



Australian Government
Department of Defence

**Senate Standing Committee on Foreign Affairs, Defence and
Trade Inquiry into the Implications of Climate Change for
Australia's National Security**

**Department of Defence
Written Submission**

August 2017

Defence Submission to the Senate Inquiry on 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.

Executive Summary

1. Australia's national security includes state and human security and is inherently linked to the security of health, water, energy, food and economic systems at the local, national, regional and global level. Defence views climate change¹ as a threat multiplier², having both direct and indirect impacts on Defence's business.
2. Direct climate impacts – such as change in the frequency of extreme weather events, increase in number of extreme hot days and sea-level rise – can affect Defence bases, operations, capability and personnel. These impacts are relatively well understood and are largely being addressed 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.
3. In the longer term, climate change can act as a threat multiplier, intersecting with issues such as population density, poor governance, weak government institutions, poverty, and adaptation risk. The national security threats that may emerge include inter-group rivalries, water, food and resource shortages and irregular migration. Many of the states in Australia's region face some or all of these challenges, in addition to being vulnerable to climate change impacts such as temperature and sea level rise. Unmitigated, climate change could exacerbate the potential for conflict and the consequence of any climate change-related threats could lead to an increase in the demand for a wide spectrum of Defence responses.
4. The ADF is primarily designed and structured to provide for the physical security of the nation. The force structure of the ADF is therefore built around the most demanding and most complex of its roles - the warfighting role. Due to the nature of its capabilities it is able to make a contribution to Humanitarian Assistance and Disaster Relief (HADR), though the force is not structured around this task. Defence is able to adapt existing capabilities to assist the Australian government lead agencies, Department of Foreign Affairs and Trade (DFAT), and the Attorney General's Department (AGD) in responding to climate related events, such as natural disasters.
5. Domestically, an increase in Defence support to disaster response and border security operations could be expected. An increase in illegal foreign fishing or irregular migration to Australia as a result of the effects of climate change may increase existing demands for ADF patrols in Australia's northern waters. Defence may also be expected to provide increasing levels of emergency assistance to the civil community if the size and scale of Australian natural disasters increase. Modelling of Defence's future preparedness posture currently indicates a manageable near-term increase in the frequency, scale and operational risk of climate-related Defence commitments. However, the forecast level of commitment may create concurrency pressures for Defence from as early as the middle of the next decade, or earlier if climate change related impacts on security threats accelerate. Defence will need to monitor climate change-related risks to human health as well as the impact of climate change on critical enablers such as infrastructure and energy.
6. 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,

¹ Climate Change is 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).

² The 2014 Quadrennial Defense Review, issued by the U.S. Department of Defense, succinctly describes climate change as a "threat multiplier," meaning that it may exacerbate other threats to security (DOD, 2014).

capability life cycle management, and estate and environmental management. 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 adoption of climate change considerations into business as usual.

7. Successful forward leaning mitigation and adaptation actions can strengthen national, regional and global resilience and thereby reduce longer term security risks for Defence. Defence does not lead on climate change mitigation and adaptation, but welcomes and supports mitigation initiatives led by other agencies, such as the Department of Environment and Energy (DoEE), the DFAT, the Department of Health and the AGD.

Climate Change Risks and Threats

The National Security Threat of Climate Change

8. Climate change is one of several factors increasing the complexity of Australia's future strategic environment, and climate change-related risks are being reviewed as part of Defence's routine and longer-term planning. The 2016 Defence White Paper included climate change in one of its six key drivers of Australia's security environment to 2035³. The 2016 Defence White Paper anticipated that the effects of climate change will result in a higher likelihood of deployment on stabilisation, post-conflict reconstruction and HADR operations in the future,⁴ as well as posing a threat to Defence infrastructure such as our bases.⁵

9. Climate impacts can disproportionately affect the most vulnerable. The 2016 Defence White Paper notes that climate change will be a major challenge for countries in the South Pacific.⁶ Humanitarian disasters are the results of hazards interacting with conditions of vulnerability, and climate change as a risk multiplier exacerbates vulnerabilities in health, water, food and economic systems. Developing countries often have characteristics of growing populations combined with low societal resiliency, making them more exposed to both direct and indirect climate change impacts.

10. 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. For example, climate change has been assessed as a factor in the drought and subsequent food shortages in the Middle East prior to the Arab Spring. Combined with political and social factors, climate change as a threat multiplier helped exacerbate many of the current conflicts in that region, including in Syria, and contributed to the current emerging refugee crises in Africa. Incidences of instability and low-intensity conflict in our region are increasing.⁷

³ Defence White Paper 2016, p.40, accessed at: <http://www.defence.gov.au/whitepaper/Docs/2016-Defence-White-Paper.pdf>

⁴ Defence White Paper 2016, p.56

⁵ Defence White Paper 2016, p.102

⁶ Defence White Paper 2016, pp.55-56

⁷ Steffen Will, *Climate Change: the ultimate threat multiplier*, The Strategist, ASPI, 18 Nov 2015, accessed at: <https://www.aspi.org.au/climate-change-the-ultimate-threat-multiplier/>

11. Domestically the impact of climate change-related extreme weather events can be expected to continue and increase.⁸ Over the next 20 years, we expect the threats to our maritime resources and our borders to grow in sophistication and scale. Australian fisheries remain relatively abundant, particularly in the Southern Ocean, making them appealing targets for long-range illegal fishing fleets.

12. Climate change may also eventually contribute to greater irregular migration pressure in vulnerable countries to Australia's north,⁹ potentially becoming a substantial security threat for Australia. Defence must be prepared to respond to these security challenges when directed by the Australian Government. From 2008-2015 climate-related events (including increased coastal flooding) reportedly contributed to the migration of an average of 21.5 million people annually.¹⁰

13. The United States (US) Department of Defense's 2015 Report - *National security implications of climate-related risks and a changing climate*- identifies four general areas of climate-related security risks, specific to US Combatant Command operations (US Government 2015, p. 5):

- a. Persistently recurring conditions such as flooding, drought and higher temperatures.
- b. More frequent and/or more severe extreme weather events.
- c. Sea level rise and temperature changes.
- d. Decreases in Arctic ice cover, type and thickness.¹¹

14. This submission considers the US Report's identified risks in the context of our Departmental mandate and the Australian circumstances.

Impact on Defence Operations

15. The 2016 Defence White Paper states that higher levels of ADF preparedness will be required to support increased Defence activity in the region, while maintaining the ADF's ability to make meaningful contributions to global security where our interests are engaged.¹² Climate change has implications for operations both within Australia and abroad as force preparation and sustainment becomes more complex and demanding.

16. Defence can expect to be called upon with greater frequency to assist neighbouring states as part of Australian Whole of Government (WoG) or International response. Such interventions would include HADR and may extend to stabilisation operations. More frequent extreme weather events due to climate change have already led to Defence, in collaboration with DFAT, undertaking more disaster relief operations over the last decade and a half.

⁸ <http://www.environment.gov.au/climate-change/climate-science/impacts>

⁹ *Global Risks Report 2016*, World Economic Forum, accessed at: <https://www.weforum.org/reports/the-global-risks-report-2016>

¹⁰ Bennett, K, Bilak, A, Bullock, N, Cakaj, L, Margarite Clarey, Desai, B, Ginnetti, J, Rolley, CMd, McClusky, P, Monaghan, L, O'Callaghan, S, Osborn, C, Rodriguez, AL, Rushing, EJ, Tyler, D & Yonetani, M 2017, *Global Report on Internal Displacement 2017*, Internal Displacement Monitoring Centre IDMC, Norwegian Refugee Council NRC.

¹¹ <http://archive.defense.gov/pubs/150724-congressional-report-on-national-implications-of-climate-change.pdf?source=govdelivery>

¹² Defence White Paper 2016, p.22

17. Defence's future preparedness posture currently indicates an increase in the frequency, scale and operational risk of climate related Defence commitments is manageable in the near term based on assessment of historical examples against projected trends. Previous humanitarian assistance and disaster risk missions have been analysed for the impact they had on concurrency and sustainability of Defence response options to the range of Defence missions. Planning assumptions on the frequency and scale of response were revised accordingly for the development of the Chief of Defence Force's Preparedness Directive for 2017-18. Work is ongoing in forecasting climate change impacts on Defence missions and mission environments, with a view to informing Defence preparedness requirements. However, the current most likely forecast climate changes may require higher levels of commitment that may create concurrency pressures for Defence from as early as the middle of the next decade, or earlier if climate change related impacts on security threats accelerate.

18. Although the full range of impacts are not yet able to be determined, there is potential for climate change to exacerbate existing threats and future governments may increase demands on the ADF or impose new commitments. These impacts could include an increase in illegal, unreported or unregulated fishing or irregular maritime arrivals to Australia as a result of the effects of climate change. 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). MBC is a multi-agency task force for civil maritime security operations that combine expertise, resources and assets from Defence and other Commonwealth, state and territory agencies to appropriately counter civil maritime threats from a WoG perspective.

Capability Impacts

19. It is too early to identify specific capability impacts but Defence is aware that risks to capability, including fitness for purpose, may emerge from changes in the biophysical environment, especially for capabilities that will be in service for decades. These impacts could include increased atmospheric and oceanic temperatures and changed chemical composition (such as aerosols and other pollutants, ocean acidification). It is possible that changes such as these may affect the life-of-type, maintenance requirements and possibly the operational performance of major ADF assets. Defence will incorporate input from agencies monitoring changes in biophysical geography (including the Commonwealth Scientific and Industrial Research Organisation (CSIRO), Bureau of Meteorology (BOM) and DoEE) into capability development planning and risk assessment processes.

Deployment, Training and Human Health Impacts

20. Climate change has the potential to exacerbate the environmental and human performance challenges for operations both within Australia and abroad and make force preparation and sustainment more demanding. Defence's people and their health is a critical input to Defence's overall capability, both in raising and training forces (preparedness), and in mobilising and sustaining operations from humanitarian assistance to high-end warfighting. Increased ambient temperatures and expansion of the tropics (i.e. increased persistent humidity in what are now sub-tropical, temperate and savannah zones) would extend the area where Defence faces the most challenging operational conditions that combine persistent exposure to heat and humidity, undertaking strenuous physical activity and increased presence and range of tropical pests and diseases. There could also be mental health impacts from prolonged exposure to these kinds of difficult conditions.

Defence Energy and Critical Infrastructure

21. 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.¹³ Energy, including electricity and fuel, is a key enabler of ADF operations, supporting both force projection (through bases) and military capabilities.

22. Forecast impacts of climate change may directly effect Defence's infrastructure and bases. During 2011-2015, Defence completed preliminary investigations that identified the risks from climate change on Defence activities, personnel, and assets. The climate change risks addressed during these investigations included the possible impact of sea level rise, flooding, storm surge and coastal erosion on key bases and training areas. Cross-governmental input from the CSIRO, Antarctic Climate & Ecosystems Cooperative Research Centre and the Met Office UK was sought during these investigations.

23. Projected increases in sea-level rise and the severity (though not frequency) of severe weather events, including storm surges¹⁴, may impact Defence facilities and the national infrastructure they depend on. The impacts could vary between sites ranging from making the facility more expensive to maintain to becoming unviable to operate. 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.¹⁵ The longer-term effects of these types of events need to be considered in infrastructure investment decisions, noting that these decisions will likely have an impact over the many decades of the design life of Defence facilities.

24. It is uncertain to what extent climate and other biophysical change, including increased ambient temperatures and likely increases in the intensity and range of natural hazards, will affect particular current and planned Defence training grounds and facilities. One potential example is that Defence training grounds and facilities could be usable for less time each year due to Work Health and Safety factors such as extreme heat. Impacts on surrounding population centres and local infrastructure may have knock-on effects on the operation of Defence bases in terms of access to local goods, services and utilities, and may impact access to community services such as schools and healthcare. These broader impacts will be considered as part of estate planning and risk assessment.

25. 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. The national arrangements for supply and demand of energy have remained largely static for decades, but indications are an energy transition has begun in Australia. The energy transition away from fossil fuels is driven in part by concerns over climate change and is likely to continue to redefine national energy supply chains. As an end user of energy sources Defence must ensure that it retains undisrupted access to appropriate sources of energy, despite these impacts and uncertainty. Technology advancements, evolving consumer demand and market reform in the electricity sector have implications for national economic and social outcomes, and this includes national security and Defence. The combined effect

¹³ Defence Integrated Investment Program, p.15, accessed at: <http://www.defence.gov.au/WhitePaper/Docs/2016-Defence-Integrated-Investment-Program.pdf>

¹⁴ <http://www.environment.gov.au/climate-change/adaptation/publications/climate-change-risks-australias-coasts>

¹⁵ Defence White Paper 2016, p.102, accessed at: <http://www.defence.gov.au/whitepaper/docs/2016-defence-white-paper.pdf>,

of climate change and resource scarcity stands to play a big part in geopolitics and shape the international energy landscape over the coming years. There is a critical nexus of enablers between energy supply and critical infrastructure. Extreme weather-related disruptions to the infrastructure supporting the national energy market, as seen recently, will likely continue into the future.

26. The recent interruptions to electricity supply in South Australia and Tasmania demonstrate the impact of disruptive influences in the National Electricity Market. Climate change will exacerbate storms of increasing severity that will continue to impact national electricity infrastructure. The recent National Electricity Market Finkel Review specifically notes the importance of reliable electricity in maintaining national security, including Defence capabilities. It states that a secure electricity system is one that continues to operate across the entire region despite disruptions. A more secure power system will be resilient to the integration of new technologies and resistant to the threat of natural disasters and cyber security attacks.¹⁶ 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.

Climate Change Innovation

27. 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 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".

Role of Humanitarian & Military Response

28. The ADF is the Government's principal mechanism for using the military element of national power. It is primarily designed and structured to provide for the physical security of the nation. It is unique in its ability to apply state sanctioned lethal force. The force structure of the ADF is therefore built around the most demanding and most complex of its roles - the warfighting role. Due to the nature of its capabilities it is able to make a contribution to HADR. Importantly though, the force is not structured around this task. Defence is able to adapt to assist the Australian government lead agencies, DFAT and AGD in responding to climate related events, such as natural disasters. Defence is prepared to contribute to both domestic disaster relief operations and Pacific regional HADR operations with a range of air, land and sea capabilities. However, Defence is just one part of the WoG effort to provide emergency responses to climate change-related events, and mitigate climate-change related impacts.

29. Domestically, Defence provides support to the Australian community in emergencies under specific policy arrangements referred to as Defence Assistance to the Civil Community (DACC). State and territory governments have primary responsibility for the protection of life, property and the environment, and for coordinating and 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

¹⁶ <http://www.environment.gov.au/system/files/resources/1d6b0464-6162-4223-ac08-3395a6b1c7fa/files/electricity-market-review-recommendations.pdf>

assistance, including from Defence. All significant domestic requests for Commonwealth assistance during a disaster are made by the affected state or territory through the AGD Emergency Management Australia (EMA) Division.

30. DFAT remains the lead for international humanitarian responses. DFAT's humanitarian efforts are in response to requests from government of an effected country and build upon a range of well-established modalities and partnerships, including with the United Nations (UN) and Non-Government Organisations (NGOs), particularly in the Pacific. The 2016 Defence White Paper outlines the ADF's role in disaster response and the potential need for increased involvement. A number of ADF assets are easily adapted for such responses, including amphibious ships HMAS Canberra, Adelaide and Choules. Experience in recent years shows that Government is willing to deploy relatively large-scale ADF contingents in response to natural disasters when appropriate (such as Cyclone Winston damage to Fiji in 2016 and Cyclone Pam in Vanuatu in 2015).

31. The importance of improved capability effectiveness is illustrated through the ADF's contribution to the Australian WoG and NGO response to the February 2016 Tropical Cyclone Winston in Fiji. Tropical Cyclone Winston caused massive social and economic consequences, leaving 44 dead and a damage bill of more than \$2.5 billion. The Defence response included:

- a. High level and strategic collaboration with DFAT and the Australian Embassy in-country on response efforts.
- b. The Royal Australian Air Force was able to fly in Army helicopters aboard a C-17 airlift aircraft to help immediately, while HMAS Canberra provided emergency relief supplies, including DFAT supplies, personnel and heavy equipment for a larger and longer-term response. An Air Force surveillance aircraft conducted early surveillance assessments on the impacts of the cyclone.
- c. Approximately 1,000 ADF personnel were deployed to assist with emergency assistance and recovery. This included ADF engineers who helped repair schools, medical centres and critical infrastructure in affected communities
- d. 520 tonnes of humanitarian equipment were delivered by C-17 and C-130 airlift aircraft.

32. 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.

Defence Capacity and Preparedness to Respond to Climate Change

Defence preparedness for increasing humanitarian assistance

33. 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 on concurrent tasks and training to sustain Defence preparedness for its warfighting and other response options.

34. The ADF has a range of capabilities that can be easily adapted to HADR operations and periodically tests these through practical experience. Although the ADF does not exercise to respond to natural disasters, the Program of ADF Activities routinely includes several Defence exercises and training activities that incorporate humanitarian assistance and disaster responses each year, particularly within WoG and multi-lateral settings.

Embedding Climate Change Considerations in Defence Business

35. Defence is progressively embedding climate change in its core business functions. Defence now considers the impact of climate change in policy setting, planning, operations, preparedness, capability life cycle management, and estate and environmental management. The embedding process was supported initially by a Global Change and Energy Security Initiative established in 2013 and revised 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 adoption of climate change considerations into business as usual.

36. To build common climate change awareness Defence has taken the lead supported by the Australian National University's Climate Change and Energy Change Institutes in developing short courses on climate change and security and energy literacy. Originally piloted in 2015 these courses have since been conducted annually and have been attended by other Government agencies. In 2016 Defence also introduced a Climate Change and Security elective in its Centre for Defence and Strategic Studies to develop future senior leaders' awareness of potential climate change implications for national security.

Building on Collaborative Approaches

37. Defence collaboration and integration is conducted with regard to *The National Climate Resilience and Adaptation Strategy*, released by the Australian Government in 2015, that set out the guiding principles for action on climate resilience and adaptation across government, business and community. The agreed principles are:

- e. Shared Responsibility,
- f. Evidence based-risk management approach,
- g. Factor climate risk into decisions,
- h. Collaborative values based choices,
- i. Assist the vulnerable, and
- j. Revisit decisions and outcomes over time.

38. Defence is committed to supporting the interagency coordinating mechanisms now established by the DoEE and the AGD under the resilience and adaptation framework. This includes participation in the Australian Government Disaster and Climate Resilience Reference Group, co-chaired by the DoEE and the AGD, as a forum to progress the integration of WoG policy. This will assist with improving the integration of disaster and climate resilience planning, policies and programmes at the national level, to deliver a sustainable and coordinated national approach to

natural disasters and climate change. Defence is also supporting the DoEE, AGD and DFAT to develop a range of climate futures and scenario activities, and has partnered with the Australian Strategic Policy Institute (ASPI) in developing a WoG executive master-class in risk and resilience. Defence works closely with DFAT on preparation for humanitarian disaster response including training and positioning of supplies.

39. In addition, Defence notes that the inputs from leading science, academic institutions, peak agency organisation, think tanks, and local government have been critical to understanding Defence's climate change risks and business impacts. Defence continues to collaborate closely with and 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.

Integration for Complex Operations

40. The National Security Committee of Cabinet in 2008 tasked Defence to establish the Australian Civil-Military Centre to support the development of national civil-military capabilities to prevent, prepare for and respond more effectively to conflicts and disasters overseas. Lessons derived from other joint, interagency and international contexts are used to identify common considerations to assist decision-makers, policy experts, planners and operational practitioners prepare whole-of-government responses for complex contingencies.

41. The Australian Government Guiding Principles for Civil-Military-Police Interaction in International Disaster and Conflict Management (May 2015) also provides a set of guiding principles to build collaboration. The principles were developed by the Australian Civil-Military Centre in Defence, in collaboration with the departments of the Prime Minister and Cabinet (PM&C), DFAT and AGD together with the Australian Federal Police and the Australian Council for International Development. The guiding principles affirm interagency commitment to build preparedness for complex contingencies through multiagency exercises, training and education, practical research and lessons-learned. The integrated approach is underwritten by an appreciation that successful WoG coordination is best achieved through a collaborative culture, which recognises the unique capabilities of individual agencies despite different practices and mandates. The agreed five guiding principles are:

- a. Clearly define strategic objectives and operational roles and responsibilities;
- b. Engage proactively;
- c. Share knowledge and understanding;
- d. Leverage organisational diversity; and
- e. Commit to continuous improvement.

42. An example of Defence applying these principles is our collaboration with the EMA to assist with domestic disaster response, this includes:

- 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.

43. Another example is ADF officers training with DFAT on civil-military cooperation in crisis responses. Defence works closely with DFAT to ensure that international guidelines¹⁷ are incorporated into Defence practices. In recent civil-military exercises, the Women, Peace and Security agenda in UN Security Council Resolution 1325¹⁸ has informed new military doctrine. The ADF and DFAT are also working closely to develop a civil-military chapter of the Multi National Forces Standard Operating Procedures. The ADF also regularly includes DFAT and civil society organisations in exercises to reinforce relevant civil-military doctrine, such as exercise Talisman Sabre in 2017. To enhance departmental coordination, DFAT and the ADF have officer exchange programs.¹⁹ While these activities are not solely focused on responding to climate change related events they build the capacity to collaborate across government and quickly integrate when conducting operations.

The role of climate mitigation policies in reducing national security risks

44. The risks associated with climate change are not yet fully understood, but trends indicate that we could be entering a time of greater instability in weather. There is a range of possible scenarios that are presented in Intergovernmental Panel on Climate Change reports that acknowledge the difference in global warming could be due to continued Green House Gasses release²⁰ and Defence will use the agreed range of potential outcomes to develop most-likely and most-dangerous impacts to use as a basis for planning a range of options to address the security implications.

Other Climate Change Mitigation and Adaptation Actions in Defence

45. The Defence Estate and Infrastructure Group is actively pursuing best practice in delivering energy to bases. Renewable energy is part of Defence energy projects with numerous solar sites operational across northern Australia and the Carnegie Wave Project undertaken at HMAS Stirling.

46. Defence has also included a focus on both mitigation and resilience to climate change in the 2016 Defence Environmental Policy and 2016-2036 Environmental Strategy. Defence is also implementing a program that aims to mitigate greenhouse gas emissions. Some of the key projects under this program include:

- a. An extensive energy sub metering program to understand consumption and identify opportunities.

¹⁷ Such as the “Oslo Guidelines” and the 2010 Asia-Pacific Regional Guidelines for the use of Foreign Military Assets in Natural Disaster Response Operations.

¹⁸ <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N00/720/18/PDF/N0072018.pdf?OpenElement>

¹⁹ DFAT has a liaison officer at Headquarters Joint Operations Command (HQJOC) and a secondee at the Australian Civil Military Centre, and in return the ADF provides DFAT with HQJOC liaison officers.

²⁰ <http://www.ipcc.ch/>

- 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.

47. In accordance with the forecasts developed by the lead Government agencies Defence is already moving to adapt, plan and prepare for potential climate change impacts on its infrastructure. Defence completes disposition studies regularly to determine the most suitable geographical locations for infrastructure supporting capability, taking into account long-term strategic inputs and future force posture. Previous preliminary climate change investigations undertaken by Defence, described above, have influenced and shaped the findings of these studies. Based on the outcomes of preliminary climate change investigations, adaptation recommendations are considered during base planning and development activities on a site-by-site basis.

48. 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 and will continue to incorporate climate change into existing risk frameworks and processes as they develop across government for projects and planning.

49. Consideration of capability changes to incorporate changing energy options is being considered across Defence. The Navy is integrated with the US Biofuels initiative, Army is examining innovative energy approaches in the Deployable Force Infrastructure projects and Airforce is also examining potential alternative sources for fuel. Defence Science and Technology (DST) Group continues to play a small role in exploring the potential of new energy technologies for Defence. As part of DST Group's role to coordinate science and technology in support of Defence and the broader national security community, DST has previously undertaken work with the AGD in risk and resilience analysis of critical infrastructure. In 2016 Vice Chief of the Defence Force appointed a Defence Climate and Security Adviser to ensure 2016 Defence White Paper guidance is integrated and synchronised into all relevant areas of Defence business.

Regional Defence Development and Capacity Building

50. The 2016 Defence White Paper increased investment in international defence engagement to improve our ability to coordinate with partners in response to shared challenges, including humanitarian disasters and the effects of climate change,²¹ by:

- a. enhancing the Defence Cooperation Program (DCP) through which Australia supports the development of our neighbours and regional partners' capability and capacity for their own security, including to protect their natural resources.
- b. participating more regularly in multinational exercises in maritime South East Asia and the South Pacific, and in North East Asia.

²¹ Defence White Paper, p.22

- c. increasing the overseas presence of Defence personnel to conduct more liaison, capacity building, training and mentoring with partner defence and security forces.

51. The DCP has formed a significant part of Australia's international defence engagement since the 1960s. The DCP places a particular focus on building partner capacity for peacekeeping, counter-terrorism, maritime security, military governance and professionalism, and – importantly – HADR. The DCP builds regional HADR response capabilities by funding exercises and operations (such as Exercises LONGREACH, VANUATU ALLIANCE, and COASTWATCHERS), supporting regional participation on ADF-led joint training courses, and working with our regional partners to deconflict and maximise the effectiveness of regional capacity building activities.

52. Defence also works closely on environmental security issues with the United States Pacific Command through the annual Pacific Environmental Security Forum (PESF). The PESF gathers representatives from Indo-Pacific nations to create an improved shared understanding of the geostrategic implications of threats to environmental security. The PESF works to develop practical adaptation and mitigation strategies to counter the effects of climate change.

Conclusion - The Imperative for Collaboration

53. The potential for climate change to exacerbate threats to national security is a national and global challenge that will require collaboration. In Defence's view, 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. Defence requires shared risk understanding across agencies, business and communities and our ability to plan for the national security impacts would be improved by continued investment in climate change research and business impact analysis to inform risk understanding by lead agencies. As Defence contributes to whole-of-government disaster response, inter-agency collaboration is also essential, as well as engagement with state and local governments to ensure that collaborative efforts are undertaken to implement longer term climate change mitigation approaches.

54. Defence appreciates the potential for climate change to exacerbate national security challenges and considered climate change as one of the inputs to its Future Operating Environment analysis. One of the four major themes of the Future Operating Environment analysis is 'Resources, Energy and Climate', which includes consideration of how climate change will shape Defence's future operating environment and how it may affect the development of future warfighting capability to protect the nation and its interests.