *Submission 14*, p. 4; Dr Stuart Pearson, *Submission 34*, pp. 2–3; Northern Territory Government, *Submission 56*, p. 2.

5.8 DFAT described Australia as 'a leading provider of international humanitarian response, particularly in [Australia's] region'.[14] It noted Australia participates in regional fora including 'the East Asia Summit, Asia-Pacific Economic Cooperation, the Pacific Islands Forum and the Indian Ocean Rim Association'.[15] DFAT also underscored Australia's participation in the FRANZ partnership, which provides multilateral support to PICs.[16]

5.9 DFAT further stated that Australia will assist the region to implement the *Framework for Resilient Development in the Pacific* (FRDP), which was endorsed by Pacific Island Forum Leaders in 2016.[17] The FRDP is the 'overarching policy framework for integrated action on climate change and disaster risk management' in the region.[18] DFAT is ensuring:

> –Risk-informed development is embedded in development policy and planning processes of bilateral partner governments.
>
> – Governments are prepared to respond and recover.
>
> – Communities are aware of, and have the resources to plan and prepare for, natural hazards in a changing climate.[19]

Defence cooperation

5.10 The *2017 Foreign Policy White Paper* reasoned '[s]tability in Papua New Guinea, the wider Pacific and Timor–Leste…is vital to our ability to defend Australia's northern approaches, secure our borders and protect our exclusive economic zone'.[20] It outlined Australia's 'commitment to work with governments in the Pacific to respond to climate change, bolster resilience, strengthen emergency responses and improve governance, education, health and gender outcomes'.[21]

5.11 The Centre for Policy Development (CPD) supported a greater focus on interoperability with partner nations including the US, UK and NZ, and argued 'Australia should perform a stronger leadership role in improving coordination and interoperability with regional partners'.[22] It further suggested Defence 'should also pursue coordinated planning and risk assessment on climate security' with countries including Japan, the US and Indonesia, to identify regional vulnerabilities and inform wargaming scenarios.[23]

---

14 *Submission 61*, p. 9.

15 *Submission 61*, p. 8.

16 *Submission 61*, p. 11.

17 *Submission 61*, p. 12. See *Framework for Resilient Development in the Pacific*.

18 Pacific Islands Forum Secretariat, *Submission 54*, p. 5.

19 DFAT, *Submission 61*, p. 12.

20 Australian Government, *2017 Foreign Policy White Paper*, November 2017, p. 99.

21 *Foreign Policy White Paper*, p. 99.

22 *Submission 24*, [p. 11].

23 *Submission 24 Attachment 1*, p. 42.

5.12 Dr Anthony Bergin and Ms Zoe Glasson, Australian Strategic Policy Institute (ASPI), advised that 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'.[24] Defence collaborates 'on environmental security issues' with PACOM 'through the annual Pacific Environmental Security Forum', which 'works to develop practical adaptation and mitigation strategies to counter the effects of climate change'.[25] Defence also builds partner country capability and capacity through the Defence Cooperation Program.[26]

Embed climate change across Australia's aid program

5.13 The committee heard that DFAT could do more to address the effects of climate change through its ODA programs. Ms Lucy Manne, ActionAid Australia, told the committee her views on the *2017 Foreign Policy White Paper* and the DFAT *Humanitarian Strategy 2016*, which integrates implementation of the Paris Agreement across DFAT's activities.[27] She stated the documents include 'really good recognition…of the role that climate change is playing on security in the region and around the world and how it's an incredibly important risk now and will continue to be so in the future'.[28] However, she identified:

> …a big disconnect between that recognition on the one hand and the policy response on the other hand. While there is a really strong recognition from the Department of Foreign Affairs and Trade that this is a major issue that needs to be addressed as part of our foreign policy response, at the moment we haven't seen mitigation policies that are bipartisan and in line with our commitments, we don't have an adequate contribution to climate finance, we don't have a comprehensive response that's strategic and long term across the department that takes into account both development and humanitarian response in the aid budget, and we also don't have sufficient programs in the aid budget that bring together humanitarian work and climate work.[29]

5.14 DFAT's submission outlined Australia's contributions to climate change mitigation, adaptation and disaster risk resilience across the region. It indicated that because 'climate change multiplies threats across a wide spectrum, DFAT investments span governance, economic and social policy, agriculture, water, forestry and infrastructure'.[30] Australia's aid is intended to 'align with each country's Nationally Determined Contributions (including mitigation targets) and National Adaptation

---

24 *Submission 3*, p. 7.

25 Defence, *Submission 63*, p. 14.

26 Defence, *Submission 63*, pp. 13–14.

27 DFAT, *Humanitarian Strategy 2016*, May 2016, p. 7.

28 *Committee Hansard*, 8 December 2017, p. 45.

29 *Committee Hansard*, 8 December 2017, p. 45.

30 DFAT, *Submission 61*, p. 3.

Plans that guide climate-resilient planning and actions'.[31] DFAT advised it is already integrating climate action and disaster resilience 'across the entire aid program, bilaterally, regionally and globally' by:

> 1. mainstreaming climate action across the aid program portfolio investments, comprising: climate risk analyses; climate-smart and climate-proofing new investments; institutional, policy and programmatic capacity-building;
>
> 2. targeted climate-change mitigation and/or adaptation investments.[32]

5.15 Australian aid is focused in the Indo-Pacific region, which is 'at high risk of disasters', including PICs.[33] The FRDP notes the 'impact of natural hazards and climate change threaten their integrity, food security, water, health, infrastructure, livelihoods and economies and, more broadly, their populations and ecosystems'.[34] In response, DFAT is developing the Australia Pacific Climate Change Action Program. This will seek to 'increase the effectiveness of Australia's support for climate change action and disaster resilience in the Pacific' and have an investment budget of $22.6 million over four years from 2018 to 2022.[35] DFAT is also developing a Pacific Humanitarian Strategy, which advocates 'a shift in the way we pursue our objectives in three key areas: localisation of humanitarian action; a greater emphasis on prevention and preparedness; and accelerating post-crisis recovery and reconstruction'.[36]

5.16 DFAT indicated that, previously, 'different regions have taken the lead on climate change development aid for their regions'.[37] At the time of writing, work is being undertaken to release a climate change strategy for Australia's aid program during 2018, as recommended by a number of submissions.[38] Submissions suggested this strategy should support the priorities of affected countries and communities, focus on human security, and empower groups disproportionately affected by climate change, particularly women and children.[39] This aligns with the FRDP, which

---

31 DFAT, *Submission 61*, p. 18.

32 *Submission 61*, p. 19.

33 DFAT, *Submission 61*, p. 18. See *Framework for Resilient Development in the Pacific*, pp. 2, 4.

34 *Framework for Resilient Development in the Pacific*, p. 4.

35 DFAT, *Design Document: Australia Pacific Climate Change Action Program Support Unit*, http://dfat.gov.au/about-us/business-opportunities/tenders/Pages/design-document-australia-pacific-climate-change-action-program-support-unit.aspx (accessed 31 January 2018).

36 DFAT, *Submission 61*, p. 12.

37 Mr Patrick Suckling, Ambassador for the Environment, DFAT, *Committee Estimates Hansard*, 1 March 2018, p. 86.

38 Mr Patrick Suckling, Ambassador for the Environment, Multilateral Policy Division DFAT, *Committee Estimates Hansard*, 1 March 2018, p. 86. See World Vision Australia, *Submission 28*, p. 8; Oxfam Australia, *Submission 40*, p. 10; ActionAid Australia, *Submission 49*, p. 7; Australian Council for International Development (ACFID), *Submission 53*, p. 15.

39 Oxfam Australia, *Submission 40*, p. 10. See chapter 1 for more information on human security.

'advocates for the systematic adoption of inclusive and participatory processes, which gather contributions across different stakeholder groups, women and men, and in particular the most vulnerable members of society'.[40]

5.17 The committee heard that climate change 'amplifies the risks facing people who are already marginalized due to inequalities', and CARE Australia has found '[e]ngaging women as well as men in responding to climate change makes mitigation and adaptation more effective'.[41] ActionAid Australia suggested Australia's ODA 'should include greater investment and commitment to resourcing women's organisations in leading disaster preparedness and resilience to climate change'.[42] The committee notes that one of the activities of the Australia Pacific Climate Change Action Program Support Unit is 'Gender and social inclusion'.[43]

Provide additional climate-related official development assistance

5.18 Under the UN Framework Convention on Climate Change (UNFCCC), developed countries committed to providing financial resources to assist developing countries with mitigation and adaptation, including mobilising at least USD $100 billion per year between 2020 and 2025.[44] Within this context, the Prime Minister agreed to provide at least AUD $1 billion over five years from the existing aid budget to build climate change resilience and reduce emissions in developing countries.[45] This included $200 million to the Green Climate Fund and $300 million to address climate change in PICs (2016-2020).[46]

5.19 A number of submissions were critical that Australia's existing climate funding has been drawn from the overall ODA budget, rather than from 'new and additional funding'.[47] Mr Patrick Suckling, Ambassador for the Environment, DFAT, told the committee:

> …the thing about climate finance is that, when you say 'additional', it's often embedded in existing aid programs. For example, a lot of the infrastructure development that we are doing in the Pacific at the moment is being climate-proofed. You would build a road and that could be an infrastructure project in PNG, for example, or in Kiribati, but, because we

40 *Framework for Resilient Development in the Pacific*, p. 2.

41 *Submission 57*, pp. 2, 4.

42 *Submission 49*, p. 5. See Ms Manne, *Committee Hansard*, 8 December 2017, pp. 41, 44–45.

43 Australian Government, *AusTender Australia Pacific Climate Change Action Program (APCCAP) Support Unit*, ATM ID: DFAT 163, published 11 January 2018.

44 WaterAid Australia, *Submission 5*, p. 4; UNFCCC, *Report of the Conference of the Parties on its twenty-first session, held in Paris from 30 November to 13 December 2015*, conference report made 29 January 2016.

45 DFAT, *Submission 61*, p. 18; *Proof Committee Hansard*, 20 March 2018, p. 26.

46 The $300 million includes $150 million in bilateral aid investments, $75 million disaster resilience investments and $75 million in regional investments. DFAT, *Submission 61*, p. 18.

47 See Mr Nic Maclellan, *Submission 19*, p. 8; World Vision Australia, *Submission 28*, p. 10.

> then climate-proof it to a certain tolerance of being able to weather different storms and natural disasters, the additional element to climate-proof it then gets accounted as climate finance. In that sense, it's hard to compare apples with apples when you're having a marginal addition to a major infrastructure project that's creating a climate-proofed project.[48]

5.20 Many submissions advocated Australia increase its contribution to climate aid and finance.[49] Professor Jon Barnett, University of Melbourne, argued the 'nature and volume of Australian ODA is insufficient given the risks climate change poses to our security interests'.[50] Dr Matthew Dornan from the Australian National University (ANU) cautioned 'perceptions about Australia's climate finance commitments, combined with perceived weakness with respect to climate change mitigation, have damaged Australia's standing internationally'.[51]

5.21 The committee heard Australia's total contribution of public and private funding to international climate finance should be increased to $3.2 billion per year by 2020, which represents approximately 2.4 per cent of the global USD $100 billion commitment.[52] Dr Simon Bradshaw, Oxfam Australia, noted Australia's climate finance contribution equates to 'about 0.3 per cent of international climate finance flows' (2014-2015 financial year).[53] Dr Amrita Malhi from the Australian Council for International Development (ACFID) acknowledged this target 'will require a whole-of-government push, some public finance and a coordinated push to mobilise other sources of money as well'.[54]

5.22 Some submissions suggested how much public climate funding the Australian Government should allocate per year. Dr Dornan suggested the contribution should be increased to 'at least $300 million annually by 2020', while ACFID elsewhere proposed $1,600 million of new and additional public funding by the 2019-2020 financial year.[55]

5.23 The Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts 'is the main vehicle under the Convention to address loss and damage associated with climate change impacts in developing countries that are

---

48 *Proof Committee Hansard*, 20 March 2018, p. 26.

49 World Vision, *Submission 28*, p. 10; Plan International Australia, *Submission 29*, p. 7. The term 'finance' typically refers to money that must be repaid along with interest.

50 *Submission 12*, p. 3.

51 Dr Dornan, *Submission 50*, p. 19. See also Mr Maclellan, *Submission 19*, pp. 9–11.

52 See ACFID, *Submission 53*, pp. 13–14; Oxfam Australia, *Submission 40*, p. 9 Plan International Australia, *Submission 29*, p. 2; Mr Ian Dunlop, *Submission 36 Attachment 2*, p. 23; Mr Maclellan, *Submission 19*, p. 8.

53 *Committee Hansard*, 8 December 2017, p. 47. See Australian Government, *Australia's Second Biennial Report*, December 2015, p. 58.

54 *Committee Hansard*, 8 December 2017, p. 43.

55 Dr Dornan, *Submission 50*, p. 20; ACFID, *ACFID Submission to the 2017-18 Federal Budget*, January 2017, p. 17.

particularly vulnerable to the adverse effects of climate change'.[56] While submissions did not provide substantial information on this topic, the committee is aware of an international movement advocating that vulnerable populations receive financial support for addressing climate change-related loss and damage, beyond climate mitigation and adaptation aid and finance.[57]

5.24 Some submissions recommended increasing Australia's overall ODA budget.[58] The committee heard a range of specific recommendations about how climate funding and support should be distributed. As outlined below, these suggestions included: allocating additional money towards climate funds, reducing emissions (mitigation), supporting communities to adapt to changing conditions, preparing communities for extreme weather events through disaster risk reduction measures, delivering HADR once disasters have occurred, and disseminating climate science across partner countries.

Climate funds

5.25 Australia contributes to multilateral fund and banks, such as the World Bank Group and Asian Development Bank, which provide support for climate mitigation, adaptation and resilience building.[59] DFAT is also mobilising 'financing for clean energy projects in developing countries' through the Private Financing Advisory Network, and giving 'matching finance for clean energy projects under DFAT's Business Partnerships Platform'.[60] Australia contributed $93 million to mobilising private climate finance through the Global Environment Facility in 2014, 'the largest funder of projects to improve the global environment'.[61] DFAT is considering 'integrating climate finance more strongly through the aid program because climate impacts magnify development challenges pretty much across the spectrum'.[62]

5.26 DFAT further encourages a focus on private sector climate finance and investment through the Green Climate Fund (GCF).[63] The GCF was established by countries party to the UNFCCC, and is:

> …the largest multilateral fund for supporting climate change-mitigation and adaptation in developing countries. It helps to implement the Paris

56 UN Climate Change http://unfccc.int/adaptation/workstreams/loss_and_damage/items/6056.php (accessed 20 February 2018).

57 Oxfam Australia, *Submission 40.1*, p. 37.

58 See, Ms Manne, *Committee Hansard*, 8 December 2017, p. 41; Mr Maclellan, *Submission 19*, p. 7; Dr Dornan, *Submission 50*, p. 20.

59 DFAT, *Submission 61*, pp. 4, 22.

60 DFAT, Submission 61, p. 23.

61 DFAT, *Submission 61*, p. 23.

62 Mr Suckling, *Committee Estimates Hansard*, 1 March 2018, p. 87.

63 DFAT, *Submission 61*, p. 4.

> Agreement goals by funding high impact, transformational projects, and catalysing climate finance from other sources including the private sector.[64]

5.27 Australia is Co-Chair of the GCF, and committed '$200 million for the Fund's initial resource mobilisation for 2015-2018'.[65] Associate Professor Matt McDonald contended Australia's contribution to the GCF:

> …could be significantly increased as an indication of Australia's commitment to *global* climate security, and as recognition of the implications that climate change could have for Australian *national* security through its effects on vulnerable states in the region.[66]

5.28 DFAT indicated Australia is working to improve access to GCF resources for Pacific countries, noting the GFC Board has approved five Pacific climate projects in various PICs equating to 'up to US$165 million'.[67] Submissions commended Australia's leadership and provision of support for PICs to access resources for mitigation and adaptation through the GCF.[68]

5.29 ACFID argued many PICs 'continue to face challenges in accessing funding' through the GCF, and 'the accreditation process is emerging as a roadblock for NGOs, requiring significant resources'.[69] ACFID, World Vision Australia and Oxfam Australia recommended Australia provide further support and simplify procedures to ensure climate aid and finance is accessible to vulnerable communities and the non-government organisations that support them.[70]

Climate mitigation

5.30 DFAT supports a range of projects across the region to assist partner countries reduce their greenhouse gas emissions (climate mitigation). These mitigation initiatives include bilateral and regional investments in renewable energy.[71] DFAT provided the examples of the Tina River Hydropower Project ($26.7 million) in the Solomon Islands, and the Variable Renewable Energy Grid Integration Program ($1.5 million) which is supporting ten PICs to 'integrate solar and wind into electricity

---

64 DFAT, *Submission 61*, pp. 22–3.

65 DFAT, *Submission 61*, p. 23. The co-chair position will be held by Ewen McDonald, Deputy Secretary DFAT, until December 2018. Green Climate Fund, *Overview*, http://www.greenclimate.fund/boardroom/overview (accessed 3 October 2017).

66 *Submission 23*, p. 5

67 DFAT, *Submission 61*, p. 23; DFAT, *Development assistance in the Pacific: Pacific Regional—climate change and resilience*, http://dfat.gov.au/geo/pacific/development-assistance/Pages/resilience-pacific-regional.aspx (accessed 30 January 2018).

68 See Oxfam Australia, *Submission 40*, p. 10; Save the Children Australia, *Submission 41*, p. 9; Dr Dornan, *Submission 50*, p. 19.

69 *Submission 53*, p. 14.

70 ACFID, *Submission 53*, p. 14; World Vision Australia, *Submission 28*, pp. 10–11; Oxfam Australia, *Submission 40*, p. 10.

71 DFAT, *Submission 61*, p. 3.

grids while maintaining reliability, affordability and adequacy of supply'.[72] DFAT also described other mitigation measures in the forestry and land use sectors in South East Asia.[73] In addition, DFAT noted mitigation measures 'often include adaptation and resilience-building benefits'.[74] It provided the example of the *AgResults* initiative in Vietnam, which:

> …incentivises the uptake of technologies to reduce greenhouse gas (GHG) emissions from paddy rice farming, while simultaneously increasing poor farmers' yields, which have been impacted by changing climatic conditions. Alongside emission mitigation, this project assists farmers to adapt to new climatic conditions and to build resilience, through improved agricultural productivity and nutrition, and catalysing private sector investment.[75]

Adaptation

5.31 DFAT observed that adaptation measures that support communities to build resilience to the impacts of climate change are important because 'historic emissions mean some climate change is inevitable and impacts are already being felt'.[76] Dr Bradshaw, Oxfam Australia, explained investments in 'adaptation resilience building not only reduce the human cost on communities but are avoiding what would then be much more significant costs in humanitarian response in future'.[77] DFAT maintained 'adaptation and resilience building are central to our investments', and listed examples of Australian ODA supporting climate adaptation, ranging from:

> …climate-smart infrastructure projects and climate forecasting capacity building in the Pacific, to agricultural livelihoods and, in Asia, a particular focus on water management in view of the potential future social, political and economic impacts of water scarcity. Other examples include enhancing oceans governance in the Pacific and the Integrated Coastal Management Program in Vietnam.[78]

5.32 Submissions recommended the establishment of a program to facilitate adaptation initiatives in vulnerable communities, similar to the previous Community-based Climate Change Action Grants Program, including child-centred initiatives.[79]

---

72 *Submission 61*, pp. 19–20.

73 *Submission 61*, p. 20.

74 *Submission 61*, p. 19.

75 *Submission 61*, p. 19.

76 *Submission 61*, p. 18.

77 *Committee Hansard*, 8 December 2017, p. 42.

78 *Submission 61*, pp. 3–4.

79 ACFID, *Submission 53*, p. 15; Dr Malhi, *Committee Hansard*, 8 December 2017, p. 45; Plan International Australia, *Submission* 29, p. 8. See Kate Duggan, *Independent evaluation of the Community-based Climate Change Adaptation Grants Program – main evaluation report*, Griffin nrm, Canberra, January 2016.

5.33 ACFID noted 60 per cent of Australia's climate finance during the 2013-2014 and 2014-2015 financial years 'went towards adaptation, bucking a global trend that has continued to see the majority of funding flow to mitigation projects'.[80] ACFID reiterated the 'finance flowing to mitigation (avoiding emissions) should be balanced by finance flowing to adaptation (building resilience to impacts)' as agreed under the Paris Agreement.[81]

5.34 Oxfam Australia expressed concerns that Australia's 'increasing emphasis on the private sector to contribute to climate finance' may mean adaptation measures in vulnerable communities do not receive adequate funding, 'especially when those at greatest risk from climate change are the least able to attract private investment'.[82] Dr Dornan explained 'adaptation cannot be traded in regional or global markets in the same way as mitigation', so is unlikely to receive private investments seeking financial return on investments.[83] Most submissions that argued Australia's contribution to climate finance should increase to $3.2 billion per year by 2020 also suggested at least 50 per cent of this funding should be dedicated to climate adaptation measures.[84]

Disaster risk reduction and response

5.35 Australia contributes to disaster risk reduction (DRR) initiatives in the region. Griffith University explained that '[a]daptation is generally focused on strategic planning and decision making, while disaster risk management is more focussed on real time emergency responses'.[85] DFAT stated that DRR 'encompasses discrete activities, such as physical improvements to infrastructure, as well as embedded actions across all aid investments to prevent creation of new risk, reduce existing risk and manage residual risk'.[86] Other submissions underlined the importance of DRR initiatives such as 'risk mapping', emergency response planning, and the development of regional early warning and climate information systems.[87]

5.36 The United States Department of Defense focuses on supporting partner nations to respond to climate change through building infrastructure, training and

---

80 ACFID, *ACFID Submission to the 2017-18 Federal Budget*, January 2017, p. 17. See Australian Government, *Australia's Second Biennial Report*, December 2015, p. 58.

81 *Submission 53*, p. 13. See Plan International Australia, *Submission 29*, p. 2.

82 Nic Maclellan and Sarah Meads, *After Paris: Climate finance in the Pacific islands Strengthening collaboration, accelerating access and prioritising adaptation for vulnerable communities*, Oxfam Australia, September 2016, p. 6.

83 *Submission 50*, p. 19.

84 See WaterAid Australia, *Submission 5*, pp. 4–5; Mr Maclellan, *Submission 19*, p. 8; Mr Dunlop, *Submission 36 Attachment 2*, p. 23; Oxfam Australia, *Submission 40*, p. 10. ACFID advocated 60 per cent of funding should be directed to adaptation measures, *Submission 53*, p. 13.

85 Griffith Climate Change Response Program & the Griffith Policy Innovation Hub, *Submission 37*, p. 3.

86 *Submission 61*, p. 19.

87 World Vision Australia, *Submission 28*, p. 9.

equipping.[88] Dr Anthony Bergin suggested the Australian military could emulate the US and do more to 'work with regional civil and military authorities to strengthen fragile infrastructure'.[89]

5.37 DFAT stated a 'significant proportion' of its efforts are 'directed to the broader issues of DRR and building the capacity of the wider international system and countries to respond'.[90] Of the $300 million Australian funding to address climate change in PICs from 2016-2020, $75 million is dedicated to disaster resilience investments.[91] DFAT provided the example of the Philippines Disaster and Climate Risks Management initiative ($31.4 million), which is:

> …strengthening the Philippines government's capacity for disaster preparedness, including via: i) technical agencies' capacity building on disaster response and monitoring, early warning and forecasting, hazard and risk analysis, climate science and adaptation options (to better inform disaster and climate risk management in vulnerable areas); ii) technical and policy support on integrating disaster risk management and climate change and mainstreaming across government and development sectors; iii) facilitating linkages between technical agencies in the Philippines with their Australian counterparts and non-government organisations.[92]

5.38 Australia also contributed to the Pacific Risk Resilience Program, which sought to strengthen the resilience of four PICs and 'support a strong enabling environment for risk governance to empower communities to identify risks and needs, and formulate and implement sustainable responses'.[93]

5.39 ACFID noted 'DRR programs are proven to protect long-term development gains, minimise economic losses and prevent damage to infrastructure'.[94] DFAT's *Humanitarian Strategy* stated '[e]ven the most conservative estimates suggest that $1 invested into DRR activities saves up to $15 in response and recovery costs in the aftermath of a disaster'.[95] On this basis, submissions advocated that funding for DRR

---

88 United States Department of Defense (US DoD), *National Security Implications of Climate-Related Risks and a Changing Climate*, July 2015, p. 6.

89 *Committee Hansard*, 8 December 2017, p. 20.

90 *Submission 61*, p. 11.

91 DFAT, *Development assistance in the Pacific: Pacific Regional—climate change and resilience*, http://dfat.gov.au/geo/pacific/development-assistance/Pages/resilience-pacific-regional.aspx (accessed 30 January 2018).

92 *Submission 61*, pp. 21–22.

93 DFAT, *Development assistance in the Pacific: Pacific Regional—climate change and resilience*.

94 ACFID, *Submission 53*, pp. 9–10.

95 DFAT, *Humanitarian Strategy 2016*, May 2016, p. 12. See UNISDR, *Global Assessment Report on Disaster Risk Reduction 2015*, 2015.

should be increased to at least 5 per cent of Australia's total ODA budget, from approximately 2–3 per cent.[96]

5.40 ACIFD also underlined that DRR funding 'has often not been sufficiently or consistently tracked'.[97] World Vision Australia recommended the development of mechanisms to calculate the amount of ODA allocated to DRR measures more precisely.[98] DFAT informed the committee that it is:

> …developing a marker to capture DRR funding within 'AidWorks'-our aid management system. The system will assist with identification of DRR components within aid investments. In addition to tracking funding over time, this system will provide data to support reporting against the global target F of the Sendai Framework for Disaster Risk Reduction 2015-20. The new system will be launched in July 2018.[99]

Humanitarian assistance and disaster relief

5.41 In addition to supporting initiatives to prepare PICs to respond to disasters, Australia also provides assistance in their aftermath. Australia currently provides $150 million per annum in ODA through the Humanitarian Emergency Fund, which allocates crisis funding to various country and regional programs, including those beyond Australia's region.[100] Arguing that Australia has a responsibility to contribute to global humanitarian needs within and beyond the region, Oxfam Australia suggested increasing this to $260 million from 2018–19, to 'ensure that Australia can continue to uphold its global humanitarian responsibilities…given the unprecedented level of need'.[101]

5.42 Defence and DFAT work closely 'on preparation for humanitarian disaster response including training and positioning of supplies'.[102] The committee heard evidence from non-government organisations that Defence could improve its relationships with local and international humanitarian organisations. ActionAid Australia identified 'a need to create more space for dialogue between the military and humanitarian actors, so there is a clear understanding of different roles and mandates and a coordinated and complimentary approach'.[103] Ms Manne emphasised the need for cooperation between civil society and a range of government actors including Defence, foreign affairs, and the departments with responsibility for immigration and the environment.[104] Dr Malhi added:

---

96 ACFID, *Submission 53,* p. 10; Oxfam Australia, *Submission 40,* p. 7.

97 *Submission 53,* p. 10.

98 World Vision Australia, *Submission 28*, p. 9.

99 DFAT, answers to questions on notice, 20 March 2018 (received 13 April 2018).

100 Australian Government, *Australian Aid Budget Summary 2017–18*, DFAT, 2017, p. 8.

101 *Submission 40,* p. 7.

102 Defence, *Submission 63,* p. 11.

103 *Submission 49,* pp. 3–4.

104 *Committee Hansard,* 8 December 2017, p. 46.

> More cooperation would be wonderful and we'd love to see it. We recognise that there are a few attempts being made here and there. We'd like them to be brought together in a comprehensive strategy, a whole-of-government strategy, where everyone can play an appropriate role.[105]

Climate science

5.43 The committee heard that building climate resilience across the region 'requires greater information and knowledge sharing about climate change and responding to the risks it presents'.[106] The Pacific Islands Forum Secretariat suggested the enhancement of current initiatives, including 'investments in science and adaptation planning, support to national weather and climate services to improve climate risk early warning systems, and support the implementation of the FRDP'.[107] The FRDP calls for development partners to:

> Strengthen effective use of science, technology and knowledge management (including analysis tools required to assess risk) to understand underlying drivers and to inform disaster risk reduction, climate change adaptation, loss and damage, and support the application of new technologies and innovative solutions.[108]

5.44 Australia shares climate science and expertise with partner countries through a range of initiatives. The Department of the Environment and Energy (DoEE) and the Bureau of Meteorology (BOM):

> …have had key roles in delivering a long-term investment in climate change science and data, meteorological capability, and adaptation information and planning for the Pacific, often in partnership with CSIRO. Initiatives include the Climate and Oceans Support Program in the Pacific, the Pacific Risk Resilience Program, and the Pacific-Australia Climate Change Science and Adaptation Planning program.[109]

5.45 The Climate and Oceans Support Program in the Pacific is delivered by BOM ($39 million, 2012-2018) and supports 14 Pacific national meteorological services to 'better understand and use climate, ocean and sea- level products for the benefit of island communities and governments'.[110] CSIRO has also 'engaged in climate adaptation research partnerships with countries in the Asia-Pacific region to better

---

105 *Committee Hansard*, 8 December 2017, p. 46.

106 Griffith Climate Change Response Program & the Griffith Policy Innovation Hub, *Submission 37*, p. 5.

107 Pacific Islands Forum Secretariat, *Submission 54*, p. 4.

108 *Framework for Resilient Development in the Pacific*, p. 17.

109 DoEE, *Submission 60*, p. 5.

110 DFAT, *Development assistance in the Pacific: Pacific Regional—climate change and resilience*, http://dfat.gov.au/geo/pacific/development-assistance/Pages/resilience-pacific-regional.aspx (accessed 30 January 2018).

understand and support the capacity of those countries to manage the potential risks and impacts of climate change'.[111]

5.46 DFAT is funding the Pacific Climate Change Information Management Project (iCLIM) from 2015-2018 ($1.5 million).[112] This partnership between Griffith University and the Secretariat of the Pacific Regional Environment Programme seeks to improve 'the ability of regional bodies, governments and other stakeholders to discover, store, access and utilize climate change information and data'.[113] Geoscience Australia has also been improving data access and usage through the new PacSAFE desktop tool to national disaster management-related agencies in Tonga and Fiji ($1 million, 2015–2018).[114]

5.47 DoEE noted Australia also provides climate mitigation support:

> …by researching and developing clean energy technologies, conserving rainforests and coastal blue carbon ecosystems, and building capacity for measuring and reporting on emissions. Cooperation initiatives between Australia and others in the international community include bilateral and multilateral initiatives such as the Asia-Pacific Rainforest Partnership, the Global Forest Observations Initiative, the International Partnership for Blue Carbon, and the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security.[115]

5.48 The Crawford Fund, an international agricultural research advocacy group, noted the 'good examples of how Australia is helping neighbouring countries cope with increasing food production under changing climatic conditions', including the Australian Centre for International Agricultural Research (ACIAR) and Australian Water Partnership.[116] An example of ACIAR's work is the project to improve the sustainability of rice-shrimp farming systems in Vietnam as wet-season salinity is increasing.[117] The Crawford Fund recognised 'total funding to these organisations is a very small percentage of our total foreign aid budget and has not been increased to match the increasing severity of regional food demand, nor the growing risks posed by climate change'.[118] Mr Nic Maclellan posited 'damage to Australian institutions' such

---

111 CSIRO, *Submission 55*, p. 1.

112 DFAT, *Development assistance in the Pacific: Pacific Regional—climate change and resilience*.

113 Griffith Climate Change Response Program & the Griffith Policy Innovation Hub, *Submission 37*, p. 5.

114 DFAT, *Development assistance in the Pacific: Pacific Regional—climate change and resilience*.

115 DoEE, *Submission 60*, p. 6.

116 *Submission 31*, p. 7. See Australian Centre for International Agricultural Research, *Submission 21*; Australian Water Partnership, *Submission 39*.

117 Australian Centre for International Agricultural Research, 'Rice and shrimp farming in the Mekong Delta', *Partners Magazine*, no. 4, 2017.

118 *Submission 31*, p. 7.

as 'funding cuts to the CSIRO and Australian Bureau of Meteorology…reduce the sustainability of their engagement with Pacific island counterparts'.[119]

5.49 The committee heard:

> Better mechanisms are needed to coordinate expertise that supports adaptation and resilience plans and actions…. Rather than contracting this out on a project-by-project basis, it could benefit both Australia's national interest and information sharing among countries, if there was a higher-level platform from which Australia could more easily coordinate support to the region and through which partner nations could ensure new information was shared and developed in a consistent way.[120]

Human mobility

5.50 Chapter 2 outlined the evidence on the contribution of climate change to population displacement and migration in Australia's region. The committee heard varying evidence regarding the nature and scale of this movement, and the extent to which it will be problematic for Australia's national security. Submissions agreed some level of climate-related displacement is inevitable.[121] Peacifica argued 'collaborative approaches to managing them and welcoming those who need new homes (in Australia or elsewhere in the region) will significantly reduce the cost of those movements and risk of conflict'.[122] Oxfam Australia called for:

> …an integrated global agenda aimed at minimizing displacement, upholding the rights of people on the move, and supporting strategies to ensure safe and dignified movement for those who may be forced to move in the future.[123]

5.51 Submissions presented a range of suggestions for protecting human security in the region and reducing the risk and extent of future displacement, as outlined below.

Prevention of population displacement

5.52 Proposals generally involved initiatives to prevent population displacement through climate mitigation, adaptation and disaster risk reduction initiatives, as well as delivering HADR when required. Professor Burke supported resilience building and the ability of people 'to move within their own countries because…that's what people want'.[124] The Kaldor Centre and Friends of the Earth Brisbane emphasised:

---

119 Mr Maclellan, *Submission 19,* p. 10.

120 Griffith Climate Change Response Program & the Griffith Policy Innovation Hub, *Submission 37,* p. 7.

121 Kaldor Centre, *Submission 1,* p. 2.

122 *Submission 30,* pp. 4–5.

123 *Submission 40 Attachment 1,* p. 7.

124 *Committee Hansard,* 8 December 2017, p. 25.

> By systematically integrating disaster risk reduction measures, there is a better chance that if disaster strikes, some people may avoid displacement altogether – or at least be displaced for a much shorter period of time.[125]

5.53 Australia is a member of the *Platform on Disaster Displacement*, which is intended to implement the recommendations of the Protection Agenda stemming from the Nansen Initiative on Disaster-Induced Cross-Border Displacement.[126]

Protection of displaced people

5.54 Submissions made recommendations relating to how Australia should respond to population displacement when it does occur. The Department of Immigration and Border Protection (DIBP) noted:

> Under the United Nations *1951 Refugees Convention*, people displaced for environmental reasons are not considered to be refugees unless they have a well founded fear of persecution in their country of origin. There is no internationally agreed position on expanding the current definition of a refugee or impetus to create a new international protection obligation to encompass people displaced by climate change.[127]

5.55 However, Oxfam Australia pointed out the needs of people displaced by the effects of climate change can be similar to refugees:

> …they may have lost their homes, been separated from family, or be in need of medical assistance. The individual protection needs of women, men, boys, girls and people with particular vulnerabilities can be significant irrespective of whether they have been displaced because of armed conflict, persecution, disasters or climate change.[128]

5.56 Ms Goodman suggested that Australia needs to rethink current governance models to better prepare for climate-related migration.[129] Professor Burke and Professor Scott warned 'approaches to the potential for forced climate migration must be consistent with international human rights law'.[130] The Kaldor Centre advised Australia could develop temporary protection options for people affected by disasters, such as humanitarian visas or extended stay arrangements.[131] It found 'evidence shows

125 Kaldor Centre, *Submission 1*, p. 4; Friends of the Earth Brisbane, *Submission 15*, p. 1.

126 Platform on Disaster Displacement: Follow-up to the Nansen Initiative, https://disasterdisplacement.org/about-us/the-steering-group (accessed 19 February 2018). The Nansen Initiative, *Agenda for the Protection of Cross-Border Displaced Persons in the Context of Disasters and Climate Change*, December 2015, https://disasterdisplacement.org/the-platform/our-response (accessed 19 February 2018).

127 *Submission 59*, p. 2.

128 *Submission 40.1*, p. 35.

129 *Submission 8*, p. 7. This was reiterated by Breakthrough, *Submission 20*, p. 11.

130 *Submission 51*, p. 16.

131 *Submission 1*, p. 4.

that most people in such circumstances will be keen to go home and rebuild as soon as it is safe to do so, but need temporary relief'.[132]

5.57 The committee is aware that the Task Force on Displacement under the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts is expected to present its recommendations in 2018.[133] Two new Global Compacts are being negotiated this year, one on safe, orderly and regular migration, and one on refugees.[134] Oxfam Australia suggested these negotiations provide an opportunity to 'strengthen rights and protection for those displaced across borders by disasters and in the context of climate change'.[135] It recommended the 2018 Global Compact on Safe, Orderly and Regular Migration should:

> …develop new norms for addressing displacement in the context of climate change and gaps in legal protection, specifically: a two-year process to identify a protection and reception strategy that includes legal recognition and status for people forced to cross borders due to disasters, including extreme weather events; and a longer term process to address migration and displacement across borders when related to slow-onset impacts of climate change.[136]

Planned migration

5.58 Other proposals focused on how to provide voluntary migration opportunities for people who can no longer remain where they are due to the effects of climate change. ACFID stated that for PICs such as Tuvalu, Kiribati and Micronesia:

> …the prospect of international migration is likely to begin to loom large in their thinking, although evidence to date shows that most households do not wish to migrate except as a last resort. Nevertheless, relocation will be necessary for some communities, and Australia must support strategies for safe and dignified mobility for these communities.[137]

5.59 The FRDP called on development partners to undertake 'studies and support the development of appropriate national strategies on relocation due to climate change and disaster impacts'.[138] Oxfam Australia recommended Australia:

> Expand opportunities for safe and regular migration for those who may be forced to move permanently, including through bilateral and multi-country agreements, special visa categories and open-access arrangements between developed countries and countries facing a high risk of displacement.[139]

---

132 *Submission 1*, p. 4.

133 Oxfam Australia, *Submission 40.1*, p. 45.

134 Oxfam Australia, *Submission 40 Attachment 1*, p. 35.

135 *Submission 40.1*, p. 35.

136 *Submission 40.1*, November 2017, p. 8.

137 *Submission 53*, p. 7.

138 *Framework for Resilient Development in the Pacific*, p. 17.

139 *Submission 40.1*, p. 9.

5.60 The Kaldor Centre suggested options could 'include bilateral or regional free movement agreements, training programs that prepare individuals to find work abroad, or the creation of special visa categories for people living in specifically identified regions'.[140] Peacifica agreed:

> Australia should work with PICs on long term plans to support climate induced migration as a viable adaptive measure, including through appropriate education assistance and employment programs that meet both Australia's labour needs and the aspirations, labour rights and skills of PIC workers. With examples of current migration in the Pacific leading to positive outcomes, preemptive and considered migration strategies could be seen as a relevant adaption strategy for many remote Pacific communities.[141]

5.61 In its submission, the ANU Climate Change Institute noted that the New Zealand Government provides a permanent Pacific Access Category visa, allowing a quota of people from PICs severely affected by climate change to migrate to New Zealand.[142] It proposed this could serve as a model for Australia, and also suggested the development of an 'Atoll Access Agreement' with Kiribati, Tuvalu and Nauru.[143] Dr Bradshaw also supported Australia following New Zealand by establishing a special visa category.[144] Peacifica suggested '[i]nitiatives like the Pacific Seasonal Worker scheme and assistance for secondary and tertiary education for Pacific Island people should be expanded, with a variety of jobs and opportunities available'.[145] These options may align with Australia's existing commitments in the Pacific to:

> …improve opportunities for growth and jobs and to strengthen the economic resilience of the region by increasing opportunities for labour mobility to satisfy unmet demand in our labour market, investing in skills, and helping countries to capture growth potential in sectors such as tourism.[146]

5.62 For example, the Australian Government is establishing a Pacific Labour Facility to 'connect Australian employers with Pacific workers and support the administration of the Pacific Labour Scheme'.[147] Oxfam Australia cautioned:

---

140 *Submission 1*, p. 4.

141 *Submission 30*, p. 5.

142 *Submission 50*, p. 25.

143 *Submission 50*, p. 25.

144 *Committee Hansard*, 8 December 2017, p. 40.

145 *Submission 30*, pp. 4–5.

146 *Foreign Policy White Paper*, p. 101.

147 DFAT, *Australia's Pacific Engagement – Stepping-up Australia's Pacific Engagement*, http://dfat.gov.au/geo/pacific/engagement/Pages/stepping-up-australias-pacific-engagement.aspx (accessed 19 February 2018).

> …existing labour migration schemes are not without problems…It is therefore vital that schemes or policies aiming to increase and enhance labour migration opportunities for people impacted by climate change are driven by the needs of families and communities, including women; have robust safeguards in place to prevent exploitation; and provide opportunities for permanent as well as seasonal migration.[148]

5.63 The Kaldor Centre also recommended that Australia facilitate planned relocations for communities prior to or following disasters, noting the 'vast majority of relocations will occur within countries, rather than across borders'.[149]

5.64 When asked by the committee if any planning is occurring to prepare for migrants in the context of climate change, including from Pacific Island countries, the Department of Home Affairs noted that it is 'participating in whole of government discussions on the impact of climate change in the Pacific and the implications for Pacific island countries'.[150]

148 *Submission 40.1*, p. 35.

149 *Submission 1*, p. 4.

150 Department of Home Affairs (Home Affairs), answers to questions on notice, 20 March 2018 (received 9 April 2018).

Chapter 6

Conclusions and recommendations

6.1 The committee believes this was a useful inquiry to investigate the ability of Commonwealth agencies to respond to climate change in the area of national security. The committee notes the consensus from the evidence that climate change is exacerbating threats and risks to Australia's national security. These include sea level rise, bushfires, droughts, extreme rainfall events, and higher-intensity cyclones. The committee was reassured that climate risks are being factored into preparedness policies and procedures at the whole of government level and by individual agencies, including Defence. There are well-established arrangements for states, territories and the Commonwealth to respond to domestic weather events and for the Commonwealth to provide regional humanitarian and disaster relief assistance (HADR).

6.2 Climate change is also adversely affecting other aspects of Australia's national security, including the economy, infrastructure, and community health and well-being. The committee did not receive substantial evidence on these matters, though some are being considered through other processes, such as Senate committee inquiries into the financial risk associated with carbon for businesses and the impacts of climate change on the built environment. In addition, a framework for a national strategy on climate, health and well-being was also recently released.[1] The committee's conclusions and recommendations focus on the areas where the committee received most evidence, including Commonwealth coordination, leadership, reducing climate risks, and building resilience in the region.

Commonwealth government coordination

6.3 Climate-related risks affect many government portfolios, including those dealing with domestic, regional and international security. Therefore, the committee supports the implementation of a whole of government approach to responding to climate risks at the Commonwealth level.

Whole of government approach

6.4 The Commonwealth whole of government approach is facilitated through the Secretaries Board on Climate Risk and the Disaster and Climate Resilience Reference Group (Reference Group).[2] The Reference Group is co-chaired by the Department of the Environment and Energy and the Department of Home Affairs, and Commonwealth agencies are represented at the deputy or first assistant secretary level. The Reference Group is considering the strategic implications of climate change for Commonwealth agencies, policies and programs. It is also facilitating engagement with the Commonwealth's expert science and research organisations, including the Bureau of Meteorology, Geoscience Australia and the CSIRO.

---

1 Framework for a National Strategy on Climate, Health and Well-being for Australia, Climate and Health Alliance, June 2017.

2 The committee did not receive any detail regarding the Secretaries Board on Climate Risk.

6.5 The committee supports the availability of robust climate data, science and expertise to facilitate modelling and planning to ensure preparedness. The committee was encouraged to hear the Reference Group is also engaging with external stakeholders such as the insurance industry and business groups on climate risk modelling and data. The committee emphasises that addressing the risks of climate change in the community involves not just Commonwealth Government agencies so it supports engagement with other stakeholders to facilitate the exchange of information and data.

Recommendation 1

6.6 **The committee recommends that the Commonwealth Government commits to providing ongoing adequate funding for climate science and research organisations.**

Coordination with states and territories

6.7 The committee also recognises that broader engagement on climate security by all Australian governments is required. Climate change is affecting areas of responsibility shared between the Commonwealth, states, territories and local governments, including emergency management. The committee notes there are well established policies and procedures between the Commonwealth and states and territories in relation to emergency management. However, evidence suggested that a new high-level taskforce or working group could undertake scenario planning and guide a coordinated national response to climate-related national security risks. The committee view is that at this time these issues are adequately considered by existing arrangements including the Council of Australian Governments (COAG) ministerial councils, and supporting senior officials committees such as the Australia-New Zealand Emergency Management Committee (ANZEMC).

Commonwealth government strategic planning and reporting

6.8 Climate and national security risks are identified in various national policy documents, including the 2011 *National Strategy for Disaster Resilience*, 2015 *National Climate Resilience and Adaptation Strategy*, the *2016 Defence White Paper* and the *2017 Foreign Policy White Paper*. Evidence suggested a white paper specifically on the national security implications of climate change could guide a coordinated whole of government response to climate risks, including extreme weather events, regional instability, and broader threats to the economy, infrastructure, and community health and well-being. The committee agrees that in order to ensure the national security aspects of climate change are being considered from a whole of government perspective that a white paper or other planning document should be developed.

Recommendation 2

6.9 **The committee recommends that the Commonwealth Government develop a climate security white paper, or similar planning document, to guide a coordinated whole of government response to climate change risks.**

6.10 Although the committee did not receive a large amount of evidence on the issue of health and well-being, the committee notes that in 2017 the Climate and

Health Alliance released a *Framework for a National Strategy on Climate, Health and Well-being for Australia*. The Framework seeks to guide government policy and decision making processes in addressing climate change and associated health impacts. Developed following consultation with a range of stakeholders including health professionals and experts in climate change and health, the Framework is structured around seven key areas of policy action and identifies a number of policy directions that could be adopted by governments across all levels.

6.11 The committee notes that although states and territories have responsibility for a range of health services, it is the Commonwealth Government that has responsibility for the national perspective on health and climate change. The committee suggests the Commonwealth draw on this framework to develop a national strategy on climate, health and well-being.

Recommendation 3

6.12 **The committee recommends that the Commonwealth Government develop a National Climate, Health and Well-being Plan based on the *Framework for a National Strategy on Climate, Health and Well-being for Australia*.**

6.13 The committee understands that climate risks are considered as part of agency risk assessments, and supports ongoing preparedness activities and scenario planning. The committee notes modelling and planning is critically important in relation to domestic emergency management. Emergency Management Australia—part of the Department of Home Affairs—is working with Defence and other stakeholders to understand climate risks and prepare to respond to extreme weather events in Australia. The committee heard examples of how arrangements can be adapted to respond to the forecast level of risk. For instance, the level of fire risk in each state and territory is monitored, and additional firefighting aircraft leased through the national and international markets if it appears fires in multiple states could occur concurrently following particularly dry periods.

Defence-specific planning and reporting

6.14 The committee notes that Defence also has modelling and planning processes that inform preparation for military missions, HADR operations, capability life cycle and estate and environmental management. The committee heard that Defence had undertaken preliminary investigations into how climate risks can affect the Defence estate. While this work remains classified, the committee notes that this year the United States released the *Climate-Related Risk to DoD Infrastructure Initial Vulnerability Assessment Survey (SLVAS) Report*. The committee suggests Defence consider making an unclassified version of its work publicly available in order to assist other affected local stakeholders.

Recommendation 4

6.15 **The committee recommends the Department of Defence consider releasing an unclassified version of the work undertaken by Defence to identify climate risks to its estate.**

6.16 The committee notes that climate risks are considered in strategic planning relating to Defence, including the *2016 Defence White Paper* and the Chief of the

Defence Force (CDF) annual preparedness directive to the Australian Defence Force. The preparedness directive considers the full range of security capabilities and risks, outlines the level of readiness, and guides Defence activities. The committee notes advice that the CDF adjusts preparedness requirements in accordance with the security environment and assessment of risks, including climate-related risks. The committee supports this regular consideration of climate risks, and notes it will be important as climate-related threats continue to increase demands for a wide spectrum of Defence responses, including domestic disaster recovery, regional HADR and stabilisation operations.

Ensuring Defence preparedness

6.17 Modelling indicates a manageable increase in Defence's climate-related commitments in the near term. However, climate change is increasing the likelihood of concurrent events, such as a combination of extreme weather events, HADR and military missions requiring responses simultaneously. Defence identified that higher levels of commitment and the risk of simultaneous disasters could create concurrency pressures and sustainment cost issues from as early as the middle of the next decade, or earlier if climate security threats accelerate. The committee is aware similar pressures are likely to affect other agencies, such as the Australian Federal Police.

6.18 Some submissions suggested that Defence should respond to these pressures by reforming its structure to equally prioritise warfighting and non-warfighting responsibilities. While the committee acknowledges war fighting will remain critical for defence, it also recognises the existing and emerging pressures to national security posed by climate change, and that its force structure is likely to change over time in response to such pressures. In this light, the committee notes that capabilities acquired to meet its war fighting role should where possible be adaptable and able to be used to respond to the effects of climate change such as additional HADR operations. The committee supports Defence investment in versatile and adaptable assets and ongoing training of personnel to provide HADR within Australia and the region when required, while maintaining its warfighting role.

6.19 The committee understands that the National Aerial Firefighting Centre (NAFC) currently leases firefighting aircraft from commercial operators through public tender processes. The committee heard evidence that this currently represents the most flexible and cost effective model. However, the committee notes climate change and other factors may alter market conditions in the future, and suggests this should be considered.

Recommendation 5

6.20 **The committee recommends the National Aerial Firefighting Centre undertake a cost benefit analysis to assess whether leasing arrangements or government ownership of firefighting aircraft will provide the best value and support to firefighters and communities in the future.**

Leadership

6.21 The committee heard concerns that there is an absence of dedicated senior climate security leaders across the Commonwealth, leaving the whole of government

response fragmented. Suggestions included establishing a climate security envoy with responsibility for international engagement, similar to the former United Kingdom Climate and Energy Security Envoy. Others supported the creation of a climate security adviser within the Home Affairs Portfolio to facilitate interagency coordination on national climate resilience. The committee notes there is already an array of leadership groups responsible for aspects of climate security policy, including the Reference Group and ANZEMC. The Department of Foreign Affairs and Trade (DFAT) has an Ambassador for the Environment. The committee suggests that, once the Home Affairs Portfolio has been fully established and operational for a time, the need for a national climate security position should be considered.

Recommendation 6

6.22 **The committee recommends that the Commonwealth Government consider the need for a dedicated climate security leadership position in the Home Affairs Portfolio to facilitate coordination on climate resilience issues, including disaster risk reduction, infrastructure planning, community health and well-being, and emergency management.**

6.23 The committee also heard proposals for elevating leadership on climate security within Defence. The recently-established Climate and Security Adviser role is held by a Colonel in the reserves. However, Defence emphasised staff at higher levels also share responsibility for climate security policy, including the Head Force Design, who examines climate change in the context of investment decisions. The Vice Chief of the Defence Force considers climate security when developing preparedness statements for the CDF, and participates in the Secretaries Board on Climate Risk. The Deputy Secretary, Strategic Policy and Intelligence, is the Defence lead on climate change policy and manages Defence contributions to the whole of government agenda. The committee notes that responsibility for responding to climate change security risks is currently shared between a range of leaders within Defence and suggests a dedicated leadership role could assist in Defence's planning and delivery of domestic and international HADR as demands and concurrency pressures increase over time.

Recommendation 7

6.24 **The committee recommends that the Department of Defence create a dedicated senior leadership position to assist in planning and managing the delivery of domestic and international humanitarian assistance and disaster relief as pressures increase over time.**

Increasing climate security capability

6.25 The committee notes recent efforts to improve climate security capability and knowledge through the development of short courses and partnerships between Defence and educational institutions. The committee supports the continuation and expansion of these courses and partnerships across Commonwealth agencies.

Recommendation 8

6.26 **The committee recommends that national security agencies increase their climate security knowledge and capability by encouraging participation of staff in available courses.**

Reducing climate risks

Disaster risk reduction

6.27 The committee recognises domestic disaster management is primarily a responsibility of state and territory governments. However, the Commonwealth will be required to continue supporting states affected by disasters in the context of climate change. Through the Natural Disaster Relief and Recovery Arrangements (NDRAA) the Commonwealth Government provides financial assistance directly to the states and territories to assist them with the costs associated with disaster relief and recovery assistance measures.

6.28 The committee is aware that new federal funding arrangements for recovery following disasters are expected to be implemented from July 2018. The committee is also aware that these new arrangements will provide incentives for states to deliver reconstruction projects more efficiently so that efficiencies can be put towards mitigation activities and projects.

6.29 While the committee supports the Commonwealth initiatives to support resilience building outlined in chapter 3, it notes that after being extended for 12 months in May 2017, the National Partnership Agreement on Natural Disaster Resilience (NPANDR) is due to cease on 30 June 2018.[3] The committee has no information on whether the new arrangements are intended to replace the NPANDR. The committee would consider the conclusion of the NPANDR as premature and urges the government to further extend this agreement and review the need for it after the new arrangements are well established and data is available on the funding made available for mitigation activities.

Recommendation 9

6.30 **The committee recommends the Commonwealth Government extend the National Partnership Agreement on Natural Disaster Resilience and review after the new funding arrangements are well established and data is available on the funding available for mitigation activities.**

Mitigation

6.31 The committee views climate change mitigation through emissions reductions as a fundamental part of protecting Australia's national security. Australia is party to international climate mitigation agreements including the 2015 Paris Agreement. The Government has committed to reducing greenhouse gas emissions to 26–28 per cent

3 Funding for three states is to be provided under the National Partnership in the 2018–19 financial year, and negotiations are yet to be finalised regarding any future funding. Commonwealth of Australia, *Federal Financial Relations: Budget Paper No. 3 2018–19*, p. 58.

below 2005 levels by 2030. While some of the effects of climate change are already being experienced, the committee heard that stronger emissions reductions can contribute to reducing future risks. To address this, witnesses provided a range of suggestions for different national emissions reductions targets in the evidence. The committee recognises that senators and parties hold different views on the appropriate level of mitigation targets.

6.32 The committee supports Defence's use of renewable energy and alternative fuel sources, and notes Defence provides information on its environmental performance and changes to energy consumption in its annual report. The committee sees an opportunity for Defence to enhance this reporting by setting clear goals against which progress can be measured.

Recommendation 10

6.33 **The committee recommends that the Department of Defence establish emissions reductions targets across stationary and operational energy use, and report against these in its annual report.**

6.34 The committee notes that, in addition to reducing the risks of climate change, adopting a greater diversity of energy sources will improve Defence's energy security and resilience by reducing its reliance on external energy sources.

Building resilience in the region

6.35 The committee is concerned that the consequences of climate change are exacerbating the fragility of Australia's allies, including Pacific Island countries (PICs). The committee notes the Commonwealth Government has committed to some important regional resilience initiatives, including supporting the implementation of the *Framework for Resilient Development in the Pacific* and developing the Australia Pacific Climate Change Action Program.

6.36 Australia has also committed $1 billion over five years from the existing aid budget to build climate change resilience and reduce emissions in developing countries. The committee supports the efforts of DFAT to align Australia's development assistance with the priorities of partner countries and communities, focus on human security, and empower groups disproportionately affected by climate change. The committee notes that climate finance is being embedded in existing programs, for example, by 'climate proofing' infrastructure projects such as roads. The committee also recognises Australia's positive contribution to the Green Climate Fund (GCF), and the ongoing work undertaken by DFAT to integrate climate finance into the Australian aid program. As Co-Chair of the GCF, Australia is supporting PICs to access resources for climate mitigation and adaptation.

6.37 The committee agrees that funding for climate mitigation, adaptation and disaster risk reduction measures represents an investment in the security and stability of Australia's region. Avoiding food and water insecurity and protecting critical infrastructure and institutions is likely to reduce future aid requirements and Defence costs to Australia, and help minimise population displacement. Therefore, the committee considers that public climate aid and finance contributions should be

increased, in addition to the existing development assistance budget, to the extent that financial circumstances allow.

Recommendation 11

6.38 **The committee recommends the Commonwealth Government provide further funding for international climate adaptation and disaster risk reduction measures, in addition to the existing aid budget, to the extent that financial circumstances allow.**

6.39 The committee emphasises that protecting Australia's national security in the context of climate change requires not only the whole of government approach being taken by Commonwealth Government agencies but also the ongoing cooperation of communities, academia, the private sector and all levels of government, as well as Australia's regional and international partners.

Senator Alex Gallacher

Chair

Additional Comments by Coalition Senators

Report and findings

1.1 Coalition Senators agree with much of the body of the report relating to evidence on strategic and long-terms risks to Australia's national security and the role of humanitarian and military personnel in responding to the impact of climate on our security and strategic environment.

1.2 However, Coalition Senators note that the terms of reference for this inquiry have been applied liberally to focus on broader policy matters related to international climate agreements and obligations. Additionally, the committee has also focussed on and recommended defence establish internal emissions reduction targets, also outside of the spirit of this inquiry.

1.3 Commonwealth agencies with an interest in the impact of climate change on Australia's national security environment provided information to the inquiry on the role of climate change in their strategic considerations.

1.4 The Department of Defence outlined in their submission to the inquiry that:

> Direct climate impacts – such as the change in the frequency of extreme weather events, increase in the number of hot days and sea-level rise – can affect Defence bases, operations, capability and personnel. These impacts are relatively well understood and are largely being addresses in concert with other government agencies, allies and industry partners. Climate change is also increasing the demand for Australian Defence Force (ADF) to conduct humanitarian operations both domestically and overseas.[1]

1.5 Furthermore, the Department said:

> Defence is progressively embedding climate change in its core business functions. Defence now considers the impact of climate change in its policy setting, planning, operations, preparedness capability life cycle management and estate and environmental management.[2]

1.6 Similarly, the Department of Foreign Affairs, Defence and Trade submitted:

> Successive Australian governments have recognised these threats and risks. Australia's national security agencies have well-defined responsibilities and capacities to respond…
>
> DFAT works as part of a whole-of-government effort to address and manage the risks to security from climate change. Of particular importance is the Department's leadership on strengthening international cooperation and action against climate change, including participation in forums and agreements such as the United Nations Framework Convention on Climate

1 *Submission 63*, p. 3.

2 *Submission 63*, pp. 3–4.

> Change, the 2015 Paris Agreement, the Platform on Disaster Displacement and the Sendai Framework for Disaster Risk Reduction 2015-2030.[3]

1.7 Mr Mark Crosweller, Director General of Emergency Management Australia, the Department of Home Affairs, confirmed the Department is leading a whole of Government approach to address the future impacts of natural hazards; this includes the effects of climate change. In the hearing on March 20, 2018, Mr Crosweller stated:

> The department is taking the lead role across the Commonwealth to address the future impacts of natural hazards. With the Department of the Environment and Energy, we co-chair the Australian government Disaster and Climate Resilience Reference Group to embed disaster and climate resilience in Australian government policies and programs. This group has representatives from every Australian government department. The group is deepening understanding of the current and future impacts of climate change and provides a forum for sharing experiences of how we can respond through engagement with the Commonwealth's expert science and research organisations in the private sector.[4]

1.8 Coalition Senators believe the Government and stakeholder departments have sufficient strategies in place to ensure Australia's response to the implications of climate change on national security is well understood and consistent across the whole of Government. As such, we provide the below response to the recommendations contained in the report.

Response to recommendations

1.9 In response to recommendations 2 and 3, Coalition Senators believe the 2016 Defence White Paper and the 2017 Foreign Policy White Paper, along with the whole of Government approach outlined by the Department of Home Affairs sufficiently recognise the importance of climate change in strategic considerations. Evidence provided to the committee demonstrates climate change and related regional implications are already part of strategic and national security considerations.

1.10 Coalition Senators agree with recommendation 4 so far as the release of the work would benefit other Commonwealth departments in their preparedness and planning. Coalition Senators also note the importance of the Commonwealth Government's Pacific Patrol Boat Replacement Program and associated operational support by the Australian Defence Force to combatting many of the issues related to climate change in the pacific. Australia's Defence Cooperation Agreements are also critical in this context. Defence should deploy to support HADR where civilian capacity is limited or exceeded. Funding models should also be explored in a similar manner to that which enables augmentation of national firefighting capability.

1.11 In response to recommendation 6, Coalition Senators note the leadership role the Department of Home Affairs have taken in ensuring a whole of Government response to climate change and resilience, through the Director General of Emergency

---

3 *Submission 61*, pp. 2–3.

4 *Committee Hansard*, 20 March 2018, p. 2.

Management Australia. Climate change is a whole of society risk and should be normalised across all departments, there is no need for a dedicated leadership position, current arrangements are sufficient.

1.12 In response to recommendation 7, Coalition Senators acknowledge the steps Defence have taken in recognising the role climate effects play in forward and strategic planning, particularly in projecting the potential for increased HADR deployments. Advice from Defence that a Defence Climate and Security Advisor has been appointed is welcome and sufficient:

> The embedding process was supported initially by a Global Change and Energy Security Initiative established in 2013 and in 2016, and since mid-2016 by the appointment of a Defence Climate and Security Adviser. These initiatives have focussed on building climate change awareness throughout Defence and across government, and supporting adoptions of climate change considerations into business as usual.[5]

1.13 In their submission, Defence further noted that:

> The 2016 Integrated Investment Program states that Defence will implement a comprehensive program of investment aimed at continuously developing, monitoring and maintaining critical infrastructure, ADF bases and logistics systems such as fuel facilities. Energy, including electricity and fuel, is a key enabler of ADF operations, supporting both force projection (through bases) and military capabilities.[6]

1.14 In response to recommendation 8, Coalition Senators support staff in relevant departments such as the Department of Home Affairs, Defence and Foreign Affairs and Trade becoming more familiar with the impact of climate effects on national security.

1.15 Coalition Senators support the principle of recommendation 10 and the Department of Defence's continued use of and exploration of alternative energy sources for defence installations.

1.16 In response to recommendation 10, Coalition Senators do not support internal emissions reductions targets for Defence, however note the successful exploration of alternative energy sources such as utilising wave energy at HMAS Stirling in Western Australia – alternative energy sources should be pursued where practical and where operational concerns and demands permit. In their submission, Defence noted the potential for further exploration of alternative energy sources:

> While changes in energy market dynamics and energy sources will in the short-term require strategic thinking to ensure security of Defence liquid fuel supplies, in the medium-long term they may provide new energy conversion technology, energy sources and mobile processing that could provide Defence ways to reduce its energy footprint, increase energy productivity (and thereby capability return on investment), and the

5 *Submission 63*, p. 4.

6 *Submission 63*, p. 7.

> capability to produce its own power and fuel on demand wherever it is and whatever it is doing, freeing it from limiting logistic chains. Further innovation examples are provided below in "Climate Change Mitigation and Adaptation Actions in Defence".[7]

1.17 Coalition Senators believe fuel security for Defence operations is an ongoing concern, in their submission Defence stated:

> Continued access and supply of energy is critical for Defence missions. Energy supply, particularly fuel, is provided through a transforming global market and Defence will be reliant on the national and international support base for the foreseeable future.[8]

1.18 Whilst Defence have been successfully exploring alternative energy sources for base operations, Coalition Senators recommend Defence continue to review and implement measures to reduce reliance on external energy sources both in terms of fuel security for operations and utilities for bases and domestic installations. Defence will be a key stakeholder in the inquiry into liquid fuel security recently announced by Minister Frydenberg which should consider, among other factors, the role for alternative energy sources such as biofuels (whether drop-in or replacement).

1.19 In response to recommendation 11, Coalition Senators recognise the Foreign Policy White Paper reinforces the importance of our official development of our Overseas Development Assistance as a powerful tool to encourage sustainable development and reduce poverty in our region, leading to stability, security and prosperity, which for Australia is second only to the defence of Australia.

1.20 Coalition Senators note the Commonwealth Government currently spends $4 billion on our Overseas Development Aid program with 90 per cent allocated to the Indo-Pacific. Concerning the impact of climate change, the Department of Foreign Affairs and Trade noted in their submission that:

> DFAT is active in a range of regional forums, such as the East Asia Summit and Pacific Islands Forum. Globally, DFAT engages in the G20 and its strong sustainable development, climate and energy action agenda. Through our network of bilateral relationships, we are strengthening political and practical cooperation to mitigate climate change risks...
>
> DFAT is integrating climate action and disaster resilience across the entire Australian Aid Program, as well as implementing the Prime Minister's commitment to invest AUD 1 billion over five years in climate resilience and emission reduction measures in developing countries, with a focus on the Indo-Pacific. DFAT works bilaterally, regionally and with multilateral banks and funds. DFAT's longstanding partnerships with Australian and international non-government organisations (NGOs) are key.[9]

---

7 *Submission 63*, p. 8.

8 *Submission 63*, p. 7.

9 *Submission 61*, p. 3.

1.21 The stability and security of our region is second only to the defence of Australia and so stability, security and prosperity are the drivers of our overseas development assistance in the Pacific and a very important component of this is food security and effective fisheries coastal management plays a vital role in ensuring this.

1.22 Coalition Senators note the Commonwealth is integrating climate change and disaster considerations into all Australia's overseas development assistance investments across the Pacific through improved research and a focus on resilience and risk reduction.

1.23 This support is in line with the Framework for Resilient Development in the Pacific, which is a great example of regional coordination- with SPC, a lead author alongside SPREP, the University of the South Pacific, the Pacific Islands Forum Secretariat and UN agencies.

1.24 Coalition Senators believe states and territories should consider strategies contributing specialist resources to offshore emergencies, including those generated by climate change.

Senator Linda Reynolds CSC

Deputy Chair

Senator David Fawcett

Additional Comments from the Australian Greens

1.1 The Greens acknowledge the extensive work of the Committee in its inquiry into the implications of climate change for Australia's national security. We thank the Committee and the Secretariat for its high-quality work, and welcome the recommendations in the report.

1.2 This inquiry has highlighted the crystal-clear threat of climate change. As the Climate Council stated in its submission to the inquiry "climate change poses a significant and growing threat to human and societal well-being, threatening food, water, health and national security".[1] Many submitters and witnesses made reference to the current and existential national security risk that climate change presents, including Mr Mark Crosweller, Director-General of Emergency Management Australia.[2]

1.3 In its submission, the Department of Defence was one of many witnesses to state that climate change is a "threat multiplier".[3] Defence noted that climate change has helped to exacerbate many of the current conflicts in the Middle East, including Syria, and has contributed to the current emerging refugee crisis in Africa.

1.4 This inquiry has also shown that climate denial is a threat to national security. It is overwhelmingly evident that mitigation is the most important task in reducing the security risks posed by climate change. As Oxfam noted in its submission:

> …we cannot afford to focus on response at the expense of prevention…To protect communities, governments must act rapidly to mitigate the worst effects by limiting warming to 1.5°C, whilst helping communities and countries around the world adapt to the impacts we can no longer avoid.[4]

1.5 Yet some members of our current Parliament remain intent on blocking any action to reduce Australia's greenhouse gas emissions, such that Australia's emissions continue to increase annually.

1.6 At the same time, successive Coalition and Labor Governments have overseen drastic cuts to Australia's aid budget. This directly contravenes evidence heard during the inquiry, calling for Australian leadership in supporting climate change mitigation and adaptation efforts through its international aid program.

1.7 Furthermore, successive cuts to government funding of climate science and research stands in stark contrast to recommendations from submitters and witnesses that it is in Australia's security interests to increase the capacity of our climate research institutions. These cuts have been exacerbated by continued political attacks on the validity of climate science. A clear statement of support regarding the

---

1 *Submission 18*, p. 4.

2 *Committee Hansard*, 20 March 2018, p. 7.

3 *Submission 63*, p. 3.

4 *Submission 40*, p. 2.

importance of climate science, backed up by increased and sustained Government funding, is critical.

1.8 The Australian Greens welcome the fact that this inquiry has broken new ground in recognising and understanding the severe security risks posed by climate change. We note that many of the submissions contained compelling recommendations to address climate and security challenges. We hope that these suggestions will be further explored in a Climate Security White Paper (Recommendation 2 of the Chair's report). The Australian Greens have four additional recommendations that are, in our view, fundamental to addressing the climate and security challenge.

Recommendation 1

1.9 Phase-out greenhouse gas emissions across all sectors of the Australian economy by 2040 at the latest, including ensuring that Australia reaches the target of 100% renewable energy by 2030.

Recommendation 2

1.10 Plan and upgrade the ADF's role and capabilities to provide equal priority to humanitarian, disaster relief and peacekeeping missions, alongside its warfighting functions.

Recommendation 3

1.11 Provide at least $3.2 billion in climate finance funding each year by 2020, in addition to the existing aid budget, so that developing nations, particularly those in our own vulnerable region, can build climate resilience.

Recommendation 4

1.12 Increase funding to the CSIRO climate program and other climate science programs and institutions, along with assurances around funding stability, so that Australia can better understand the threats posed by climate change.

Senator Peter Whish-Wilson

The Australian Greens

Appendix 1

Submissions

1. Kaldor Centre for International Refugee Law, UNSW
2. Mr Mark Carter
3. Dr Anthony Bergin and Ms Zoe Glasson
4. Dr Dick Varley
5. WaterAid Australia
6. International Committee of the Red Cross
7. Confidential
8. Ms Sherri Goodman
9. Mr Michael Nolan
10. Climate Change Research Centre
11. Dr David Titley
12. Professor Jon Barnett
13. Professor Timothy Stephens
14. ARC Centre of Excellence for Climate Extremes
15. Friends of the Earth Brisbane
16. Australian Psychological Society
17. Beyond Zero Emissions
18. Climate Council of Australia
19. Mr Nic Maclellan
20. Breakthrough - National Centre for Climate Restoration
21. Australian Centre for International Agricultural Research
22. The Center for Climate and Security
23. Associate Professor Matt McDonald

24. Centre for Policy Development
25. Darebin Climate Action Now
26. Climate and Health Alliance
27. Quaker Peace and Legislation Committee
28. World Vision Australia
29. Plan International Australia
30. Peacifica
31. The Crawford Fund Ltd
32. Richard and Maria Maguire
33. AGL Energy Limited
34. Dr Stuart Pearson
35. National Climate Change Adaptation Research Facility
36. Mr Ian Dunlop
37. Griffith Climate Change Response Program & Griffith Policy Innovation Hub
38. Honorary Professor Chris Barrie
39. Australian Water Partnership
40. Oxfam Australia

40.1 Supplementary to submission 40

41. Save the Children Australia
42. Citizens' Climate Lobby (Australia)
43. Public Health Association of Australia
44. Dr Md Saiful Karim
45. Climate Change, Development and Mobility Research Group
46. Dr Paul Barnes
47. Ms Elizabeth Boulton
48. Sustainable Business Australia

49. ActionAid Australia

50. Climate Change Institute, ANU

51. Professor Anthony Burke and Professor Shirley Scott

52. Jesuit Social Services

53. Australian Council for International Development

54. Pacific Islands Forum Secretariat

55. CSIRO

56. Northern Territory Government

57. CARE Australia

58. Attorney-General's Department

59. Department of Immigration and Border Protection

60. Department of the Environment and Energy

61. Department of Foreign Affairs and Trade

62. United Nations Environment Programme

63. Department of Defence

64. Queensland Government

65. Returning Organics to Soil

66. Mr Phil Clark

66.1. Supplementary to submission 66.1

67. Mr John McLean

68. Dr Kumuda Simpson-Gray

69. Mr Stewart Hespe

70. Mr David Bailey

Appendix 2

Additional information and answers to questions on notice

Additional information

1. Additional information provided by Dr Paul Barnes, Head of Risk and Resilience, Australian Strategic Policy Institute, received 8 December 2017.

2. Additional information provided by Honorary Professor Admiral Chris Barrie AC RAN (R'td.), received 8 December 2017.

3. Additional information provided by Mr Ian Dunlop, received 8 December 2017.

4. Additional information provided by Dr Amrita Malhi, Development Economics Advisor, Australian Council for International Development, received 20 December 2017.

Answers to questions on notice

1. ActionAid Australia, Answer to question taken on notice at 8 December 2017 hearing in Canberra, received 9 February 2018.

2. Department of Defence, Answer to written question on notice (number 1) following 8 December hearing in Canberra, received 27 February 2018.

3. Department of the Environment and Energy and Department of the Defence, joint answer to question taken on notice at 20 March 2018 hearing in Canberra, received 6 April 2018.

4. Department of Home Affairs, Answers to questions taken on notice at 20 March 2018 hearing in Canberra and written questions on notice, received 9 April 2018.

5. CSIRO, Answer to question taken on notice at 20 March 2018 hearing in Canberra, received 12 April 2018.

6. Department of Defence, Answer to written question on notice (number 15) following 20 March 2018 hearing in Canberra, received 13 April 2018.

7. Department of Foreign Affairs and Trade, Answers to questions taken on notice at 20 March 2018 hearing in Canberra and written questions on notice, received 13 April 2018.

8. Department of Defence, Answers to questions taken on notice (numbers 1, 2, 5, 6, 7, 8) at 20 March 2018 hearing in Canberra, received 17 April 2018.

9. Department of Defence, Answers to written questions on notice (numbers 9, 10, 11) following 20 March 2018 hearing in Canberra, received 17 April 2018.

10. Department of Defence, Answers to written questions on notice (numbers 12, 17, 18, 19) following 20 March 2018 hearing in Canberra, received 17 April 2018.

11. Department of Defence, Answers to written questions on notice (numbers 16, 20) following 20 March 2018 hearing in Canberra, received 20 April 2018.

12. CSIRO, Answer to question taken on notice at 20 March 2018 hearing in Canberra, received 27 April 2018.

Appendix 3

Public hearings and witnesses

Friday 8 December 2017 Canberra, Australian Capital Territory

Ms Sherri Goodman, Senior Fellow, Woodrow Wilson International Center

Dr David Titley, Rear Admiral USN (Retired), Professor and Director, Center for Solutions to Weather and Climate Risk, Pennsylvania State University

Australian Strategic Policy Institute

Dr Anthony Bergin, Senior Analyst; Senior Research Fellow, Australian National University

Dr Paul Barnes, Head of Risk and Resilience

Centre for Policy Development

Mr Robert Sturrock, Policy Director

UNSW Canberra at the Australian Defence Force Academy

Dr Stuart Pearson, Honorary Associate Professor of Geography, School of Physical Environmental and Mathematical Sciences

Professor Anthony Burke, Professor of International Politics, School of Humanities and Social Sciences

Professor Shirley Scott, Professor of International Relations, School of Humanities and Social Sciences

Honorary Professor Admiral Chris Barrie AC (Retired), private capacity

Climate Council of Australia

Dr Michael Thomas

Oxfam Australia

Dr Simon Bradshaw, Climate Change Advocacy Lead

ActionAid Australia

Ms Lucy Manne, Head of Campaigns

Australian Council for International Development

Dr Amrita Malhi, Development Economics Adviser

Mr Ian Dunlop, Senior Member, Advisory Board, Breakthrough—National Centre for Climate Restoration

Tuesday 20 March 2018 Canberra, Australian Capital Territory

Department of Defence

Mr Steven Grzeskowiak, Deputy Secretary, Estate and Infrastructure Group

Air Vice Marshal Mel Hupfeld, Head Force Design

Air Commodore Richard Lennon, Director General Force Analysis

Dr Peter Sawczak, Assistant Secretary Strategic Policy

Department of the Environment and Energy

Ms Helen Wilson, Acting Deputy Secretary, Climate Change and Energy Innovation

Mr Brad Archer, First Assistant Secretary, International Climate Change and Energy Innovation Division

Ms Kushla Munro, Assistant Secretary, International Branch

Ms Katie Eberle, Director, Carbon Markets and Bilateral Engagement

Dr Will Howard, Assistant Director, Mitigation and Climate Science

Department of Foreign Affairs and Trade

Mr Patrick Suckling, Ambassador for the Environment

Mr Paul Kelly, Assistant Secretary, Humanitarian Response, Risk and Recovery Branch

Department of Home Affairs

Mr Luke Brown, Acting Assistant Secretary, Disaster Resilience Strategy Branch

Mr Mark Crosweller, Director General, Emergency Management Australia

Commonwealth Scientific and Industrial Research Organisation (CSIRO)

Dr Craig James, Research Program Director

Mr John Clarke, Team Leader, Regional Projections