CENTRE FOR POLICY DEVELOPMENT

report

# The Longest Conflict:

## Australia's Climate Security Challenge

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***Front cover image:*** *Australian Defence Force Emergency Support Force assists residents during the South-East Queensland Floods in 2012, image provided courtesy of Department of Defence*

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## BOXES



## FIGURE



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## ACRONYMS

| | |
|---|---|
| **ADF** | Australian Defence Force |
| **ADB** | Asia Development Bank |
| **DoD** | Department of Defence, Australia |
| **DCP** | Defence Cooperation Programme |
| **IPCC** | Intergovernmental Panel on Climate Change |
| **MoD** | Ministry of Defence, UK |
| **NATO** | North Atlantic Treaty Organisation |
| **ONA** | Office of National Assessment, Australia |
| **QDR** | Quadrennial Defense Review, US |
| **QDDR** | Quadrennial Diplomacy and Development Review, US |
| **RIMPAC** | Rim of the Pacific Exercises |
| **USDoD** | Department of Defense, US |

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## Methodology

Our research was conducted between November 2014 and April 2015. It involved on and off the record interviews with senior defence bureaucrats and defence analysts and analysis of recent US, British and Australian climate security documents. This report is strengthened by the expertise, insights and advice of a range of experts and CPD associates. The authors of this report would like to acknowledge all those who participated in interviews, particularly the following:

Members of the Australian Department of Defence who discussed this topic with CPD and chose to remain anonymous

Admiral Chris Barrie (retired) Former Chief of the Australian Defence Force

Rear Admiral Neil Morisetti, Retired Admiral, former UK Government Climate and Security Envoy and former Interim Special Representative for Climate Change

Sharon Burke, Former Assistant Secretary of Defense for Operational Energy and current Senior Adviser for the New America Foundation

Sherri Goodman, former Deputy Under Secretary of Defense (Environmental Security), current President and CEO of the Consortium for Ocean Leadership, and Executive Director of the Military Advisory Board for the Center for Naval Analyses

Dr Chris King, Dean of Academics at US Army Command and General Staff College and member of the Global Military Advisory Council on Climate Change

Lord Martin Rees, Astronomer Royal, Fellow of Trinity College, Cambridge and Past President of the Royal Society

This report benefitted from independent reviews including from the following:

CPD's Research Committee

Alan Dupont, Professor of International Security, University of New South Wales

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## About CPD

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into practical policy proposals. We then work to convince government, business and civil society of the merits of implementing these proposals.

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# FOREWORD

Australia's longest conflict is our struggle to deal with our climate vulnerabilities at home and abroad. As we enter this conflict we currently do so with at least one eye shut. The Australian Government is to release a new Defence White Paper in late 2015 or early 2016. On current expectations, it will pay only passing and piecemeal consideration to climate change. The 2014 Defence Issues Paper identified many security threats and opportunities facing Australia, however climate change was not one of them. According to Defence officials involved in preparing the White Paper, it is very unlikely that the language of 'climate change' will be used. This is symbolic of the nature of the broader national debate on climate change, which remains fractious and turbulent in terms of developing a coherent policy framework for the nation.

Whilst various unforeseen crises and events are sure to define the remainder of the 21st century, what is undeniable is that it will be a century visibly marked by the onset of climate change. It is a profound security concern for the international community. The world is at a unique turning point. Decades of comprehensive research into the topic have produced an overwhelming international consensus that climate change is occurring and becoming more pronounced. Whilst the international debate, and Australia's own domestic debate, still grapples with what this means in real terms, the first phase of climate change is coming to a close – the period from the early 1900s to the present when average temperatures increased less than 1 degree Celsius, and which brought incremental impact. As we finally start to see momentum to address climate change far more robustly, we also enter the second phase, where the average temperature shift over the rest of the century is likely to be at least 1.5 degrees Celsius and possibly as much as 4 degrees. The 21st century must limit the pace and severity of climate change. This requires comprehensive mitigation as well as adaptation measures. From this juncture onwards, global warming becomes harsher. How harsh it becomes is thankfully still a decision residing with us.

Whilst the parliamentary discussion on climate change increasingly resembles trench warfare, a poll conducted in June 2015 demonstrated that the Australian public already have an understanding of the security impacts of climate change.[1] This is especially so regarding resource security, where 68% of respondents agree that damage to our food supply chain and our agricultural industry due to increases in extreme weather is a national security threat. Similarly, 63% of respondents agree that increased international competition for food, water and energy resources in our region is a national security threat. A total of 58% of respondents respectively agree that damage to the infrastructure of our coastal cities, and increased risks to personal health and safety due to extreme weather, are national security threats. Considering the baseline community understanding of climate security, the persistent parliamentary division on this clear national security threat is concerning.

CPD has written this report considering the future we are likely to inherit over the next two decades, chiefly the security environment. Whilst this report cannot cover the field on a subject as penetrating as climate change, it seeks to make a contribution to the national debate on defence and security policies. It seeks to influence Federal Government policy-making in a prudent and pragmatic manner. Our work focuses on the Department of Defence and the Australian Defence Force. The report advocates for taking the climate security challenge seriously. It outlines overdue action within Australia's defence establishment to manage the risks prudently. The recommendations are overwhelmingly in Australia's national interest and would enable more constructive engagement on this issue in the region.

**Travers McLeod**
Chief Executive Officer

# EXECUTIVE SUMMARY

## Report overview

No threat has ever been as permeating, persistent and omnipresent as climate change. This phenomenon profoundly challenges the way we ensure our peace and security in the 21st century. It is a type of threat that will generate a conflict with which we are wholly unfamiliar. We cannot fight it, but we will be forced to struggle against it. It is a security risk in its own right, yet it is also a threat multiplier, influencing and exacerbating geopolitical risks in our region and in the broader international community. Simultaneously, climate change threatens to undermine our domestic tranquillity and prosperity. Its impact will become more acute by 2030 and worse by 2050. It will pressure us on multiple fronts for at least a century.

> ***'We are not prepared for a Hundred Year War. And that is the scale and breadth of what climate change presents. History confirms that nobody knows how to win a Hundred Year War'.***
>
> Dr Chris King

This report argues Australia is underprepared and underpreparing for what is now a known security threat. Australia must position herself to protect the country and the region more effectively. Australia can be a regional leader in preserving human security by acting in concert with our partners to prepare for the climate security challenges ahead. It is an opportunity for deepened, constructive and non-threatening engagement in Asia. Former Chief of the Australian Defence Force, retired Admiral Chris Barrie argues that Australian defence planning must act upon the reality of the climate security challenge immediately:[2]

*'A Global Change Framework is necessary for defence risk assessment that takes into account geography, hydrology, demography and geopolitics. Military planning is progressing, but neither the world nor Australia are prepared for the serious, large-scale impacts of climate change on vulnerable communities and refugee patterns'*

*The Longest Conflict: Australia's Climate Security Challenge* outlines emerging security threats in a warming world at home and abroad (Chapters 1 and 2), examines how our key allies and other nations are addressing the climate security challenge (Chapter 3) and examines our experience compared to these nations (Chapter 4). In Chapter 5, we recommend a number of policy actions for how our defence establishment can integrate climate security into its forward planning risk management framework. These include the development of a Climate Security Strategy, an organisational shift to prioritise climate security across the civilian structure and the services, and commitments to enhance the effectiveness and preparedness of the Australian Defence Force (ADF) whilst also improving regional cooperation and interoperability with our allies.

The report is infused with the perspectives of non-partisan defence and security experts from the United States (US) and the United Kingdom (UK) who have both considerable experience in or with the armed services as well as practical understanding of climate security challenges. Their insights and observations offer Australia the opportunity to understand good practices in defence risk management and strategic planning when it comes to climate change.

## Entering the longest conflict

Without intending it, we are confronting a threat akin to a Hundred Year War. According to Dr Chris King, Dean of Academics at US Army Command and General Staff College and a member of the Global Military Advisory Council on Climate Change:[3]

*'Western societies are poor at long term security planning. We are not prepared for a Hundred Year War. And that is the scale and breadth of what climate change presents. History confirms that nobody knows how to win a Hundred Year War'.*

There is no contemporary history to draw upon in order to understand how to ensure our own security in a climate-changed world. Domestically, Australia is one of the developed countries most threatened by climate change via extreme weather incidents, severe heat forecasts as well as changed rainfall composition. Regionally, Australia is positioned in one of world's geographies most vulnerable to climate threats.[4] These climatic threats undermine human security, identified by the Intergovernmental Panel on Climate Change (IPCC) as the ability and capacity to provide the fundamental needs required by a community of people.

Climate change is likely to contribute to security risks through extreme weather (e.g. drought), natural disasters (e.g. cyclones) and social destabilisation (e.g. forced displacement of people). The challenge is exacerbated by the large populations and dense urban living that occurs on low-lying coastal areas in the region. In a defence context, this means a likely increase in demands upon defence forces to render assistance to affected nations. British and American security experts have also highlighted that competition over food, water and energy resources will exacerbate geopolitical relations in a region with an increasingly fluid and contested power dynamic.[5] Retired Admiral, former UK Government Climate and Security Envoy and former Interim Special Representative for Climate Change, Rear Admiral Neil Morisetti, offers an assessment of our region and the need for action by Australia:[6]

*'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'.*

Unlike our key allies such as the US and the UK, Australia's defence establishment has not developed a strategic framework addressing climate security. Nor do we have a robust, whole of government plan for climate change. This is despite a building consensus amongst these and other allies on the need to take action from a defence standpoint. The 2014 Defence Issues Paper did not identify climate change as one of the key security threats facing Australia. Similarly, defence officials involved in preparing the White Paper indicated that it is very unlikely that the language of 'climate change' will be used.

Australia's security response to climate change currently comprises individual parts that do not form a coherent whole. The following table is a snapshot of the current situation.

### Table 1: National Climate Security Actions – How Does Australia Compare?

| | Action | United States | United Kingdom | Australia |
|---|---|---|---|---|
| **General** | Climate change integrated into strategic policy development | *Implemented* | *Implemented* | *Not implemented* |
| | Regular environmental sustainability plans | *Implemented* | *Implemented* | *Implemented* |
| **Mitigation** | Ambitious operational emissions reductions targets | *Implemented (-34% by 2020 from 2008 levels)* | *Implemented, but no clear goals or timeframes* | *Not implemented* |
| | Ambitious national emissions reductions targets for 2020-2025 | *Not implemented (only committed to 26-28% reduction by 2025 from 2005 levels)* | *Implemented (50% reduction by 2025 from 1990 levels)* | *Not implemented (5% reduction by 2020 from 2000 levels)* |
| **Adaptation** | Climate adaptation strategy developed | *Implemented – reviewed and update biannually* | *Implemented* | *Not developed* |
| | Climate risks to the defence estate assessed | *Implemented* | *Implemented* | *In progress* |

Our defence establishment should perform two fundamental roles. Firstly it must ensure the preparedness and effectiveness of the ADF to engage in a climate-changed operating environment and to meet future security challenges. Sherri Goodman, former US Deputy Under Secretary of Defense (Environmental Security), current President and CEO of the Consortium for Ocean Leadership, and Executive Director of the Military Advisory Board for the Center for Naval Analyses states that a fundamental way to engage with the defence establishment and the security community on climate change is to frame the discussion in terms of its impact on military operations (particularly force readiness) and as a threat multiplier and catalyst for conflict:[7]

*'Climate change will affect important operational matters including bases and other infrastructure, training and even military exercises. Focusing on the practical aspects that comprise military effectiveness is a pragmatic starting point to a broader strategic discussion'.*

Defence can be a strategic leader that spearheads the development of an overarching policy framework that connects our national security to the climate change challenge. The Department of Defence (DoD) can gather the relevant machinery of government together to collaborate and plan Australia's mobilisation for the longest conflict. In doing so, it can effectively draw on precedents from our key allies who have already undertaken comparative measures.

Forecasting significant changes in the global security environment is built on uncertainty. However the availability of independently developed, peer-reviewed intelligence from the international scientific community on the impacts of climate change is a game-changer.

Future climate security scenarios can now be based on reliable forecasts of what will happen. Residual uncertainty over the specific nature of future climate change incidents is not a valid reason to abstain from strategic defence planning. At the core of all military risk assessments is planning despite uncertainty. Whilst exact dates or locations of climate-related events are unknown, the key factors that will destabilise our stability and security, such as those identified above, are predominately known. Australia's climate risk assessments and contingency planning must identify critical vulnerabilities and adaptive capacities in advance whilst being unable to predict specific disasters and other incidents fully.[8] Similarly, uncertainty over international policy to address climate change is not a valid reason to abstain from planning either as the climatic security risks remains whether global warming is contained to 1.5-2 degrees Celsius or 4 degree Celsius by the end of this century.

**Box 1: Our Recommendations**

1. **Incorporate Australia's climate security challenge into the 2015 Defence White Paper:** start taking this challenge seriously by laying out a roadmap for strategic action in the forthcoming White Paper.
2. **Create a Climate Security Strategy:** develop a holistic strategic approach for addressing climate security with specific implementable measures at the services level and within the civilian structure.
3. **Develop the effectiveness of the ADF to operate in a climate-changed world:** ensure the future ability and preparedness of the ADF to meet climate security challenges and operate in a changed security environment.
4. **Enhance interoperability and coordination with regional allies:** ensure Australia can effectively act in concert with her allies and regional partners to preserve collective human security against climatic threats.
5. **Establish a Climate Change Working Group:** drive departmental change via information exchange, policy discussion and networking within and outside the defence establishment.

# 1. EMERGING CLIMATE CHANGE SECURITY THREATS

The world is experiencing the end of the first phase of a changing climate. Over the 20th century to the present day we have seen an average temperature increase of 0.8 degrees Celsius. We are transitioning now to the second phase. Evidence suggests a temperature increase of 1.5 degrees Celsius above pre-industrial levels is already locked into the Earth's atmospheric system, and that a certain array of climatic impacts 'may now be unavoidable'.[9] Mitigation measures are now at best targeting a restriction of temperature increases to 1.5 – 2 degrees Celsius by 2100 to avoid the very worst climatic impacts.

## The longer term climate change threats to human security

The IPCC identifies with *high confidence* a suite of climatic risks that will eventuate if the temperature increases by 1.5 to 2 degrees Celsius:[10]

- *Rising sea levels:* large and potentially irreversible increase in levels due to ice sheet loss.

- *Increased prevalence and frequency of extreme weather events*: including
  - sudden, high impact incidents such as coastal flooding, hurricanes, storm surges, bushfires and heatwaves; and
  - enduring incidents with ongoing impact such as drought.

- *Continued destruction of ecosystems and corresponding loss of biodiversity*, including:
  - the loss of marine and coastal ecosystems and biodiversity; and
  - the loss of terrestrial and inland water ecosystems and biodiversity.

Climatic impacts fundamentally undermine and erode human security. The 2014 report from the IPCC includes a chapter on the human security implications of climate change. It defines human security as 'a condition that exists when the vital core of human lives is protected, and when people have the freedom and capacity to live with dignity'.[11] The IPCC chapter concludes that '[h]uman security will be progressively threatened as the climate changes,' and that '[c]limate change will lead to new challenges to states and will increasingly shape both conditions of security and national security policies'.[12]

The above climatic risks will have a severe aggregate impact on human security in the following ways:[13]

- *Morbidity and mortality will increase.* For example*:*
  - low-lying coastal zones and floodplains will be increasingly vulnerable to storm surges, coastal flooding, and sea level rises.
  - large urban populations will experience severe ill-health and disrupted livelihoods during periods of extreme heat and during severe weather incidents such as flooding.

- *Vital infrastructure networks and critical services will be under heightened stress and breakdowns will rise:* This will include damage to economic infrastructure such as electricity and water supply, as well as social infrastructure such as health and emergency services.
  - Increasing natural disasters in coastal areas will result in rising insurance premiums which may ultimately render some areas uninsurable. Further, reinsurance options for insurance companies in such areas will become increasingly limited, leading to an underinsurance crisis.

- *Food insecurity will increase*, including*:*
  - the breakdown of food systems due to precipitation variability, temperature warming, as well as extreme weather incidents like drought and flooding; and
  - the decline of agricultural productivity, affected by insufficient access to drinking and irrigation water for farmlands.

- *The overall quality of life will degrade:* the aggregate of all the above impacts is a sharp decline in living conditions for populations in coastal communities, large metropolitan areas and rural communities.

Many of the worst projected climate impacts occur if warming exceeds 2 degrees Celsius.[14] On current trends, the world is on track a more drastic temperature shift in excess of 2 degrees (see box below).

In applying the security lens to climate change, we couple the traditional notion of national security with the unique challenges of a new century. Human security, as it is applied by the IPCC, acknowledges a simple reality – that the dignity of the life of the individual, and his or her ability to meet personal needs, will be corroded on a personal and communal level by climate change. Climate change is unlike traditional conflict because it is not armed conflict. Nevertheless, it has the features of such conflicts both in terms of its impact (e.g. extreme heat leading to loss of life) and aftermath (e.g. in the wake of storm surges or natural disasters). As we will see, climate change may also make traditional conflict more likely.

**Box 2: A 'four degree world'?[15] Temperature estimates to end of the century**

The scale of the security threat depends on two temperature scenarios. The difference between the two scenarios is influenced by the level of action expected by the international community to address climate change in coming years. The first estimate is based on global average temperatures increasing by only 1.5 to 2 degrees Celsius by the end of this century. This estimate relies on international policy efforts (particularly from the largest emitting nations) evolving to adopt comprehensive, sustained mitigation measures that substantially reduce greenhouse gas emissions more aggressively. As recent studies have shown, this target remains out of reach on current emissions estimates.[16]

The second temperature estimate is that the world is heading for a four degree Celsius temperature rise by the end of the century. This presumes that the international

community will not significantly improve its mitigation efforts within an adequate timeframe to have a lasting effect on the century's climate. The ramifications if this eventuates will be catastrophic, involving a more severe degradation of human security than forecast by the IPCC in the 1.5-2 degree scenario. The same types of risks will materialise, but on a harsher scale.

## Australia's external dilemma - Asia is a frontline for climate change crises

So often marked by the 'tyranny of distance' in our history, the view of Australia's geographic position has shifted in the past decade. The current belief is that Australia is uniquely located to capitalise on the unfolding economic expansion in East Asia. Missing from the assessment of Australia's geography is an explicit understanding of the climate security challenge confronting our region and us.[17] Climatic risks transcend borders and shipping lanes, and threats that undermine the human security of our partners and neighbours will impact upon Australia. Whilst developed nations are far from immune to climate security threats, these are likely to be felt most acutely in fragile states - those countries least developed with unstable or vulnerable communities - that will be considerably exposed to climate change and far less capable to respond.

**Box 3: A climate-changed Asia: how the experts see it**

Whilst Australia may be lagging, senior defence experts overseas are acutely aware of Asia's climate security dilemma.

Retired Admiral, former UK Government Climate and Security Envoy and former Interim Special Representative for Climate Change, Rear Admiral Neil Morisetti, offers an assessment of our region and the need for action by Australia,[18]

*'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'.*

Dr King, Dean of Academics at US Army Command reaffirms the dilemma:[19]

*'In conducting threat assessments across the different regions of the world, the Pacific Rim always presents the scariest analyses of how it will be affected by climate change. It will be severely impacted by extreme weather, rising sea levels and changing rainfall compositions, concurrent with population growth and urbanisation, all of which add complexity to the problems presented by climate change'.*

During a 2013 interview, Admiral Locklear, Commander of the US Pacific Command, identified climate change as the biggest long-term security threat in the Pacific Region.[20] In his March 2015 congressional testimony, Admiral Locklear stated that the Indo-Asia-Pacific region accounted for over 40 per cent of reported natural disasters worldwide, and

that this high tendency for disasters coupled with population density in coastal areas presented a significant long term climatic security challenge.[21]

Southeast Asia and Oceania – including Australia's neighbouring island nations of the South Pacific - are considered highly vulnerable to climate change. These sub-regions compromise a litany of highly vulnerable communities exposed to specific climate risks including a combination of the following:

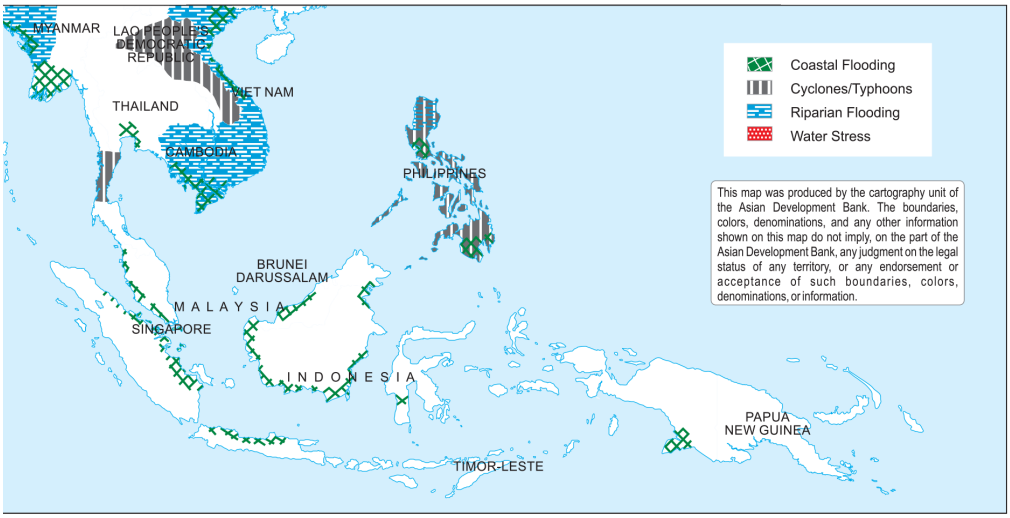
- food and water shortages;
- rising sea levels, storm surges and extreme weather events leading to humanitarian disasters requiring international assistance; and
- increased frequency of bushfires, droughts, floods, impacting particularly on the Australian continent.[22]

**"There is a strong correlation between areas most at risk from natural hazards and areas at greatest risk of climate change impacts"**

Further, Asia is acutely vulnerable because of its exposure to climatic risks which significantly threaten densely populated, urbanised areas as well as economically productive agricultural regions. According to the Asian Development Bank (ADB), the Asia-Pacific is the global area most prone to natural disasters both in terms of absolute number of disasters as well as populations affected.[23] For instance, 7 out of 10 of the world's most vulnerable countries to climate change and natural disasters are in the Asia-Pacific.[24] There is a strong correlation between areas most at risk from natural hazards and areas at greatest risk of climate change impacts. This is exacerbated by the large populations and dense urban living that occurs in the region, particularly on low-lying coastal areas vulnerable to floods and storm surges (see Figure 1). Approximately 600 million people, live in low elevation coastal zones.[25] One recent study estimated that this population would reach approximately 879 million-949 million by 2030, with around 70% of people residing in Asia. [26]

Asia is the most exposed region to low elevation climatic impacts in terms of population and assets.[27] Between half to two-thirds of Asia's cities with 1 million or more inhabitants are exposed to one or multiple hazards, with floods and cyclones the most important.[28] Asia has more than 90 per cent of the world's exposure to tropical cyclones.[29] In many parts of Asia, around one-third of the population live in low-lying coastal areas that are highly susceptible to both storms and flooding and climate induced sea-level rises.[30] Globally the top five nations in coastal low lying areas, classified by population, are all in Asia: Bangladesh, China, Vietnam, India and Indonesia.[31] These countries are key strategic and economic partners for Australia. National agencies in the region, as well as the ADB, concur that the region contains many 'climate hotspots', as well as existing cases of countries struggling to deal with natural disasters exacerbated by climatic variability, including cyclones, droughts and extreme rainfall.[32]

**Figure 1: Coastal vulnerability in South-East Asia.** An example from the ADB of coastal vulnerability for Australian neighbours in South-East Asia.[33] The figure demonstrates that important partners to Australia such as Indonesia, Philippines and Vietnam are significantly exposed to natural disasters and flooding.




> ***'Climate change may exacerbate emerging humanitarian and security issues elsewhere in the world, leading to increased demands on Australia for aid, disaster relief and resettlement'***
>
> Australian Academy of Science

## The Perfect Storm

Population growth is likely to increase the scarcity of fundamental resources and will compound climate vulnerability. The US National Intelligence Council identifies a nexus of resource scarcities. It forecasts that the growing interaction between food, water and energy and climate change will be one of four 'overarching megatrends' that will shape the global strategic environment by 2030.[34] The Council warns that over this time, '[d]emand for food, water, and energy will grow by approximately 35, 40, and 50 per cent respectively owing to an increase in the global population and the consumption patterns of an expanding middle class.'[35] The geopolitics of East Asia will be increasingly concerned with addressing this resource scarcity nexus.

Shortages of food, water or energy alone are sufficiently dangerous to geopolitical instability, let alone the inter-play of the three together compounded by ongoing climate change. Sir John Beddington, former UK Government Chief Scientific Adviser, has described this as 'The Perfect Storm'.[36] A useful example is energy insecurity, which will be driven by booming regional populations and intensifying competition for energy sources by states. Energy infrastructure will come under increasing pressure due to both these demand problems and also the strain of climate impacts such as extreme weather episodes and natural disasters. The result is that availability of conventional energy sources becomes more problematic, particularly for developing states.[37] It is a trend likely to be felt more sharply by low-income and rural or remote communities.

Layered on top of this at the international level are the ongoing major negotiations regarding the placement of limitations on energy emissions. According to the Brookings Institution, these have 'become central to the relations between major powers'.[38] Sharon Burke, former Assistant Secretary of Defense for Operational Energy and Senior Adviser for

the New America Foundation, is prescient on the matter of energy insecurity and its destabilising effects on geopolitical dynamics:[39]

*'Social and political stability relies on people's ability to turn the power on. If you can't stabilise the energy supply, you can't stabilise the country. The US experience in Iraq taught us that'.*

Ms Burke envisages two key scenarios demonstrating where energy insecurity may affect international stability in Asia.[40] Firstly, the countries that currently produce the world's energy are not immune to domestic instability. Future shortages threaten to aggravate internal instability, which will have significant security ramifications for customer nations. Secondly, the instability of nations that suffer from acute energy poverty will have a spill-over effect on their neighbours. A key case is Pakistan, which has acute energy shortages exacerbated by armed opposition groups who target energy infrastructure. Increasing destabilisation in Pakistan - a pivot state between Central and South Asia – will contribute to instability outside its own borders, affecting Australia's strategic partners such as India and even China. This is but one part of the resource scarcity challenge, and the security risk grows significantly with the integration of food, water and climate change into this nexus.

Sharon Burke points out the challenge from the US perspective:[41]

*'The Pentagon still needs to do a lot of work on resource insecurity and its effect on potential future conflicts. This type of planning was not done for operations in Iraq and Afghanistan and the US had to rapidly play catch-up once the mission had already started.'*

**One example from Syria is striking, it estimates that 50,000 Syrian families migrated from rural to city areas in 2010 (prior to the civil war) after suffering the impact of prolonged drought on agricultural livelihoods.**

## Climate change as a threat multiplier

Climate change undermines human security via disruptions such as the degradation of freshwater resources, a decline in food production, rising sea-levels, increased floods and storms surges, and environmentally-induced displacement. Whilst these disruptions are threats in their own right, they may also influence the creation of new 'conflict constellations'.[42] For example, the prospect of forced displacement involving climate change has significant security implications, especially in densely populated vulnerable regions such as Asia and the Pacific.[43]

Some analysts argue these problems have the potential to generate direct conflict between states.[44] It is more commonly argued, however, that these new conflict constellations will be 'threat multipliers' by exacerbating political instability in weak states and regions, whilst hindering development in the poorest parts of the world.[45]

Dr King, Dean of Academics at US Army Command offers the following analysis:[46]

*'Several researchers have stated that it is very likely that climate change had a substantial influence on the Arab Spring, in particular the Egyptian and Syrian uprisings. Prolonged droughts and subsequent water shortages across the globe contributed to raising food prices which generated political instability within these societies. This is hugely significant considering how these regional conflicts have unfolded with the emergence of the likes of ISIS'.*

There is evidence emerging of 'a compelling case that the consequences of climate change are stressors that can ignite a volatile mix of underlying causes that erupt into revolution'.[47] It has been suggested for example, that a once-in-a-century drought in China influenced

the uprisings in Egypt: Chinese drought conditions lead to reduced domestic wheat production, subsequently contributing to global wheat shortages and eventually sharp increases in bread prices in Egypt, the world's largest wheat importer.[48] Similar examples reveal climate change correlations with instability in Libya (water insecurity) and in Syria (prolonged local drought).[49] Although one might query the analysis, one can contemplate how climate change may become a threat multiplier through the butterfly effect of local hazards globally.[50]

Environmental problems transform into security problems because they threaten to intensify global distributional conflict and disturb existing balances of power. These types of problems have the potential to be highly problematic in East Asia, where the regional balance of power is increasingly fluid and contested with the emergence of new major powers, and which is greatly exposed to climatic threats.

## Problems without borders

Australia is only beginning to comprehend the scale of the challenge that awaits us. A 2015 assessment from the Australian Academy of Science predicts that 'climate change may exacerbate emerging humanitarian and security issues elsewhere in the world, leading to increased demands on Australia for aid, disaster relief and resettlement.'[51] There is currently a dearth of strategic planning within governments dealing with the climate security dilemma. Former Chief of the Australian Defence Force, Admiral Chris Barrie argues that Australian defence planning must act upon the reality of the climate security challenge, including international co-operation:[52]

*'A Global Change Framework is necessary for defence risk assessment that takes into account geography, hydrology, demography and geopolitics. Military planning is progressing, but neither the world nor Australia are prepared for the serious, large-scale impacts of climate change on vulnerable communities and refugee patterns'*

Whether in relation to resource scarcity, forced migration due to extreme weather or exacerbated geopolitical instability, Australia must prepare for a changing security environment in Asia. We must also prepare for a higher level of 'humanitarian' deployments. Our best strategic approach is for Australia to be a regional leader in preserving human security alongside our partners in preparing for a climate changed world. We have the opportunity for deepening our security ties throughout Asia in a way that is constructive, sustainable and non-threatening. Collectively working on regional preparedness serves to bolster regional stability and human security. Shifting our thinking to become a regional leader in this way can lay the foundation for a more coherent and clear doctrinal framework for our regional engagement as a whole. Our approach to international policy lacks a vision necessary to prudently steward Australia through a suite of known security challenges whilst building contingency plans for unforseen future crises. Concerted action is required by Australia to address our climate insecurity. This starts with understanding our own unique climate vulnerabilities. We expand on the Australian context in the next chapter.

**Box 4: Climate change, displacement and the effect on national stability**

Certain countries in Asia are at heightened risk of internal displacement because of dense populations residing in coastal and/or floodplain areas that are vulnerable to the onsets of climate change, such as Bangladesh. The ADB estimates that between 2010 and 2011, over 42 million people were displaced due to 'sudden-onset climate related and extreme weather events'.[53] Whilst causality is difficult to determine conclusively,[54] the internal displacement of people within their country of residence is likely to be the dominant feature of climate-induced migration.

The 2014 IPCC Report states that 'displacement risk increases when populations that lack the resources for planned migration experience higher exposure to extreme weather events, in both rural and urban areas, particularly in developing countries with low income'.[55] One example from Syria is striking, it estimates that 50,000 Syrian families migrated from rural to city areas in 2010 (prior to the civil war) after suffering the impact of prolonged drought on agricultural livelihoods.[56]

A ground-breaking collection of collaborative essays produced in 2013 by the Center for Climate Security, the Center for American Progress and the Stimson Center explores the complex connections between climate events and enablers of the Arab Awakening, including migration:[57]

*'Even if most climate migrants—people displaced by the slow or sudden onset of climate change—move only short distances, these shifts have the potential to alter political dynamics, increase ethnic tensions, or provoke clashes over resources.'*

# 2. THE HOMEFRONT: AUSTRALIA'S SECURITY CHALLENGE

## Our history of climate change

Australia is already experiencing climate change related incidents and trends, including extreme heat, bushfires and flooding. According to the Australian Climate Council, these were all exacerbated by climate change and are likely to become more prolific in the future.[58] This is confirmed by the CSIRO's 2014 *State of the Climate* report, which found climate change impacts are already evident:[59]

- Australia's climate has warmed by 0.9 degrees Celsius since 1910. The frequency of extreme weather has changed to encompass more extreme heat and fewer cool extremes. More frequent, prolonged and intense heatwaves have been recorded since 1950. Average temperatures are expected to continue to increase, with more hot days and fewer cool days. Increases of between 2.2 and 5 degrees Celsius are possible if global emissions are not significantly curbed.
- Extreme fire weather has increased and the fire season has lengthened across much of Australia since the 1970s. Days of extreme fire weather are predicted to become even more frequent, potentially by as much as 100% to 300% under a business-as-usual global emissions scenario.
- Average rainfall has increased slightly since 1900, with the biggest increase in the northwest. However, there has been a decrease in the main agricultural regions of the southeast and southwest. Further decreases are likely in southern Australia of up to 30%, leading to increased incidence and duration of droughts. At the same time the frequency and intensity of extreme rainfall is projected to increase, leading to more regular and serious flooding.
- Observed sea-level rises vary around the country, with rates commensurate with the global average rise of 0.225 metres since 1880 recorded in the south and east, with greater increases in the north. By 2100, sea-level rises around Australia are predicted to be consistent with the global projected rise of 0.52 to 0.98 metres.

Some of the strongest international evidence on the extreme weather effects of climate change draws on the Australian experience. One study demonstrated with considerable confidence that climate change was the likely cause of the 'extreme summer heat' in Australia in 2013, with humans increasing the risk of the heatwave at least fivefold.[60]

The economic cost of climate change is increasingly evident in Australia. A key example is the insurance sector, in particular North Queensland and its exposure to natural disasters. Between financial years 2005/06 and 2012/13, home and contents insurance premiums for North Queensland residents increased by 80 per cent, compared to an average of 45 per cent for Brisbane residents, and an average of 12 per cent in Sydney and Melbourne.[61] These increased prices signal the insurance sector is taking the risk of climate-induced disasters seriously. The Assistant Federal Treasurer acknowledged in February 2015 that 'natural disaster risk – and in particular cyclones – is likely to be the predominant driver of these price increases'.[62] Increasing natural disasters in North Queensland and other parts of Northern Australia are reducing the availability of reinsurance for the insurance companies.

The risk is that whole areas will eventually become underinsured or even uninsurable. This will occur either through heightened premiums becoming unaffordable for residents, or by a lack of insurance availability as companies withdraw regionalised services from the market. Ultimately, it exposes state and federal governments to the risk of having to financially compensate uninsured victims after disasters, hence becoming the insurer of last resort.

Preparing for a climate-changed future is not an abstract concept. It is playing catch-up on what has already happened, and which will happen with greater veracity and economic cost unless concerted action is taken.

## The time for strategic planning is now

> **Whilst we cannot identify the specific timing and location of extreme weather events and similar climate-induced disasters, we have sufficient scientific intelligence to identify the critical vulnerabilities and prepare contingencies.**

The defence and security establishment are predisposed to plan for the long term. As a result, they are well positioned to use military planning processes to prepare for climatic threats to our human security whilst concurrently adapting to a changing climate.

The previous section described climate change as a threat multiplier. By the same logic, actions taken to adapt militaries to cope with climate risks and to become more resilient in changed operating environments can be thought of as 'force multipliers.' Force multipliers are adaptive actions that increase the capacity of a nation's defence and security apparatus to fulfil national security objectives or mitigate security risks. Actions such as adopting energy efficient technologies and even decentralised renewable energy have both mitigation and adaptation benefits by reducing emissions on the one hand whilst reducing the dependence upon conventional or extended supply chains on the other.

Strategic planning must therefore seek to minimise threat multipliers and maximise force multipliers. A crucial element is the need to manage risk, and commence the planning as soon as possible despite residual uncertainty. We have sufficient scientific intelligence to start this process.

As outlined earlier, either of the two main global warming scenarios presents an ominous security environment. The threat multipliers have already been broadly identified for a range of relevant, credible climate scenarios. It is no excuse to abstain from planning because the precise likelihood of such scenarios occurring is unknown.[63] Inaction creates longer term insecurity. Rear Admiral Neil Morisetti is insightful on this issue:[64]

*'In order to provide a roadmap for achieving stability, an effective national security strategy needs to address all issues that pose a risk to national interests and wellbeing. The evidence is already there demonstrating the dangerous and long-lasting climate security risks. If a national security strategy does not reflect these risks it is fundamentally flawed and undermines a nation's ability to achieve longer term stability'.*

**Box 5: Thinking ahead: Energy scarcity and the ADF**

The ADF is not removed from energy supply chain pressures. Australia's climate security challenge also involves understanding and preparing for energy scarcity – our military can be at the forefront of adaptation. The risk posed by energy shortages was acknowledged with the release of the Defence Energy Integration Framework in 2013. The Framework was created by a joint Australian Public Service and ADF team as a risk management approach to the ADF's energy usage. It acknowledges that energy is 'critical for Defence missions' and that 'Defence's need for sufficient quantities of the right energy at the right time to be able to conduct operations is a significant and exploitable vulnerability'.[65] Chief Developer of the Framework Colonel Neil Greet acknowledged the specific risk energy supply disruption could pose to the ADF:[66]

*'If future energy supply chains were interrupted during the course of an operation – by vectors as diverse as natural disasters, human pandemics or enemy action – the Defence response might be constrained in the short term by the lack of a contiguous energy supply. Any such disruption may not necessarily occur on Australian territory'.*

At less than 60 days, the average energy stockholdings are 'relatively small' for both the Army and Air-Force.[67] The Framework does not explicitly address climate change but at least begins to highlight the strategic realities of maintaining the ADF's supply chain into the longer term where the ADF could face concurrent and competing pressures to respond to climate-induced incidents at home and abroad.

## The impact on the ADF: preparing for trouble on multiple fronts

Australia has a long and meritorious history of deploying the Australian Defence Force (ADF) for international peace keeping, humanitarian assistance and domestic disaster relief. The effective deployment of the ADF in these situations has significantly contributed to our peace and stability. The impact on human security generated by climate change will inevitably increase the demand on the Australian Government to deploy the ADF for such missions in coming years. As professional and valuable as the ADF is, it remains a military force with limited capacity to deploy assets, particularly regionally.

The Australian Strategic Policy Institute (ASPI) has identified the impact of Australia's climate security challenge on the ADF, in particular the fact that 'the ADF will face new demands and stresses on its force structure, personnel and roles.'[68] With respect to future missions, ASPI found the following:

- *Disasters at home:* increased frequency and severity of extreme weather in Australia will require the ADF to plan for a greater role in disaster relief.
- *Disasters, displacement and instability in the region:* climate-induced population displacement, resource wars and the weakening of already fragile states could generate regional instability, necessitating greater ADF involvement in regional stabilisation missions.
- *The risk of multiple and concurrent demands at home and abroad:* the ADF may have to respond to concurrent climate-induced disasters, such as bushfires in South

Eastern Australia and flooding in Northern Australia or somewhere else in the region.[69]

The key risk to the ADF is the very real prospect of multiple, concurrent disasters within Australia and within the region, and the contemporaneous demand for peace-keeping, stabilisation and disaster relief missions. Far larger armed forces and defence establishments have been felled by the challenge of engaging conflict or strife on multiple fronts. As climate change impacts intensify it would be naïve to assume our ADF is immune to the above scenario.

ASPI has outlined examples of the impact climate change may have on the ADF without necessary planning.[70]

- *detrimental impact on force readiness and effectiveness:* tougher environmental conditions will endanger the health and safety of defence personnel and effect the performance and longevity of equipment and infrastructure. This will require new health, safety and training procedures and adaptation and acquisition strategies to account for climatic factors such as sea-level rise and increased extreme weather; and
- *detrimental impact on ability to deploy:* potential disruptions to energy supplies will necessitate the decentralisation of energy generation, a shift to renewable energy sources and energy efficiency measures.

There is also the risk that domestic or regional crises will be exacerbated by any inability of the ADF to respond, due to factors such as over-stretched capacity or energy shortages leading to immobilisation (or a combination of both). The impact of disasters, or onset political or social instability, may be prolonged in this event. For instance, the intensity or duration of a disaster may prevent the defence force from sustaining relief operations.

As we will see in the next chapter, Australia is fortunate in that it can examine successful climate change security strategies that key allies such as the US and the UK have already created and are implementing. Their measures include action to adapt their militaries. This presents Australia with the chance to adopt good practice and accelerate our preparedness with minimum opportunity cost.

# 3. THE CLIMATE SECURITY EXPERIENCE OF OUR ALLIES

## The United States

### Mainstreaming climate change as a security concern

Following Hurricane Katrina in 2005, a number of US government agencies, led by the Department of Defense (USDoD), began integrating climate risks into security considerations in two main ways.[71]

First, climate change was mainstreamed as an issue of strategic importance, by the USDoD[72] and leading defence think-tanks such as the CNA Corporation,[73] the Center for a New American Security[74] and the American Security Project.[75] The mainstreaming of climate security began in 2008 with the Bush Administration's *National Defense Authorization Act*, which requires all defence agencies to consider the effects of climate change in future strategic policy development. Climate security considerations have subsequently featured prominently in President Obama's last two iterations of the *National Security Strategy* (2010 and 2015), the *Quadrennial Defense Reviews (QDR)* of 2010 and 2014, as well as the *Quadrennial Diplomacy and Development Review 2015 (QDDR)*. The 2015 National Security Strategy called climate change an 'urgent and growing threat to our national security'.[76] The QDR states that:[77]

> *'[t]he impacts of climate change may increase the frequency, scale, and complexity of future missions, including defence support to civil authorities, while at the same time undermining the capacity of our domestic installations to support training activities. Our actions to increase energy and water security, including investments in energy efficiency, new technologies, and renewable energy sources, will increase the resiliency of our installations and help mitigate these effects'*

> ***'We are already seeing the negative consequences of climate change, which is a national and global security threat'***
>
> US Quadrennial Diplomacy and Development Review, 2015

USDoD also emphasises the need for ambitious reductions in global emissions to lessen the severity of climatic destabilisation. Recently it warned climate change could 'create an avenue for extremist ideologies and conditions that foster terrorism' by undermining already fragile governments or disrupting stable governments.[78] A similar strategic narrative around climate change has been produced by the US State Department. Its QDDR identifies 'Mitigating and Adapting to Climate Change' as one of its four strategic priorities. The chapter dealing with climate change states that 'We are already seeing the negative consequences of climate change, which is a national and global security threat' and reinforces the USDoD notion of climate change as a threat multiplier.[79] This demonstrates an increasingly coherent and coordinated policy response within the US Federal Government in the areas of defence, security, diplomacy and development.

The second dimension of the US response to the climate security challenge is the regulatory measures stemming from President Obama's *Executive Order 13514* signed on 19 March 2015. It requires all federal departments, including USDoD, to reduce operational and non-operational emissions, evaluate risks posed by climate change, produce an annual environmental sustainability plan and develop a climate change adaptation plan. Federal departments are required to ensure 25 per cent of their total energy consumption is from clean energy sources by 2025.[80] The USDoD's 2013 *Sustainability Performance Plan* defines

a range of more ambitious climate security objectives considered necessary to maintain readiness in the face of climate change. These include:[81]

- reducing greenhouse gas emissions from stationary energy, land vehicles, aircraft, ships and other equipment by 34% by 2020 from 2008 levels
- reducing the use of petroleum-based fuels in non-tactical vehicles by 30% by 2020 from 2005 levels
- decreasing the energy intensity of defence facilities by 37.5% between 2003 and 2020
- producing or procuring 18% of electricity consumed by defence installations from renewable sources by 2020, and
- a range of other targets to reduce water consumption and solid waste production.

Currently, most of these targets are on track to be met or exceeded, while energy, water and waste production efficiency programs are already generating significant cost savings. In terms of national greenhouse gas emissions reductions these achievements are significant as the military is the largest single emitter in the country.

In 2012 and 2014, USDoD published *Climate Change Adaptation Roadmaps* ('Roadmap'). These outline:

- a policy framework for climate change adaptation planning;
- assessment of agency vulnerability to climate change risks;
- a process for adaptation planning;
- actions to better understand climate change risks and opportunities; and
- actions to address these risks and opportunities.

The 2014 *Climate Change Adaptation Roadmap* sets three key adaptation goals covering planning, operations, training, testing, infrastructure, natural resources and procurement. These are to:

- identify and assess the effects of climate change on USDoD
- integrate climate change considerations across USDoD and manage associated risks, and
- collaborate with internal and external stakeholders on climate change challenges.[82]

Observers of USDoD initiatives point out that these should not be interpreted primarily, or even partially, as reflecting a new 'green' view of the military. Rather, 'the security view is that climate change represents a disruptive force that has the potential to make operations more costly and time-intensive, and to require further deployments as part of humanitarian assistance and disaster response operations'.[83] Such contingency planning is part of a traditional process of risk management by the USDoD. Its objective is to avoid facing these risks in the future or diminish the scale of such risks, based on the credible evidence on hand regarding climate change.

Whilst a strategic framework such as the *Roadmap* is a significant move forward by the US, its implementation remains problematic. Sharon Burke at the New America Foundation urges caution in prematurely assigning success to the *Roadmap*. Burke insists its language is mostly aspirational, leaving the specific responsibility, timeframe and financial resources for action unresolved:[84]

*'It is positive that the Pentagon has started to assess how climate change will affect installations and military properties however this is not considered core business. It still has a way to go in developing the necessary military strategy to deal with climate change. The Pentagon needs to incorporate a climate-changed world into its future planning, including the development of personnel, weapons and organisational capacity.'*

With the above actions undertaken and policies developed in the past decade, climate change as a national security concern is now taking increasing prominence in the United States. President Obama has placed it firmly on his national security agenda. After making explicit reference to climate security in his 2015 State of the Union Address,[85] the President most recently emphasised the importance of climate security during his speech on 20 May 2015 to the United States Coast Guard Academy:[86]

*'Climate change will impact every country on the planet. No nation is immune. So I'm here today to say that climate change constitutes a serious threat to global security, an immediate risk to our national security. And make no mistake, it will impact how our military defends our country. And so we need to act - and we need to act now'.*

In this landmark speech President Obama flagged that the climate science is conclusive, that climate change is a threat multiplier and that the military must adapt and respond to the security challenge.

### Practical measures to build resilience

The USDoD has also started to actionable, practical measures addressing the vulnerability of its assets to climate change. For instance, it has commenced an assessment of military installations and properties, such as its naval station at Norfolk, Virginia, which is vulnerable to future flooding and subsidence due to sea level rises.[87]

This has been complemented by practical changes such as the adoption of a universal building code on construction and compliance, which requires consideration of these and other climatic factors.[88] These measures are to date the most direct attempts by the USDoD to address climatic effects on its force readiness and effectiveness. Additionally, the significance of strong executive leadership by President Obama, who publicly acknowledges the intelligence received from the USDoD on the issue, cannot be understated.

## The United Kingdom

### Assuming international leadership on the climate security challenge

The British Ministry of Defence (MoD) has factored long-term security implications of climate change into its planning for several years, notably within its Strategic Trends Programme. The 2008 UK *National Security Strategy* declared:[89]

*'[c]limate change is potentially the greatest challenge to global stability and security, and therefore to national security. Tackling its causes, mitigating its risks and preparing for and dealing with its consequences are critical to our future security, as well as protecting global prosperity and avoiding humanitarian disaster.'*

The Strategy identified climate change as a security threat for its potential to:

- increase the frequency and severity of extreme hazards;
- challenge the rules-based international security system;
- generate increased population pressure on urban areas and increased pressure on food and water supplies;
- increase cross-border movement of people as basic resources become scarcer;
- generate territorial disputes arising from the melting of sea ice and the opening of new sea lanes;
- undermine energy security; and
- facilitate new disease vectors.

The 2010 update to this strategy continues to give prominence to the UK's climate security challenge and also places importance on Britain demonstrating international leadership.[90]

In 2008 MoD also developed a *Climate Change Strategy*, which sets out two key mitigation and adaptation objectives:

- to reduce greenhouse gas emissions from Defence activities to a negligible level; and
- to ensure that Defence activities continually adapt to a changing climate such that operational capabilities are not compromised.[91]

**Britain instigated the first ever debate on climate change in the UN Security Council in 2007.**

While this document does not stipulate similarly ambitious mitigation and energy efficiency targets as those adopted by the US military, it does go into some detail about how significant improvements will be achieved. This has been built upon by subsequent Climate Change Strategies released in 2010 and 2012 respectively. Sustainability and adaptation measures for the defence estate have also been outlined in the *MoD Sustainable Development Strategy* and the *MoD Adaptation Plan Update 2011*, the latter as part of a whole of government approach to national adaptation planning.[92]

## Security is part of a national framework for action

The UK climate security strategy is better integrated into the national climate policy framework than its US counterpart because security concerns are directly incorporated into a broader framework for national action. This is reflected in Britain's ambitious commitment to cut national greenhouse gas emissions by 50% by 2025 from 1990 levels, compared to the US commitment of 26-28% by 2025 from 2005 levels (Australia's commitment is a 5% cut by 2020 from 2000 levels). Similarly, these ambitious domestic policies reaffirm the UK's explicit intention to securitise climate change in order to create the impetus for strong international action.[93] This intent saw the UK instigate the first ever debate on climate change in the UN Security Council in 2007.[94] The UK is proactive in the international sphere in addressing its climate security challenge. It has been a consistent proponent of strong emissions reductions within the international climate negotiations, increased the portion of its overseas development assistance assigned to climate mitigation

and adaptation projects, and joined with other European powers such as Germany to work on multilateral climate security arrangements.[95]

In the UK, meeting the climate security challenge has also attracted support from all of the main political parties. This was demonstrated by the continuation of the climate security agenda, and the wider UK commitment to strong national mitigation policies and international action, with the change from a Labour to a Conservative-Liberal Democrat government in 2010. The leaders of the three major parties all signed a joint 'pledge' to continue to tackle climate change as a threat to national security and prosperity ahead of the May 2015 general election.[96] In contrast, while senior military figures from across the partisan divide in the US have endorsed the climate security agenda, this has not been broadly reflected within the two major parties.

**"The examples of the US Roadmap and the UK Climate Change Strategy reveal the necessity of an overarching document framing climate change as a security threat and outlining a plan addressing the challenge"**

## Lessons for Australia from the US and UK experience

The US *Roadmap* and the UK *Climate Change Strategy* reveal the necessity of an overarching document framing climate change as a security threat and outlining a plan addressing the challenge. In Australia, any such document must contain specific, targeted language that outlines roles and responsibilities, implementation timelines and internal reporting requirements to ensure accountability. To be a truly effective and enabling framework it should also incorporate specific budget measures for implementation items. Sherri Goodman posits that an effective, overarching climate change adaptation strategy can be complemented with separate implementation plans that focus on operational change across the defence establishment.[97] Implementation plans adopted by the different armed services, including actionable items at command level, would ensure that the overarching strategy is delivered via workable, operable solutions that address climate security risks.

The USDoD's steps to assess asset vulnerability and adopt new construction codes are worthy of special attention in the Australian context. These are practical and uncontroversial ways to address climatic threats and enhance the resilience of defence infrastructure to a changing climate. Coordination is vital within defence to ensure the effectiveness of grand strategic planning is paired with practical resilience building at the individual installation level.

The UK experience demonstrates two important points. Firstly, greater cohesion across the political spectrum has been essential. Secondly, climate change has been framed as a whole of society dilemma. Addressing the security implications is one critical part of the national response; it has not been viewed through only an environmental or economic lens.

**Box 6: Other notable climate security responses**

Other countries have also made significant progress in meeting their own climate security challenges. In June 2014 the French Ministry of Defence released a report assessing the risks posed by climate change to France's national security, military operations and procurement strategies. Drawing on the US and UK approaches, the report developed several climate security crisis scenarios and made a set of operational recommendations to the Ministry of Defence.[98]

In our region, Japan has given some consideration to the climate security challenge,[99] although this has not as yet been systemically integrated into the broader human security agenda, of which Japan has traditionally been one of the leading international exponents. Nonetheless, the earthquake, tsunami and nuclear accident 'triple disaster' of March 2011 has forced a revaluation of environmental security in Japan.[100] Whether this will influence the climate security agenda remains unclear.

In September 2014 the North Atlantic Treaty Organization (NATO) declared that:[101]

*"Key environmental and resource constraints, including health risks, climate change, water scarcity, and increasing energy needs will further shape the future security environment in areas of concern to NATO and have the potential to significantly affect NATO planning and operations."*

The security implications of climate change have also been debated in the UN Security Council and General Assembly on several occasions since 2007.

Clearly there is a growing consensus internationally on the need to respond to the security implications of climate change. This represents an opportunity for constructive and non-threatening engagement in the region. To meet Australia's climate security challenge effectively, defence planners should closely examine the climate security actions that have already been taken in other jurisdictions, and seek to meet and then lead the development of regional best practice.

# 4. AUSTRALIA'S SECURITY RESPONSE TO CLIMATE CHANGE: PARTS WITHOUT A WHOLE

Most of the defence officials and experts interviewed for this study acknowledged Australia has not integrated climate security considerations into broader national security and defence strategic frameworks. Indeed, Australia has been unique among developed states because of the absence of a climate and energy security discourse.'[102] The climate security challenge was noted in Australia's last two Defence White Papers (2009 and 2013), the 2013 *National Security Strategy* and the *Australia in the Asian Century White Paper* of 2012.[103] Seemingly the intelligence community has been cognisant of the potential security implications of climate change since the early-1980s with the Office of National Assessments (ONA) especially interested in recent years.[104] In 2014 the Australian Army released *Future Land Warfare Report*. It examined the 'metatrends' that would influence battlefield operations out to 2035 and beyond.[105] Climate change is referenced in the footnotes in the contexts of natural disaster, population movement and the risk of 'rapid climate change'.[106] The Report's inclusion of metatrends as part of an analysis of the future battlefield is forward thinking, but its treatment of climate security is marginal.

> **However, whilst the Defence Issues Paper released in 2014 by the DoD (to inform discussion on the White Paper) identifies many of the key national, regional and global security threats and opportunities facing Australia, it does not include climate change related security risks amongst them.**

Interviews conducted for this report have suggested climate change will not feature in the Defence White Paper. This would mean a regression from, not advancement towards, a systematic approach to address Australia's climate security challenge.

## Insight from within the Department of Defence

Interviewees offered a number of explanations for the absence of a strategic framework. One was that whilst there is significant concern about climate change amongst middle and junior level defence bureaucrats, the defence establishment as a whole remains resistant to 'securitising' climate change.[107] This resistance stems from both those who do not believe that climate change is a serious problem and those who accept the climate science but do not believe climate change should be conceived of as a security issue. Interviewees also noted a widespread reluctance to reconsider the ADF's traditional mission in the context of climate change.[108]

Most interviewees intimated that the most significant factor inhibiting climate security in Australia is the reluctance to embroil the DoD or the ADF in climate change politics, which have become extremely divisive and partisan in Australia in recent years.[109] When asked why the senior ADF personnel have not been prepared to echo the call of the US top brass to make climate change a defence priority, one senior defence department official pointed to the differences in political culture between the two countries. In the US, this official suggested, the defence establishment is pushing very hard publically on climate security largely to force a recalcitrant Congress to take the issue seriously. The US climate security agenda also reflects a history of the USDoD presenting grand strategies and narratives to shape defence planning, whereas the policymaking culture in Australia is generally more technocratic and secretive.[110]

The next Defence White Paper, anticipated to be released in late 2015 at the earliest, offers a key opportunity to re-vitalise the security narrative regarding our climate security challenge. However, whilst the *Defence Issues Paper* released in 2014 by the DoD to inform discussion on the White Paper identifies many of the key national, regional and global security threats and opportunities facing Australia, it does not include climate change related security risks amongst them. Defence officials involved in preparing the White Paper have indicated it is 'very unlikely that the language of "climate change" will be used in the paper given the current political situation.'[111] Indeed, as one interviewee stated, in Canberra currently 'climate change is a dirty word.'[112]

On a positive note those familiar with the White Paper process believe that there will be some piecemeal recognition of specific security threats in Australia and in the region stemming from extreme weather and other climatic impacts, such as sea level rises. They also expect the White Paper to deal with energy security issues and issues impacting the defence estate such as sea level rises whilst obliquely referencing the potential for climate change to cause conflict. The 2015 White Paper will also emphasise 'defence enablers' such as information and communications technology (ICT) and other infrastructure, although it is unlikely that climate change preparedness will be referred to as a key driver for related energy efficient procurement and upgrades.[113]

## Limited efforts to address elements of climate security

Overall, the way the 2015 White Paper is expected to deal with climate change is symptomatic of the limited way Australia's defence establishment has handled the subject for several years. The DoD and the ADF have previously acknowledged the need to undertake infrastructure planning and defence preparedness.[114] The Vice Chief of the Defence Force Group sponsors a Global Change and Energy Sustainability Initiative. Amongst other issues, this attempts to improve the understanding of climate change on defence preparedness. The Initiative is supported by the Defence Science and Technology Organisation and draws upon research done across the services, connects with academia, think tanks and other government agencies such as Commonwealth Scientific and Industrial Research Organisation (CSIRO) or the Office of the Chief Scientist.

The Initiative has made progress in recent years. A notable example of progress from 2012 saw leading climate scientists and defence planners brought together to assess the impact of climate risks on ADF operational capability.[115] Other information seminars have been organised at routine intervals over the past three years.[116] As part of the Initiative, a 'deep-dive' review into defence force resilience was commissioned in early 2015.[117] The deep-dive will support the Force Structure Review that underpins the 2015 White Paper. Whilst these activities demonstrate substantial progress within the establishment, the Initiative remains a poorly resourced project.[118]

In certain instances, the DoD has worked with other forces on discrete climate issues, such as the New Zealand Defence Force and the United States Pacific Command. There is certainly a cognisance within DoD and the ADF of what other actions are being undertaken by the US and other allies. Defence Department officials involved in infrastructure planning

report that work similar to that undertaken in the US has been done on the exposure of the defence estate to climate risks. Yet the vast differences in capacity between the countries means that Australian planning is much less extensive.

Two key infrastructure initiatives have been highlighted by interviewees. Firstly, the Defence Support Group undertook a $2 million study into the effects of sea-level rises on defence bases.[119] Although this research was classified and the report was never made publically available,[120] defence officials have indicated that it covered the climate change readiness of bases and the likelihood of the need for base redevelopment and relocation.[121] Following on from this study, the Department has now begun examining a wider range of climate-related risks to the defence estate, including the risk from bushfires.[122] These studies align with current evidence from the Climate Council. This evidence demonstrates that sea level rises in Australia mean it is likely that low-lying coastal portions of the defence estate are at significant risk of inundation.[123] The increased frequency and intensity of bushfires may also pose a hitherto under-examined risk to the defence estate.[124] Whilst this work proceeds within the department, recent public discussion about managing bases and other defence land, including as part of the current defence estate consolidation project, still eschews any sustained consideration of climate risks.[125]

**"Even the Defence Environmental Strategic Plan 2010-2014 makes limited mention of the impact of climate change"**

Apart from infrastructure planning, other areas identified by interviewees demonstrate Australia's tendency to follow the lead of the US and UK. This includes exploring the potential for renewable energy generation on defence land[126] and ensuring interoperability with the US Navy on its Great Green Fleet programme.[127] The Green Fleet comprises ships and aircraft powered by alternative sources of energy and multiple energy conservation measures, and is scheduled to be deployed from 2016.[128]

There are also examples of where action on climate change was proposed but not implemented or heavily caveated. For instance, in 2009 the ADF announced that it would set emissions reductions targets and develop a 'Defence Climate Change and Sustainable Development Strategy',[129] although neither of these initiatives have ever come to fruition. Similarly, the 'Combat Climate Change' program sought to reduce the ADF's greenhouse gas emissions yet excluded large and significant parts of the organisation such as operational fuel use. In fact, the ADF's emissions actually increased over the life of the program. Even the *Defence Environmental Strategic Plan 2010-2014* makes limited mention of the impact of climate change.[130]

The 2013 *Defence Energy Integration Framework* sets out a risk management approach aimed at ensuring future energy sustainability and security. It identifies vulnerabilities to the supply chain and outlines potential risk mitigation measures for Defence's energy usage. It does highlight the potential for renewables to provide cost-effective, reliable energy. One of the stated risk management measures is that 'Defence will diversify and secure energy supplies in order to minimise risk of energy disruptions and cost volatility'. This includes an investigation of on-site sources of renewable energy for bases, facilities and installations, including solar PV, solar hot water, remote location site-scale solar power generation and wave energy systems.[131] However the Framework also warns against 'a premature shift to alternative fuels' in the short term because they may not be 'supported

by mature industry capabilities and come with uncertain costs'.[132] Overall the Framework also lacks specific timeframes for implementing core actions.

## Reluctance remains

These examples reinforce the perception of an institutional reluctance to address this critical security challenge comprehensively. The sum of the parts that are identified above demonstrate an understanding of the threat, yet without a guiding compass. Australia clearly has some way to go to catch up with the US and the UK to meet the climate security challenge. It is time Australia grappled with the climate security challenge in a much more systematic way.

# 5. RECOMMENDATIONS: PREPARING FOR THE LONGEST CONFLICT

Our five recommendations focus on how to mainstream climate security most effectively within Australia's defence establishment. Our measures are pragmatic, realistic, and draw upon practice from the US and the UK.

Rear Admiral Morisetti offers a suitable starting point for this section:[133]

*'To inform organisational and cultural change in the defence establishment on climate security, the issues need to be effectively mainstreamed. To mainstream the issues, it is imperative to use appropriate language that highlights how addressing the impact of a changing climate should be part of the military's approach to core business. For instance, climate security threats should be packaged in terms connected to reducing strategic risk, reducing overall defence costs and improving operations at the unit level."*

Firstly, DoD must ensure the ADF's effectiveness and readiness to operate in a climate changed future. This involves improving the capacity, capability and resilience of the ADF to engage in a changing operating environment. DoD's risk management approach is the process by which it can meet future climatic threats and improve ADF preparedness.

Secondly, DoD should be a strategic leader within the broader defence and security establishment. It should develop an overarching policy framework intrinsically tying our climate change challenge to our national security. It must gather together the relevant machinery of government such as the intelligence agencies and the CSIRO to collaborate and plan Australia's security approach.

In securitising climate change it would be a fundamental policy mistake to militarise the entire national approach to climate change. That is not the intention of these recommendations. Climate change ultimately remains a broader societal challenge that requires coordinated action across government, business and civil society. This report's recommendations are focused on ensuring our defence establishment plans and prepares for how climate change will impact their line of work in protecting Australia, as well as enhancing Australia's role in advancing peace and security within the region.

## Incorporate Australia's climate security challenge into the 2015 Defence White Paper

Whilst we are yet to see the details of the next White Paper, it is anticipated that there will be a large gap between Australia's climate security challenge and the actual climate change-related content within it. At a minimum, a basic commitment to the preparation of a Climate Security Strategy would be required in the White Paper to start the longer process of development and implementation of such a strategy.

The White Paper will likely emphasise shorter-term procurement necessary to maintain force readiness. Just as beneficial to our national security would be commitments to resilience and adaptation measures required for dealing with the climate- changed operating environment in the future. Examples include a commitment to significantly

improving energy efficiency, or a comprehensive examination of bases and key physical infrastructure at risk from climatic developments.

History suggests one cannot expect too much from a White Paper. Institutional history within DoD indicates poor implementation of previous White Papers, as Chris Barrie points out:[134]

*'In Australia, there is not a good record of long-term implementation, as the policy is simply to write the White Paper rather than actually implement anything'.*

The development of a Climate Security Strategy that emphasises forward thinking as well as practical ADF modifications can assist in overcoming this longstanding problem that Australia has with the Defence White Paper process. Whilst the climate security challenges are not insurmountable, the only result of delayed action is more expensive and more difficult action later.

Given what we know about the early draft, a fundamental adjustment to the next Defence White Paper is required. This is not just for the sake of climate security but vital in order for us to examine regional and global change more broadly. The next White Paper currently stands as another lost opportunity to establish a more sophisticated, holistic, forward-looking strategic framework that identifies future threats both related and unrelated to climate change. It is symptomatic of Australia's continual failure to develop a coherent international doctrine for our regional affairs and to communicate such a doctrine effectively. The absence of an international doctrine undermines our ability to address climate security and other emerging threats. We remain vulnerable to being swept along by crises and events, and to being pressured into action or inaction by expectations of allies and partners alike. As a result, our long-term national security posture is inherently compromised.

## Create a Climate Security Strategy

DoD should develop a comprehensive, holistic approach to climate change security via a Climate Security Strategy. This Strategy would enable the DoD to ensure the ADF's effectiveness, readiness and resilience, as well as position Australia to be a strategic leader in climate security. Such a Strategy would be the overarching framework identifying the broad risks to Australia domestically and internationally. It would also identify the requisite preparedness needed in the ADF to respond. The Strategy should require detailed strategic planning be undertaken within the civilian structure as well as at force level. Specific roles, responsibilities, actionable timeframes and internal reporting requirements should all be identified. As a starting point, this Strategy would examine the following risks:

- the increasing need for national and regional disaster relief;
- identifying where climate change will act as a threat multiplier in the region, including:
  - regional large-scale population increases as well as forced movements and displacements;
  - vulnerable communities at heightened risk of climate change incidents (e.g. extreme weather, drought);

- resource insecurity in the region and potential for political and social instability (food, water, energy);
- potential geopolitical 'hotspots' as a result of climate change and its effects; and
- the overall effect of climate change on the defence estate including preparedness of the ADF across capacity, capability and resilience.

This Strategy can be developed within current Federal Government reporting requirements. All Commonwealth departments and agencies are required to submit a corporate plan once every four years. Amongst other things the plan is to address 'the environment in which [the department or agency] will operate over the period of the plan'.[135] Such plans can include 'geographic or temporal factors that affect the entity and its work'.[136] The requirements allow departments to 'discuss the main external and internal factors that affect or influence its performance' as well as 'explain how risk management will underpin [the department's] approach to achieving their purposes'.[137] Emerging climate security threats faced by Australia clearly fit within the ambit of the requirements for DoD. A Climate Change Strategy could be linked to any Defence Corporate Plan. The four year reporting cycle allows DoD to update the Strategy routinely, including on issues such as:

- material changes in climate change security risks at home and across the region;
- progress the Australian Government has made in addressing individual risks as identified in the Strategy, including reference to further departmental and service level operational plans; and
- the forward planning and preparation for the next reporting cycle.

The DoD can be the key driver to gather together the defence, security and intelligence agencies for collaboration in threat analysis and risk management. If the DoD and ADF are to commence securitising climate change they will need analytical tools accurately identifying specific threats and vulnerabilities as well as broad macro-trends. The capabilities of intelligence agencies such as the Office of National Assessments mean that they are expertly positioned to provide 'actionable information'[138] to the defence establishment. Other institutions should be incorporated into this process such as the CSIRO, who have expert analytical skills in climate change and have already begun mapping future climatic risks.

## Develop the effectiveness of the ADF to perform in a climate-changed operating environment

A Climate Security Strategy will be ineffective unless we ensure the preparedness of the ADF to perform in a climate-changed operating environment. This includes responding to direct climatic security risks and corresponding regional challenges. Ensuring the future effectiveness of the ADF entails three elements:

1) the capability of the ADF to be deployed;
2) the capacity of the ADF to be deployed; and
3) the resilience of the ADF to climatic changes in the operating environment.

These three elements are at the core of the adaptability of the ADF to climate change. Without addressing these three elements, our national ability to use the ADF will be undermined. Admiral Chris Barrie underlines this point, saying that 'any defence strategy for climate change must be inherently linked to ADF capability and capacity over the long term'.[139]

If a reluctance to develop a Climate Security Strategy remains, resilience building at the service-level can be undertaken incrementally from the ground up. Such practical measures can be an effective catalyst for systemic action across the defence establishment. Sherri Goodman highlights the use of pilot programs to introduce incremental change into the way the US defence establishment has responded to the climate security challenge.[140] Pilot programs in Australia can be directed at adaptation and preparedness measures required by the ADF. For example, the military could conduct scenario planning for the displacement of people in small island states in Oceania as sea level rises, including what type of humanitarian assistance and disaster relief will be needed (see also interoperability in the next section). Auditing of military installations to identify vulnerabilities, as well as appropriate adaptation responses, could be undertaken in a similar manner. The USDoD's experience demonstrates that practical and uncontroversial steps can be taken in the short term to improve the resilience of Australian defence assets to climate change factors such as sea level rises, flooding, subsidence and extreme weather incidents.

It is positive that DoD has now commissioned a wider review into climatic risks to the defence estate that we mentioned previously. Within this review, DoD should ensure 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. The scale of DoD's assets is significant, as noted by Dr Bergin of the Australian Strategic Policy Institute:[141]

*'Defence has the single largest real estate portfolio in Australia: hundreds of major buildings, more than 60 bases, tens of thousands of assets and millions of hectares of land embracing five world heritage areas. But Defence infrastructure has been largely designed and built on the assumption of a stable climate with known variability'.*

Auditing the defence estate allows DoD to prioritise different vulnerabilities based on the significance of the asset to the ADF and its level of exposure to climatic risks. Secondary work following on from an audit includes updating building and compliance codes. The successful completion of one or more of the above programs could spur increased action and innovation in other operational areas. Ideally it will lead to systemic change over time.

Presented below in Table 2 are important operational risks that threaten to undermine the ADF's overall effectiveness. These risks can be mitigated through various reduction measures as outlined in the right column. The identified measures cover issues such as improving hard assets and installations, improving energy efficiency and diversifying the energy supply chain, to human capital measures such as workforce capacity planning. They provide a suite of options to improve the ADF's resilience to deal with Australia's climate

security challenge. Whilst a holistic approach is preferable, individual issues could be singled out for further work via the pilot program option outlined above.

**Table 2: The effectiveness of the ADF response to climate change**

| Risk area | ADF vulnerability | Risk reduction measures |
|---|---|---|
| **Capability to deploy the ADF on missions** | Energy insecurity has potential to disrupt supply chains and immobilise military assets. This risk is heightened in remote or harsh locations (e.g. Middle East) or energy poor areas (e.g. Philippines). | ○ Improved energy efficiency of current assets and equipment such as military shelters, base generators, vehicle batteries and operating systems.<br>○ Shift to incorporate increased proportion of renewables on-site.<br>○ Decarbonisation of energy usage in military assets<br>○ Enhanced interoperability with regional allies through combination of above options. |
| | Inadequate equipment and technology to respond to specific threats such as extreme weather and disaster incidents, which negates ADF ability to respond. | ○ Development and implementation of procurement policies which explicitly incorporate climatic threats and identify equipment necessary to address future challenges. |
| | Inadequate supply of relevant, trained personnel for deployment on missions | ○ Workforce capability development including training, education and targeted employment/recruitment of personnel to address identified gaps (also in Capacity). |
| **Capacity of the ADF to respond** | Competing international and domestic demands for humanitarian assistance, disaster support and peace keeping/stabilisation missions that the ADF is unable to supply. | ○ Strategic planning which identifies cascading security priorities for the ADF including triage principles for multiple, concurrent climatic threats.<br>○ Strategic planning with regional allies to identify critical vulnerabilities and development of strategy to enable coordinated future response.<br>○ Workforce capacity development including training, education and targeted employment/recruitment of personnel to address identified |

| | | |
|---|---|---|
| | | capacity gaps (also in Capability). |
| | Degrading of, or damage to, military infrastructure such as bases and ports undermining deployment ability. | ○ Mandatory audit of all military infrastructure to identify those areas at greatest risk to climate change damage.<br>○ Ongoing implementation of adaptation measures to reduce risk of degradation. |
| **Resilience of ADF to climatic changes in operating environment** | Increased difficulty for the ADF to adapt to operating environment both in terms of harshness (e.g. extreme heat) difficulty (e.g. frequent extreme weather events).<br>Physical damage or strain on infrastructure, equipment and other key assets undermines long-term effectiveness of ADF.<br>Risks to the health and safety of ADF personnel undermines capacity and capability. | ○ Audit and modelling to identify current vulnerabilities in assets and equipment.<br>○ Acquisition and adaptation of equipment to withstand tougher environmental conditions.<br>○ Protection and retrofitting of relevant assets.<br>○ Enhanced health, safety and training procedures for ADF. |

Preparing the ADF for a climate-changed world may provide commercial benefits as well. Meeting the climate security challenge offers opportunities for Australia's defence supply industries to develop niche markets and first-mover advantages in the design and production of low carbon defence technologies for both Australia and our allies. Commercial opportunities can be used to bolster the argument for ADF adaptation. DoD can draw together agencies within the establishment such as the Defence Science and Technology Organisation and Defence Materiel Organisation as well as utilising *Team Australia*, a Federal Government defence initiative enabling commercial collaboration between public and private sectors. Collaboration in this way can seek to find commercialisation and export opportunities for Australia's defence responses.

## Enhance interoperability and coordination with regional allies

An overall reduction in human security in Asia as a result of emerging climate change threats is detrimental to the stability of our region, and therefore detrimental to Australia's national security. Amongst our neighbours there is an appetite for international leadership to prevent the worst impacts of climate change. A 2015 international poll of respondents in China, Indonesia, Philippines and India found that 80% of respondents want world leaders to take immediate action without delay to prevent climatic impacts[142]. A staggering 90% of Indonesian respondents sought immediate action by the world's leadership[143]. Similarly, there is an emerging community consensus for Australia to take a leadership role on climate change. In a June 2015 poll 59% of respondents agreed that Australia should play a leadership role in setting ambitious targets to address climate change as quickly as

possible.[144] Australia's climate leadership should extend to advancing as best it can the peace and security of the region.

A vital part of our defence response over coming years is working with our allies and key partners. There is a real opportunity for Australia to deepen its regional engagement and strengthen our partnerships. Australia can be a valued contributor to preserving regional human security via non-threatening engagement and constructive regional cooperation. Bipartisan and sustained commitment to this endeavour can lay the foundations for Australia to finally develop a long-term international doctrine outlining our approach to regional affairs.

The top regional priorities in climate security are developing defence preparedness and improving interoperability. Rear Admiral Neil Morisetti identifies a specific opportunity for Australia:[145]

*'Australia has a military that is highly regarded by its strategic allies and as such, it can provide regional leadership to coordinate with its partners to address climate security challenges. Australia performs well in the areas of expertise, training and joint military exercises, and should use its strong performance to drive greater regional coordination and cohesion in tackling climate security issues such as humanitarian and disaster relief'*

In the immediate future, DoD needs to work to improve the interoperability with our allies as they undertake adaptation measures.[146] This is especially pertinent for interoperability between the ADF and US forces. The winding down of overseas operations in Afghanistan and elsewhere offers the ADF an opportunity to shift considerable focus to climate security.

Admiral Samuel Locklear, Commander of the US Pacific Command, has repeatedly acknowledged in congressional testimonies that climate change in the Indo-Asia-Pacific presents a challenging security environment to the US.[147] Humanitarian responses and disaster relief are hallmarks of the annual activities of the US Pacific Command. The DoD should make a concerted effort to identify ways to improve interoperability between itself and key allies like the US to improve our collective ability to respond to regional climatic threats. Energy interoperability, for instance, is an important example. The *Defence Energy Integration Framework* ('Framework') acknowledges at the very least the need to 'keep abreast of emerging interoperability requirements' with close allies like the US, UK and NZ as they 'increasingly pursue alternate energy solutions'.[148] However, piecemeal approaches like these are insufficient.

An establishment-wide approach to interoperability is necessary and prudent and can build on individual commitments like those in the Framework. It is in our national interests to find new and more effective ways to improve interoperability with the US forces, especially in naval services. The same goes for our cooperation with New Zealand and the UK. Defence can utilise current organisational architecture in this regard. The Defence Cooperation Programme (DCP) has been in existence since the 1960s, and amongst other objectives 'improves Australia's capacity to work with partners in response to common security challenges'.[149] The DCP currently focuses on the neighbouring areas of South-Pacific and South-East Asia. '[B]uilding on partner capacity in humanitarian assistance and

disaster relief' is an identified activity under the DCP, as are strategic dialogue, training, infrastructure support, personnel exchanges, exercises and operations. Harnessing the DCP in improving interoperability and cooperation is a prudent approach to integrate climate security into the existing framework. This is especially vital since the various Pacific Island states will be looking to Australia for leadership on climate security, as they have historically on other matters.

The DoD should also pursue coordinated planning and risk assessment on climate security with key regional allies such as Japan and the US, as well as key partners such as Indonesia. A core focus should be on identifying critical regional vulnerabilities, likely humanitarian flashpoints in the region, and determining what appropriate joint and individual responses would look like in times of crises. This strategic assessment could inform regional war-gaming scenarios such as the biannual Rim of the Pacific Exercises (RIMPAC) which are hosted by the US and involve key regional partners including Australia, UK India, Indonesia, China and Korea. In 2014 countries participated in the 24th RIMPAC around the Hawaiian Islands, focussing on responding to requests for humanitarian assistance and disaster relief.[150]

According to Sharon Burke, the USDoD has begun incorporating climate change impacts into its own war-gaming activities, both future scenario planning and military exercises.[151] As outlined earlier, Sherri Goodman also raised the value of war-gaming scenarios as part of the broader adaptation process for the military.[152] Coordinated forward planning for the region allows Australia and our key partners to be better prepared to respond to emerging regional security threats and more able to mitigate their worst affects.

The DoD and ADF should also make a detailed assessment of how the major powers and others are integrating climate security concerns into their national security strategies. This is done by the US and the UK and is a prudent way to identify best practice mitigation and adaptation examples in the defence space as well as look for future opportunities to improve interoperability and collective planning.

## Establish a Climate Change Working Group

A Working Group should be established to drive strategic thinking on Australia's climate security challenge. This body could operate on a relatively informal basis with voluntary involvement. It should comprise members of the defence and security establishment, officials from relevant departments across the Australian Government, as well as outside influencers from think tanks, academia and business (particularly the insurance industry) who can provide an additional and diverse level of expertise. Different ranks within the military hierarchy should be eligible to participate to ensure a diversity of experience and perspectives from within the services.

The focus of the Working Group should be to build a network across relevant government and non-government agencies. Members could exchange declassified intelligence, research and other information on the security impacts of climate change, and identify policy options for consideration. The environment should be strictly non-partisan. The Working Group should meet under Chatham House rules to ensure confidentiality, and be chaired by an

organisation or expert external to the Australian Government. Defence need not start from scratch to make this happen. The Global Change and Energy Sustainability Initiative that resides in the Vice Chief of the Defence Force Group offers an under-utilised, pre-existing research network across the services and with external parties. This group can be incorporated into a better-resourced and enlarged Working Group. It could meet routinely with a broad agenda, ultimately aimed at influencing strategic thinking, shaping institutional culture and improving content knowledge on climate security. A similar model was adopted in the US based on confidentiality and non-partisanship.[153]

## Conclusion: Towards a whole of government approach to climate change

It is abundantly clear to objective observers that a whole of government approach by Australia is needed to consider significant climate change measures that have a broader societal impact and also improve Australia's forward defence position on climate security. Measures for consideration will include measures such as fostering a larger and viable renewable energy sector, creating a comprehensive national adaptation strategy and utilising Australia's aid and development programs to improve the adaptability of neighbours and partners. Such policies have potentially wide security benefits for Australia and can improve regional human security in general.[154]

Admiral Chris Barrie provides a stark warning about Australia's current position on the climate security challenge:[155]

*'At the moment it is very hard to envisage conditions short of serious crisis in which a whole of government approach to climate security will develop'.*

Australia's current experience of climate change is arguably this crisis. The security implications are known, real and have begun. So too are the environmental and economic impacts. On present form however, it seems that a 'burning crisis' combining economic, security and environmental impacts will provide the tipping point.

Australia can ill afford to wait. The UK experience reveals what is possible.[156] Whole of government collaboration is improving as silos are broken down. Various departments now see the opportunities and benefits from co-ordinated action. Notably this has included the establishment of cross-government committees to address both the issues of climate change and energy security; the UK Ministry of Defence is represented on both these committees. Similarly, a Joint Unit has now been established between the Foreign Office and the Department of Energy and Climate Change that examines all aspects of climate change, including the security implications. Australia can learn from these UK experiences and emulate what is currently best practice in this space.

A sophisticated and pragmatic approach by the defence establishment to Australia's climate security challenge will create an opportunity and impetus for whole of government action on climate change. The complexity of climate change 'requires breaking out of the constraining silo of defence-thinking and developing a whole-of-government response that integrates national security strategy with other domestic and foreign policies, and with

human security in the region.'[157] At the very least, it is envisaged that the recommendations presented in this report can accelerate a gradual shift towards a whole of government approach to climate change.

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