

# Chapter 3

## Suggestions for improving domestic coordination

### Introduction

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

### Commonwealth coordination

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

#### *Australia's response to climate security concerns*

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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### ***Commonwealth agency planning and reporting***

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

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

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

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

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

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

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

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

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

18 *Submission 14*, [pp. 2–3].

19 *Submission 46*, p. 3.

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

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

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

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

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

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

### *Climate security white paper*

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

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

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

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

24 *Submission 8*, p. 9.

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

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

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

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

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

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

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

3.16 The Climate Council nominated the Department of Prime Minister and Cabinet and the Department of Defence to coordinate a climate security white paper.<sup>31</sup>

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

### *New climate security entities*

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

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

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

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

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

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

31 *Submission 18*, p. 11.

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

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

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

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

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

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

#### *Existing interagency coordination*

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

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

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

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

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

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

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

40 *Submission 22*, p. 1.

41 *Submission 22*, p. 7.

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

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

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

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

3.25 The Reference Group's current activities include:

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

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

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

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

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

- Developing and agreeing an approach for further engagement with the private sector on disaster and climate issues.
- Inviting Geoscience Australia, CSIRO, the Bureau of Meteorology, the Australian Bureau of Statistics and others to deliver briefings to the Reference Group on disaster and climate science and research.<sup>47</sup>

3.26 At the time of writing, the Reference Group had met six times since its establishment in July 2016.<sup>48</sup>

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

- Illegal exploitation of natural resources;
- Illegal activity in protected areas;
- Illegal maritime arrivals;
- Prohibited imports/exports;
- Maritime terrorism;
- Piracy, robbery and violence at sea;
- Compromise to bio-security; and
- Maritime pollution.<sup>51</sup>

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

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

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

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

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

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

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

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

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



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

### ***Knowledge and skills***

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

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

### ***Emissions reductions***

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

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

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

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

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

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

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

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

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

62 *Submission 43*, p. 7.

### *National emissions reduction targets*

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

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

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

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

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

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

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

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

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

69 *Submission 13*, p. 3.

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

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

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

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

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

#### *Energy sources*

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

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

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

73 *Submission 11*, p. 10.

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

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

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

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

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

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

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

3.38 The ANU Climate Change Institute also raised the risk of nuclear proliferation.<sup>82</sup>

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

### **Commonwealth leadership roles**

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

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

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

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

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

82 *Submission 50*, p. 22.

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

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

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

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

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

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

### **Coordination between the Commonwealth and domestic stakeholders**

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

#### ***National communities of practice***

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

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

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

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

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

89 *Submission 22*, p. 7.

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

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

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

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

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

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

### ***Sharing climate science, data and expertise***

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

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

94 *Submission 46*, p. 3.

95 *Submission 46*, p. 3.

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

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

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

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

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

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

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

3.49 Mr Crossweller described how the Reference Group has an 'ongoing dialogue' with 'the Australian Business Roundtable, which includes a reinsurer, plus an insurer, plus the banking sector, plus the telecommunications sector'.<sup>103</sup> He stated:

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

3.50 He further explained:

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

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

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

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

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

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

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

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

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

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

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

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

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

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107 *Submission 11*, p. 10.

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

109 *Submission 3*, p. 8.

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

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

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

113 *Submission 63*, p. 11.

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

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

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

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



depends on understanding the magnitude and rate of rapid sea level rise'.<sup>118</sup> Expanding on this point, Ms Goodman said:

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

### ***Funding for domestic disaster prevention, response and recovery***

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

#### *Disaster prevention*

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

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

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

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

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

120 NDRRA Fact Sheet, accessed 10 April 2018.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

3.64 Home Affairs also outlined the following disaster resilience initiatives:

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

#### *Disaster response*

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

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

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

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

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

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

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

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

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

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

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

#### *Disaster recovery*

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

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

#### *Climate-related health effects*

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

#### *Australian economy*

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

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

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

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

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

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

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

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

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

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

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

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

