

UNIVERSITY *of*  
TASMANIA

# Just Resilience in Australian Climate Adaptation Laws

by

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### **Statement of Co-Authorship**

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## **Abstract**

Climate adaptation presents a major challenge for Australian law. Australian law has typically struggled to adjust to change, and is already pressured by increasingly frequent and intense climate impacts. New approaches will be needed. Adaptation laws will need to support nimble and responsive adjustments to change. They must also enable transformative change where existing approaches are wholly inadequate given the nature and scale of climate impacts. Yet adaptation laws must also help to facilitate fair and equitable allocations of the costs and benefits of climate adaptation. This latter role is often overlooked in analyses of climate adaptation and law.

This thesis argues that law will play a crucial role in promoting both resilience and justice in climate adaptation. Drawing on the extensive scholarly literature on resilience thinking and environmental justice, the thesis develops a conceptual framework of ‘just resilience’ and applies it to Australian law. The conceptual framework emphasises four interrelated principles for simultaneously enhancing resilience and justice in climate adaptation law. To enhance just resilience, climate adaptation laws must (1) address change; (2) account for the distributive effects of climate change and adaptation; (3) promote participation in adaptation processes; and (4) cross sectors and scales.

The implementation of the principles will be context-dependent. The thesis therefore applies the principles of just resilience to three case studies of Australia’s current climate adaptation laws: (a) fire in the Tasmanian Wilderness World Heritage Area; (b) water levels in Lake Macquarie, New South Wales; and (c) heatwaves in urban Melbourne. Through a combination of desktop legal analysis and semi-structured interviews with expert practitioners, the case studies explore how existing laws shape resilience and justice in addressing climate impacts in practice. Cross-case comparisons help to emphasise the strengths and limitations of Australia’s existing climate adaptation laws. This empirical analysis illustrates how the principles might be pursued in particular contexts, and points to the importance of leadership and information sharing in implementing the four principles of just resilience in practice. The thesis draws together these theoretical and empirical inquiries to examine potential pathways for development and reform of Australia's adaptation laws to meet the demands of a climate impacted future. There is untapped potential for incremental development of existing laws, and the thesis highlights opportunities to implement the just resilience principles through targeted reforms of existing laws. However, the thesis also points to pathways for implementing transformative change where existing legal approaches are inadequate.

## Chapter One: Introduction

Climate adaptation presents an immense challenge for Australian law. Climate change is already impacting Australia,<sup>1</sup> and is likely to cause substantial change in cultural, economic, environmental and social conditions over the coming years, decades and centuries. Yet Australian laws have typically struggled to adjust to changing conditions in both the shorter- or longer-terms.<sup>2</sup> Australian laws must therefore develop new means of addressing change if it is to improve responses to climate impacts. Laws will be required to address biophysical disasters and socio-economic crises, but also to support and stimulate scientific and technological developments that provide options for addressing climate impacts. In addition, these challenges must be addressed fairly – that is, in a manner that accounts for the inequitable distribution of climate impacts (and adaptation measures) across socio-economic and cultural divides.

This thesis uses resilience and environmental justice theories to analyse Australia's current climate adaptation laws. Climate adaptation has emerged, in the last decade, as one of the most pressing public policy issues confronting Australia.<sup>3</sup> Yet the absence of coherent policy direction – along with Australia's corrosive climate politics<sup>4</sup> – has stymied development of the legal framework for climate adaptation at the national level. Nevertheless, various State and local governments have made important progress in developing climate adaptation laws and governance arrangements over the past decade. Those initiatives provide useful insights on the potential for law to support the planning and implementation of adaptation actions into the future.

This introductory chapter outlines the core concepts and research methods used in this thesis. It first provides an overview of the likely impacts of climate change in Australia, including their biophysical, social and cultural, and economic dimensions. Section 1.2 then defines the concepts of 'adaptation' and 'adaptation law' central to this thesis. The following section 1.3 provides a general outline of the legal and policy framework for climate adaptation in Australia; emphasising the varied legal powers of the different levels

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<sup>1</sup> Will Steffen et al, *The Angriest Summer* (Climate Council, 2019) 1; see also CSIRO and Bureau of Meteorology, *Climate Change in Australia: Projections for Australia's NRM Regions* (Technical Report, 2015).

<sup>2</sup> Jan McDonald, 'Reforming Environmental Law for Responsiveness to Change' in Ron Levy et al (eds) *New Directions for Law in Australia: Essays in Contemporary Law Reform* (ANU Press, 2017) 251.

<sup>3</sup> Australian Government, Productivity Commission, *Barriers to Effective Climate Change Adaptation* (Productivity Commission Inquiry Report, No 59, September 2012) 33.

<sup>4</sup> See, eg, Mark Beeson and Matt McDonald, 'The Politics of Climate Change in Australia' (2013) 59 *Australian Journal of Politics and History* 331, 335-8.

of Australian government. The chapter then explains the research methods by which the evidence base for this thesis was established. Section 1.4 articulates the major research questions at the heart of the thesis. Section 1.5 then goes on to provide a detailed account of the methodology and methods informing this research. The final section 1.6 concludes with a brief overview of the structure and development of the remaining thesis chapters.

### **1.1 Overview of Climate Change Impacts in Australia**

A diverse range of climate impacts will affect all aspects of Australian society over the coming decades, years and centuries. *Extreme weather events*, or impacts that manifest over shorter terms (ie days, weeks or months), will generally increase in frequency and severity.<sup>5</sup> Heatwaves will be more frequent and more severe, especially in southeastern Australia.<sup>6</sup> Extreme rainfall events are likely to be more severe in many locations, despite an overall reduction in annual average rainfall.<sup>7</sup> Fire weather is expected to worsen in most of southern Australia, while tropical cyclones are expected will become more intense, even if they are not more frequent.<sup>8</sup> *Slow onset impacts* will accrue more gradually over longer timeframes (decades, centuries and millennia).<sup>9</sup> Average air and sea surface temperatures will continue to increase.<sup>10</sup> Sea levels will rise, and oceans will become more acidic over time.<sup>11</sup> In combination, these events will often have multiplying effects; for example, sea level rise over longer time scales will further exacerbate the effects of storm surge and extreme rainfall associated with severe storms and tropical cyclones.

The likely consequences of climate change are quite grim. Australia's natural and built environment are already experiencing extreme levels of climate stress. Increases in sea temperatures and ocean acidification are already impacting Australia's marine environment, causing significant and likely irreversible damage to coral reefs.<sup>12</sup> Floods and bushfires are destroying crucial public infrastructure (including transport networks and utilities infrastructure) and private property.<sup>13</sup> The biophysical impacts of climate change are likely

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<sup>5</sup> UNFCCC, Technical Paper — Slow Onset Events, UN Doc FCCC/TP/2012/7 (26 November 2012) ('UNFCCC Technical Paper 2012') 7.

<sup>6</sup> Andy Reisinger et al, 'Australasia' in Christopher B Field et al (eds) *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2014) 1402-3.

<sup>7</sup> Ibid, 1380.

<sup>8</sup> Ibid, 1381.

<sup>9</sup> UNFCCC Technical Paper 2012 (n 5) 7.

<sup>10</sup> Reisinger et al (n 6) 1380-1.

<sup>11</sup> Ibid, 1374.

<sup>12</sup> Terry P Hughes et al, 'Spatial and Temporal Patterns of Mass Bleaching of Corals in the Anthropocene' 359(6371) *Science* 80, 82.

<sup>13</sup> Reisinger et al (n 6) 1374.

to worsen into the future. Substantial terrestrial biodiversity loss is expected as increasing air temperatures, reduced rainfall and more frequent and intense fires cause substantial changes in species distribution and increasing rates of extinction.<sup>14</sup> Ecosystem services – the benefits that humans derive from ecosystems, such as the provision of food, water quality and recreational opportunities, among others – will be diminished or extinguished.<sup>15</sup> Water security will be compromised.<sup>16</sup> Low-lying settlements – including housing, buildings, public spaces and major infrastructure – and ports will be damaged or destroyed as sea levels rise, and storm events cause erosion, flooding or permanent inundation in coastal areas.<sup>17</sup> Although there may be some benefits as some ecosystems and crops benefit from increased warming, those opportunities may not be sustained over time, and are far outweighed by the negative physical impacts of climate change in any event.<sup>18</sup>

The economic outlook is equally bleak. The financial impacts of extreme weather events are already well known across Australia. Recent bushfires in Tasmania (in late 2018-early 2019) are estimated to have cost more than \$60 million in fire suppression alone.<sup>19</sup> Governmental expenditure to address natural disasters is in the order of \$10 billion in current forward estimates.<sup>20</sup> The private sector is similarly exposed. Major industries and key sectors of the Australian economy are vulnerable to climate impacts. The tourism sector, which contributes approximately 3% of Australia's gross domestic product (GDP), is exposed to climate impacts. For example, major cyclone and flood events in 2011 were estimated to cost the Queensland tourism industry almost \$600 million.<sup>21</sup> Agricultural production will also be impacted by climatic change. Increases in air temperature, and increasingly variable rainfall, are expected to reduce livestock productivity and cause associated reductions in the economic value of farming and dairy industries.<sup>22</sup> Commercial fisheries will also be affected as increasing sea surface temperatures and ocean acidification, along with more frequent and intense storm events, affect the spatial and temporal distribution of fish stocks making them more difficult to access, or require significant

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<sup>14</sup> Sandra Diaz et al, *Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services* (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, 2019) 4.

<sup>15</sup> UNFCCC Technical Paper 2012 (n 5) 11.

<sup>16</sup> Reisinger et al (n 6) 1387-8.

<sup>17</sup> Reisinger et al (n 6) 1384.

<sup>18</sup> Ross Garnaut, *The Garnaut Review 2011: Australia in the Global Response to Climate Change* (Cambridge University Press, 2011) 129

<sup>19</sup> Australasian Fire and Emergency Service Authorities Council, *AFAC Independent Operational Review: A Review of the Management of the Tasmanian Fires of December 2018 – March 2019* (2019) 49.

<sup>20</sup> Australian Government, 'Disaster Recovery Payment' (Web Page) <<https://www.disasterassist.gov.au/Pages/disaster-recovery-payment.aspx>>.

<sup>21</sup> Reisinger et al (n 6) 1402.

<sup>22</sup> Ibid, 1396

changes to maintain sustainable fishing practices.<sup>23</sup> In addition to domestic economic effects, Australia's international trade may also be affected as major trading partners experience their own climate impacts.<sup>24</sup>

Climate impacts will also have significant consequences for human health. Extreme weather events – especially heatwaves – have already significantly impacted human health in Australia. For example, the southeastern Australian heatwave of 2009 caused a 50% increase in emergency presentations associated with heat exposure, and a 62% increase in mortality over its three hottest days.<sup>25</sup> Flood and bushfire events have also caused substantial loss of life in the last decade. The 2009 Victorian bushfires, for example, led to 173 deaths. Food and water-borne diseases may become more prevalent as temperatures increase.<sup>26</sup> And while the psychological impacts of climate change, such as the cumulative impact of long-term drought, are increasingly recognised, further research is required to shed light on the mental health implications of climate change.<sup>27</sup>

Climate impacts will also have substantial effects on social and cultural values. Communities in low-lying or high fire danger areas may be displaced, which will disrupt social networks vital to the health and wellbeing of individuals and communities.<sup>28</sup> Conflict over diminished resources will increase, negatively impacting societal cohesion. These tensions are already manifesting in contemporary Australia, especially in relation to access to water in the Murray Darling Basin.<sup>29</sup> Damage to natural environments, including biodiversity loss, will reduce recreational opportunities and general amenity. Cultural heritage will be at risk of destruction by extreme weather events. It is important not to overlook these social and cultural implications of climate change impacts, even where they are difficult to express in quantifiable or economic terms.

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<sup>23</sup> Senate Environment and Communications References Committee, Parliament of Australia, *In Hot Water: The Impacts of Climate Change on Marine Fisheries and Biodiversity* (Report, December 2017) 41-53.

<sup>24</sup> Garnaut (n 18) 145

<sup>25</sup> Thomas Longden, 'Measuring Temperature-related Mortality using Endogenously Determined Thresholds' (2018) 150 *Climatic Change* 343; heatwaves and their impacts are discussed further in Ch 6.

<sup>26</sup> Reisinger et al (n 6) 1403.

<sup>27</sup> See, eg, Paul J Beggs et al, 'The 2019 Report of the MJA-Lancet Countdown on Health And Climate Change: A Turbulent Year with Mixed Progress' (2019) *Medical Journal of Australia* (forthcoming) 3-4; see also Ashlee Cunsolo and Neville R. Ellis, 'Ecological Grief as a Mental Health Response to Climate Change-related Loss' (2018) 8(4) *Nature Climate Change* 275; Glenn Albrecht et al, 'Solastalgia: The Distress Caused by Environmental Change' (2007) 15(sup1) *Australasian Psychiatry* S95.

<sup>28</sup> See, eg, Joshua E Cinner et al, 'Building Adaptive Capacity to Climate Change in Tropical Coastal Communities' (2018) 8 *Nature Climate Change* 117.

<sup>29</sup> See, eg, Jason Alexandra, 'Evolving Governance and Contested Water Reforms in Australia's Murray Darling Basin' (2018) 10 *Water* [113].

These diverse impacts will affect all aspects of human society and the environment. Alone, and in combination, they present a large question: since many impacts are unavoidable even on the best possible mitigation scenarios, how will Australian communities and ecosystems *adapt* to these impacts?

## 1.2 *Adaptation and Adaptation Law*

In its most recent major report, the Intergovernmental Panel on Climate Change (IPCC) offered a refined definition of *adaptation* in the following terms:<sup>30</sup>

In human systems, the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate and its effects.<sup>31</sup>

This definition, which has developed over the past 30 years,<sup>32</sup> forms the basis of much planning, action and research on climate adaptation.<sup>33</sup> A number of its important features require attention here. First, the IPCC definition distinguishes between human and natural systems. The distinction is based on the capacity of human systems to engage in anticipatory adaptation based on predictions or expectations of future climate.<sup>34</sup> Yet the definition also acknowledges the interconnectedness of natural and human systems in observing that human intervention may shape the progression of natural systems. Second, the IPCC definition clearly conceives adaptation as an ongoing, iterative process, echoing Adger et al's description of 'a continuous stream of activities, actions ... and attitudes that informs decisions about all aspects of life, and that reflects existing social norms and processes'.<sup>35</sup> Finally, the IPCC definition also identifies the potential for climate change to

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<sup>30</sup> This is the core of the extended definition of adaptation provided in IPCC SR15; other glosses and expansions have been omitted for the sake of brevity. Although an infinite number of definitions of 'adaptation' might be found in the scholarly literature, they are typically 'variations on [this] theme': Barry Smit and Johanna Wandel, 'Adaptation, Adaptive Capacity and Vulnerability' (2006) 16(3) *Global Environmental Change* 282, 282.

<sup>31</sup> JB Robin Matthews (ed) 'Annex I: Glossary' in Valerie Masson-Delmotte et al (eds) *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* (2019) 542.

<sup>32</sup> For an overview and analysis of changes in the IPCC definition of adaptation over the past 30 years, see Thomas J Bassett and Charles Fogelman, 'Deja vu or Something New? The Adaptation Concept in the Climate Change Literature' (2013) 48 *Geoforum* 42.

<sup>33</sup> RM Wise et al, 'Reconceptualising Adaptation to Climate Change as part of Pathways of Change and Response' (2014) 28 *Global Environmental Change* 325, 331.

<sup>34</sup> Barry Smit et al, 'An Anatomy of Adaptation to Climate Change and Variability' (2000) 45 *Climatic Change* 223, 233.

<sup>35</sup> W Neil Adger, Nigel W Arnell and Emma L Tompkins, 'Successful Adaptation to Climate Change across Scales' (2005) 15(2) *Global Environmental Change* 77, 78. This sentiment is also captured in the expanding

have advantageous consequences in some areas, and for some people.<sup>36</sup> Longer term shifts in weather patterns, for example, might result in increased rainfall in certain areas, or result in agricultural benefits such as increased crop yields.<sup>37</sup> Adaptation actions themselves might also create beneficial opportunities, especially where market mechanisms are used to control access to and exploitation of natural resources. Water licences, for example, may become increasingly valuable as access to water resources is restricted in efforts to avoid critical water shortages.<sup>38</sup>

Although the IPCC definition is dominant in both policy and research contexts,<sup>39</sup> adaptation remains a contested concept. In particular, there is continued disagreement about whether adaptation is restricted to incremental ‘adjustments’ to the ‘additional’ risks presented by climate impacts,<sup>40</sup> or might include wider reforms that address the structural drivers of vulnerability to climate impacts.<sup>41</sup> Both extremes are attended by risk; a strict ‘adjustment’ approach may be susceptible to the development and implementation of reductionist, linear strategies that fail to respond to the widely-accepted assertion that ‘stationarity is dead’.<sup>42</sup> Heavily transformational understandings risk making adaptation ‘about “everything”’,<sup>43</sup> and thus reducing its conceptual and rhetorical force. Although some tension remains, the IPCC approach – and climate adaptation scholarship more broadly – has become increasingly receptive to transformational understandings of adaptation.<sup>44</sup> As a result, much more attention is devoted to the social and political

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literature on ‘adaptation pathways’; see eg Jan McDonald et al, ‘Adaptation Pathways for Conservation Law and Policy’ (2019) *Wiley Interdisciplinary Reviews: Climate Change* <<https://onlinelibrary.wiley.com/doi/pdf/10.1002/wcc.555>>.

<sup>36</sup> On the complexities of identifying winners and losers in the context of climate change, see JB Ruhl, ‘The Political Economy of Climate Change Winners’ (2013) 97 *Minnesota Law Review* 206 and Robin Kundis Craig, ‘The Social and Cultural Aspects of Climate Change Winners’ (2013) 97 *Minnesota Law Review* 1416.

<sup>37</sup> Reisinger et al (n 6) 1397-9.

<sup>38</sup> Anthony Kiem, ‘Drought and Water Policy in Australia: Challenges for the Future Illustrated by the Issues Associated with Water Trading and Climate Change Adaptation in the Murray-Darling Basin’ (2013) 23 *Global Environmental Change* 1615, 1624.

<sup>39</sup> Bassett and Fogelman (n 32) 50

<sup>40</sup> Wise et al (n 33) 331

<sup>41</sup> Bassett and Fogelman (n 32); see also Pelling (2011), and discussed further in Ch 2 below.

<sup>42</sup> Paul CD Milly et al, ‘Stationarity is dead: Whither water management?’ (2008) 319(5863) *Science* 573; Wise et al (n 33) 331.

<sup>43</sup> Dave Huitema et al, ‘The governance of adaptation: choices, reasons, and effects. Introduction to the Special Feature’ (2016) 21(3) *Ecology and Society*, 2

<sup>44</sup> Siri H Eriksen, Andrea J Nightingale and Hallie Eakin, ‘Reframing adaptation: The political nature of climate change adaptation’ (2015) 35 *Global Environmental Change* 523, 525-526. This may reflect the broader disciplinary heritage of adaptation, which emerged from evolutionary biology before being adapted to social contexts; see Smit and Wandel (n 30) 283, and Bassett and Fogelman (n 32) 51.



dimensions of adaptation, including the significance of power and authority, in leading edge adaptation research.<sup>45</sup>

Adaptation, then, must be understood as a recurring process where interdependent human and natural systems experience iterative change to addressing future and present climate impacts. That process of change creates winners and losers – in both the natural and human contexts – thus ensuring that adaptation is attended by social and political complexities that are at least as challenging – and impossible to separate from<sup>46</sup> – the scientific and technical challenges associated with addressing climate impacts.

Adaptation measures may take many shapes and sizes. Some responses will be physical, using modifications of the built and natural environment (eg building sea walls or enhancing coastal ecosystems to reduce the impacts of sea level change), along with technological developments (eg enhanced mapping and modelling of sea level change), to minimise the effects of climate impacts. Other responses will enhance services that provide assistance to those directly affected by climate impacts (eg enhanced disaster management arrangements). Still others will address underlying social structures through the provision of information and educational programs that seek to inform behavioural change that might minimise climate impacts. Institutional responses will use economic and governance processes – including laws – to promote decision-making that accounts for current and future climate.

Adaptation measures do not always succeed. The term *maladaptation* is used to describe '[adaptation a]ctions that may lead to increased risk of adverse climate-related outcomes, increased vulnerability to climate change, or diminished welfare, now or in the future.'<sup>47</sup> Such outcomes may be intended or unintended consequences of adaptation actions. Although this broad definition is difficult to apply with any degree of precision,<sup>48</sup> it acknowledges that adaptation may have undesirable consequences. These include both immediate adverse outcomes, and increased risk of future undesirable outcomes. These

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<sup>45</sup> Eriksen, Nightingale and Eakin (n 44) 531.

<sup>46</sup> Andrea J Nightingale, 'Power and politics in climate change adaptation efforts: Struggles over authority and recognition in the context of political instability' (2017) 84 *Geoforum* 11, 12.

<sup>47</sup> John Agard et al (eds), 'Annex II: Glossary' in Christopher B Field et al (eds) *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2014) 1769.

<sup>48</sup> Ian R Noble et al (eds), 'Adaptation Needs and Options' in Christopher B Field et al (eds) *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2014) 857.

costs and risks require attention in the development and implementation of adaptation measures and plans.

Adaptation should be contrasted with two related but distinct concepts that inform responses to climate change. Most obviously, adaptation can be distinguished from *mitigation*, which is concerned with efforts to lower atmospheric concentrations of greenhouse gases, including by reducing emissions.<sup>49</sup> Mitigation efforts have been the primary focus of climate change law, policy and discourses for more than three decades.<sup>50</sup> Although adaptation and mitigation measures may be complementary in practical terms (wetlands might protect coastal areas from changing sea levels and storm events while also acting as carbon stores, for example),<sup>51</sup> a vast range of adaptation actions have little or no mitigation benefit.<sup>52</sup> Adaptation also presents different conceptual challenges from mitigation, demanding much more localised responses to achieve relatively uncertain objectives that account for both short- and longer-term climate impacts.<sup>53</sup> While acknowledging the inherent connection of mitigation and adaptation – namely that rapid reductions in atmospheric concentrations of greenhouse gases would likely reduce the extent of adaptation required to address climate impacts<sup>54</sup> – this thesis focuses on adaptation actions as distinct responses to the impacts climate change.

*Loss and damage* is increasingly recognised as a discrete concept that differs from adaptation. Loss and damage refers to harm caused by climate impacts that cannot be avoided or reduced through adaptation measures.<sup>55</sup> Loss and damage is thus inextricably linked to adaptation, as it refers to circumstances where adaptation is not attainable.<sup>56</sup> The boundary between adaptation and loss and damage is not static; social and technological advances

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<sup>49</sup> Matthews (n 31) 554.

<sup>50</sup> For a comprehensive review of the development of laws addressing greenhouse gas emissions in Australia, see Jacqueline Peel, 'Climate Change Law: The Emergence of a New Legal Discipline' (2008) 32 *Melbourne University Law Review* 922, 932-51.

<sup>51</sup> Peter I Macreadie et al, 'Carbon Sequestration by Australian Tidal Marshes' (2017) 7 *Nature Scientific Reports* [44071]; on the promises and pitfalls of integrating mitigation and adaptation strategies, see Susanne C Moser, 'Adaptation, Mitigation, and their Disharmonious Discontents: An Essay' (2012) 111(2) *Climatic Change* 165.

<sup>52</sup> Note that adaptation actions may increase greenhouse gas emissions, as fossil fuels are used in the development and implementation of adaptation technologies (eg the construction of physical protections from climate impacts, such as seawalls).

<sup>53</sup> Huitema et al (n 43) 2

<sup>54</sup> Myles Allen et al, 'Summary for Policymakers' in Valerie Masson-Delmotte et al (eds) *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* (2019) 5.

<sup>55</sup> Matthews (n 31) 553.

<sup>56</sup> This point is well explained in the scholarship on adaptation limits; see, eg, Kirstin Dow et al, 'Limits to Adaptation' (2013) 3(4) *Nature Climate Change* 305.

may, over time, allow for climate impacts to be reduced or avoided in some instances. While loss and damage has received greatest attention in international climate negotiations,<sup>57</sup> it remains conceptually relevant at more local scales. Measures directed merely to compensating for the deprivation of land due to inundation, for example, might best be regarded as a form of loss and damage, rather than adaptation.<sup>58</sup> While acknowledging that the two concepts intersect, this thesis focuses primarily on adaptation to prevent or minimise the effects of climate change, rather than the prospect of compensation for unavoidable climate impacts.

### 1.2.1 *Adaptation Law*

A second key concept for this thesis is *law*. Law refers to the body of rules generated by governmental institutions that regulate the conduct of citizens and other actors. Law thus includes rules developed by governments at the national, sub-national and local levels. At the domestic level, those rules are found in a variety of primary legal sources, including statutes, delegated legislation<sup>59</sup> and in case law.<sup>60</sup> It also includes formal international laws, including those set out in international agreements and recognised as customary international law.<sup>61</sup> This approach to law can be contrasted with the concept of governance. Governance frameworks recognise the role of private actors, nongovernmental organisations and civil society in developing the rules and norms through which actions are regulated.<sup>62</sup> Governance thus encompasses a broader range of entities and processes than law, although the two undoubtedly overlap. In adopting law as the unit of analysis, this thesis does not contest the potential relevance of governance to climate adaptation. Nor does it deny that a wide range of actors and tools may play a vital role in responses to

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<sup>57</sup> Karen E McNamara and Guy Jackson, 'Loss and Damage: A Review of the Literature and Directions for Future Research' (2019) 10 *Wiley Interdisciplinary Reviews: Climate Change* e564.

<sup>58</sup> This distinction has not always been drawn in Australian legal circles; this can in part be explained by the significant challenges to a successful legal claim for mere loss and damage resulting from contributions to greenhouse gas emissions; see, eg, Brian J Preston, 'Climate Change Litigation' (2009) 26 *Environmental and Planning Law Journal* 169, 172-5; see also Jacqueline Peel, Hari Osofsky and Anita Foerster, 'Shaping the Next Generation of Climate Change Litigation in Australia' (2017) 41 *Melbourne University Law Review* 793, 818-25.

<sup>59</sup> Delegated legislation is a general description for legislative instruments made by a body or person to whom the power to make law has been delegated or referred by the Parliament: see Dennis Pearce and Stephen Argument, *Delegated Legislation in Australia* (LexisNexis Butterworths, 4<sup>th</sup> ed, 2012) 1.

<sup>60</sup> Because Australia is a common law legal system, some relevant legal rules are developed at common law; see, eg, Justine Bell-James and Anna Huggins, 'Compliance with Statutory Directives and the Negligence Liability of Public Authorities: Climate Change and Coastal Development' (2017) 34 *Environmental and Planning Law Journal* 398, 408-16 on the continued significance of the common law in the development of the tort of negligence.

<sup>61</sup> See *Statute of the International Court of Justice* art 38.

<sup>62</sup> Matthews (n 31) 550

climate impacts. The thesis simply takes formal legal rules as the starting point for analysing laws' role in addressing climate impacts in Australia.

Adaptation law, then, refers to the rules and principles generated by governmental institutions that influence the process of addressing actual (or expected) climate effects so as to reduce harm and to maximise any benefits that arise. As McDonald has explained, this allows for broad and narrow conceptions of climate adaptation law.<sup>63</sup> A broader approach would include within climate adaptation law all aspects of the legal system that are responsive to change, including drivers of adaptability of the legal system itself. On that approach, climate adaptation law is virtually synonymous with 'law' itself.<sup>64</sup> A narrower approach would focus primarily on laws that require consideration of the effects of climate change (such as land-use planning laws, biodiversity conservation laws and torts), and laws that influence measures addressing climate impacts (including disaster and emergency management laws, for example).<sup>65</sup> While many of the rules and principles relevant to climate adaptation are found in legislation, some crucial aspects of climate adaptation law are found in the decisions of Australian courts.<sup>66</sup>

This thesis adopts a relatively narrow approach, focusing primarily on laws requiring consideration of, or directly implicated in responses to climate impacts. While acknowledging that those laws cannot be divorced entirely from the broader legal framework,<sup>67</sup> this thesis takes those laws as the starting point and focus of its analysis.

It is important at this point to observe the often slippery distinction between law and *policy*. In the Australian context, the term policy is often used in two related but separate ways. Small 'p' policy is often used to refer to the substantive positions adopted by governments that 'recognise a problem and in general terms state what will be done about it'.<sup>68</sup> Dovers and Herzi recognise that climate adaptation comprises a suite of policy problems (such as addressing vulnerability to extreme events, and mainstreaming adaptation in governmental

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<sup>63</sup> Jan McDonald, 'A Short History of Climate Adaptation Law in Australia' (2014) 4 *Climate Law* 150, 151-2.

<sup>64</sup> See also JB Ruhl and James Salzman, 'Climate Change meets the Law of the Horse' (2013) 62 *Duke Law Journal* 975, 1019-26, and Peel (n 50), 951-5.

<sup>65</sup> McDonald (n 63) 152.

<sup>66</sup> Jacqueline Peel and Hari M Osofsky, 'Sue to Adapt?' (2015) 99 *Minnesota Law Review* 2177, 2210-44.

<sup>67</sup> An array of general legal principles are relevant on even the narrowest approach to climate adaptation law. The obligation to afford procedural fairness, for example, applies to governmental decision-making on climate adaptation. Similarly, constitutional frameworks and principles shape the development of adaptation law and policy as part of the broader governmental framework, and must also be addressed; see section 1.3.2 below.

<sup>68</sup> Stephen R Dovers and Adnan A Hezri, 'Institutions and policy processes: the means to the ends of adaptation' (2010) 1(2) *Wiley Interdisciplinary Reviews: Climate Change* 212, 221-3.

processes) in this sense.<sup>69</sup> In contrast, capital ‘P’ Policies are formal documents developed by governments; those Policies typically document substantive policy positions in a formal manner, while also providing information and guidance relevant to their implementation in practice. While it is difficult to generalise, capital ‘P’ Policy documents are generally not ‘law’ as defined above.<sup>70</sup> They are, however, often crucial to the development and implementation of governmental approaches to climate adaptation in practical terms. They may be relevant to the interpretation and application of laws in certain instances,<sup>71</sup> but are typically not legally enforceable in any strict sense.<sup>72</sup> Policies (in both small and capital ‘P’ terms) thus form part of the broader social and political context in which the laws central to this thesis are analysed.<sup>73</sup>

Having sketched the parameters of this thesis, the following section outlines the development of Australian climate adaptation law and policy over the past three decades. The section both provides an outline of the Australian legal framework as it relates to climate adaptation, and sketches major policy developments at each level of that framework.

### ***1.3 Climate Adaptation Law and Policy in Australia***

Australian climate adaptation law and policy has experienced significant change over the past decade. There have been periods of rapid progress, where substantial advances have been made in developing principles and frameworks for climate adaptation in the medium to longer term. Measures to incorporate future sea level rise within coastal management and land-use planning laws are often cited as an example.<sup>74</sup> However, phases of retreat and backsliding have caused uncertainty and inconsistency in the law and policy framework. This section provides a brief overview of the legal and policy frameworks for climate

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<sup>69</sup> Ibid.

<sup>70</sup> Such ‘Policies’ are typically regarded as examples of ‘soft law’; for detailed analysis of the meaning of the term ‘soft law’ in the Australian context, see Greg Weeks, *Soft Law and Public Authorities: Remedies and Reform* (Hart Publishing, 2016) 13-24.

<sup>71</sup> See, eg, the various ‘Policy’ and ‘policy’ documents informing the development and implementation of planning benchmarks for sea level rise in New South Wales; the development, implementation and ultimate repeal of those benchmarks are discussed in Ch 6.4.2.

<sup>72</sup> Policies may, for example, provide guidance or advice on the exercise of discretionary decision-making powers, but cannot themselves determine the outcome of a discretionary decision-making process. This principle is most directly reflected in the ‘inflexible application of policy’ ground of judicial review; see *Green v Daniels* (1977) 13 ALR 1 and *Drake v Minister for Immigration and Ethnic Affairs (No 2)* (1979) 2 ALD 634; see also *Administrative Decisions (Judicial Review) Act 1977* (Cth) ss 5(1)(e),(2)(f). Relevant case law is analysed in greater detail in Weeks (n 70) 120-4.

<sup>73</sup> See further Joseph Wenta and Jan McDonald, ‘The Role of Law and Legal Systems in Climate Change Adaptation Policy’ in ECH Keskitalo and BL Preston (eds), *Research Handbook on Climate Change Adaptation Policy* (Edward Elgar, 2018) 69-90.

<sup>74</sup> Ibid, 80-1.

adaptation in Australia. Although many of the most substantial developments in adaptation law and policy are found at local and sub-national levels, Australia's national laws and policies continue to shape responses to climate impacts. Before addressing those aspects of Australia's legal framework, this section first outlines Australia's relevant obligations under international law.

### 1.3.1 *Australia and International Climate Adaptation Law*

Australia has signed and ratified the major multilateral international agreements that provide the basis of global climate governance. Major early agreements, including the United Nations Framework Convention on Climate Change (UNFCCC)<sup>75</sup> and its Kyoto Protocol,<sup>76</sup> focused almost exclusively on mitigation of greenhouse gas emissions.<sup>77</sup> They contain only the broadest of obligations to develop and implement national 'measures to facilitate adequate adaptation to climate change',<sup>78</sup> and to 'cooperate in preparing for adaptation to the impacts of climate change',<sup>79</sup> including by assisting developing countries to meet the costs of adaptation.<sup>80</sup> As repeated attempts to mitigate greenhouse gas emissions proved unsuccessful, adaptation assumed a more prominent position in global climate negotiations. The release of the IPCC's Fourth Assessment Report, along with increasing developing country calls for action on adaptation, saw adaptation receive much more prominent treatment at the Bali COP in 2007.<sup>81</sup> An Adaptation Committee was established (as part of the Cancun Adaptation Framework) in 2010, with the primary role of 'promot[ing] the implementation of enhanced action on adaptation in a coherent manner under the Convention'.<sup>82</sup> And as Zahar, Peel and Godden describe,<sup>83</sup> the initial

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<sup>75</sup> *United Nations Framework Convention on Climate Change*, opened for signature 4 June 1992, 1771 UNTS 107 (entered into force 21 March 1994) ('UNFCCC').

<sup>76</sup> *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, opened for signature 16 March 1999, 2303 UNTS 162 (entered into force 16 February 2005) art 3 ('Kyoto Protocol').

<sup>77</sup> Alexander Zahar, Jacqueline Peel and Lee Godden, *Australian Climate Law in Global Context* (Cambridge University Press, 2012) 378.

<sup>78</sup> UNFCCC (n 75), art 4(1)(b); Kyoto Art 10(b).

<sup>79</sup> *Ibid*, art 4(1)(e).

<sup>80</sup> *Ibid*, art 4(4); Kyoto Protocol (n 76), art 12(8).

<sup>81</sup> Conference of the Parties, United Nations Framework Convention on Climate Change, *Report of the Conference of the Parties on Its Thirteenth Session, Held in Bali from 3 to 15 December 2007 - Addendum - Part 2: Action Taken by the Conference of the Parties at Its Thirteenth Session*, UN Doc FCCC/CP/2007/6/Add.1 (14 March 2008) Decision 1/CP.13 para 1(c)(i) ('Bali Action Plan'); see also Mizan R Khan and J Timmons Roberts, 'Adaptation and international climate policy' (2013) 4(3) *Wiley Interdisciplinary Reviews: Climate Change* 171.

<sup>82</sup> Conference of the Parties, United Nations Framework Convention on Climate Change, *Report of the Conference of the Parties on Its Sixteenth Session, Held in Cancun from 29 November to 10 December 2010 — Addendum — Part 2: Action Taken by the Conference of the Parties at Its Sixteenth Session*, UN Doc FCCC/CP/2010/7/Add.1 (15 March 2011) Decision 1/CP.16 para 4 ('Cancun Agreements'), para 20.

<sup>83</sup> Zahar, Peel and Godden (n 77) 379.

emphasis on funding adaptation has also persisted as adaptation finance commitments have become a perennial feature of global climate negotiations.

The 2015 Paris Agreement saw adaptation receive direct and detailed treatment in a treaty for the first time.<sup>84</sup> Tellingly, the Paris Agreement recognises that adaptation, including by fostering climate resilience, is an essential element of the global response to climate change.<sup>85</sup> The Agreement acknowledges that the adaptation demand is already significant,<sup>86</sup> and establishes a global adaptation goal of ‘enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to ... ensuring an adequate adaptation response’ in light of the Agreement’s goal to restrict increase in global average temperature to well below 2°C.<sup>87</sup> While retaining an emphasis on the needs of developing country parties for adaptation support,<sup>88</sup> the Agreement accounts for the sub-national dimensions of climate adaptation, including within developed countries.<sup>89</sup> It recognises that adaptation poses challenges from the local to international levels,<sup>90</sup> while also acknowledging that some groups, communities and ecosystems may be particularly vulnerable to climate impacts.<sup>91</sup> All parties are required to engage in adaptation planning and action, including by developing and implementing national adaptation plans.<sup>92</sup> Adaptation actions are to be developed and implemented through ‘participatory and fully transparent approach[es]’.<sup>93</sup> Adaptation plans and actions are to be reported by adaptation communications<sup>94</sup> that will inform the ‘global stocktake’ of progress towards the Agreement’s objectives.<sup>95</sup>

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<sup>84</sup> Paris Agreement, opened for signature 22 April 2016 [2016] ATS 24 (entered into force 4 November 2016) (‘Paris Agreement’).

<sup>85</sup> Ibid, art 2(1)(b).

<sup>86</sup> Ibid, art 7(4).

<sup>87</sup> Ibid, art 7(1).

<sup>88</sup> See, eg, ibid, arts 7(2),(3),(6),(14)(a).

<sup>89</sup> Alexandra Lesnikowski et al, ‘What does the Paris Agreement mean for adaptation?’ (2017) 17(7) *Climate Policy* 825, 826-7, 828.

<sup>90</sup> Paris Agreement (n 84) art 7(2).

<sup>91</sup> Ibid, art 7(5),(9)(c).

<sup>92</sup> Ibid, art 7(9)(b).

<sup>93</sup> Ibid, art 7(5).

<sup>94</sup> Ibid, art 7(10).

<sup>95</sup> Ibid, art 7(14). Need to add in rulebook reference re adaptation communications when document is finalised by UNFCCC. On the challenges of, and potential pathways towards an adaptation stocktake, see Brianna Craft and Susannah Fisher, ‘Measuring the adaptation goal in the global stocktake of the Paris Agreement’ (2018) 18(9) *Climate Policy* 1203. See also Emma L Tompkins et al, ‘Documenting the State of Adaptation for the Global Stocktake of the Paris Agreement’ (2018) 9 *Wiley Interdisciplinary Reviews: Climate Change* e545.

In addition to its commitments under the UNFCCC process, Australia also has a range of obligations under other aspects of international law that are relevant to its adaptation activities. Australia is party to a wide range of international treaties that are implicated in responses to climate impacts. More recent multilateral agreements expressly recognise their intersection with global climate governance.<sup>96</sup> These include the *Sendai Framework for Disaster Risk Reduction 2015-2030*, which aims to achieve a substantial reduction of disaster risk and losses, including in the context of climate impacts.<sup>97</sup> The Sendai Framework identifies the strengthening of disaster risk governance, including through laws at the local, national and global scales, as a priority for effective and efficient disaster risk management.<sup>98</sup> The *2030 Agenda for Sustainable Development*, which sets out the Sustainable Development Goals (SDGs), calls for urgent action to strengthen resilience and enhance adaptive capacity to climate impacts.<sup>99</sup> Other aspects of international environmental law, such as the biodiversity cluster,<sup>100</sup> also create international legal obligations that shape responses to climate impacts. Climate adaptation was not a primary consideration when many of these agreements were developed, which can present some difficulties in their interpretation and operation in contemporary circumstances.<sup>101</sup> These obligations, in combination with the global climate governance framework, establish the international legal framework within which Australia addresses climate impacts.

### 1.3.2 National Climate Adaptation Law and Policy in Australia

Legal powers for addressing climate impacts are distributed across the Australian federal system of government. This section, along with the following sections 1.3.3 and 1.3.4, explains the distribution of legal powers relating to climate adaptation across the Commonwealth,<sup>102</sup> State<sup>103</sup> and local governments within the Australian context.<sup>104</sup> It also

<sup>96</sup> While important, bilateral international agreements with implications for climate adaptation are beyond the scope of this thesis.

<sup>97</sup> United Nations Office for Disaster Risk Reduction, *Sendai Framework for Disaster Risk Reduction 2015-2030* (2015), para 16.

<sup>98</sup> Ibid, paras 26-28.

<sup>99</sup> *Transforming Our World: The 2030 Agenda for Sustainable Development*, GA Res 70/1, UN GAOR, 70<sup>th</sup> sess, 4<sup>th</sup> plen mtg, Agenda Items 15 and 116, UN Doc A/RES/70/1 (21 October 2015, adopted 25 September 2015), Goals 13.1-13.3. See also goals 1.5, 2.4 and 11.b which also refer to climate adaption.

<sup>100</sup> The biodiversity cluster includes the Convention on Biological Diversity (CBD), Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Convention on Migratory Species (CMS), International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), Ramsar Convention on Wetlands and World Heritage Convention (WHC); see José Octavio Velázquez Gomar, 'Environmental Policy Integration Among Multilateral Environmental Agreements: The Case of Biodiversity' (2016) 16 *International Environmental Agreements: Politics, Law and Economics* 525, 530.

<sup>101</sup> See, eg, Arie Trouwborst, 'International Nature Conservation Law and the Adaptation of Biodiversity to Climate Change: A Mismatch?' (2009) 21 *Journal of Environmental Law* 419.

<sup>102</sup> The national level government in Australia is typically referred to as the 'Commonwealth' government; that nomenclature is employed in the remainder of this thesis.



highlights major pathways through which national, State and local governments work together to address climate adaptation and related issues. Important components of Australian climate adaptation law and policy are used to illustrate how this legal framework is put into action. Together, these three scales provide the legal and policy framework through which Australia's climate adaptation laws are developed and implemented.

Because climate change will affect all aspects of Australian society, the Commonwealth government will play an important role in addressing climate impacts.<sup>105</sup> Although the *Constitution* does not expressly confer power to make laws with respect to 'climate adaptation', the Commonwealth Parliament may use a range of its existing powers to address climate impacts.<sup>106</sup> These include the power to make laws with respect to: external affairs;<sup>107</sup> taxation;<sup>108</sup> telecommunications services<sup>109</sup> and social security payments.<sup>110</sup> The national government may also rely on its executive powers<sup>111</sup> in dealing with emergencies that threaten the national polity, which might include large scale natural disasters.<sup>112</sup> The *Constitution* also imposes limits on governmental powers (the prohibition against acquisition of property other than on just terms, for example)<sup>113</sup> which may constrain the scope of Commonwealth climate adaptation laws.<sup>114</sup> The Commonwealth government therefore possesses a range of legal powers that might be used to shape the framework for climate adaptation in Australia.

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<sup>103</sup> In the Australian context, the first tier of sub-national governments are generally referred to as the States and Territories. The States and Territories include six States (New South Wales, Queensland, South Australia, Tasmania, Victoria and Western Australia) and two self-governing Territories (Australian Capital Territory and the Northern Territory). This thesis refers to the sub-national level of government as 'States' throughout, as it is focused on the development of Australian climate adaptation laws in three of the Australian States (as explained in section 1.5 below).

<sup>104</sup> The existence of legal powers is related to, but should not be confused with, the allocation of roles and responsibilities for climate adaptation; on the latter, see, eg, Department of Climate Change and Energy Efficiency, *Roles and Responsibilities for Climate Change Adaptation in Australia* (2012).

<sup>105</sup> *Ibid*, 4.

<sup>106</sup> This essentially replicates the constitutional basis for Australia's national environmental laws; see, eg, Sangeetha Pillai and George Williams, 'Commonwealth Power and Environmental Management: Constitutional Questions Revisited' (2015) 32 *Environmental and Planning Law Journal* 395.

<sup>107</sup> *Constitution* s 51(xxix).

<sup>108</sup> *Constitution* s 51(ii); see Pillai and Williams (n 106) 403-404.

<sup>109</sup> *Constitution* s 51(v).

<sup>110</sup> *Constitution* s 51(xxiiiA).

<sup>111</sup> *Constitution* s 61.

<sup>112</sup> The executive power of the Commonwealth includes both prerogative powers and powers conferred on the executive by statute. In the climate law sphere, performance of statutory functions will comprise the majority of Commonwealth executive action.

<sup>113</sup> *Constitution* s 51(xxxi).

<sup>114</sup> On its face, this limit would prevent the Commonwealth government from compulsorily acquiring private property for the purposes of implementing a retreat from at risk coastal areas, for example. On the scope of the concept of 'acquisition', which remains a point of some contention in Australia's s 51(xxxi) jurisprudence, see Andrew Macintosh and Jancis Cunliffe, 'The Significance of ICM in the Evolution of s 51(xxxi)' (2012) 29 *Environmental and Planning Law Journal* 297, 303-11.

In addition to its legislative power, the Commonwealth government also has financial powers that afford it the capacity to shape climate adaptation law-making at State and local levels. The Commonwealth Parliament has power to grant financial assistance to the States;<sup>115</sup> this allows the national government substantial scope to support and incentivise the implementation of laws and policies at State and local levels. These powers are frequently used to support programs potentially related to climate adaptation, including environmental management, public hospital funding and major infrastructure projects.<sup>116</sup> Because Australia experiences a relatively high degree of vertical fiscal imbalance – where the national government’s income far exceeds its service delivery responsibilities<sup>117</sup> – the national government has substantial capacity to influence adaptation law and policy at lower levels of government. This imbalance has some benefits; it creates an opportunity (at least in theory) for the national government to address inequities that arise at lower levels.<sup>118</sup> Yet a high degree of vertical fiscal imbalance is often seen as undesirable because – among other things<sup>119</sup> it creates a moral hazard<sup>120</sup> where the national government is expected to provide financial relief for States, local governments and citizens in the wake of major disruptions, such as large scale natural disasters.<sup>121</sup> In practical terms, the Australian national government therefore has substantial capacity to influence the development and implementation of climate adaptation laws and policies at lower levels of government.

Two examples of Australia’s current national approach provide useful examples of the ways that the Commonwealth government uses its legal and financial powers in relation to climate adaptation. First, the *National Climate Resilience and Adaptation Strategy 2015* (‘the Strategy’) provides a useful illustration of the role the Commonwealth government currently plays in Australian approaches to climate adaptation.<sup>122</sup> The Strategy’s overarching vision is to ‘[build] the resilience of communities, the economy and the environment to a

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<sup>115</sup> *Constitution* s 96.

<sup>116</sup> See, eg, Commonwealth of Australia, *Budget 2019-20: Federal Financial Relations* (Budget Paper No 3, 2019-20) Part 2.

<sup>117</sup> In 2008, Alan Fenna estimated that the Commonwealth collects 80% of revenue, yet has responsibility for approximately 50% of governmental service delivery: Alan Fenna, ‘Commonwealth Fiscal Power and Australian Federalism’ (2008) 31 *University of New South Wales Law Journal* 509, 509.

<sup>118</sup> Department of the Prime Minister and Cabinet, *Reform of the Federation White Paper: COAG and Federal Financial Relations* (Issues Paper No 5, 2015) 32 (‘Issues Paper No 5’). This is especially the case in Australia with its historical emphasis on horizontal fiscal equalisation; see 39-46.

<sup>119</sup> Including negative effects on financial certainty and governmental accountability in a general sense.

<sup>120</sup> Ie that citizens who suffer damage might not implement measures to minimise their exposure to a climate impact; Justine Bell and Mark Baker-Jones, ‘Retreat from Retreat - The Backward Evolution of Sea-Level Rise Policy in Australia, and the Implications for Local Government’ (2014) 19 *Local Government Law Journal* 23, 34.

<sup>121</sup> Issues Paper No 5 (n 132).

<sup>122</sup> Commonwealth of Australia, *National Climate Resilience and Adaptation Strategy* (2015) (‘National Strategy’).

variable and changing climate'.<sup>123</sup> It sets out 'Guiding Principles' to direct adaptation actions, and to promote evidence-based, adaptive decision-making that considers climate risks in the short-, medium- and long-terms. The 'Guiding Principles' also promote collaborative, values-based decision-making that supports people vulnerable to climate impacts while recognising shared responsibilities across levels of government, and between governments and the private sector.<sup>124</sup> The Strategy identifies eight national priority policy areas for adaptation, including coasts, natural ecosystems, cities, health and wellbeing and disaster risk management.<sup>125</sup> However, the Strategy does little more than catalogue existing adaptation efforts undertaken at national, State and local levels, while providing superficial direction for future action in each priority policy area. Thus, while there is the appearance of policy coordination at the national level, the Strategy falls well short of the integrated approach to climate adaptation often called for by adaptation researchers and practitioners.

The Australian approach to managing natural disasters provides another useful example of the way that adaptation is addressed at a national level. There is no national legislation addressing disaster or emergency management.<sup>126</sup> Nevertheless, the Commonwealth government plays a key role in shaping emergency management arrangements. First, the Commonwealth government contributes to strategic policy development by supporting the development and implementation of the *National Strategy for Disaster Resilience* through COAG.<sup>127</sup> It also supports cross-jurisdictional policy development through intergovernmental committees such as the Ministerial Council for Police and Emergency Management, and the Australia-New Zealand Emergency Management Committee. The Commonwealth government has also provided crucial funding to support disaster prevention, preparedness, and response and recovery programmes. These include:

- Disaster Recovery Funding Arrangements (DRFA), through which the Commonwealth government partially covers the costs of relief and recovery efforts at State and local levels;<sup>128</sup>
- Disaster Recovery Payment or Allowance to eligible individuals;<sup>129</sup>

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<sup>123</sup> Ibid, 6.

<sup>124</sup> Ibid, 8-9.

<sup>125</sup> Ibid, 23.

<sup>126</sup> Emergency management has historically been the responsibility of State governments, who have all enacted disaster or emergency management legislation. On the increasing importance of national level emergency management legislation, see Michael Eburn, 'Responding to Catastrophic Natural Disasters and the Need for Commonwealth Legislation' (2011) 10 *Canberra Law Review* 81.

<sup>127</sup> Department of Home Affairs, *National Disaster Risk Reduction Framework* (2019).

<sup>128</sup> Department of Home Affairs, *Disaster Recovery Funding Arrangements 2018* (2018) 66-68.

<sup>129</sup> Australian Government, 'Emergency Management: Recovery Assistance' (Web Page) <https://www.homeaffairs.gov.au/about-us/our-portfolios/emergency-management/recovery-assistance>

- Ad hoc sectoral funding, such as limited term funding for bushfire mitigation;
- Funding for research on disaster resilience, including the Bushfire and Natural Hazards Cooperative Research Centre (BNHCRC) and the National Climate Change Adaptation Research (NCCARF).

Federal, State and/or local governments have, for many years, worked collaboratively in areas that require coherent national policy and action. In some instances, this cooperation has been developed through formal intergovernmental committees established through the COAG system. For example, the Select Council on Climate Change, which operated from 2011-13, devised policy documents (such as the statement of *Roles and Responsibilities for Climate Change Adaptation in Australia*) that remain influential in Australian climate adaptation policy.<sup>130</sup> Other cross-jurisdictional bodies, such as the Climate Change Adaptation Working Group,<sup>131</sup> continue to play an important role in national level policy development. In some instances, this collaborative work develops, or gives effect to, formal intergovernmental agreements.<sup>132</sup> Disaster resilience approaches, for example, have long been managed and funded through formal intergovernmental processes. In other instances, collaborative work is effected through more relaxed working arrangements. In any case, intergovernmental cooperation is well-established within Australia's climate adaptation law and policy framework.

### 1.3.3 *Climate Adaptation Laws and Policies in the Australian States*

The Australian States have wide law-making powers relevant to climate adaptation. The State Parliaments are empowered to make laws on any subject matter they choose to address. The States have had primary responsibility for several areas of law relevant to climate adaptation, such as land-use planning, coastal management, real property law, the built and natural environments, healthcare and emergency services. However, the power of State Parliaments to make adaptation laws is limited in two ways. First, the States are required to comply with any constitutional limits on their powers.<sup>133</sup> Second, validly enacted

<sup>130</sup> Climate adaptation is often addressed through Council of Australian Government (COAG) processes, such as the Ministerial Council for Police and Emergency Management which deals with aspects of extreme weather events.

<sup>131</sup> Meeting of Environment Ministers, 'Agreed Statement' (15 December 2015) 3.

<sup>132</sup> *Intergovernmental Agreement on the Environment* (1992) schedule 5 para 3; see Mikael Granberg and Leigh Glover, 'Adaptation and Maladaptation in Australian National Climate Change Policy' (2014) 16 *Journal of Environmental Policy and Planning* 147.

<sup>133</sup> This includes limitations found in both the national *Constitution* (the implied freedom of political communication, for example) and the relevant State Constitution.

federal laws overrule inconsistent State legislation.<sup>134</sup> Subject to those limits, the States have plenary power to enact adaptation laws.

Each of the Australian States continue to develop and implement customised legal arrangements for climate adaptation. Some jurisdictions (eg Victoria) have developed general framework climate change legislation that includes provisions relating to climate adaptation.<sup>135</sup> Others such as New South Wales have chosen not to adopt specific legislation, preferring to address climate change (including adaptation) through Policy documents such as the *NSW Climate Change Policy Framework*<sup>136</sup> and an array of sectoral measures integrated across other laws and policies.<sup>137</sup> The remaining States have typically assumed a middle ground, where general climate legislation exists, but adaptation law and policy is dispersed across the legal framework. In Tasmania, for example, adaptation is recognised as an objective in legislation,<sup>138</sup> but further developments are affected through the State's *Climate Change Action Plan 2017-21*<sup>139</sup> and measures integrated among other laws and policies.<sup>140</sup> These varied approaches are generally designed consistently with existing local practices and procedures, and within the contemporary political context.

#### 1.3.4 Local Government and Climate Adaptation Law and Policy in Australia

Local governments play a vital role in climate adaptation. They provide services and facilities that are essential to day-to-day community life. Local governments also play a crucial regulatory role by applying State and some national level laws to the particularities of their local circumstances.<sup>141</sup> This is best-demonstrated by the extensive role that local governments play in planning decision-making under State land-use planning laws. Despite their clear importance, the legal powers of local government are relatively limited. In pure legal terms, local governments are subordinate entities of the Australian States. Local governments are constituted by State legislation, which confers powers and responsibilities upon them.<sup>142</sup> Although local governments are generally empowered to make local rules, the nature and scope of those rules is limited to the areas in which they are empowered by

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<sup>134</sup> *Australian Constitution* s 109.

<sup>135</sup> *Climate Change Act 2017* (Vic).

<sup>136</sup> (2016).

<sup>137</sup> See also the discussion of NSW laws relating to coastal management in Chapter 5.

<sup>138</sup> *Climate Change (State Action) Act 2008* (Tas) s 4(h).

<sup>139</sup> Tasmanian Climate Change Office, Department of Premier and Cabinet, *Climate Action 21: Tasmania's Climate Change Action Plan 2017-21* (Tasmanian Government, 2017) 8, 20-1.

<sup>140</sup> Relevant examples are addressed in detail in Chapter 4.

<sup>141</sup> Lyndon Megarrity, *Local Government and the Commonwealth: An Evolving Relationship* (Parliament of Australia, Parliamentary Library, Research Paper No 10, 2010-11) 1-2.

<sup>142</sup> See, eg, analysis of local government laws in Chapters 5 and 6.

State legislation. State governments also retain the power to dissolve or reshape local government, and to overrule local government decisions in some circumstances.<sup>143</sup>

Despite their comparative lack of formal legal power, many local governments around Australia have taken significant steps in developing and implementing climate adaptation policies and plans over the past decade. While it is not practical to catalogue the specific initiatives developed by each of Australia's 537 local councils,<sup>144</sup> it is important to recognise that local government policies address a wide range of current and future climate impacts. Local councils are intimately involved in the preparation and implementation of disaster management arrangements at the local level. They also implement local level environmental laws. For example, local council by-laws and policies are often central to efforts to mitigate bushfire risk. Local councils also regularly address climate adaptation when implementing State and national level land-use planning and building laws in their municipal area. Coastal councils, for example, may be required to consider future sea level change when assessing development applications on, or near to, the coastline.<sup>145</sup> Much of Australia's nascent climate adaptation case law has developed through judicial review of local government level decision-making, or attempts to pursue civil claims against local governments.<sup>146</sup> Local level laws and local governments are therefore central to the operation of Australian adaptation laws in practice.

### 1.3.5 Resilience and Justice in Australian Climate Adaptation Law and Policy

Two substantive concepts are increasingly influential in the substantive development of Australian climate adaptation law and policy. Many of Australia's climate adaptation policies – at all levels – refer to the concept of *resilience*.<sup>147</sup> The term 'resilience' is typically used to refer to the capacity of a system to address change.<sup>148</sup> In the policy context, 'resilience' is often used in a manner that leaves its meaning uncertain and obscured; there is no one settled approach to resilience in the policy or legal sphere. In some contexts, the

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<sup>143</sup> These powers are found in local government legislation; see eg *Local Government Act 1993* (NSW) Parts 7 and 8.

<sup>144</sup> See Australian Local Government Association, <<https://alga.asn.au/>>.

<sup>145</sup> See Chapter 5.

<sup>146</sup> Peel (n 64) 951-5.

<sup>147</sup> Resilience appeared in Australian adaptation policies as early as 2011 (see Council of Australian Governments, *National Strategy for Disaster Resilience* (2011)), and is now frequently incorporated in climate adaptation policies across multiple sectors. Resilience is also referred to in several pieces of State legislation, including the *Coastal Management Act 2016* (NSW) and *Emergency Management Act 2013* (Vic). For an analysis of amendments embedding resilience in the Victorian emergency management legislation, see Stephanie Niall and Anne Kallies, 'Electricity Systems between Climate Mitigation and Climate Adaptation Pressures: Can Legal Frameworks for "Resilience" Provide Answers?' (2017) 34 *Environmental and Planning Law Journal* 488.

<sup>148</sup> See Chapter 2.1.

term resilience refers to the capacity of a social or environmental system to ‘bounce back’ from a disturbance to resume ‘business as usual’. Yet in other situations the term is used to refer to the ability of the socio-economic and/or biophysical processes to anticipate and/or respond dynamically – and perhaps repeatedly – to ongoing change. These varied approaches reflect the evolution of the concept of resilience in the scientific and scholarly literature over the past four decades.<sup>149</sup> While resilience approaches are used across diverse contexts extending beyond environmental change,<sup>150</sup> they are now heavily influential in policy and practical approaches to climate adaptation.<sup>151</sup>

*Environmental justice* considerations are also increasingly relevant to the development of Australian climate adaptation law and policy. Contemporary notions of environmental justice typically focus on participation in decision making relating to environmental hazards, and in the development, implementation and enforcement of regulations that affect the substantive fairness of environmental decision making.<sup>152</sup> Environmental justice emerged in the US in the late 20<sup>th</sup> century in response to concern over the location and management of environmental hazards in African American and other minority neighbourhoods.<sup>153</sup> It thus initially developed as a collection of activist practices aimed at addressing the inequitable distribution of environmental ‘bads’.<sup>154</sup> It has subsequently been theorised and is developing into a rich, interdisciplinary area of scholarly inquiry.<sup>155</sup> Environmental justice has often – but by no means exclusively – been pursued through legal processes. Although

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<sup>149</sup> See further Chapter 2.1 below.

<sup>150</sup> On the breadth of the use of resilience, see Danny MacKinnon and Kate Driscoll Derickson, ‘From Resilience to Resourcefulness: A Critique of Resilience Policy and Activism’ (2012) 37 *Progress in Human Geography* 253, 256 (Table 1).

<sup>151</sup> Carl Folke, ‘Resilience (Republished)’ (2016) 21(4) *Ecology and Society*, [44], 1; Sonja Deppisch and Sasha Hasibovic, ‘Social-Ecological Resilience Thinking as a Bridging Concept in Transdisciplinary Research on Climate-Change Adaptation’ (2013) 67 *Natural Hazards* 117, 120-2; Hartmut Füngfeld and Darryn McEvoy, ‘Resilience as a Useful Concept for Climate Change Adaptation’ (2012) 13 *Planning Theory and Practice* 324-8.

<sup>152</sup> This statement is heavily influenced by the US Environmental Protection Agency (EPA), ‘Environmental Justice’ <<https://www.epa.gov/environmentaljustice>>.

<sup>153</sup> Alice Kaswan, ‘Environmental Justice and Environmental Law’ (2012-13) 24 *Fordham Environmental Law Review* 149, 150. This thesis uses the phrase ‘environmental hazards’ to include both environmental harms that already affect communities and the risk of future impacts.

<sup>154</sup> Environmental justice is also a thriving area of academic research; it has now expanded beyond the US to many countries (including Australia), while also emerging at both the transnational and global levels. This scholarship is explored in detail in Chapter 2.

<sup>155</sup> See, eg, Robert D Bullard, *Dumping in Dixie: Race, Class, and Environmental Quality* (Westview Press, 1st ed, 1990); Bunyan I Bryant and Paul Mohai (eds), *Race and the Incidence of Environmental Hazards: A Time for Discourse* (Westview Press, 1992); Paul Mohai, David Pellow and J Timmons Roberts, ‘Environmental Justice’ (2009) 34 *Annual Review of Environment and Resources* 405.

initial efforts involved the strategic use of litigation,<sup>156</sup> aspects of environmental justice have become increasingly embedded in legislative and policy frameworks over time.

While not always invoked by name, environmental justice considerations are often latent within Australia climate adaptation law and policy. Laws that require public participation in decision-making – through diverse mechanisms ranging from publication of draft rules for public comment through to more intensive deliberative processes – provide good examples of the role that environmental justice considerations play in approaches to climate adaptation.<sup>157</sup> Policy provisions identifying the need to assist those most vulnerable to climate impacts are also reflective of concerns about the distribution of hazards central to environmental justice.<sup>158</sup>

#### **1.4 Research Questions**

Although resilience and justice are increasingly identified as policy objectives in Australian adaptation laws and government documents, there is much we do not know about their implementation through law. First, the interaction of resilience and justice has not been considered in great detail. Although there is increasing scholarly interest in the synergies and tensions between the concepts, the area remains underexplored.<sup>159</sup> In particular, little attention has been paid to the ways that legal frameworks might affect the interrelationship of resilience and environmental justice.<sup>160</sup> Secondly, resilience and environmental justice are far more developed as areas of scholarly inquiry than their implementation in Australia's existing adaptation laws and policies suggests. If resilience and justice are to be foci of Australian adaptation policy, we must understand the extent to which those concepts are reflected in our existing laws. In addition, the existing literature clearly demonstrates the difficulty of operationalising the resilience and environmental justice principles in practice. This is equally true of the law. In order to assist in the development of Australia's adaptation laws, we must therefore consider how the operation of Australia's climate adaptation laws in practice influences resilience and justice in addressing to climate impacts. Finally, the study might also provide some insights on better implementing resilience and environmental justice principles through law into the future.

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<sup>156</sup> Luke W Cole, 'Environmental Justice Litigation: Another Stone in David's Sling' (1993) 21 *Fordham Urban Law Journal* 523.

<sup>157</sup> See Chapter 3.3.3 where participatory processes are discussed at length.

<sup>158</sup> National Strategy (n 122) 9.

<sup>159</sup> See Chapter 3.1 for analysis of key sources and further discussion.

<sup>160</sup> See Chapter 3.2 for analysis of key sources and further discussion.



To address these concerns, the thesis therefore answers the following research questions:

- 1) **Are the concepts of resilience and environmental justice interrelated? If so, how?**
- 2) **To what extent are ‘just resilience’ principles reflected in Australia’s current climate adaptation laws as written?**
- 3) **To what extent are ‘just resilience’ principles reflected in the implementation of Australia’s current climate adaptation laws in practice?**
- 4) **What reforms might allow Australian climate adaptation laws to better promote ‘just resilience’ in addressing climate impacts?**

## **1.5 Research Methodology and Methods**

The research questions at the core of this thesis each pose distinct, but related, research challenges. The first requires a conceptual analysis of the treatment of resilience and environmental justice in the existing literature. The second question requires a systematic identification and analysis of the rules and principles comprising Australian climate adaptation laws. In other words, it requires attention to the law ‘in books’.<sup>161</sup> The third, concerned with the operation of Australian climate adaptation laws in practice, directs attention to how these existing laws are made to work by the people and institutions involved in their creation, implementation, evaluation and reform. The third research question therefore requires investigation of the law ‘in action’.<sup>162</sup> The fourth and final question requires consideration of ‘the adequacy of existing rules and recommend[ing] changes to any rules found wanting’.<sup>163</sup> Determining whether rules are adequate, and prescribing the ends to which they might be changed, may have normative dimensions that require further elaboration.

### **1.5.1 A Case Study Approach**

To facilitate nuanced analysis, and to make examination of the law ‘in action’ practical, the thesis examines three case studies of aspects of Australian climate adaptation laws. Flyvbjerg defines a case study as ‘an intensive analysis of an individual unit stressing developmental factors in relation to environment’.<sup>164</sup> He goes on to identify four key features of the case study. First, the ‘case’, or unit that comprises the case study, is the ‘bounded system’ selected for investigation. Second, case studies are intensive, in that they focus on the depth and detail of the unit of study. In addition, case studies are highly

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<sup>161</sup> This distinction was famously drawn in Roscoe Pound, ‘Law in Books and Law in Action’ (1910) 44 *American Law Review* 12.

<sup>162</sup> Ibid.

<sup>163</sup> Terry Hutchinson and Nigel Duncan, ‘Defining and Describing What We Do: Doctrinal Legal Research’ (2012) 17 *Deakin Law Review* 83, 105.

<sup>164</sup> Bent Flyvbjerg, ‘Case Study’ in Norman K Denzin and Yvonna S Lincoln (eds), *SAGE Handbook of Qualitative Research* (SAGE Publishing, 2011) 301, 301.

contextual, concerned with the environment or context in which the case occurs. Finally, case studies might relate to a ‘string of concrete and interrelated events’ that occur over time. That is, a series of events – such as experiences of climate impacts and the development of relevant legal measures over time – can together constitute a ‘case’ for analysis.

This thesis uses three contextually diverse case studies to develop a contextual understanding of the operation of Australian climate adaptation laws and, more particularly, their influence on resilience and environmental justice in relation to climate impacts. The cases are the legal framework relating to three climate impacts in three specific locations, being:

- 1) Bushfire in the Tasmanian Wilderness World Heritage Area (TWWHA);
- 2) Changing lake levels in Lake Macquarie, New South Wales;
- 3) Heatwave in urban Melbourne, Victoria.

Each case study thus involved in-depth, contextual analysis of the case study, including both the laws and factual matrix relevant to each particular climate impact.

These three case studies have important similarities and differences. First, each case study explores an aspect of Australia’s climate adaptation laws that is already being called upon to address climate impacts. In each instance, the climate impact(s) that present an adaptation challenge have been experienced in recent times. Second, the legal framework in each case study was known to be active. Preliminary inquiries – which included the monitoring of media reports, government inquiries and academic journals – indicated that legal processes were engaged in relation to each case study.<sup>165</sup> Each case thus involved a series of events that had the potential to provide useful insights relating to the dynamic development of the legal framework over time. Finally, each case study addresses a climate impact (or impacts) that is of significant public policy interest. Bushfires, heatwaves and the complex of impacts that affect water levels in coastal areas (including sea level change, storm surge and rainfall events) represent three of the major climate impacts confronting south-eastern Australia. these case studies are thus ‘critical’, as they have ‘strategic importance to the general problem’<sup>166</sup> of the development and implementation of Australia’s climate adaptation laws.

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<sup>165</sup> Relevant sources are referred to in each of the three case study chapters below.

<sup>166</sup> Flyvbjerg (n 164) 307.

Despite these similarities, there are important differences that facilitate ‘cross-unit’<sup>167</sup> or comparative analysis across the three case studies. The case studies are each located in different Australian State jurisdictions; important differences in the relevant legal frameworks can thus be usefully explored through comparison across the case studies. The case studies involve international law to varying degrees, and may thus provide insights with respect to the influence of international agreements on the operation and development of Australian domestic climate adaptation law. The climate impacts that are the fulcrum of each case study are also different in important ways. Heatwaves, bushfires and coastal change manifest over different time scales, and have different effects on the biophysical environment and socio-cultural contexts in ways that were expected to provide different insights regarding the operation of Australian climate adaptation laws. For example, while heatwaves may be relatively transient events with a duration of hours or days, coastal processes such as sea level change involve long-term and sustained change over decades. Different impacts may thus place distinct demands on the law ‘in action’, and require diverse reforms to enhance resilience and justice in climate adaptation.

### 1.5.2 *Research Methods*

Each case study was investigated using a combination of doctrinal legal research and qualitative social research methods. The first step in each case study was systematic doctrinal legal research; as a practical matter, this was necessary to scope and identify the boundaries of each case study.<sup>168</sup> Building on that analysis of the law ‘in books’, the second step was to examine the law ‘in action’ through content analysis of data generated through semi-structured interviews. The following paragraphs detail the application of those methods in this project.

Doctrinal legal analysis, or the study of law ‘in books’, involved two steps.<sup>169</sup> The first step required the identification and collection of the legal sources that constitute the legal framework relevant to each case study. Relevant primary legal sources (ie legislation, regulations and relevant case law) were identified through systematic searching of key legal databases (including Westlaw AU, Lexis Advance and Austlii), and close reading of authoritative secondary materials (including governmental publications, grey literature and academic journals, textbooks and monographs). Authoritative versions of primary legal sources were retrieved from relevant publishers (including governmental websites and

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<sup>167</sup> Ibid, 301.

<sup>168</sup> Terry Hutchinson, ‘Doctrinal Research: Researching the Jury’ in Dawn Watkins and Mandy Burton (eds), *Research Methods in Law* (Routledge, 2013) 7, 28.

<sup>169</sup> Hutchinson and Duncan (n 163) 110-2.

those sources produced by major publishers, such as Thomson Reuters and LexisNexis). Relevant extrinsic materials (ie sources that may be used in resolving uncertainty when interpreting legislation and regulations)<sup>170</sup> were also retrieved from authoritative locations (eg explanatory memoranda and other records of the parliamentary process were accessed via Parliamentary websites). Major governmental policy documents and associated grey literature were accessed via official governmental or organisational websites where possible.

The second step in doctrinal legal research is to analyse and synthesise the law in accordance with the canons of legal interpretation. In other words, this step involves the application of well-recognised legal reasoning processes to documents obtained in the first step in order to ascertain the meaning of the law. For example, analysing legislation required application of principles of statutory interpretation; determining the current state of the common law required application of ‘deductive logic, inductive reasoning and analogy’ to judgments in decided cases.<sup>171</sup> Relevant secondary sources (eg peer reviewed journal articles, monographs, and “grey” literature) informed the analysis and synthesis of the law. Those sources were particularly helpful in illustrating the contextual factors relevant to the development of the legal framework over time. Although the ‘model’ doctrinal legal researcher interprets and analyses the relevant materials objectively,<sup>172</sup> most legal researchers acknowledge that doctrinal legal analysis some reference to external considerations when interpreting and analysing legal sources.<sup>173</sup>

Although doctrinal legal research is often described in a linear fashion,<sup>174</sup> the process of identifying, retrieving and analysing relevant legal materials required multiple iterations in this project. The legal framework in each of the three case studies changed, to varying degrees, during the course of the research; new legislative frameworks were enacted, new subordinate legislation and governmental documents were produced, and the corpus of case law relevant to climate adaptation continued to evolve. Sources identified in the course of semi-structured interviews – or to which participants made particular reference – were often re-examined in light of the collection and analysis of interview data. Some sources

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<sup>170</sup> See DC Pearce and RS Geddes, *Statutory Interpretation in Australia* (LexisNexis Butterworths, 8<sup>th</sup> ed, 2014) Ch 3 on the use of extrinsic materials in statutory interpretation.

<sup>171</sup> Hutchinson and Duncan (n 163) 111.

<sup>172</sup> Hutchinson (n 168) 16.

<sup>173</sup> Paul Chynoweth, 'Legal Research' in Andrew Knight and Les Ruddock (eds), *Advanced Research Methods in the Built Environment* (Wiley-Blackwell, 2008) 30-31.

<sup>174</sup> This is typically for ease of reading/efficiency; see, eg, Hutchinson and Duncan (n 163) 110.

also required further consideration as external factors relevant to the case changed.<sup>175</sup> The two steps of doctrinal legal research were thus repeated on multiple occasions (as required) throughout the course of this research.

The law ‘in action’ was investigated through *socio-legal research*. Socio-legal research draws upon research methods from disciplines other than law (most commonly social sciences and the humanities) to investigate the context in which the law operates.<sup>176</sup> Data regarding the context in which Australian climate adaptation laws operate was generated through a series of semi-structured interviews with expert practitioners.<sup>177</sup> Semi-structured interviews were the preferred data generation technique as they allow participants to relate their individual experiences of Australia’s climate adaptation laws, and thus offer an opportunity to develop a richer and deeper understanding of the operation of laws in practice.<sup>178</sup> The following paragraphs detail the methods used in this phase of the research project.

Semi-structured interviews were chosen as the research method for generating data about the law ‘in action’ for several reasons. The operation of laws ‘in action’ is a heavily contextual social process that can be most usefully understood through the accounts and experiences of people who have direct experience with relevant legal processes. Interviews allowed for the collection of data reflecting the depth and nuance of participant’s experiences.<sup>179</sup> In practical terms, interviews were one of the only ways in which relevant data could be generated.<sup>180</sup> There are relatively few other sources of data detailing the observations of expert-participants on the operation of the legal regimes in the case studies. While some data was available in other sources (published journal articles, for example), those sources typically focused on a different unit of analysis and thus did not provide the in-depth accounts of participant’s experiences in observing and participating in relevant legal processes. That pre-existing data was therefore of extremely limited utility for this research project.

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<sup>175</sup> This reflects the views of Murphy and McGee, who argue that doctrinal legal research involves “immersion” or “saturation” in context: Brendon Murphy and Jeffrey McGee, ‘Phronetic Legal Inquiry: An Effective Design for Law and Society Research?’ (2015) 24 *Griffith Law Review* 288, 305-306.

<sup>176</sup> Terry Hutchinson, *Researching and Writing in Law* (Thomson Reuters, 3rd ed, 2010) 97; Murphy and McGee (n 175) 289.

<sup>177</sup> Ruth G Ethel and Marilyn M McMeniman, ‘Unlocking the Knowledge in Action of an Expert Practitioner’ (2000) 51 *Journal of Teacher Education* 87.

<sup>178</sup> Helene Starks and Susan Brown Trinidad, ‘Choose your Method: A Comparison of Phenomenology, Discourse Analysis, and Grounded Theory’ (2007) 17 *Qualitative Health Research* 1372, 1375.

<sup>179</sup> Jennifer Mason, *Qualitative Researching* (SAGE Publications, 2nd ed, 2002) 65.

<sup>180</sup> *Ibid*, 66.

Semi-structured interviews were conducted with 27 expert practitioners (across the three case studies) during 2018 and 2019. Relevant laws, Policies, and governmental reports, documents (eg lists of submissions to public inquiries) and websites were systematically reviewed to identify offices and people who had potential to offer insights on the operation of Australian climate adaptation laws in practice. As a result, participants included staff from State government departments and local councils; statutory office holders; staff from utilities providers, representatives of relevant community groups and non-governmental organisations with experience of relevant legal institutions and processes, and independent practitioners with professional experience directly related to the climate impacts and legal frameworks that comprise the cases. The group of participants for each case study was curated in an effort to secure a diverse range of views regarding the operation of the relevant legal framework. Particular care was taken to maximise the diversity of participants in each case study, especially by recruiting participants from across levels of government, and from both within and outside of government.

Interviews used a series of open-ended questions to elicit narrative responses from participants. Participants were also presented with a diagram depicting relevant aspects of Australia's climate adaptation laws prior to the interview.<sup>181</sup> The majority of interviews were conducted 'face-to-face' at the office of the participant, or in a private space nearby. However, a small number of interviews were conducted via Skype or telephone where it was not possible to conduct interviews in person. Interviews were, on average, completed in 1 hour and 10 minutes; although a small number of interviews were of longer duration. Although all interviews included participant's general observations relating to relevant aspects of Australia's climate adaptation laws, most interviews ultimately focused more narrowly on participant's accounts and experiences of specific aspects of the legal framework. All interviews were recorded in full and transcribed with the assistance of a professional transcription service. Transcripts were made available to participants for review. Field notes and reflections were recorded during and after interviews in order to capture aspects of the interview process not immediately evident in the audio recordings.<sup>182</sup>

Interview data was then analysed using a qualitative content analysis approach. Qualitative content analysis is a 'method for the subjective interpretation of the content of ... data through the systematic classification process of coding and identifying themes or

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<sup>181</sup> Both the interviews and diagrams were tailored to each case study.

<sup>182</sup> Mason (n 179) 77.

patterns'.<sup>183</sup> It requires that language be examined intensively to determine its meaning in context. Transcripts of interviews were coded using NVivo software. In the coding process, interview transcripts were read closely in order to identify key thoughts and concepts that emerge from the data.<sup>184</sup> Codes were then grouped into categories, or meaningful collections of codes that represent higher order. Categories were then further organised into themes. Themes are higher order assemblages that allow for interrogation of similarities and differences among categories. Although some codes and categories appeared consistently across more than one case study, others were unique to only one case. The patterns emerging within and across the case studies suggested that cross-case analysis might provide important insights.

The process of analysing interview data and developing codes, categories and themes involved both inductive and deductive components. As White and Marsh explain, 'patterns and concepts may emerge [when analysing data] that were not foreshadowed but that are, nevertheless, important aspects' of the phenomenon being investigated.<sup>185</sup> Codes and categories were largely developed inductively through close reading of the interview transcripts and consideration of the connections between codes. Although the language used to describe some codes and categories reflects aspects of existing scholarship, the use of that language was driven by the interview data itself, rather than the uncritical imposition of established concepts onto the interview data. In contrast, the higher level themes largely reflect concepts well-established in the scholarly literature. This outcome was anticipated, as interview protocols were designed to facilitate investigation of the conceptual framework developed with reference to existing secondary literature.

The process of qualitative data analysis influenced the presentation of results in two ways. First, the categories and themes that emerge from content analysis are reflected in the organisation of results; in some instances, the headings and subheadings used in chapters 4, 5 and 6 were developed in the content analysis process. Secondly, select quotations from the interview data are included in the presentation of results in the case study chapters 4, 5 and 6. Quotations have been used where they exemplify a theme that emerged in analysis of the research data, or because they provide a particular insight regarding the operation of the case study legal frameworks. However, care has been taken to protect the identity of

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<sup>183</sup> Hsiu-Fang Hsieh and Sarah E Shannon, 'Three approaches to qualitative content analysis' (2005) 15 *Qualitative Health Research* 1277, 1278.

<sup>184</sup> Hsieh and Shannon (n 183) 1279; Marilyn Domas White and Emily E Marsh, 'Content Analysis: A Flexible Methodology' (2006) 55 *Library Trends* 22, 34.

<sup>185</sup> White and Marsh (n 184) 34.

participants.<sup>186</sup> No participants are identified by name in this thesis, and quotations have been curated (where necessary) to ensure that the identity of participants is not revealed by the specifics of their account. Quotes have also been included in the written results in order to ensure that the views and perspectives of participants are represented as authentically as possible, and to facilitate assessment of the reliability of data analysis.

### 1.5.3 *Research Methodologies and Methods in Resilience and Environmental Justice Research*

Resilience and environmental justice are established areas of research, and scholars have devoted substantial time and effort in analysing research approaches in each field. Resilience is a fast growing and diverse area of research that now clearly welcomes contributions from a wide range of disciplines and research traditions. Davidson et al argue persuasively that the social-ecological approach to resilience represents a conceptual 'middle ground between social and environmental sciences'.<sup>187</sup> However, resilience's rise to policy prominence has reinvigorated interest in the 'social' aspect of resilience research.<sup>188</sup> Recent studies have shown that natural sciences based scholarship remains heavily influential in the resilience domain more broadly, and ecology remains influential even in resilience scholarship.<sup>189</sup> As a result, questions remain regarding the capacity of the largely positivist research methods prevalent in much resilience scholarship to accurately conceptualise society, or to acknowledge and value 'different ways of knowing'.<sup>190</sup> Through the use of doctrinal legal research and qualitative social research methods outlined above, this project further highlights the importance of methodological pluralism in the further development of resilience research.

Environmental justice scholarship also encompasses a wide range of research methodologies and methods. In stark contrast to resilience scholarship, environmental justice research developed through methods and methodologies most closely associated with social research. Bullard's path-setting research in the late 1980s, for example, used qualitative research methods to generate insights regarding the siting of waste facilities in the southern US.<sup>191</sup> Although environmental justice research has rapidly expanded in the

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<sup>186</sup> This was an important consideration for approximately 50% of participants.

<sup>187</sup> Julie L Davidson et al, 'Interrogating Resilience: Toward a Typology to Improve its Operationalization' (2016) 21(2) *Ecology and Society* 3.

<sup>188</sup> See, eg, W Neil Adger, 'Social and Ecological Resilience: Are They Related?' (2000) 24 *Progress in Human Geography* 347; this point is discussed further in Chapter 2.6.

<sup>189</sup> Jacopo A Baggio, Katrina Brown and Denis Hellebrandt, 'Boundary Object or Bridging Concept? A Citation Network Analysis of Resilience' (2015) 20(2) *Ecology and Society* 7.

<sup>190</sup> Seema Arora-Jonsson, 'Does Resilience have a Culture? Ecocultures and the Politics of Knowledge Production' (2016) 121 *Ecological Economics* 98, 105.

<sup>191</sup> Walker (n 152) 17-22.



past quarter century, it has retained a particular focus on the social aspects of human communities. It is perhaps unsurprising that environmental justice studies continue to expand their treatment of the social domain. As Pellow describes, more recent contributions to environmental justice scholarship have utilised an expansive range of research methodologies and methods to develop more nuanced analyses of the social domain.<sup>192</sup> Although the relationship between law and environmental justice is contested, the doctrinal legal research methods employed in this project will build on the environmental justice research's openness to qualitative research methods.

## **1.6      *Structure of the Thesis***

This thesis comprises seven chapters. Chapter Two presents a detailed review of the literature addressing resilience and environmental justice. It outlines the central precepts of resilience and environmental justice, and then explores the intersection of both concepts with climate adaptation and law respectively. Chapter Three builds on the literature review by developing a conceptual framework for analysing the influence of law on just resilience. Drawing on emerging interdisciplinary scholarship exploring the intersection of resilience, environmental justice and law, the chapter sets out four principles for assessing the influence of law on just resilience in climate adaptation. Those principles are that legal arrangements must: (1) prepare for, and respond to, change; (2) address the distributive effects of climate change and adaptation; (3) promote participation in adaptation processes; and (4) cross sectors and scales.

Chapters Four to Six use the key principles as a lens to analyse three case studies of Australian climate adaptation laws. Those three case studies explore the legal framework relating to: bushfire in the TWWHA; changing water levels in Lake Macquarie, and heatwaves in Melbourne in chapters Four, Five and Six respectively. As explained in section 1.5 above, each chapter presents desktop analysis of the 'law in books' alongside the insights of expert practitioners on the 'law in action'. Each case study provides valuable insights on the importance of aspects of the key principles, while also identifying drivers of, and barriers to, their operationalisation in practice.

Chapter Seven synthesises and analyses key themes emerging from the three case studies. The chapter begins by exploring similarities and differences in the role of the four key principles for just resilience across the three case studies. This comparative analysis

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<sup>192</sup> David N Pellow, 'Critical Environmental Justice Studies' in Beth Schaefer Caniglia, Manuel Vallee and Beatrice Frank (eds), *Resilience, Environmental Justice and the City* (Routledge, 2017) 18.

facilitates more nuanced analysis of aspects of the four key principles. Facilitating public participation, for example, presents discrete challenges in the context of State level strategic planning (as in the TWWHA case study) when compared with the development of highly localised adaptation plans at the community scale (as in the Lake Macquarie case study). Highlighting and analysing these comparative dimensions is vital to understanding how climate adaptation laws may adopt and employ differing yet complementary approaches at local, State and national scales. The chapter then addresses key cross-cutting considerations (such as the information sharing in the implementation and enforcement of climate adaptation laws) that underpin the four key principles for enhancing just resilience through law. While these cross-cutting issues are not directly articulated as key principles, they are vital to the operation of Australian climate adaptation laws in practice. The chapter concludes by exploring synergies and tensions between the key principles of just resilience. These cross-case comparisons demonstrate the valuable insights provided by this project with respect to the particular challenges facing climate adaptation law in Australia.

Chapter Eight concludes the thesis by emphasising the key messages emerging from the theoretical and empirical analysis, and pointing to opportunities to extend this research.

## Chapter Two:           The Development of Resilience and Environmental Justice in the Scholarly Literature

This chapter maps the landscape of resilience and environmental justice scholarship – the two major bodies of theory underpinning this thesis. The concept of resilience is introduced first. Section 2.2 provides a background to resilience, charting major steps in its development over the past 50 years. The following section identifies and explains the main principles of resilience. Section 2.4 explains how resilience has been implemented in the management of socio-ecological systems, providing an overview of the concepts of adaptive management, governance and law. Sections 2.5 and 2.6 then examine the literature connecting resilience with climate adaptation, and climate adaptation law respectively. The following section 2.7 introduces critical scholarly analyses of resilience, which point out conceptual limitations in the theory and associated shortcomings in its operationalisation to date. The concept of environmental justice provides a useful mechanism for theorising these blindspots in resilience. Its potential remains largely untapped. In the second half the chapter therefore turns to explore environmental justice approaches. Section 2.8 explains the emergence of environmental justice as a theoretical lens, before section 2.9 introduces the key principles of environmental justice. Section 2.10 highlights limitations of existing approaches in environmental justice scholarship. Sections 2.11 and 2.12 then explore the links between environmental justice and climate adaptation, and climate adaptation law. The chapter highlights the need to consider further the synergies and tensions between these two bodies of literature.

### **2.1     *Resilience: Background and Overview***

The concept of resilience rose to prominence following the publication of CS Holling's landmark paper in 1973.<sup>1</sup> An ecologist, Holling challenged the then dominant assumption that ecosystems were stable and responded to disturbances by rebounding to equilibrium without any significant change.<sup>2</sup> This traditional approach, now often referred to as *engineering resilience*, 'focuses on maintaining efficiency of function, constancy of the system, and a predictable world near a single steady state'.<sup>3</sup> The major measure of resilience was

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<sup>1</sup> C S Holling, 'Resilience and Stability of Ecological Systems' (1973) 4 *Annual Review of Ecology and Systematics* 1.

<sup>2</sup> Lance H Gunderson, Craig R Allen and C S Holling, 'Conclusion: The Evolution of an Idea - The Past, Present, and Future of Ecological Resilience' in Lance H Gunderson, Craig R Allen and CS Holling (eds), *Foundations of Ecological Resilience* (Island Press, 2010) 423-444., 425.

<sup>3</sup> Carl Folke, 'Resilience: The Emergence of a Perspective for Social-Ecological Systems Analyses' (2006) 16 *Global Environmental Change* 253, 256. See also CS Holling and Lance H Gunderson, 'Resilience and Adaptive Systems' in Lance H Gunderson and CS Holling (eds), *Panarchy: Understanding Transformations in Human and Natural Systems* (Island Press, 2002) 28-29.

thus how quickly a system would return to its original state.<sup>4</sup> Holling instead proposed that ecosystems persisted by responding dynamically to change, including by shifting to new system states in order to maintain key features.<sup>5</sup> Resilience, then, referred to ‘the persistence of systems ... and their ability to absorb change and disturbance and still maintain the same relationships between populations or state variables’.<sup>6</sup> Now commonly referred to as *ecological resilience*, this approach focuses on the amount of disturbance a system can absorb while maintaining its key characteristics, which is necessarily influenced by the capacity of the system to adapt to change.<sup>7</sup>

Building on Holling’s early work, the literature on *socioecological resilience* has grown rapidly over recent decades.<sup>8</sup> Socioecological resilience refers to the capability of a system to maintain important features by self-organising in response, and learning to adapt, to unexpected disturbances and change.<sup>9</sup> As the label itself indicates, the inclusion of the social domain alters the pathways of system dynamics. In particular, the capacity to learn from previous experience and to take pre-emptive measures to address the prospect of change, rather than simply ‘bouncing back’ after disruption, distinguishes socioecological from the engineering and ecological approaches to resilience.<sup>10</sup> And while the inclusion of the human dimension has aided the development of the resilience concept, it is also the cause of underlying tension that persists in resilience scholarship today.<sup>11</sup>

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<sup>4</sup> David G Angeler and Craig R Allen, ‘EDITORIAL: Quantifying Resilience’ (2016) 53 *Journal of Applied Ecology* 617, 618.

<sup>5</sup> Lance H Gunderson and Craig R Allen, ‘Why Resilience? Why Now?’ in Lance H Gunderson, Craig R Allen and CS Holling (eds), *Foundations of Ecological Resilience* (Island Press, 2010) xiii-xxv., xiii, xiv-xv.

<sup>6</sup> CS Holling, ‘Resilience and Stability of Ecological Systems’ [1] (1973) 4 *Annual Review of Ecology and Systematics* 1, 14.

<sup>7</sup> Brian Walker and David Salt, *Resilience Thinking: Sustaining Ecosystems and People in a Changing World* (Island Press, 2006) 28-29.

<sup>8</sup> Reinette Biggs, Maja Schlüter and Michael L Schoon, ‘An Introduction to the Resilience Approach and Principles to Sustain Ecosystem Services in Social-Ecological Systems’ in Reinette Biggs, Maja Schlüter and Michael L Schoon (eds), *Principles for Building Resilience: Sustaining Ecosystem Services in Social-Ecological Systems* (Cambridge University Press, 2015).

<sup>9</sup> Brian Walker et al, ‘Resilience, Adaptability and Transformability in Socio-ecological Systems’ (2004) 9(2) *Ecology and Society* [5], 3 (‘Walker et al 2004’); Brian Walker et al, ‘A Handful of Heuristics and Some Propositions for Understanding Resilience in Socio-ecological Systems’ (2006) 11 *Ecology and Society* [1], 13 (‘Walker et al 2006’); Folke (n 3) 259-60; Carl Folke et al, ‘Resilience Thinking: Integrating Resilience, Adaptability and Transformability’ (2010) 15(4) *Ecology and Society* [20], 2 (‘Folke et al 2010’); Carl Folke et al, ‘Socio-ecological Resilience and Biosphere-based Sustainability Science’ (2016) 21(3) *Ecology and Society* [41], 2 (‘Folke et al 2016’).

<sup>10</sup> Folke (n 3) 259. See, for example, Julie L Davidson et al, ‘Interrogating Resilience: Toward a Typology to Improve its Operationalization’ (2016) 21(2) *Ecology and Society* [27], 4-5.

<sup>11</sup> This tension is in two forms; one is the conceptual difficulty associated with the breadth of the resilience concept; this is addressed in the two following paragraphs. The second dimension is elaborated in section 2.6 below.

Resilience approaches are used across a wide range of subject matters, including natural resource management,<sup>12</sup> engineering,<sup>13</sup> disaster risk reduction,<sup>14</sup> and psychology.<sup>15</sup> It is also applied to different units of analysis, including cities and urban areas,<sup>16</sup> communities,<sup>17</sup> the social domain<sup>18</sup> and sociotechnical systems.<sup>19</sup> This diversity has facilitated the rapid development of resilience approaches, allowing the development of deep insights as ideas and concepts are tested across domains, and through use of varied research approaches.<sup>20</sup> However, the ‘blurred boundaries and conceptual fuzziness’ associated with the resilience have made it difficult to achieve the level of agreement necessary to operationalise – and monitor – resilience approaches in practice.<sup>21</sup>

Perhaps because resilience spans such a wide range of domains, policy processes and research methodologies, many of its architects and advocates have typically avoided describing it as a ‘theory’.<sup>22</sup> Instead, they refer to *resilience thinking* as an approach to understanding and better managing a world that experiences dynamic change.<sup>23</sup> While other forms of resilience might be identified as a system property that can be strived for or measured,<sup>24</sup> socioecological resilience is more commonly used as an approach for conceptualising systems and organising thinking about resilience.<sup>25</sup> The following section

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<sup>12</sup> Walker and Salt (n 7).

<sup>13</sup> Nita Yodo and Pingfeng Wang, ‘Engineering Resilience Quantification and System Design Implications: A Literature Survey’ (2016) 138 *Journal of Mechanical Design* [111408].

<sup>14</sup> ‘Disaster resilience: a bounce back or bounce forward ability?’ (2011) 16 *Local Environment* 417.

<sup>15</sup> Sandra Walklate, Gabe Mythen and Ross McGarry, ‘States of Resilience and the Resilient State’ [185] (2014) 24 *Current Issues in Criminal Justice* 185.

<sup>16</sup> See, eg, Sara Meerow and Joshua P Newell, ‘Urban resilience for Whom, What, When, Where, and Why?’ (2016) *Urban Geography* 1; Beth Schaefer Caniglia, Beatrice F Frank and Manuel Vallee, *Resilience, Environmental Justice and the City* (Routledge, 2017).

<sup>17</sup> See, eg, Fikret Berkes and Helen Ross, ‘Community Resilience: Toward an Integrated Approach’ (2013) 26(1) *Society and Natural Resources* 5.

<sup>18</sup> See, eg, W Neil Adger, ‘Social and Ecological Resilience: Are They Related?’ (2000) 24 *Progress in Human Geography* 347.

<sup>19</sup> See, eg, Sulfikar Amir and Vivek Kant, ‘Sociotechnical Resilience: A Preliminary Concept’ (2018) 38 *Risk Analysis* 8.

<sup>20</sup> See, eg, Fridolin Simon Brand and Kurt Jax, ‘Focusing the Meaning(s) of Resilience: Resilience as a Descriptive Concept and a Boundary Object’ (2007) 12(1) *Ecology and Society* [23].

<sup>21</sup> Davidson et al (n 10) 1.

<sup>22</sup> Walker and Salt (n 7); see also Andreas Duit, ‘Resilience Thinking: Lessons for Public Administration’ (2016) 94(2) *Public Administration* 364, 368.

<sup>23</sup> Folke et al 2010 (n 9).

<sup>24</sup> See, eg, Angeler and Allen (n 4).

<sup>25</sup> Steve Carpenter et al, ‘From Metaphor to Measurement: Resilience of What to What?’ (2001) 4 *Ecosystems* 765; Folke (n 3) 258-9, 261; Biggs, Schlüter and Schoon (n 8) 13. These two approaches correlate broadly with the distinction between general and specified resilience; see Folke et al 2010 (n 9) 4-5. This is also consistent with suggestions that resilience can function as either a boundary object or bridging concept in an interdisciplinary context; see, for example, Brand and Jax (n 20); Simone A Beichler et al, ‘The Role played by Socio-ecological Resilience as a Method of Integration in Interdisciplinary Research’ (2014) 19(3) *Ecology and Society* [4]; Jacopo A Baggio, Katrina Brown and Denis Hellebrandt, ‘Boundary Object or Bridging Concept? A Citation Network Analysis of Resilience’ (2015) 20(2) *Ecology and Society* [2].

introduces the core concepts that underpin resilience and touches briefly upon their potential relevance to law and legal systems.

## **2.2 Resilience Principles**

The core components of resilience as the term is used in the remainder of this thesis include (1) socioecological systems; (2) variables, feedbacks, thresholds and regime shifts; (3) adaptability and transformation; (4) the adaptive cycle; and (5) panarchy. Together, these five components provide the conceptual framework of resilience. Each is explained below, with reference to its significance for law.

The concept of *socioecological systems*<sup>26</sup> comprehends the Earth system as comprising linked biophysical and socio-political arrangements.<sup>27</sup> Socioecological systems approaches recognise the indivisibility and interdependence of human and ecological system components.<sup>28</sup> As Walker and Salt explained, ‘the biophysical system constrains and shapes people and their communities, just as people shape the biophysical system’.<sup>29</sup> This socioecological systems approach contrasts with purely ecological and social understandings of resilience that tend to conceive of biophysical and socio-political systems separately.<sup>30</sup> Further, socioecological systems are understood as complex adaptive systems, where the parts of the system interact in unplanned and unexpected ways to changes in system dynamics.<sup>31</sup> Complex systems are notoriously unpredictable; causal connections (both within and between systems) can be difficult to identify, and relatively minor disruptions might cause disproportionately large changes in system dynamics.<sup>32</sup> Acknowledging the interconnectedness within, and non-linearity of, socioecological systems encourages attention to the complex interactions of human and biophysical system components, which may in turn shape environmental and resource management strategies.

Variables, feedbacks, thresholds and regime shifts are the analytical concepts used to explain the dynamics of socioecological systems. *Variables* are the internal system elements

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<sup>26</sup> On the nature of socio-ecological systems, see Johan Colding and Stephan Barthel, ‘Exploring the Social-Ecological Systems Discourse 20 Years Later’ (2019) 24(1) *Ecology and Society* [2]. Note that the term ‘socio-ecological system’ is preferred in this thesis.

<sup>27</sup> Elinor Ostrom, ‘A General Framework for Analyzing Sustainability of Social-Ecological Systems’ (2009) 325(5939) *Science* 419, 419.

<sup>28</sup> See Colding and Barthel (n 26) 1.

<sup>29</sup> Walker and Salt (n 7) 32, 34; Walker et al 2006 (n 9) 3, 6.

<sup>30</sup> The application of ecological resilience concepts to social systems has been referred to as *social* resilience; see W Neil Adger, ‘Social and Ecological Resilience: Are They Related?’ (2000) 24 *Progress in Human Geography* 347, 361.

<sup>31</sup> See, eg, Walker and Salt (n 7) 34.

<sup>32</sup> Carl Folke, ‘Resilience (Republished)’ (2016) 21(4) *Ecology and Society*. [44], 6.

that shape a socioecological system.<sup>33</sup> Although a system may consist of many variables, a few *key* or *state* variables – typically four or five factors<sup>34</sup> – shape system dynamics. Some key variables are ‘fast’, in the sense that they change more quickly than ‘slow’ variables.<sup>35</sup> *Feedbacks* are the signals that link system components, and reflect changes in variables.<sup>36</sup> Feedbacks can be either positive (ie promote change and destabilise existing system dynamics)<sup>37</sup> or negative (where they reinforce the present system state).<sup>38</sup> Together, variables and feedbacks shape the stability of socioecological systems. When a key variable crosses a threshold – the tipping point<sup>39</sup> or level of that variable<sup>40</sup> that influences the system state<sup>41</sup> – the system may experience *regime shift* and change to a different configuration.<sup>42</sup> In other words, the system reconfigures with new feedbacks and variables, and may reflect all, some or none of its previous features. Although some regime shifts are reversible (ie the system can then move between alternative stable states), others are irreversible.<sup>43</sup> Together, these four concepts help to explain how socioecological systems are constantly evolving,<sup>44</sup> but seldom develop in an incremental, linear manner.<sup>45</sup>

Resilience also recognises that change occurs in different ways. Systems approaching thresholds may exercise *adaptability* or *adaptive capacity* to maintain existing system functions.<sup>46</sup> In other words, systems demonstrate adaptability where they learn and adjust in order to maintain their existing configuration.<sup>47</sup> The social components of a socioecological system are often a major source of adaptive capacity.<sup>48</sup> Systems can also *transform* by reconfiguring key variables and feedbacks to establish a substantially different

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<sup>33</sup> External factors are referred to as drivers; see, eg, Brian Walker et al, ‘Drivers, “Slow” Variables, “Fast” Variables, Shocks, and Resilience (2012) 17(3) *Ecology and Society* 30.

<sup>34</sup> Walker et al 2004 (n 9) 5.

<sup>35</sup> Ibid 5.

<sup>36</sup> Reinette Biggs, Garry D Peterson and Juan C Rocha, ‘The Regime Shifts Database: A Framework for Analyzing Regime Shifts in Social-ecological Systems’ (2018) 23(3) *Ecology and Society* 1.

<sup>37</sup> Joshua Farley and Alexey Voinov, ‘Economics, socio-ecological resilience and ecosystem services’ (2016) 183 *Journal of Environmental Management* 389, 392.

<sup>38</sup> Jeroen F Warner, Anna J Wesselink and Govert D Geldof, ‘The Politics of Adaptive Climate Management: Scientific Recipes and Lived Reality’ (2018) *Wiley Interdisciplinary Reviews: Climate Change*, 2; Ahjond Garmestani and Melinda Harm Benson, ‘A Framework for Resilience-based Governance of Social-Ecological Systems’ (2013) 18(1) *Ecology and Society* [9], 4.

<sup>39</sup> Angeler and Allen (n 4) 619-20.

<sup>40</sup> Although systems may comprise many variables, certain ‘key’ variables drive those systems; see Umberto Pisano, ‘Resilience and Sustainable Development: Theory of Resilience, Systems Thinking and Adaptive Governance’ (ESDN Quarterly Report No 26, 2012) 13.

<sup>41</sup> Walker and Salt (n 7) 53.

<sup>42</sup> Ibid, 55, 59.

<sup>43</sup> Walker et al 2006 (n 9) 2.

<sup>44</sup> Biggs, Schlüter and Schoon (n 8) 6, 9.

<sup>45</sup> Christian Rammel, Sigrid Stagl and Harald Wilfing, ‘Managing Complex Adaptive Systems: A Co-evolutionary Perspective on Natural Resource Management’ (2007) 63 *Ecological Economics* 9, 10.

<sup>46</sup> Walker et al 2006, (n 9) 3.

<sup>47</sup> Folke et al 2010 (n 9) 2.

<sup>48</sup> Nathan L Engle, ‘Adaptive Capacity and its Assessment’ (2011) 21 *Global Environmental Change* 647, 650.

regime.<sup>49</sup> Although regime shifts are often periods of rapid and unexpected transformative change,<sup>50</sup> systems can also shift more gradually – through the exercise of adaptability – to a new stable state.<sup>51</sup> These two properties of adaptability and transformability thus identify the potential for systems to either change to avoid shifts to less desirable regimes, or convert to more desirable system states.

The concepts of thresholds and regime shifts have important implications for legal interventions aiming to facilitate climate change adaptation. While some scholars suggest that law has little to contribute to transformations,<sup>52</sup> others take the view that law and governance can initiate substantial changes in socioecological systems.<sup>53</sup> Laws intended to maintain a particular system state might try to enhance adaptive capacity.<sup>54</sup> For example, fisheries managers might use decision rules in harvest strategies to automatically adjust catch limits when new data indicates that stock levels have declined.<sup>55</sup> Laws may also be used to trigger a regime shift away from an undesirable state – that is, enable transformation to a more desirable system state.<sup>56</sup> For example, land use planning laws could restrict development in bushfire-prone areas to reduce overall exposure to such risks.

The fourth key concept in resilience is the *adaptive cycle*. The adaptive cycle outlines four key phases in system dynamics:<sup>57</sup>

- ‘rapid growth’, in which systems have plentiful resources to respond dynamically to unexpected events;<sup>58</sup>
- ‘conservation’, in which systems become more efficient but less adaptable to unexpected disturbances as they approach thresholds;<sup>59</sup>
- ‘release’, in which established functions are destroyed following the crossing of a threshold;<sup>60</sup> and

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<sup>49</sup> Walker et al (n 9) 3.

<sup>50</sup> Biggs et al (n 36) 2.

<sup>51</sup> Folke (n 3) 257.

<sup>52</sup> CS Holling, ‘Response to “Panarchy and the Law”’ (2012) 17(4) *Ecology and Society* [37], 1.

<sup>53</sup> Brian C Chaffin, Robin Kundis Craig and Hannah Gosnell, ‘Resilience, Adaptation, and Transformation in the Klamath River Basin Social-Ecological System’ (2014) 51 *Idaho Law Review* 157, 190.

<sup>54</sup> Victor B Flatt, ‘Adapting Laws for a Changing World: A Systemic Approach to Climate Change Adaptation’ (2012) 64 *Florida Law Review* 269, 290-1.

<sup>55</sup> Eg Australian Government, *Commonwealth Fisheries Harvest Strategy: Policy and Guidelines* (Department of Agriculture, Fisheries and Forestry, September 2007); see also Jan McDonald and Megan Styles, ‘Legal Strategies for Adaptive Management under Climate Change’ (2014) 26 *Journal of Environmental Law* 25, 46.

<sup>56</sup> Brian C Chaffin et al, ‘Transformative Environmental Governance’ (2016) 41 *Annual Review of Environment and Resources* 399, 410-1.

<sup>57</sup> Walker and Salt (n 7) 75.

<sup>58</sup> Walker et al 2004 (n 9) 2.

<sup>59</sup> Walker et al 2006 (n 9) 2.

<sup>60</sup> C.R. Allen et al, ‘Panarchy: Theory and Application’ (2014) 17 *Ecosystems* 578, 579; S. Carpenter et al, ‘From Metaphor to Measurement: Resilience of What to What?’ (2001) 4 *Ecosystems* 765, 766.



- ‘reorganization’, in which new structures and thresholds are then established.<sup>61</sup>

Although it is a stylised generalisation of change in socioecological systems,<sup>62</sup> the adaptive cycle helps to explain how and where management interventions can most effectively shape socioecological system dynamics. The ‘release’ and ‘reorganization’ phases – together described as the ‘back loop’<sup>63</sup> – provide the greatest opportunity for human interventions, including through law, to shape thresholds and feedbacks in the socioecological system.<sup>64</sup> The adaptive cycle also highlights the importance of monitoring feedbacks and variables that might signal the approach of thresholds and thus explain changing system dynamics.

The final concept critical to an understanding of resilience is the idea of multi-scale interactions. The term *panarchy* refers to the hierarchy of inter-related socioecological systems that collectively comprise the larger and more complex system.<sup>65</sup> Each of these systems experiences the adaptive cycle at different spatial and temporal scales: each scale is both independent (with its own structures and functions) and influenced by processes occurring at other scales. Lower levels can ‘trigger a crisis’ or help to slow progression towards a Release phase at a higher scale,<sup>66</sup> while higher scales of a panarchy provide ‘memory’ that may shape dynamics at lower scales.<sup>67</sup>

The concept of panarchy has implications for governance arrangements because it highlights the importance of focussing on multiple sectors and scales.<sup>68</sup> For example, the management of coastal areas to promote resilience under climate change involves a complex mix of international laws, national and State legislation, and localized management plans.<sup>69</sup> These arrangements span a range of sectors including coastal management, biodiversity conservation, land use planning, emergency management and tourism. They involve both governmental and non-governmental actors (community-based environmental

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<sup>61</sup> Walker et al 2004 (n 9) 2.

<sup>62</sup> Ibid.

<sup>63</sup> Walker et al 2004 (n 9) 2.

<sup>64</sup> Walker and Salt (n 7) 75.

<sup>65</sup> The term ‘panarchy’ combines the words ‘Pan’ (the name of the Greek god of nature, representing unpredictable change) and ‘hierarchy’ (representing the multi-level character of socio-ecological systems); see CS Holling, Lance Gunderson and Garry D Peterson, ‘Sustainability and Panarchies’, in Lance H Gunderson and CS Holling (eds), *Panarchy: Understanding Transformations in Human and Natural Systems* (Island Press, 2002) 72-4.

<sup>66</sup> Ibid., 75-6.

<sup>67</sup> Ibid., 76.

<sup>68</sup> Walker and Salt (n 7) 90.

<sup>69</sup> Lance H Gunderson et al, ‘Escaping a Rigidity Trap: Governance and Adaptive Capacity to Climate Change in the Everglades Social Ecological System’ (2014-15) 51 *Idaho Law Review* 127; see also Garmestani and Benson (n 38) 6-7.

groups or tourism industry bodies, for example). Successful management demands the coordination of all these disparate regimes.

Each of the concepts outlined above has been the subject of substantial scholarly inquiry. However, resilience has not developed solely in the abstract. Rather, a significant proportion of leading resilience scholars have also contributed to a substantial body of applied research that explores the potential for implementing resilience principles in practice. That applied research is outlined in the section that follows.

### ***2.3 Putting Resilience into Practice: Adaptive Management, Adaptive Governance and Adaptive Law***

This section sketches the broad parameters of adaptive management, adaptive governance and adaptive law. These three concepts are at the heart of efforts to implement resilience-informed approaches in practice. It outlines the features of each concept, while also addressing the influence of law on the implementation of adaptive management and adaptive governance approaches.

*Adaptive management* seeks to increase knowledge about socioecological systems while simultaneously attempting to regulate them.<sup>70</sup> It recognises that policymakers and institutions are compelled to implement management decisions despite uncertainty about how dynamic, non-linear socioecological systems will respond.<sup>71</sup> In other words, adaptive management involves ‘learning by doing’<sup>72</sup> through iterative and incremental decision-making that ‘integrat[es] learning into the management process’ in an structured way.<sup>73</sup> In theory, adaptive management is an ‘active’ process where different interventions are tested to determine the desired management approach. In reality, adaptive management is often achieved ‘passively’, where lessons are derived from system interventions not expressly designed for learning.<sup>74</sup> Despite its apparent logic and attractiveness, the successful implementation of adaptive management remains fairly rare and has been limited to smaller

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<sup>70</sup> For a useful introduction, see Craig R Allen and Ahjond S Garmestani, ‘Adaptive Management’ in Craig R Allen and Ahjond S Garmestani (eds), *Adaptive Management of Social-Ecological Systems* (Springer, 2015).

<sup>71</sup> Craig R Allen et al, ‘Adaptive Management for a Turbulent Future’ (2011) 92 *Journal of Environmental Management* 1339, 1339

<sup>72</sup> Carl J Walters and CS Holling, ‘Large-scale Management Experiments and Learning by Doing’ (1990) 71(6) *Ecology* 2060.

<sup>73</sup> Ahjond S Garmestani et al, ‘The Integration of Social-Ecological Resilience and Law’ in Ahjond S Garmestani and Craig R Allen (eds), *Social-Ecological Resilience and Law* (Columbia University Press, 2014) 370.

<sup>74</sup> On the blurred line between active and passive adaptive management, see Martin J. Westgate, Gene E. Likens and David B. Lindenmayer, ‘Adaptive management of biological systems: A review’ (2013) 158 *Biological Conservation* 128, 130.

scale land or resource management frameworks.<sup>75</sup> Further, adaptive management in practice rarely reflects the thorough process of planning, testing, evaluating and learning advocated by the scholarly literature; the less rigorous, but more flexible, approaches observed in practice are often described as ‘adaptive management-lite’.<sup>76</sup> Despite these caveats, adaptive management approaches are often suggested as a (sometimes, *the*) solution to complex management challenges at wider governance scales.<sup>77</sup>

The limited success of adaptive management has been attributed, at least in part,<sup>78</sup> to barriers imposed by the legal system.<sup>79</sup> In a recent review, Frohlich and his colleagues identified a range of legal barriers to implementing adaptive management. The substantive requirements of specific legal processes are often a barrier to adaptive management, especially where they afford little or no room for experimentation. Legal processes often stymie adaptive management approaches; judicial review applications, for example, may disrupt adaptive management by preventing the timely implementation of new approaches informed by learning.<sup>80</sup> Misalignment of legal and socioecological boundaries also limits the capacity of natural resource and environmental managers to implement adaptive management strategies.<sup>81</sup> There must also be grave concerns over the limited transparency of adaptive management approaches in practice,<sup>82</sup> especially where the allure of ideal adaptive management obscures its limitations in practice.<sup>83</sup>

However, Frohlich et al equally identify opportunities for law to support adaptive management. The solutions they identify fall into three main categories. First, and perhaps preferably, laws could create a specific adaptive management pathway that provides the

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<sup>75</sup> Olivia Odom Green et al, ‘Barriers and Bridges to the Integration of Social-Ecological Resilience and Law’ [332] (2015) 13(6) *Frontiers in Ecology and the Environment* 332, 334; see also Melinda Harm Benson and Courtney Schultz, ‘Adaptive Management and Law’ in Craig R Allen and Ahjond S Garmestani (eds) *Adaptive Management of Social-Ecological Systems* (Springer, 2015) 40.

<sup>76</sup> Miguel F Frohlich et al, ‘The Relationship between Adaptive Management of Social-ecological Systems and Law: A Systematic Review’ (2018) 23(2) *Ecology and Society*, 4-6.

<sup>77</sup> See, eg, Eric Biber, ‘Adaptive Management and the Future of Environmental Law’ (2013) 46 *Akron Law Review* 933-962.

<sup>78</sup> On other causes such as resourcing and technical capacity, see Allen et al (n 71) 1381-3.

<sup>79</sup> Benson and Schultz (n 75); see also Garmestani and Benson (n 38) 2.

<sup>80</sup> Robin Kundis Craig and JB Ruhl, ‘Designing Administrative Law for Adaptive Management’ (2014) 67 *Vanderbilt Law Review* 1; Robin K Craig et al, ‘A Proposal for Amending Administrative Law to Facilitate Adaptive Management’ (2017) 12 *Environmental Research Letters* 074018.

<sup>81</sup> Frohlich et al (n 76) 6

<sup>82</sup> Christian Slattery, ‘Canary in the Coal Mine: Why the Approval Conditions for the Carmichael Mine reveal the Need to Amend the EPBC Act to Incorporate Adaptive Management Principles’ (2016) 33 *Environmental and Planning Law Journal* 421, 439-40; Jessica Lee, ‘Theory to Practice: Adaptive Management of the Groundwater Impacts of Australian Mining Projects’ (2014) 31 *Environmental and Planning Law Journal* 251, 282-4.

<sup>83</sup> JB Ruhl and Robert L Fischman, ‘Adaptive Management in the Courts’ (2010-2011) 95 *Minnesota Law Review* 424, 442.

necessary legal infrastructure to support such an approach.<sup>84</sup> Secondly, incremental law reform might increase flexibility, and establish monitoring and evaluation processes that allow for de facto adaptive management.<sup>85</sup> Although Australian courts have tacitly endorsed the use of adaptive management approaches within the confines of existing laws,<sup>86</sup> their treatment of the concept has been inconsistent.<sup>87</sup> Legislative intervention is thus likely required to align law with the requirements of adaptive management.<sup>88</sup>

*Adaptive governance* approaches have been proposed as a means of better managing for resilience in light of the limitations posed by law and other static institutional arrangements. Adaptive governance approaches support the operationalisation of adaptive management by providing the flexibility and governance tools to better ‘mediate the complexity and uncertainty inherent in socioecological systems’.<sup>89</sup> These extend beyond ‘purely legal’ institutions to consider the role played by a wider range of formal (such as non-governmental organisations and civil society) and informal institutions and networks,<sup>90</sup> along with the ‘informal policies, practices, customs and power relationships that influence how governance plays out’.<sup>91</sup> This wider array of institutions and practices thus combines a diverse range of actors – often including both state and non-state actors, and spanning multiple governance scales – that can experiment, learn and adapt more nimbly to change.<sup>92</sup> This broader configuration of actors and processes increases the knowledge base from which decision-making proceeds, thus offering new ideas and alternative responses to changes in system dynamics.<sup>93</sup> Importantly, adaptive governance frameworks are themselves complex systems; that is, the governance network itself embodies new and

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<sup>84</sup> Frohlich et al (n 76) 9, 10; see also Ruhl and Craig (n 80) and Craig et al (n 80).

<sup>85</sup> Frohlich et al (n 76) 9; see also Alastair T Iles, ‘Adaptive Management: Making Environmental Law and Policy more Dynamic, Experimentalist and Learning’ (1996) 13 *Environmental and Planning Law Journal* 288, 300.

<sup>86</sup> Adaptive management approaches are regularly incorporated within environmental impact assessment processes, and do not seem to have attracted adverse attention in review proceedings; see generally Lee (n 82).

<sup>87</sup> Slattery (n 82) 427-9; Lee (n 82) 281.

<sup>88</sup> Slattery (n 82) 441-2 proposes an amendment to the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

<sup>89</sup> Brian C Chaffin, Hannah Gosnell and Barbara A Cosens, ‘A Decade of Adaptive Governance Scholarship: Synthesis and Future Directions’ (2014) 19(3) *Ecology and Society*, 6; see also Brian C Chaffin and Lance H Gunderson, ‘Emergence, Institutionalization and Renewal: Rhythms of Adaptive Governance in Complex Social-Ecological Systems’ (2016) 165 *Journal of Environmental Management* 81, 86; and Barbara A Cosens and Mark K Williams, ‘Resilience and Water Governance: Adaptive Governance in the Columbia River Basin’ (2012) 17(4) *Ecology and Society*, 2.

<sup>90</sup> Garmestani and Benson (n 38) 3.

<sup>91</sup> Barbara Cosens et al, ‘Identifying Legal, Ecological and Governance Obstacles, and Opportunities for Adapting to Climate Change’ (2014) 6 *Sustainability* 2338, 2347.

<sup>92</sup> Barbara Cosens and Brian Chaffin, ‘Adaptive Governance of Water Resources Shared with Indigenous Peoples: The Role of Law’ (2016) 8(3) *Water* 97, 98.

<sup>93</sup> Carl Folke et al, ‘Adaptive Governance of Social-Ecological Systems’ (2005) 30 *Annual Review of Environment and Resources* 441, 463.

unexpected configurations in response to feedbacks from socio-cultural and biophysical system components.<sup>94</sup> An adaptive governance approach therefore pursues resilience by reconfiguring institutions and relationships to enhance the capacity of systems to prepare for, identify and respond to non-linear change.<sup>95</sup>

Law has typically been a peripheral concern in the adaptive governance literature.<sup>96</sup> Adaptive governance is ‘not generally legislated for or explicitly created through hierarchical, command-and-control government processes’.<sup>97</sup> Because law is subsumed within a wider governance framework,<sup>98</sup> legal scholars must consider the broad range of institutions and processes that shape governance arrangements, including those with linkages to law. Interdisciplinary research teams have made substantial progress in this endeavour, examining critically the role of law in shaping adaptive governance arrangements.<sup>99</sup> Those scholars argue that law plays a vital role in shaping adaptive governance, and can be developed to facilitate and institutionalise adaptive governance approaches.<sup>100</sup> The authors distil a series of crucial findings from a systematic review of water governance across North America and Australia. Their major findings include that law both creates and closes windows of opportunity for the emergence of adaptive governance.<sup>101</sup> They explain that stable legal structures might enable adaptive governance, so long as there is some flexibility in the substantive management goals enshrined in law.<sup>102</sup> Such flexibility might be achieved – and balanced with stability<sup>103</sup> – through reflexive laws that confer authority and responsibility and are supported with the resources necessary for their implementation.<sup>104</sup> Although mechanisms for flexibility can be identified, law has nevertheless struggled to allow the adaptability necessary for adaptive governance.<sup>105</sup> And although law has the potential to support enhanced participation, that potential was rarely realised in practice.<sup>106</sup> Finally, a detailed review of administrative process argues that,

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<sup>94</sup> Brian C Chaffin et al, ‘Transformative Environmental Governance’ (2016) 41 *Annual Review of Environment and Resources* 399, 404; Chaffin and Gunderson (n 89) 83-4.

<sup>95</sup> Chaffin, Gosnell and Cosens (n 89) 5.

<sup>96</sup> Green et al (n 75) 332.

<sup>97</sup> Chaffin and Gunderson (n 89) 86.

<sup>98</sup> See Chapter 1.2.1.

<sup>99</sup> See, eg, Craig Anthony Arnold et al, ‘Cross-interdisciplinary insights into adaptive governance and resilience’ (Pt The Resilience Alliance) (2017) 22(4) *Ecology and Society* 13 for an example of a project team comprising a wide range of disciplines.

<sup>100</sup> Barbara A Cosens et al, ‘The Role of Law in Adaptive Governance’ (2017) 22(1) *Ecology and Society*, 1.

<sup>101</sup> *Ibid* 4.

<sup>102</sup> *Ibid* 5.

<sup>103</sup> Robin Kundis Craig et al, ‘Balancing Stability and Flexibility in Adaptive Governance: An Analysis of Tools available in US Environmental Law’ (2017) 22(2) *Ecology and Society* 8-10.

<sup>104</sup> Daniel A DeCaro et al, ‘Legal and Institutional Foundations of Adaptive Environmental Governance’ (2017) 22(1) *Ecology and Society* [32], 5, 8-9.

<sup>105</sup> Cosens et al (n 100) 5-6.

<sup>106</sup> *Ibid* 6.

despite its limitations, law has the potential to enhance adaptive governance by increasing trust and legitimacy,<sup>107</sup> and establishing or supporting the adaptive procedures necessary to translate emergent governance arrangements into longer lasting institutional arrangements.<sup>108</sup>

In an effort to overcome the difficulties that law poses for adaptive management and governance, Arnold and Gunderson have proposed the concept of *adaptive law*. Adaptive law was conceived as a means of addressing the limited capacity of laws to support or facilitate resilience-oriented approaches to natural resource and environmental management by enhancing the adaptability of the legal system as a whole.<sup>109</sup> On Arnold and Gunderson's account, adaptive law has four main features. First, adaptive law pursues multiple 'goals' in order to accommodate change. Second, adaptive law has a coordinated, multi-level 'structure' that distributes power across numerous actors at different scales, and pursues its objectives through multiple modes of regulation. Adaptive law also uses multiple 'methods' including flexible standards and discretionary decision-making powers to navigate non-linear change. Finally, adaptive law uses iterative 'processes' to respond more nimbly to feedbacks from across the socioecological system.<sup>110</sup>

Despite its apparent potential, there has been relatively little uptake of the adaptive law concept to date. Those who have analysed adaptive law in detail expressed concern that its implementation would imperil law's legitimacy by diluting its core features of certainty and stability.<sup>111</sup> With its relatively confined disciplinary focus, it remains to be seen whether adaptive law approaches will attain the influence and interest of adaptive management and governance approaches.

While a substantial body of theoretical scholarship continues to explore means of putting resilience into practice, there are very few real world examples that reflect the fullness of resilience principles. Those few examples of their successful implementation – and much of the existing literature – apply the principles to a specific sector or a limited geographic location. The following sections therefore explore the application of resilience principles in the context of climate adaptation and climate adaptation law respectively.

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<sup>107</sup> DeCaro et al (n 104) 9-10.

<sup>108</sup> Cosens et al (n 100) 6-8.

<sup>109</sup> Craig A Arnold, 'Adaptive Water Law' (2014) 62 *Kansas Law Review* 1043, 1065.

<sup>110</sup> Craig A Arnold and Lance H Gunderson, 'Adaptive Law' in Ahjond S Garmestani and Craig R Allen (eds) *Social-Ecological Resilience and Law* (Columbia University Press, 2014) 319.

<sup>111</sup> Suvi Borgström and Volker Mauerhofer, 'Developing Law for the Bioeconomy' (2016) 34 *Journal of Energy and Natural Resources Law* 373, 398.

## 2.4 Resilience and Climate Adaptation

Over the last decade, resilience has attained prominence in scholarly literatures and policy frameworks pertaining to climate adaptation. However, this is a relatively recent development.<sup>112</sup> The fields of adaptation and resilience developed separately for some time after climate change emerged on the international agenda. Adaptation has long been a feature of environmental change literature more generally. In that literature, studies of adaptation often focused on disasters, and concepts and methods from social science disciplines informed its development.<sup>113</sup> In an influential contribution, Nelson and his colleagues persuasively demonstrated that resilience approaches could helpfully contribute to understandings of adaptation, and efforts to adapt to environmental change.<sup>114</sup> Resilience approaches and principles brought to adaptation studies an appreciation of the centrality of change in socioecological systems, including the prospect of transformation.<sup>115</sup> They also demonstrated that adaptation was not a location-, actor- and/or sector-specific activity, but rather a process that occurred within a network of space and time.<sup>116</sup>

Geographer Mark Pelling has led more recent efforts to clarify the interaction of resilience and climate adaptation. His work argues that adaptation should be understood as a social and political act shaped by power relations in society.<sup>117</sup> On Pelling's account, adaptation involves three levels of aims and actions. The first and lowest level of adaptation, somewhat confusingly labelled 'resilience', refers to change designed to conserve the status quo.<sup>118</sup> Drawing on the resilience literature, Pelling explains how systems use processes of social learning and self-organisation to preserve functions most important to them.<sup>119</sup> The second level, 'transition', is an intermediate form of adaptation that 'seeks[s] to implement innovations and exercise existing rights within the prevailing order'.<sup>120</sup> Transitional adaptation therefore involves incremental exploitation of opportunities within existing

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<sup>112</sup> See Chapter 1.2 on the development of the definition of 'adaptation' in the climate policy sphere.

<sup>113</sup> Donald R. Nelson, W Neil Adger and Katrina Brown, 'Adaptation to Environmental Change: Contributions of a Resilience Framework' (2007) 32(1) *Annual Review of Environment and Resources* 395, 398

<sup>114</sup> Ibid.

<sup>115</sup> Ibid, 412.

<sup>116</sup> Donald R. Nelson, 'Adaptation and resilience: responding to a changing climate' (2011) 2 *Wiley Interdisciplinary Reviews: Climate Change* 113, 118.

<sup>117</sup> Mark Pelling, *Adaptation to Climate Change: From Resilience to Transformation* (Routledge, 2011) 3; see also Karen O'Brien, 'Global Environmental Change II: From Adaptation to Deliberate Transformation' (2012) 36(5) *Progress in Human Geography* 667, 669.

<sup>118</sup> Compare David Matyas and Mark Pelling, 'Positioning resilience for 2015: the role of resistance, incremental adjustment and transformation in disaster risk management policy' (2015) 39(s1) *Disasters* s1, s8, which identifies resistance as the first level of development and risk management.

<sup>119</sup> Pelling (n 117) 56.

<sup>120</sup> Ibid 68.

governance regimes to achieve changes in behaviour.<sup>121</sup> These opportunities are often relatively constrained – either geographically, or by sector. Pelling cites the environmental justice movement – and its efforts to use legal processes to protect vulnerable communities from harm – as a typical case of transitional adaptation.<sup>122</sup> Transformational adaptation involves the recasting of the socio-political regime in order to ‘shift the balance of political or cultural power in society’.<sup>123</sup> These three levels of adaptation are nested; in other words, strategies for transitional adaptation build on adaptation as resilience, and both are necessary to transformational adaptation.<sup>124</sup> Pelling explains that ‘[n]o level of adaptation is intrinsically more desirable than the others’,<sup>125</sup> and illustrates how existing efforts occupy different places on the adaptation spectrum. It is telling that most contexts involve an array of actors, institutions and processes that collectively represent a ‘tapestry’ of adaptation spanning these diverse approaches.<sup>126</sup>

Pelling’s framing of adaptation – especially the attempt to distinguish incremental adaptability from regime altering transformation change – has achieved significant influence in adaptation policy. The distinction underpins the conceptualisation of adaptation in the IPCC’s most recent assessment report and other interim outputs.<sup>127</sup> Resilience is now ubiquitous in climate adaptation, from planning and policy activity through the implementation of adaptation actions at all scales.<sup>128</sup> Resilience principles – including socioecological systems thinking,<sup>129</sup> thresholds<sup>130</sup> and panarchy,<sup>131</sup> in addition to the concepts of adaptability and transformability discussed above – are frequently deployed in adaptation analyses.<sup>132</sup> Mechanisms for putting resilience into practice – such as adaptive management in particular – are regarded as essential to facilitating adaptation to climate change.<sup>133</sup>

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<sup>121</sup> Ibid 69.

<sup>122</sup> Ibid; see further discussion of the ways that environmental justice movements use laws and legal processes at 2.11 below.

<sup>123</sup> Ibid 84.

<sup>124</sup> Ibid 24.

<sup>125</sup> Ibid 50.

<sup>126</sup> Ibid 50-1.

<sup>127</sup> Mark Pelling, Karen O’Brien and David Matyas, ‘Adaptation and Transformation’ (2014) 133 *Climatic Change* 113, 114-5.

<sup>128</sup> Hartmut Füngfeld and Darryn McEvoy, ‘Resilience as a Useful Concept for Climate Change Adaptation’ (2012) 13 *Planning Theory and Practice* 324, 325

<sup>129</sup> Nelson (n 116) 114.

<sup>130</sup> W Neil Adger et al, ‘Resilience Implications of Policy Responses to Climate Change’ (2011) 2 *Wiley Interdisciplinary Reviews: Climate Change* 757, 762.

<sup>131</sup> Ibid, 765.

<sup>132</sup> Nelson (n 116) 118.

<sup>133</sup> Chaffin, Gosnell and Cosens (n 89) 4-5.



Nevertheless, some doubts remain regarding the use and utility of resilience in the climate adaptation context. A number of scholars have argued that the use of resilience in climate adaptation remains confounding. The term frequently remains undefined, and is often used inconsistently to reflect aspects of the engineering, ecological and socioecological understandings of resilience.<sup>134</sup> Some critics argue that climate adaptation and resilience have effectively become synonyms, rendering resilience meaningless in the development and implementation of adaptation policies.<sup>135</sup> These are valid criticisms that reflect the relative underdevelopment of socioecological approaches to resilience, difficulties in implementation of resilience principles, and the relatively recent emergence of climate adaptation as a field of study. Despite these challenges, it seems unlikely that resilience will be removed from the lexicon of climate adaptation in the near future.

## 2.5 *Resilience and Climate Adaptation Law*

Given the centrality of resilience in climate adaptation policy, there has been growing interest in its application to climate adaptation law. This section charts the expanding body of literature examining the intersection of resilience and law. Climate adaptation has been an important site for the development of scholarship connecting resilience with law and legal systems.<sup>136</sup> However, the broader literature extending beyond climate adaptation to a wider range of subject matters spanning environmental and natural resources law is used to illustrate major trends in the relevant scholarly debates.<sup>137</sup>

There are two discernible strands in the literature exploring the relationship between law and resilience.<sup>138</sup> The first, a '*resilience of legal systems*' literature, applies resilience principles to the operation and development of legal systems themselves.<sup>139</sup> Although some adaptiveness is essential to the development of adaptation law,<sup>140</sup> the key resilience principles are not

<sup>134</sup> Füngfeld and McEvoy (n 128) 236-7.

<sup>135</sup> N. A. Fisichelli, G. W. Schuurman and C. H. Hoffman, 'Is 'Resilience' Maladaptive? Towards an Accurate Lexicon for Climate Change Adaptation' (2016) 57 *Environmental Management* 753, 757.

<sup>136</sup> See, eg, JB Ruhl, 'General Design Principles for Resilience and Adaptive Capacity in Legal Systems: With Applications to Climate Change Adaptation' (2011) 89 *North Carolina Law Review* 1373; Robin Kundis Craig, "'Stationarity is Dead" - Long Live Transformation: Five Principles for Climate Change Adaptation Law' (2010) 34(1) *Harvard Environmental Law Review* 9.

<sup>137</sup> For an instructive – albeit now dated – exploration of the breadth of the resilience and law literature see Tracy-Lynn Humby, 'Law and Resilience: Mapping the Literature' (2014) 4 *Seattle Journal of Environmental Law* 85, 100.

<sup>138</sup> A similar approach is adopted in Stephanie Niall and Anne Kallies, 'Electricity Systems between Climate Mitigation and Climate Adaptation Pressures: Can Legal Frameworks for "Resilience" Provide Answers?' (2017) 34 *Environmental and Planning Law Journal* 488, 492.

<sup>139</sup> See, eg, Ruhl (n 136) 1379-85.

<sup>140</sup> Jan McDonald, 'The Role of Law in Adapting to Climate Change' (2011) 2(2) *Wiley Interdisciplinary Reviews: Climate Change* 283, 288-91.

applied directly to legal systems in this thesis.<sup>141</sup> I will instead focus on the second ‘*law for resilience*’ literature, which uses resilience principles to assess the influence of law on socioecological systems, and to propose means of enhancing systemic resilience.<sup>142</sup> This literature draws heavily on examples and case studies from the United States (US),<sup>143</sup> and typically uses resilience principles to analyse existing laws and governance arrangements.<sup>144</sup> Scholars have characterized legal systems as nested components of socioecological systems;<sup>145</sup> explored the potential relevance of thresholds and the adaptive cycle for law and governance;<sup>146</sup> identified opportunities for legal systems and governance arrangements to facilitate adaptability and transformability;<sup>147</sup> and recognised that socioecological systems often cross jurisdictional scales.<sup>148</sup> Studies that explore potential reforms have examined how existing legal processes, such as environmental impact assessment, could be improved to enhance resilience.<sup>149</sup> It is this second literature that is the focus of the following analysis.

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<sup>141</sup> The resilience of legal systems is beyond the scope of this thesis for a number of reasons. The first is pragmatic – it is impossible to afford that question an appropriate level of attention, analysis and critique within the confines of this thesis. Similarly, rigorous examination of the ‘resilience of legal systems’ would likely require a different conceptual framework and research design. Finally, the merits of applying resilience principles to the legal system remain unclear; see, eg, Duit (n 22).

<sup>142</sup> Socio-ecological resilience is the most prominent approach to resilience identified in this literature. For a notable exception, see Mary Jane Angelo, ‘Stumbling Toward Success: A Story of Adaptive Law and Ecological Resilience’ (2008) 87 *Nebraska Law Review* 950, 959-65.

<sup>143</sup> Many of the key sources identified in this article stem from a core group of US legal and interdisciplinary scholars who have developed major research projects investigating the relationship of resilience and law; see Craig Anthony (Tony) Arnold et al, ‘Cross-Interdisciplinary Insights into Adaptive Governance and Resilience’ (2017) 22(4) *Ecology and Society* [14], 13. European and Australian examples are less prominent, see, eg, Andrea M Keessen and Heleen FMW van Rijswijk, ‘Adaptation to Climate Change in European Water Law and Policy’ (2012) 8 *Utrecht Law Review* 38, and Jan McDonald, Phillipa C McCormack and Anita Foerster, ‘Promoting Resilience to Climate Change in Australian Conservation Law: The Case of Biodiversity Offsets’ (2016) 39 *University of New South Wales Law Journal* 1612, and Niall and Kallies (n 138).

<sup>144</sup> See, eg, Ruhl (n 136); Craig (n 136); Alejandro E Camacho and T Douglas Beard, ‘Maintaining Resilience in the Face of Climate Change’ in Ahjond S Garmestani and Craig R Allen (eds), *Social-Ecological Resilience and Law* (Columbia University Press, 2014) 235-64; Barbara Cosens et al, ‘Identifying Legal, Ecological and Governance Obstacles, and Opportunities for Adapting to Climate Change’ (2014) 6 *Sustainability* 2338.

<sup>145</sup> See, eg, Sandra Zellmer and Lance Gunderson, ‘Why Resilience May Not Always Be a Good Thing: Lessons in Ecosystem Restoration from Glen Canyon and the Everglades’ (2008) 87 *Nebraska Law Review* 893, 898.

<sup>146</sup> See, eg, Melinda Harm Benson, ‘Reconceptualizing Environmental Challenges: Is Resilience the New Narrative?’ (2015) 21 *Journal of Environmental and Sustainability Law* 99, 116-7; Hannah E Birge et al, ‘Social-Ecological Resilience and Law in the Platte River Basin’ (2014) 51 *Idaho Law Review* 229, 250-2.

<sup>147</sup> See, eg, Craig A (Tony) Arnold et al, ‘The Social-Ecological Resilience of an Eastern Urban-Suburban Watershed: The Anacostia River Basin’ (2014) 51 *Idaho Law Review* 29, 75-80; Chaffin et al (n 56) 410-1.

<sup>148</sup> See, eg, Ahjond S Garmestani, Craig R Allen and Heriberto Cabezas, ‘Panarchy, Adaptive Management and Governance: Policy Options for Building Resilience’ (2008) 87 *Nebraska Law Review* 1036, 1049-51; Barbara Cosens, ‘Resilience and Law as a Theoretical Backdrop for Natural Resource Management: Flood Management in the Columbia River Basin’ (2012) 42 *Environmental Law* 241, 247, 262; Barbara A Cosens and Mark K Williams, ‘Resilience and Water Governance: Adaptive Governance in the Columbia River Basin’ (2012) 17(4) *Ecology and Society* [3], 10; Birge et al (n 146) 250-2.

<sup>149</sup> See, eg, Alan Bond et al, ‘Managing Uncertainty, Ambiguity and Ignorance in Impact Assessment by Embedding Evolutionary Resilience, Participatory Modelling and Adaptive Management’ (2015) 151 *Journal of Environmental Planning* 97, 99-100.

Two crucial assumptions underpin the ‘law and resilience’ literature. First, the existing literature typically assumes that increasing adaptability and enhancing resilience is advantageous from societal and biophysical perspectives. This seems a tenable proposition, at least at the societal level; however, it is important to remember that climate impacts, and adaptation itself, may generate both winners and losers at a more granular scale. Second, the literature also assumes that law – either alone, or as part of wider governance arrangements – can play a role in producing those beneficial outcomes. While there is general acknowledgement that laws have the potential to enhance resilience,<sup>150</sup> there are relatively few examples that demonstrate empirically how this might be achieved.<sup>151</sup> This second assumption requires closer attention, and is a major focus of the research design of this thesis.

Research to date has raised concerns about the capacity of current legal arrangements to facilitate resilience.<sup>152</sup> Doubts first arise when the meaning of the term resilience is considered. The tension between resilience as ‘capacity to respond to change’, and the construction of laws to provide certainty and stability is a live issue in law and resilience scholarship.<sup>153</sup> While certainty may be a normatively desirable feature of legal systems, it may reduce the capacity of the law to promote socioecological resilience.<sup>154</sup> This is especially the case where laws provide certainty by precluding or resisting change. It is therefore unsurprising that laws often include a conservationist or preventionist imperative that suggests socioecological systems can (and ought) be managed to ‘bounce back’ after a disturbance.<sup>155</sup> This effectively represents a tension between engineering and socioecological approaches to resilience.

A further difficulty relates to laws’ incapacity to grasp the resilience principles set out in section 2.3 above. Laws often fail to recognise that people and society are part of integrated, interdependent socioecological systems.<sup>156</sup> On some accounts laws and legal institutions are further separated from the broader socioecological system as independent of the even the socio-cultural domain.<sup>157</sup> This approach surely limits the capacity of law to contribute to

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<sup>150</sup> See, eg, JB Ruhl and James Salzman, ‘Climate Change meets the Law of the Horse’ (2013) 62 *Duke Law Journal* 975, 1020.

<sup>151</sup> See discussion of adaptive management and adaptive governance above.

<sup>152</sup> Eg Humby (n 137) 94-5.

<sup>153</sup> Craig A Arnold and Lance H Gunderson, ‘Adaptive Law and Resilience’ (2013) 43 *Environmental Law Reporter* 10426, 10427; Green et al (n 75) 332-3.

<sup>154</sup> Ruhl (n 136) 1379-1382.

<sup>155</sup> Ibid Trend One.

<sup>156</sup> Jan G Laitos and Lauren Joseph Wolongevicz, ‘Why Environmental Laws Fail’ (2014-2015) 39 *William and Mary Environmental Law and Policy Review* 1, 40-1.

<sup>157</sup> Ruhl (n 136) 1382-3.

adaptive governance frameworks.<sup>158</sup> In a similar vein, laws often do not recognise that socioecological systems are complex adaptive systems that can change dynamically in a relatively short space of time.<sup>159</sup> This point was most persuasively explained by Craig, who noted that many laws assume that ecological processes are linear<sup>160</sup> and thus overlook the potential for thresholds and interactions across scales to influence management of socioecological systems.<sup>161</sup> It is therefore unsurprising that existing laws typically neither support iterative decision-making processes conducive to change,<sup>162</sup> nor distinguish between adaptive and transformative change and their different regulatory demands.<sup>163</sup>

Matters of scale present yet another disconnect between resilience and typical approaches to law. Laws tend to disaggregate socioecological systems into smaller components based on activity or geography to make them more manageable. To make matters worse, territorial lines are rarely drawn with any reference to socioecological boundaries.<sup>164</sup> As a result, jurisdictional boundaries frequently do not align with the location or scale of environmental or resource management problems (at local, national, or even transnational scales).<sup>165</sup> Adaptation actions and policies are also often distributed across multiple sectors.<sup>166</sup> This can make the task of integrating management even more challenging.<sup>167</sup>

These features have prompted some to question the capacity of current legal systems to implement resilience approaches.<sup>168</sup> While there are clear challenges,<sup>169</sup> there are nonetheless many ways in which the legal system influences resilience.<sup>170</sup> Opportunities to influence resilience through law are already emerging in both the scholarly literature, and in adaptation laws themselves. Legislation may stipulate that the pursuit of resilience as a

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<sup>158</sup> Arnold et al (n 143) 9; Cosens et al (n 144) 2341.

<sup>159</sup> Laitos and Wolongevicz (n 156) 43-44.

<sup>160</sup> Craig (n 144) 36; Robin Kundis Craig, 'Learning to think about Complex Environmental Systems in Environmental and Natural Resource Law and Legal Scholarship: A Twenty-Year Retrospective' (2012-2013) 24 *Fordham Environmental Law Review* 87, 101.

<sup>161</sup> Green et al (n 75) 335.

<sup>162</sup> Benson and Schultz (n 75) 41.

<sup>163</sup> See, eg, Chaffin et al (n 94).

<sup>164</sup> Bradley C Karkkainen, 'Collaborative Ecosystem Governance: Scale, Complexity and Dynamism' (2002-2003) 21 *Virginia Environmental Law Journal* 189, 212.

<sup>165</sup> Ibid 212-7; Cosens and Williams (n 148) 1, 10; Jonas Ebbesson and Carl Folke, 'Matching Scales of Law with Social-Ecological Contexts to Promote Resilience', in Ahjond S Garmestani and Craig R Allen (eds), *Social-Ecological Resilience and Law* (Columbia University Press, 2014) 267, 284.

<sup>166</sup> See, eg, Chapter 1.3.3.

<sup>167</sup> Craig A (Tony) Arnold and Lance H Gunderson, 'Adaptive Law', in Ahjond S Garmestani and Craig R Allen (eds), *Social-Ecological Resilience and Law* (Columbia University Press, 2014) 349.

<sup>168</sup> Eg Holling (n 52) 1; Garmestani and Benson (n 69) 8; JB Ruhl, 'Panarchy and the Law' (2012) 17(3) *Ecology and Society* [31], 2, 4; Brian H Walker, 'A Commentary on "Resilience and Water Governance: Adaptive Governance in the Columbia River Basin"' (2012) 17(4) *Ecology and Society* [29], 1.

<sup>169</sup> Ruhl (n 168) 2.

<sup>170</sup> Eg Humby (n 152); Jonas Ebbesson and Ellen Hey, 'Introduction: Where in Law is Socio-Ecological Resilience?' (2013) 18(3) *Ecology and Society* [25], 1.

statutory objective.<sup>171</sup> Legal processes can also support incremental learning, facilitate more dynamic responses to change,<sup>172</sup> and provide mechanisms for managing jurisdictional conflicts.<sup>173</sup> More broadly, the legal system can also articulate and support legal principles and values – such as the rule of law, legal certainty and procedural fairness – that might themselves influence resilience.<sup>174</sup> For example, inclusive procedures may broaden the information base from which decision-making proceeds. This may result in substantive decision-making that better accounts for socioecological dynamics, and therefore enhances resilience.<sup>175</sup> In all these senses, legal systems play an important role in supporting implementation of resilience approaches to climate change adaptation.

## 2.6 Critical Perspectives on Resilience

Despite its prominence in academic and policy circles, resilience is not without its critics. Concerns have largely been raised by researchers with backgrounds in the social sciences and humanities, especially those who employ critical methodologies and research approaches. Those criticisms typically question the characterization of human societies as ‘systems’.<sup>176</sup> Concerns commonly raised include:

- (1) the capacity of methodologies in resilience research to comprehend the social domain and accommodate ‘different ways of knowing’;<sup>177</sup>
- (2) the tendency of resilience research to underplay the influence of human agency and power dynamics within socioecological systems;<sup>178</sup> and
- (3) the susceptibility of resilience concepts to politicization.<sup>179</sup>

<sup>171</sup> Eg *Coastal Management Act 2016* (NSW) ss 3(a),(i), 6-8.

<sup>172</sup> Ahjond S Garmestani and Craig R Allen, ‘Adaptive Management of Social-Ecological Systems: The Path Forward’, in Craig R Allen and Ahjond S Garmestani (eds), *Adaptive Management of Social-Ecological Systems* (Springer, 2015) 258-9; Green et al, (n 75) 332. For explorations of how adaptive management might be facilitated through laws and legal processes, see, eg McDonald and Styles (n 55); Slattery (n 82) 441-2; Craig et al (n 80).

<sup>173</sup> Cosens et al (n 100) 8; Ebbesson and Hey (n 170) 1-2.

<sup>174</sup> Jonas Ebbesson, ‘The Rule of Law in Governance of Complex Socio-Ecological Changes’ (2010) 20 *Global Environmental Change* 414, 415.

<sup>175</sup> Ebbesson and Hey (n 170) 2.

<sup>176</sup> Debra J Davidson, ‘The Applicability of the Concept of Resilience to Social Systems: Some Sources of Optimism and Nagging Doubts’ (2010) 23 *Society and Natural Resources* 1135, 1143. W Neil Adger et al, ‘Are There Social Limits to Adaptation to Climate Change?’ (2008) 93 *Climatic Change* 335.

<sup>177</sup> T. Stojanovic et al, ‘The “Social” Aspect of Socio-Ecological Systems: A Critique of Analytical Frameworks and Findings from a Multisite Study of Coastal Sustainability’ (2016) 21(3) *Ecology and Society* [15], 3-4, 10.

<sup>178</sup> Davidson (n. 176) 1142-4; Raven Cretney, ‘Resilience for Whom? Emerging Critical Geographies of Socio-Ecological Resilience’ (2014) 8/9 *Geography Compass* 627, 632, 634; Muriel Cote and Andrea J Nightingale, ‘Resilience Thinking Meets Social Theory: Situating Social Change in Socio-Ecological Systems (SES) Research’ (2012) 36 *Progress in Human Geography* 475, 479.

<sup>179</sup> Jonathan Joseph, ‘Resilience as Embedded Neoliberalism: A Governmentality Approach’ (2013) 1 *Resilience: International Policies, Practices and Discourses* 38, 39; see also Jeremy Walker and Melinda Cooper, ‘Genealogies of Resilience: From Systems Ecology to the Political Economy of Crisis Adaptation’ (2011) 42 *Security Dialogue* 143.

Resilience has also been criticized for failing to offer normative guidance for management of socioecological systems – that is, for interpreting how a system operates in practice, without considering whether or not the resilient state is socially desirable.<sup>180</sup> By failing to explore these dynamics, resilience approaches often favour the status quo and/or ignore the costs and hazards associated with maintaining a particular system state. Although the foundational resilience scholarship readily acknowledges that undesirable system states may be very persistent,<sup>181</sup> that insight seems not to have informed subsequent extensions of resilience research to the social domain. That omission is particularly striking given the convergence of resilience approaches with the neoliberal paradigm.<sup>182</sup> In that context, it is perhaps unsurprising that resilience continues to be criticised for failing to acknowledge power imbalances or to identify and account for the complexities of social systems.

While acknowledging that the uncritical application of resilience principles to social and human systems is problematic, it is also important that scholarly debates on the (de)merits of resilience are not reduced to an unhelpful and misleading dichotomy. It is by no means clear that resilience approaches were ever meant to be applied uncritically to social system components. In fact, the difficulties of applying a way of thinking grounded in ecology was often acknowledged in foundational resilience scholarship.<sup>183</sup> There are also opportunities to use resilience as an opportunity to build synergies and develop policy approaches and research programs capable of producing insights of broad relevance to a range of scholars, areas of study and social and ecological problems. Harris et al have, for example, posited the concept of ‘negotiated resilience’ that focuses on the use of inclusive procedures to develop shared understandings of the meaning of resilience to inform the implementation of resilience oriented policies.<sup>184</sup> In the research context, Davoudi et al (among others) have suggested that resilience can serve as a bridging concept that can facilitate interdisciplinary approaches to understanding and applying resilience principles, including in the context of climate adaptation.<sup>185</sup> However, these approaches are only possible where the complexities of resilience are recognised and accounted for in policy approaches and research design.

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<sup>180</sup> Danny MacKinnon and Kate Driscoll Derickson, ‘From Resilience to Resourcefulness: A Critique of Resilience Policy and Activism’ (2012) 37 *Progress in Human Geography* 253, 258-9.

<sup>181</sup> See, eg, Walker and Salt (n 7) 15.

<sup>182</sup> See, eg, Jonathon Joseph, ‘Resilience as Embedded Neoliberalism: A Governmentality Approach’ [38] (2013) 1(1) *Resilience: International Policies, Practices and Discourses* 38.

<sup>183</sup> Holling and Gunderson (n 3) 51.

<sup>184</sup> Leila M. Harris, Eric K. Chu and Gina Ziervogel, ‘Negotiated Resilience’ (2018) 6 *Resilience* 196.

<sup>185</sup> See, eg, Simin Davoudi, ‘Resilience: A Bridging Concept or a Dead End?’ (2012) 13 *Planning Theory and Practice* 299.

While existing legal scholarship often acknowledges these critiques of resilience in passing, they are not always accounted for in subsequent analyses of law's influence on resilience. In particular, the distributive implications of implementing a resilience approach have received scant attention from legal scholars to date. The role of fair and transparent legal procedures in promoting resilience has been emphasized, but the way law shapes the allocation of resources and risks is underexplored. Current approaches to the incorporation of resilience in adaptation law might therefore usefully be supplemented with concepts derived from the field of environmental justice. This thesis argues that environmental justice scholarship offers a framework for analysing the distributive implications of climate adaptation, and for theorising the social domain that has caused such difficulties for resilience approaches.<sup>186</sup> Integrating resilience and environmental justice principles can thus enhance the value of resilience as both an explanatory and normative framework. In order to understand how this might work, the next section considers environmental justice and its application to climate adaptation law.

## **2.7 *Environmental Justice: Background and Overview***

This section provides a brief introduction to the concept of environmental justice, including its development through both ongoing and sustained community activism and, increasingly, as an area of interdisciplinary academic inquiry. It is perhaps useful – as a first step – to say something about what ‘environmental justice’ means. In its contemporary usage, environmental justice is concerned with opportunities to participate in decision making processes relating to environmental hazards, and in the development, implementation and enforcement of rules and regulations that affect the substantive fairness of environmental decision making.<sup>187</sup> In other words, environmental justice is concerned with fairness in the procedures of environmental decision-making, and in the outcomes of environmental management. A brief review of the history of environmental justice, and the environmental justice movement, helps to explain why these are matters of concern.

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<sup>186</sup> Building on passing observations such as Arnold and Gunderson (n 167) 328.

<sup>187</sup> See US Environmental Protection Agency (EPA), ‘Environmental Justice’ <<https://www.epa.gov/environmentaljustice>>. See also Gordon Walker, *Environmental Justice: Concepts, Evidence and Politics* (Routledge, 2014), who notes that environmental justice definitions typically share three common features; firstly, a concern with justice ‘for people’; secondly, an articulation of the concept of the environment; and thirdly, a diverse understanding of justice. Ultimately, however, environmental justice ‘def[ies] universal definition’, at 8-11.

It is impossible to understand environmental justice scholarship without reference to its early development through community activism. The concept of environmental justice emerged in the US in the late 20<sup>th</sup> century in response to concern over the location and management of environmental hazards in minority neighbourhoods.<sup>188</sup> Throughout the 1980s, a series of systematic studies revealed the disproportionate exposure of minority communities to environmental hazards in the southern US. Throughout the 1980s, the environmental justice movement supported extensive community campaigns that brought a range of major environmental injustices to national attention.<sup>189</sup> The most immediate result was governmental action, either at local levels where the sources of injustice were addressed, or at the national level where environmental justice was embedded in executive policy and practice.<sup>190</sup> Environmental justice is now a well-entrenched concept in societal, policy and legal discourse.

Although it is now a thriving area of scholarly inquiry, the central tenets of environmental justice research reflect its co-development with the environmental justice movement. Environmental justice research retains a core emphasis on the distribution of environmental hazards, and the importance of community participation in decision-making.<sup>191</sup> These themes were most evident in the early scholarly contributions that documented and theorised the activities of the environmental justice movement in the US.<sup>192</sup> However, environmental justice research has developed considerably over the three decades since its early applications.<sup>193</sup> Environmental justice scholarship has now expanded beyond the US,<sup>194</sup> with examples found in large numbers of countries, including Australia.<sup>195</sup> Environmental justice has also extended beyond the local scale to address the

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<sup>188</sup> Alice Kaswan, 'Environmental Justice and Environmental Law' (2012-13) 24 *Fordham Environmental Law Review* 149, 150.

<sup>189</sup> See, eg, Jedediah Purdy, 'The Long Environmental Justice Movement' (2018) 44 *Ecology Law Quarterly* 809, 819-20.

<sup>190</sup> See, eg, Jeremy Orr, 'Environmental Justice Act of 2017: A Fighting Change for Frontline Communities' (2018) 24(2) *Hastings Environmental Law Journal* 303.

<sup>191</sup> Purdy (n 189) 818-19.

<sup>192</sup> See, eg, Robert D Bullard, *Dumping in Dixie: Race, Class, and Environmental Quality* (Westview Press, 1st ed, 1990); Bunyan I Bryant and Paul Mohai (eds), *Race and the Incidence of Environmental Hazards: A Time for Discourse* (Westview Press, 1992).

<sup>193</sup> Robert Bullard, 'Levelling the Playing Field through Environmental Justice' (1998-99) 23 *Vermont Law Review* 453, 453-4.

<sup>194</sup> See Jonathan Sze and Julie K London, 'Environmental Justice at the Crossroads' (2008) 2 *Sociology Compass* 1331, 1341-2. David Schlosberg, *Defining Environmental Justice: Theories, Movements, and Nature* (Oxford University Press, 2007) 42.

<sup>195</sup> See, eg, Penny Armytage, Jane Brockington and Janice van Reyk, *Independent Inquiry into the Environment Protection Authority* (Report, Victoria, 2017) 136-46; see also Brad Jessup, 'Trajectories of Environmental Justice: From Histories to Future and the Victorian Environmental Justice Agenda' (2017) 7 *Victoria University Law and Justice Journal* 48.



allocation of environmental hazards at transnational and global levels.<sup>196</sup> This scholarship is increasingly theorised, and is often at the forefront of scholarly activity in environmental politics and policy. It is to the leading statements of that theory that we now turn.

## 2.8 *Environmental Justice Concepts*

This section introduces the core concepts of the environmental justice approach that informs this thesis. The first component of environmental justice is the environment; the understanding of and approach to the ‘environment’ helps to clarify the substantive focus of environmental justice analyses. The remaining four concepts are components of the justice approach. Although contemporary approaches to environmental justice draw on many theoretical and philosophical conceptions of justice,<sup>197</sup> four are emphasised in this thesis: (1) distributive justice; (2) procedural justice; (3) justice as recognition; and (4) the capabilities approach.<sup>198</sup> Together, these five components provide the conceptual framework of environmental justice as defined in this thesis. Each is explained in turn.

In environmental justice scholarship, the *environment* is comprised of peoples’ experiences of environmental hazards and benefits, comprising biophysical and socio-economic conditions that affect peoples’ daily lives. This is captured in the oft-cited phrase that the environment is where people live, work, learn and play.<sup>199</sup> This broad approach to the ‘environment’ facilitates the application of environmental justice across diverse contexts, including land use planning, natural resource management, public health and disaster management.<sup>200</sup> Although natural and wilderness values are contemplated by environmental justice approaches, they are not necessarily afforded primacy over other aspects of the biophysical and social environments.<sup>201</sup> Environmental justice is as readily concerned with the implications of the built environment and urban concerns such as the availability of transport as it is deep ecology approaches that prioritise wilderness and conservation values.

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<sup>196</sup> Walker (n 187) 23. David N Pellow, *Resisting Global Toxics: Transnational Movements for Environmental Justice* (MIT Press, 2007) 5.

<sup>197</sup> Walker (n 187) 42-53; Schlosberg (n 194) 11.

<sup>198</sup> In emphasizing these four dimensions, this article draws heavily on Schlosberg’s leading contributions to this area of research; see in particular Schlosberg (n 194) Ch 2.

<sup>199</sup> Purdy (n 189) 818 citing Luke W Cole and Sheila R Foster, *From the Ground Up: Environmental Racism and the Rise of the environmental Justice Movement* (2001) 16.

<sup>200</sup> Eg Walker (n 187) 35.

<sup>201</sup> This emphasis on people’s lived experiences distinguishes environmental justice from ecological approaches to justice, although the distinction is likely a matter of emphasis and degree. For an introduction to ecological justice, see Brian Baxter, *A Theory of Ecological Justice* (Routledge, 2005) 7-8. For consideration of non-human aspects of socio-ecological systems through an environmental justice lens, see, eg, Schlosberg (n 194) 142-57. The term benefit includes both advantages that are already accruing to a community, and likely future benefits.

Although perhaps paradoxical, it is the human element that lends environmental justice scholarship and activism a coherent core.

*Distributive justice* requires that substantive inequalities are accounted for in the allocation of both environmental benefits and hazards.<sup>202</sup> It is primarily concerned with the effects of environmental regulation and processes in practice, irrespective of whether any harm or injustice was intended.<sup>203</sup> From a distributive perspective, the immediate question is the mere existence of environmental justice *per se*, not what caused an unfair allocation of environmental hazards.<sup>204</sup> Distribution is typically assessed across geographical (ie spatial) and demographic (ie socio-economic) dimensions,<sup>205</sup> and is increasingly concerned with allocation of hazards and risks between human and natural systems. However, distributive justice also has an important temporal or inter-generational component, particularly in considering climate change impacts.<sup>206</sup> Accordingly, a distributive justice approach would encourage attention to the historical allocation of environmental benefits and hazards when assessing the merits of future adaptation strategies. Distributive concerns remain central – perhaps dominant – in justice theories more broadly.<sup>207</sup>

*Procedural justice* requires impartial decision-making processes<sup>208</sup> and equal and democratic participation in regulatory activities, rather than focusing exclusively on the fairness of substantive outcomes.<sup>209</sup> From a procedural perspective, justice is provided where the decisions are informed by fair and equitable processes.<sup>210</sup> The procedural dimension is thus concerned with how decisions are made, who is involved in those processes (as both decision maker and participant), and whether participants' views are integrated in decision making.<sup>211</sup> There are also broader elements to procedural justice; the inability to access relevant information, for example, would also amount to a procedural injustice.<sup>212</sup> It also

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<sup>202</sup> Robert R Kuehn, 'A Taxonomy of Environmental Justice' (2000) 30 *Environmental Law Reporter* 10681, 10684.

<sup>203</sup> Alice Kaswan, 'Distributive Justice and the Environment' (2002-03) 81 *North Carolina Law Review* 1031, 1044.

<sup>204</sup> Ibid.

<sup>205</sup> Kuehn (n 202) 10684.

<sup>206</sup> Jekwu Ikeme, 'Equity, Environmental Justice and Sustainability: Incomplete Approaches in Climate Change Politics' (2003) 13 *Global Environmental Change* 195, 198.

<sup>207</sup> Schlosberg (n 194) 13.

<sup>208</sup> This observation includes, but is not limited to, legal processes.

<sup>209</sup> Kaswan (n 203) 1045.

<sup>210</sup> Schlosberg (n 194) 25.

<sup>211</sup> Brian J Preston, 'The Effectiveness of the Law in Providing Access to Environmental Justice' (Presentation delivered to the 11<sup>th</sup> IUCN Academy of Environmental Law Colloquium, Hamilton (New Zealand), 2013), available at: <http://www.legc.justice.nsw.gov.au/Documents/preston,%20brian%20-%20plenary%20paper%20environmental%20justice.pdf>, 29.

<sup>212</sup> Stephen Williams and Andreanne Doyon, 'Justice in Energy Transitions' (2019) 31 *Environmental Innovation and Societal Transitions* 144, 147.

has a temporal component, requiring mechanisms for appeal and review of first-instance decision making.<sup>213</sup> Procedural theories of justice typically assume that fair and equitable procedures will produce desirable substantive results. There is a strong temptation to rely on procedures to deliver equitable adaptation outcomes, especially as the size and complexity of climate adaptation expands.

However, experience shows that the existence of procedures alone is no guarantee of fairness or equity. More recent approaches acknowledge that those processes can themselves be the source of injustice. *Justice as recognition* posits that failure to represent all individuals and communities fairly in decision-making processes is itself a source of inequity. Recognition approaches understand that experiences and evaluations of environmental hazards differ between individuals and communities, and require that different perspectives be acknowledged. Failures of recognition can take a number of forms. In her influential contribution to justice scholarship, Nancy Fraser outlined explained three adverse forms of recognition that can affect individuals, communities, and aspects of nature.<sup>214</sup> *Non*-recognition renders people invisible; it results in their lived experience being overlooked in decision-making processes. *Mis*-recognition involves failure to accord people the level or type of input necessary to share their experiences effectively. Although both these failures of recognition might be inflicted deliberately, they may also manifest power imbalances that inhere within society. The final failure, *mal*-recognition, involves unfavourable or damaging portrayals of people with a view to limiting their influence on decision-making processes.<sup>215</sup> It is distinguished by the malicious exclusion of people and their experiences. Providing justice *by* recognition therefore requires that individuals' and communities' varied experiences of environmental hazards and benefits be considered, and that processes not be allowed to obscure or misrepresent those experiences. As Schlosberg usefully observes, recognition approaches can help to reveal empirical injustices associated with procedural approaches.<sup>216</sup> This is especially important for climate adaptation, where a wide-range of procedures from multiple levels of government are applied to local experiences of climate impacts.

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<sup>213</sup> Eg Kuehn (n 202) 10688; Alice Kaswan, 'Environmental Justice: Bridging the Gap between Environmental Laws and "Justice"' (1997) 47 *American University Law Review* 221, 236-9.

<sup>214</sup> Schlosberg leads the application of the recognition approach to the non-human; see Schlosberg (n 194) Ch 6 generally. For ease of expression, the following explanation focuses on people, without failing to recognise Schlosberg's important extension of this work.

<sup>215</sup> Fraser's work is usefully summarised in Preston (n 211) 43-6 and Schlosberg (n 194) 18.

<sup>216</sup> Schlosberg (n 194) 26.

Schlosberg's more recent approaches have integrated the *capabilities approach to justice* within environmental justice scholarship. The capabilities approach focuses on what individuals and communities require to lead free and fully functioning lives. The capabilities approach cuts across distributive, procedural and recognition dimensions of justice. It emphasizes that inequities in any (or all) of those domains compromise full participation in society.<sup>217</sup> Developed primarily by Nussbaum and Sen,<sup>218</sup> the capabilities approach identifies various social, economic, political (including procedural), personal and environmental attributes essential to human flourishing.<sup>219</sup> Restricting just one capability compromises full participation in society, and therefore represents an injustice.<sup>220</sup> The capabilities approach offers interesting analytical possibilities for climate adaptation. It helps to translate the often abstract arguments relating to distributive justice (in particular) to the localised experiences of affected individuals and communities.<sup>221</sup> As Schlosberg himself demonstrates, the capabilities approach can also helpfully reveal injustices occasioned on the non-human elements of socioecological systems.<sup>222</sup> It may also help to identify new pathways through which law might aid climate adaptation in practice. As Holland has demonstrated, the capabilities approach might usefully inform the development of regulatory arrangements – including laws – that enhance the capacity of vulnerable communities to contribute to adaptation governance.<sup>223</sup>

These four conceptions of justice are interlinked. Synergies are clear in considering barriers to participation in regulatory processes. Barriers to participation raise procedural justice concerns, while also affecting recognition of justice claims and the capacity of individuals and communities to participate fully in society. The approaches may also conflict. At a philosophical level, for example, ongoing debates have explored the interrelationship of different approaches to justice. Schlosberg, for example, usefully sketches the historical development of scholarly debates relating to distributive, procedural and recognition approaches.<sup>224</sup> However, these theoretical tensions also have more simple and direct practical implications. For example, timely administrative procedures may serve the

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<sup>217</sup> Ibid 30.

<sup>218</sup> Eg Amartya Sen, *The Idea of Justice* (Harvard University Press, 2009) 231-47, and Martha C Nussbaum, *Creating Capabilities: The Human Development Approach* (Harvard University Press, 2011) 17-20.

<sup>219</sup> See Rosemary Lyster, *Climate Justice and Disaster Law* (Cambridge University Press, 2015) 108; Nussbaum (n 218) 33-4. Sen has elected not to provide a 'canonical' list of capabilities; see A. Sen, 'Human Rights and Capabilities' (2005) 6 *Journal of Human Development* 151, 157-60.

<sup>220</sup> Eg Sen (n 218) 231.

<sup>221</sup> Rosemary Lyster, 'The Idea of (Climate) Justice, Neoliberalism and the Talanoa Dialogue (2019) 10 *Journal of Human Rights and the Environment* 35, 40.

<sup>222</sup> Schlosberg (n 194) Ch 6.

<sup>223</sup> Breena Holland, 'Procedural Justice in Local Climate Adaptation: Political Capabilities and Transformational Change' (2017) 26(3) *Environmental Politics* 391-412., 397-8.

<sup>224</sup> Schlosberg (n 194) Ch 2.

interests of procedural and distributive justice by swiftly remedying inequitable distribution of environmental hazards, while also limiting opportunities to recognise the experiences and inputs of affected citizens and communities through participation. The combination of multiple conceptions of justice nonetheless provides a sense of the complexity in developing fair responses to the allocation of environmental risks and hazards.

In recent years, the concept of ‘climate justice’ has gained significant traction in the scholarly literature, and in policy arenas from the local to global scales.<sup>225</sup> Initially an offshoot or extension of the environmental justice movement,<sup>226</sup> climate justice has developed alongside environmental justice over the past two decades.<sup>227</sup> Climate justice scholarship recognises that often focuses on the allocation of resources at the global scale.<sup>228</sup> Although largely concerned with mitigation of greenhouse gas emissions,<sup>229</sup> the literature has more recently expanded to address adaptation issues, including funding<sup>230</sup> and responses to climate-related disasters.<sup>231</sup> While climate justice is most often associated with the global dimensions of climate policy (such as the availability of sufficient funding to address adaptation demands at the global scale), it has also been used in assessments of the influence of climate change on the distribution of environmental hazards and benefits at the local level.<sup>232</sup> In this sense, ‘climate justice’ applies environmental justice approaches to climate change harms, focusing on local adaptation efforts.<sup>233</sup> In this thesis, climate and environmental justice are best viewed as interrelated fields that are developing in complementary and mutually reinforcing ways.<sup>234</sup>

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<sup>225</sup> The labels ‘environmental’ and ‘climate’ justice are used inconsistently across several contexts; see Paul Mohai, David Pellow and J Timmons Roberts, ‘Environmental Justice’ (2009) 34 *Annual Review of Environment and Resources* 405, 421.

<sup>226</sup> Julian Agyeman et al, ‘Trends and Directions in Environmental Justice: From Inequity to Everyday Life, Community, and Just Sustainabilities’ (2016) 41(1) *Annual Review of Environment and Resources* 321-340.

<sup>227</sup> Williams and Doyon (n 212) 147.

<sup>228</sup> Eg J Timmons Roberts and B.C. Parks, *A Climate of Injustice: Global Inequality, North-South Politics, and Climate Policy* (MIT Press, 2006); Rosemary Lyster, ‘Adaptation and Climate Justice’ in Jonathan Verschuuren (ed), *Research Handbook on Climate Change Adaptation Law* (Edward Elgar, 2013) 32; and David Schlosberg and Lisette B Collins, ‘From Environmental to Climate Justice: Climate Change and the Discourse of Environmental Justice’ (2014) 5 *Wiley Interdisciplinary Reviews: Climate Change* 359, 365.

<sup>229</sup> Eg Schlosberg (n 194) 46.

<sup>230</sup> Sam Barrett, ‘The Necessity of a Multiscalar Analysis of Climate Justice’ (2012) 37 *Progress in Human Geography* 215, 218.

<sup>231</sup> Lyster (n 219).

<sup>232</sup> Eg Randall S Abate, ‘Public Nuisance Suits for the Climate Justice Movement: The Right Thing and the Right Time’ (2010) 85 *Washington Law Review* 197, 199-200. In addition, at the domestic level, climate justice is often concerned with ‘just transition’ to a low carbon society; see eg James J Patterson et al, ‘Political Feasibility of 1.5°C Societal Transformations: The Role of Social Justice’ (2018) 31 *Current Opinion on Environmental Sustainability* 1, 2; Schlosberg and Collins (n 228) 370.

<sup>233</sup> Schlosberg and Collins (n 228) 368; see also Randall S Abate, ‘Atmospheric Trust Litigation in the United States: Pipe Dream or Pipeline to Justice for Future Generations?’, in Randall S Abate (ed), *Climate Justice: Case Studies in Global and Regional Governance Challenges* (Environmental Law Institute, 2016) 546-8.

<sup>234</sup> Schlosberg and Collins (n 228) 370-1; Abate (n 232) 207-8. See also Maxine Burkett, ‘Just Solutions to Climate Change: A Climate Justice Proposal for a Domestic Clean Development Mechanism’ (2008) 56

For the purposes of this thesis, however, the foundational environmental justice framework offers a more useful lens for analysis of climate adaptation. Environmental justice approaches help to locate climate impacts in their broader environmental context, which includes consideration of non-climatic stressors.<sup>235</sup> This is likely to be important where climate impacts are one among many causes of environmental harms; for example, land clearing processes unrelated to climate adaptation may shape the vulnerability of coastal areas to future impacts.<sup>236</sup> Environmental justice also focuses more directly on peoples' lived experiences of climate impacts at the local level, with less emphasis on theoretical approaches to corrective future allocation of resources at larger scales.<sup>237</sup> While the availability of resources clearly influences climate adaptation measures and strategies, this article focuses more on the practical implications at local levels, and less on theoretical and philosophical justifications for attributing responsibility to fund adaptation at the global level.<sup>238</sup> Questions of scale – or connecting across scales – are also challenging for the application of climate justice theories to adaptation. Although climate justice recognises that harms will occur at the local level, it has so far struggled to convincingly connect global solutions with local problems.<sup>239</sup> This approach is also consistent with the localized nature of adaptation law and governance arrangements more broadly, as explained in the previous chapter.<sup>240</sup>

The above principles represent the core of environmental justice from a scholarly perspective. Despite its relative youth, the interdisciplinary field has achieved a remarkable level of consistency and coherence. However, environmental justice principles are not without their limitations, which are addressed briefly in the next section.

## **2.9     *The Limitations of Environmental Justice***

As explained above, environmental justice research initially oriented around two key themes.<sup>241</sup> These included defining the 'environment' and establishing a consistent

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*Buffalo Law Review* 169, 192-3, where climate justice is framed with reference to both national and global scales.

<sup>235</sup> Craig (n 144) 43-4.

<sup>236</sup> See Chapter 5.1 on coastal processes and climate change.

<sup>237</sup> Schlosberg and Collins (n 228) 368, 370.

<sup>238</sup> Sam Barrett, 'Local Level Climate Justice? Adaptation Finance and Vulnerability Reduction' (2013) 23 *Global Environmental Change* 1819, 1819.

<sup>239</sup> Scaling up has, in contrast, been a challenge for environmental justice.

<sup>240</sup> See Chapter 1 regarding the multiple scales of Australian law relevant to climate adaptation (and environmental management more broadly).

<sup>241</sup> See section 2.8 above.

conception of ‘justice’.<sup>242</sup> Thus the ‘first generation’ of environmental justice research<sup>243</sup> focused on collecting evidence and documenting lived experiences in order to highlight the causes and impacts of environmental injustice. This is hardly surprising given the interdependence of early environmental justice research and the environmental justice movement that was both the object of study and a major beneficiary of such research.

More recently, Pellow has advocated a critical perspective that highlights the limitations of the first generation of environmental justice scholarship, and to spur the development of a more expansive research agenda.<sup>244</sup> He identifies four key domains for the development of ‘critical environmental justice studies’.<sup>245</sup> First, Pellow calls for a broader approach to the causes of environmental injustice, seeking a movement beyond the dominant themes of race and class to consider other causes of disadvantage.<sup>246</sup> In addition, Pellow also emphasises the importance of multiscalar approaches, placing greater emphasis on the disaggregation of the causes and effects of environmental injustice across space and time.<sup>247</sup> Further, Pellow argues that the existing social order – including its manifestations in markets, social arrangements and law – is a major obstacle to environmental justice, and calls for a reimagination of the means of achieving environmental justice beyond existing dominant institutions.<sup>248</sup> Finally, critical environmental justice studies would challenge the presumption that certain aspects of socioecological systems – be they people or species – might be sacrificed for the benefit of others. Rather, they would seek to better articulate the values and contributions of all components of socioecological systems to collective well-being.<sup>249</sup> Together, these four areas present the opportunity to reimagine environmental justice research. While they may not directly challenge the key concepts of environmental justice set out above, Pellow’s provocations would perhaps test the bounds of those principles as they are currently applied.

Pellow’s provocations are clearly designed to stimulate a more ambitious research agenda for environmental justice. This is – at least in part – a response to the demands of climate

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<sup>242</sup> See also David Schlosberg, ‘Theorising Environmental Justice: The Expanding Sphere of a Discourse’ (2013) 22 *Environmental Politics* 37, 38-9.

<sup>243</sup> See, eg, Gordon Walker, ‘Beyond Distribution and Proximity: Exploring the Multiple Spatialities of Environmental Justice’ (2009) 41 *Antipode* 614, 615.

<sup>244</sup> David N Pellow, ‘Critical Environmental Justice Studies’ in Beth Schaefer Caniglia, Manuel Vallee and Beatrice Frank (eds), *Resilience, Environmental Justice and the City* (Routledge, 2017) 19.

<sup>245</sup> *Ibid.* 20.

<sup>246</sup> *Ibid.*

<sup>247</sup> *Ibid.*

<sup>248</sup> *Ibid.*

<sup>249</sup> *Ibid.* 31.

change.<sup>250</sup> It is striking that many of Pellow's provocations align with major themes in climate adaptation. The emphasis on multiscalar approaches, for example, is consistent with dominant understandings of climate adaptation.<sup>251</sup> The next section therefore explores the connections between environmental justice and climate adaptation in greater detail.

## **2.10 *Environmental Justice and Climate Adaptation***

Adaptation scholars have frequently pointed to environmental justice principles in explaining the effects and implications of climate adaptation. For example, Adger considered environmental justice a useful lens for analysing people's experiences of adjusting to climate impacts at a local level.<sup>252</sup> Many early studies highlighted the distributive consequences of adaptation, which 'generate[s] a particular incidence of benefits and costs and ... determine[s] the magnitude and distribution of residual climate change impacts'.<sup>253</sup> For example, physical installations protecting coastal areas from sea level rise and storm surge might increase the economic value and liveability of particular properties, while potentially concentrating climate impacts on neighbouring areas.<sup>254</sup> Procedural justice also features prominently in these analyses. Paavola and Adger emphasize the importance of procedural justice in connecting local level adaptation activities with governmental processes.<sup>255</sup> In a later contribution, Paavola and Adger further explain the significance of equal participation for achieving fair adaptation, noting especially the importance of local level actors contributing their own lived experiences of climate impacts.<sup>256</sup> Their analysis also points to the need for technical and financial support to support effective participation.<sup>257</sup> However, the proposed solutions are focused at very high scales of governance, with particular emphasis on the role of the UNFCCC and international environmental law in progressing fair and equitable adaptation.

More recently, questions of justice and fairness have become even more prominent in climate adaptation research. An increasing number of contributions point explicitly to the justice implications of climate adaptation through an array of labels, including 'just

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<sup>250</sup> Ibid 28.

<sup>251</sup> See analysis of the Australian legal framework in Chapter 1.3.2-1.3.4.

<sup>252</sup> W Neil Adger, 'Scales of Governance and Environmental Justice for Adaptation and Mitigation of Climate Change' (2001) 13 *Journal of International Development* 921, 929.

<sup>253</sup> Jouni Paavola and W Neil Adger, 'Fair Adaptation to Climate Change' (2006) 56 *Ecological Economics* 594, 597.

<sup>254</sup> Mark T Gibbs, 'Why is Coastal Retreat so Hard to Implement? Understanding the Political Risk of Coastal Adaptation Pathways' (2016) 130 *Ocean and Coastal Management* 107, 109.

<sup>255</sup> Jouni Paavola and W Neil Adger, 'Justice and Adaptation to Climate Change' (Tyndall Centre Working Paper No 23, 2002) 15.

<sup>256</sup> Paavola and Adger (n 253) 606.

<sup>257</sup> Jouni Paavola, 'Science and Social Justice in the Governance of Adaptation to Climate Change' (2008) 17 *Environmental Politics* 644, 656.



adaptation’,<sup>258</sup> ‘just transformation’,<sup>259</sup> ‘fair adaptation’,<sup>260</sup> ‘adaptation justice’<sup>261</sup> and ‘adaptation equity’.<sup>262</sup> These more recent analyses are, on occasion, reflective of theoretical developments in environmental justice scholarship. For example, Schlosberg, Collins and Niemeyer recently emphasized the importance of recognition forms of justice, by incorporating citizens’ views in participatory adaptation planning processes, and addressing the structural causes of inequitable and unfair distribution of climate benefits and hazards.<sup>263</sup> Further, these more recent contributions often outline practical measures to address potential injustices at the local level. Participatory processes – ranging from information sharing through intensive planning processes involving citizen juries – are frequently highlighted as justice enhancing features of climate adaptation. While the distributive implications of climate adaptation remain a major theme in these analyses, there are relatively few suggestions for remedying substantive injustices at the local scale.

Environmental justice principles thus play a crucial role in understanding and designing adaptation responses. However, the role of law in those responses is unclear. While some environmental justice scholars are sceptical of law’s capacity to fairly and equitably address climate impacts,<sup>264</sup> others see law and government as central to securing just adaptation outcomes. The next section therefore explores the interrelationship of environmental justice principles and climate adaptation law.

## ***2.11 Environmental Justice and Climate Adaptation Law***

This section explores the competing views on the role of law in securing just and fair adaptation to climate impacts. Because climate adaptation laws span multiple sectors, the treatment of environmental justice has been diffused across several areas of law. The intersection of environmental justice and law has been examined in a variety of contexts, including land-use planning,<sup>265</sup> coastal management,<sup>266</sup> human rights<sup>267</sup> and civil law.<sup>268</sup> The

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<sup>258</sup> Linda Shi et al, ‘Roadmap Towards Justice in Urban Climate Adaptation Research’ (2016) 6(2) *Nature Climate Change* 131-137.

<sup>259</sup> David Schlosberg, Lisette B Collins and Simon Niemeyer, ‘Adaptation Policy and Community Discourse: Risk, Vulnerability, and Just Transformation’ (2017) 26 *Environmental Politics* 413.

<sup>260</sup> Paavola and Adger (n 253).

<sup>261</sup> Alice Kaswan, ‘Adaptation Justice’ in Michael Faure (ed) *Elgar Encyclopedia of Environmental Law* (Edward Elgar, 2015).

<sup>262</sup> JB Ruhl, ‘Climate Adaptation Law’ in Michael Gerrard and Jody Freeman (eds), *Global Climate Change and US Law* (ABA Press, 2nd Edition ed, 2013). 704.

<sup>263</sup> Schlosberg, Collins and Niemeyer (n 259) 431.

<sup>264</sup> Pellow (n 244).

<sup>265</sup> See, eg, Tony Arnold, ‘Planning for Environmental Justice’ (2007) 59 *Zoning Digest* 3.

<sup>266</sup> See, eg, Mark Stallworthy, ‘Sustainability, Coastal Erosion and Climate Change: An Environmental Justice Analysis’ (2006) 18 *Journal of Environmental Law* 357.

<sup>267</sup> See, eg, Margaux J Hall and David C Weiss, ‘Avoiding Adaptation Apartheid: Climate Change Adaptation and Human Rights Law’ (2012) 37 *Yale Journal of International Law* 309.

section thus draws upon the broader literature exploring the relationship between environmental justice and law across those various areas of law to illustrate relevant developments in the academic literature.

Environmental justice has had a close connection with law since its inception. Bullard's first studies that revealed inequities in the allocation of environmental hazards were conducted in support of litigation seeking remedies from local authorities in Houston, Texas in the US.<sup>269</sup> Later empirical analyses have examined the operation of domestic laws, predominantly in the US,<sup>270</sup> but increasingly also in Australia<sup>271</sup> and Europe.<sup>272</sup> Distributive and procedural dimensions of justice typically received most attention in these studies.<sup>273</sup> This is unsurprising given the influence of Rawlsian thinking on distributive justice in legal philosophy, the centrality of procedure to the operation of law generally, and its use by environmental justice movements in particular. Later scholarly contributions have used theoretical developments in environmental justice scholarship to highlight different aspects of law's influence on environmental justice. Jessup, for example, used a recognition approach to highlight the significance of judicial approaches in providing justice in environmental disputes.<sup>274</sup> The legal literature has thus continued to replicate developments in environmental justice research more broadly.

The literature on environmental justice and law treats legal systems in two competing ways. On one approach, law is seen as a cause of environmental injustice by limiting participation and recognition,<sup>275</sup> as a significant barrier to addressing the unfair allocation of environmental burdens in a substantial or timely manner,<sup>276</sup> or as failing to address or

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<sup>268</sup> Sam Porter, 'Do the rules of private nuisance breach the principles of environmental justice?' [21] (2019) 21(1) *Environmental Law Review* 21-37.

<sup>269</sup> See, eg, Robert D Bullard, *Environmental Justice: It's More Than Waste Facility Siting* (1996) 77 *Social Science Quarterly* 493, 496.

<sup>270</sup> Scholarly analyses published in American law journals reflected wider societal interest in environmental justice in the US in the early 1990s: eg Bullard (n 193); Robert W Collin, 'Review of the Legal Literature on Environmental Racism, Environmental Equity and Environmental Justice' (1994) 9 *Journal of Environmental Law and Litigation* 121. The environmental justice framework has since proliferated in analyses of US environmental and natural resources laws: eg Kaswan (n 188) and (n 213) above.

<sup>271</sup> Eg Preston (n 211); Felicity Millner, 'Access to Environmental Justice' (2011) 16 *Deakin Law Review* 189; Brad Jessup, 'Justice, Recognition and Environmental Law: The Wielangta Forest Conflict Tasmania, Australia' (2015) 34 *University of Tasmania Law Review* 5.

<sup>272</sup> Eg Stallworthy (n 266); Ole W Pedersen, 'Environmental Justice in the UK: Uncertainty, Ambiguity and the Law' (2011) 31 *Legal Studies* 279.

<sup>273</sup> Eg Millner (n 271) 194-9.

<sup>274</sup> Eg Jessup (n 271) 9-19.

<sup>275</sup> Eg Kaswan (n 213) 268-75; R.J. Lazarus, 'Pursuing Environmental Justice: The Distributional Effects of Environmental Protection' (1992-93) 87 *Northwestern University Law Review* 787, 825.

<sup>276</sup> On the potential for legal procedures to restrict access to environmental justice, see Kuehn (n 202) 10688-92; Eileen Gauna, 'The Environmental Justice Misfit: Public Participation and the Paradigm Paradox' (1998) 17 *Stanford Environmental Law Journal* 3, 16.

entrenching the distributive consequences of environmental regulation.<sup>277</sup> Decision-making procedures rarely provide substantive guidance as to how distributive concerns should be addressed<sup>278</sup> and environmental law's main implementation mechanisms are not always well-suited to addressing distributive concerns. The distributive consequences of environmental or other laws are not systematically monitored.<sup>279</sup> Neither are the cumulative effects of environmental burdens over time, or the interactions that amplify particular impacts.<sup>280</sup> A final critique is that environmental laws rarely address the structural causes of environmental injustice.<sup>281</sup> Responding to disparate socio-economic and political competences is a substantial challenge and arguably beyond the scope of environmental law, but those laws and processes must at least acknowledge the different experiences of individuals and communities engaging with the legal system.

The contrary view of law and environmental justice sees the legal system as central to procedural justice,<sup>282</sup> especially because it exposes distributive inequities.<sup>283</sup> A range of mechanisms, including legislative requirements for notice and consultation, along with freedom of information legislation, help to ensure that information is available relating to the distribution of environmental hazards and benefits.<sup>284</sup> Review and appeal mechanisms might also be used to delay or prevent actions that would have inequitable distributive effects.<sup>285</sup> Of course, the availability of legal procedures is no guarantee of their effectiveness in preventing or correcting environmental injustice. Participation may be limited,<sup>286</sup> while many procedures are 'case-' or 'issue-'specific and do not automatically lead to systemic change. Much as law was historically used to advance the claims of the environmental justice movement, it may also provide opportunities to address unfairness associated with climate adaptation.

The foregoing paragraphs suggest that, despite recognised shortcomings, laws and legal systems can make fundamental contributions to the pursuit of environmental justice,

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<sup>277</sup> Kaswan, (n 213) 268-70.

<sup>278</sup> Ibid; Preston (n. 211) 27-8

<sup>279</sup> Kaswan (n 213) 268-9.

<sup>280</sup> Ibid 242; see also Preston (n. 211) 7-8; laws tend to focus on the existence of environmental hazards *per se*; eg Kaswan, n. 188 above, p. 159.

<sup>281</sup> See nn. 193, 202-206 above.

<sup>282</sup> Luke W Cole, 'Environmental Justice Litigation: Another Stone in David's Sling' (1993) 21 *Fordham Urban Law Journal* 523, 527-8.

<sup>283</sup> Kaswan (n 188) 155; Kaswan (n 213) 243.

<sup>284</sup> Millner (n 271) 194-6.

<sup>285</sup> Stephen M Johnson, 'NEPA and SEPA's in the Quest for Environmental Justice' (1997) 30 *Loyola of Los Angeles Law Review* 565, 578-9; Vicki P Mahoney, 'Environmental Justice: From Partial Victories to Complete Solutions' (1999) 21 *Cardozo Law Review* 361, 373, 381.

<sup>286</sup> Kaswan (n 213) 296-8.

particularly in the context of climate change adaptation. Limiting the adverse effects of laws and legal processes on environmental justice will be essential. Environmentally-just adaptation laws must, therefore, address the distributive implications of adaptation by prioritizing equitable allocation of climate hazards and benefits.<sup>287</sup> Adaptation laws might, for example, help to enhance the food security of vulnerable populations by shaping domestic and international trade.<sup>288</sup> In addition, adaptation laws must address interacting and cumulative impacts, and expand beyond single ‘issues’ or ‘harms’.<sup>289</sup> For example, heatwaves and bushfires are often interrelated, and may thus present a “‘compound” hazard’;<sup>290</sup> adaptation laws must account for those scenarios.<sup>291</sup> Adaptation laws can also enhance environmental justice by building on the legal system’s procedural strengths. Supporting the meaningful participation of all individuals and communities must be a priority for adaptation laws, so that the theoretical benefits of legal processes are matched in their practical implementation.<sup>292</sup> This will require adequate resources and technical support and greater tolerance of alternative understandings of environmental change.<sup>293</sup>

## 2.12 Conclusion

This chapter has provided a targeted introduction to resilience and environmental justice, the two major areas of research informing this thesis. The core principles of each theory were outlined with reference to foundational literatures. Methods for implementing resilience approaches in practice were also examined and major limitations of each concept were also identified. The chapter also explained how resilience and environmental justice principles have been used in analysing climate adaptation, and the development of climate adaptation law, to date (sections 2.4, 2.5, 2.10 and 2.11). While the existing literature identifies barriers to the pursuit of both resilience and environmental justice through law, it also points to opportunities for improving the capacity of laws to address dynamic change and remedy injustices associated with environmental hazards.

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<sup>287</sup> On the importance of addressing the distribution of both hazards and benefits, see Lazarus (n 275) 792-6.

<sup>288</sup> Ben Saul, ‘Climate Change and Resource Scarcity: Towards an International Law of Distributive Justice’, in Rosemary Lyster (ed), *In the Wilds of Climate Law* (Australian Academic Press, 2010) 87.

<sup>289</sup> Mahoney (n 285) 410.

<sup>290</sup> Darryn McEvoy, Iftexhar Ahmed and Jane Mullett, ‘The Impact of the 2009 Heat Wave on Melbourne’s Critical Infrastructure’ (2012) 17 *Local Environment* 783, 793.

<sup>291</sup> Eg Emergency Management Victoria, *State Emergency Response Plan: Extreme Heat Sub-Plan (Edition 2)* (Victorian Government, 2017) 17-8.

<sup>292</sup> Juliana Mantaay, ‘Zoning Law, Health, and Environmental Justice: What’s the Connection?’ (2002) 30 *Journal of Law, Medicine and Ethics* 572, 588; see also Amanda Kennedy, Kay A Schafft and Tanya M Howard, ‘Taking Away David’s Sling: Environmental Justice and Land-Use Conflict in Extractive Resource Development’ (2017) 22 *Local Environment* 952, 961-3.

<sup>293</sup> Gauna (n 276) 14, 66; Kaswan (n 213) 296-8; Karen O’Brien, ‘Responding to Environmental Change: A New Age for Human Geography?’ (2010) 35 *Progress in Human Geography* 542, 544.

Climate impacts, and the capacities required to address them, are distributed unevenly. The manifestation of climate impacts, and their consequences for socioecological systems, are largely unknown. With the emphasis in resilience on dynamism and change and the focus of environmental justice on fairness in environmental change, there is a compelling case for considering how these two frameworks can be combined to inform climate adaptation law that promotes both resilience and justice. The next chapter examines the emerging body of scholarship interrogating the intersection of resilience and environmental justice, and distil guiding principles for investigating the role of law in further integrating these theoretical frameworks.

## Chapter Three: Principles of Just Resilience in Adaptation Law

This chapter builds on the preceding literature review by examining the intersection of the concepts of resilience and environmental justice. The interaction of those two concepts is an area of increasing scholarly interest; major early contributions to the area are reviewed in section 3.1. Section 3.2 then argues that law is yet to receive sufficient treatment in analyses of the intersection of resilience and environmental justice. Section 3.3 then sets out four guiding principles for the intersection of resilience, environmental justice and law. These principles draw together and build on earlier contributions to the existing literature. Section 3.4 concludes by outlining how the principles are applied to case studies in the following Chapters Four to Six.

### 3.1 *'Just Resilience' in the Existing Literature*

The intersection of resilience and environmental justice is receiving increasing attention in academic literature and policy circles. In some instances the two concepts are referred to directly. For example, leading resilience scholar Brian Walker recently acknowledged that justice issues required more detailed treatment than they received in his earlier leading works on resilience.<sup>1</sup> However, many contributions point more obliquely to select aspects of the resilience and environmental justice principles. For example, much of the leading research on resilience points to the role that fair procedures might play in enhancing adaptive capacity.<sup>2</sup> Environmental justice literature similarly points to the way non-linear dynamics of socio-ecological systems shape distributive injustices.<sup>3</sup> While providing an important starting point for 'just resilience' scholarship, these brief treatments of limited aspects of resilience and environmental justice principles raise as many questions as they answer.

A smaller number of scholars have explored the integration of resilience and environmental justice principles in greater detail. Most contributions highlight complementary aspects of the two sets of principles. Caniglia et al suggest that resilience complements environmental justice. They highlight how different groups experience environmental hazards differently and how inequality shapes experiences of environmental change.<sup>4</sup> Lyster's account of the development of disaster law similarly hints at a connection between resilience and the

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<sup>1</sup> Brian Walker, *Finding Resilience: Change and Uncertainty in Nature and Society* (CSIRO, 2019).

<sup>2</sup> See section 3.3.3 below.

<sup>3</sup> See section 3.3.2 below.

<sup>4</sup> Beth Schafer Caniglia et al, 'Enhancing Environmental Justice Research and Praxis: The Inclusion of Human Security, Resilience and Vulnerabilities Literature' (2014) 8 *International Journal of Innovation and Sustainable Development* 409.

capabilities approach to justice, but does not explore the implications of that connection in detail.<sup>5</sup> Hansson and Mokeeva develop and apply a joint framework for the assessment of resilience and environmental justice in a coastal community in Indonesia. Their detailed analysis usefully integrates resilience and environmental justice, including through use of the adaptive cycle and panarchy ideas, to explain how an increased emphasis on justice also enhances resilience.<sup>6</sup> These more developed accounts suggest there are synergies between the two sets of principles that merit further attention.

However, many scholars have highlighted tensions between resilience and environmental justice approaches. Fainstein, for example, observes that resilience approaches are often inconsistent with the broad distributive reforms at the heart of environmental justice. Although the concept of resilience ‘can be used as a kind of Trojan horse to promote greater equity’, it can equally stymie the distributive actions necessary to address social and economic injustices.<sup>7</sup> Popke et al similarly observe that ‘[p]olicies focused around adaptation and resilience ... can be easily implemented without any concern for climate justice at all’.<sup>8</sup> At a higher level of abstraction, Pellow explains how resilience can be unjust where it ‘maintains socially and ecologically unequal, discriminatory, and unsustainable practices and relationships’.<sup>9</sup> While recognising that ecosystems pose large dangers to the resilience of community, Pellow emphasises that social arrangements ‘create and sustain various risks for some populations while protecting others’.<sup>10</sup> These observations mirror the concerns highlighted by scholars in more abstract assessments of the limitations of resilience in the scholarly literature.<sup>11</sup>

Connections between resilience and environmental justice are implicit in key contributions to resilience and environmental justice scholarship. For example, Schlosberg’s more recent work on environmental justice contains important implicit connections with resilience

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<sup>5</sup> Rosemary Lyster, *Climate Justice and Disaster Law* (Cambridge University Press, 2015) 138-9.

<sup>6</sup> Robin Hansson and Elena Mokeeva, ‘Securing Resilience to Climate Change Impacts in Coastal Communities through an Environmental Justice Perspective: A Case Study of Mangunharjo, Semarang, Indonesia’ (Master of Science Thesis, KTH Royal Institute of Technology, Stockholm (Sweden), 2015) 101.

<sup>7</sup> Susan S Fainstein, ‘Resilience and Justice: Planning for New York City’ (2018) 39(8) *Urban Geography* 1268-1275, 1270.

<sup>8</sup> Jeff Popke, Scott Curtis and Douglas W Gamble, ‘A social justice framing of climate change discourse and policy: Adaptation, resilience and vulnerability in a Jamaican agricultural landscape’ (2016) 73 *Geoforum* 70, 78.

<sup>9</sup> David N Pellow, ‘Critical Environmental Justice Studies’ in Beth Schaefer Caniglia, Manuel Vallee and Beatrice Frank (eds), *Resilience, Environmental Justice and the City* (Routledge, 2017) 26.

<sup>10</sup> Ibid.

<sup>11</sup> See Chapter 2.6.

principles. He articulates connections between humans and ecosystems<sup>12</sup> in terms that mirror the concept of socio-ecological systems,<sup>13</sup> explains processes of change in a way that reflects the adaptive cycle metaphor<sup>14</sup> and also treats events that exacerbate vulnerability like thresholds<sup>15</sup> that might cause a regime shift when explaining approaches to adaptation.<sup>16</sup> At a broader level, the capabilities dimension of environmental justice shares some similarities with resilience's adaptability principle, as it is concerned with the capacity of individuals and communities to respond to changing circumstances.<sup>17</sup> Schlosberg and Collins also suggest that transformations offer opportunities to address underlying structural causes of environmental injustice.<sup>18</sup> The multi-scalar nature of environmental problems, reflected in resilience's panarchy principle, also shapes Schlosberg's analysis.<sup>19</sup> The consistency of these themes demonstrates, albeit indirectly, that environmental justice and resilience share important conceptual ground.

Some commentators have used the concept of a 'just transition' to highlight the importance of justice in addressing societal responses to climate change. In a general sense, a just transition requires that issues of fairness and justice are recognised and accounted for in periods of change.<sup>20</sup> In the climate change context, a just transition refers to 'a fair and equitable process of moving towards a post-carbon society'.<sup>21</sup> The language of 'just transition' is typically invoked in relation to the energy sector;<sup>22</sup> it acknowledges that mitigation of greenhouse gas emissions will require substantial change in the means and modes of energy production, raising difficult questions regarding the production of, and access to, energy in a climate-affected future.<sup>23</sup> The development and location of renewable energy facilities in Australia, for example, poses challenges in light of the social and

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<sup>12</sup> See Chapter 2.2.

<sup>13</sup> Eg David Schlosberg, 'Theorising Environmental Justice: The Expanding Sphere of a Discourse' (2013) 22 *Environmental Politics* 37, 47-8.

<sup>14</sup> See Chapter 2.2.

<sup>15</sup> Ibid.

<sup>16</sup> Schlosberg (n 13) 47.

<sup>17</sup> Neelke Doorn, 'Resilience Indicators: Opportunities for Including Distributive Justice Concerns in Disaster Management' (2017) 20 *Journal of Risk Research* 711, 725.

<sup>18</sup> David Schlosberg and Lisette B Collins, 'From Environmental to Climate Justice: Climate Change and the Discourse of Environmental Justice' (2014) 5 *Wiley Interdisciplinary Reviews: Climate Change* 359, 370.

<sup>19</sup> Ibid.

<sup>20</sup> James J Patterson et al, 'Political Feasibility of 1.5°C Societal Transformations: The Role of Social Justice' (2018) 31 *Current Opinion on Environmental Sustainability* 1, 4.

<sup>21</sup> Darren McCauley and Raphael Heffron, 'Just Transition: Integrating Climate, Energy and Environmental Justice' (2018) 119 *Energy Policy* 1, 2.

<sup>22</sup> For a historical overview, see Noel Healy and John Barry, 'Politicizing Energy Justice and Energy System Transitions: Fossil Fuel Divestment and a "Just Transition"' (2017) 108 *Energy Policy* 451, 454-5.

<sup>23</sup> On the development of the emerging concept of 'energy justice', and its relationship with environmental and climate justice scholarship, see McCauley and Heffron (n 21) 1.



economic implications of rapid decarbonisation.<sup>24</sup> It proposes ‘unusual alliances’<sup>25</sup> between environmentalists and industry representatives to ensure that the social implications of climate action are identified and addressed, especially to assuage the resistance of fossil fuel dependent communities.<sup>26</sup>

However, the just transition concept has rarely been applied in the adaptation context.<sup>27</sup> The just transitions literature differs from resilience and environmental justice literatures in that it places much greater emphasis on the role of government ‘to reduce adverse consequences and maximise benefits’ of change.<sup>28</sup> However, the just transitions literature typically fails to explain how law can enhance fairness in periods of environmental and social change. While placing a broad emphasis on the role of government, it does little to explain how law might assist (or impair) the development of a post-carbon society.<sup>29</sup> Although just transition literature demonstrates the utility of drawing together justice frameworks alongside theories of social, economic and environmental change, it does little to advance beyond the existing environmental justice and resilience literatures in the context of climate adaptation.

Having surveyed the treatment of the intersection of resilience and environmental justice scholarship broadly, the following section moves to analyse the small number of contributions that have specifically addressed the role of law in enhancing ‘just resilience’.

### **3.2 ‘Just Resilience’ and Law**

Although previous studies have highlighted the mutually-reinforcing dimensions of resilience and environmental justice, none address the role that law can play in integrating the two concepts in substantial detail. Those studies instead focus on the potential for wider governance frameworks to simultaneously enhance resilience and justice in

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<sup>24</sup> Darren McCauley et al, ‘Energy justice in the transition to low carbon energy systems: Exploring key themes in interdisciplinary research’ (2019) 233-234 *Applied Energy* 916, 919; for an Australian example, see Geoff Evans and Liam Phelan, ‘Transition to a Post-Carbon Society: Linking Environmental Justice and Just Transition Discourses’ (2016) 99 *Energy Policy* 329.

<sup>25</sup> Patterson (n 20) 5.

<sup>26</sup> Healy and Barry (n 22) 455.

<sup>27</sup> See Dimitris Stevis and Romain Felli, ‘Global labour unions and just transition to a green economy’ (2014) 15 *International Environmental Agreements: Politics, Law and Economics* 29.

<sup>28</sup> Alice Kaswan, ‘Energy, Governance, and Market Mechanisms’ (2018) 72 *University of Miami Law Review* 476, 533. Note that some scholars see ‘just transitions’ as an outgrowth of the environmental justice literature; for an analysis of synergies between the approaches, see Caroline Farrell, ‘A Just Transition: Lessons Learned from the Environmental Justice Movement’ (2012) 4 *Duke Forum for Law and Social Change* 45.

<sup>29</sup> For a notable exception, see David J Doorey, ‘A Law of Just Transitions?: Putting Labor Law to Work on Climate Change’ (2017) 30 *Journal of Environmental Law and Practice* 201. See also Sidney A Shapiro and Robert RM Verchick, ‘Inequality, Social Resilience, and the Green Economy’ (2018) 86(4) *University of Missouri-Kansas City Law Review* 963, 989-90.

addressing environmental problems. Caniglia et al, for example, state that governance is relevant to the intersection of resilience and justice, without providing further detail.<sup>30</sup> Stringer et al similarly highlight the relevance of governance structures – referred to as the ‘policy, institutions and knowledge’ nexus – in achieving equitable outcomes that enhance resilience. Writing about the need for holistic approaches to the management of socio-ecological systems, Stringer and her colleagues provocatively question ‘whether an unjust and inequitable socio-ecological system really is resilient’.<sup>31</sup> Building on resilience principles, they propose a hybrid approach to better reflect the interconnectedness of social, economic and environmental systems.<sup>32</sup> However, laws are subsumed within Stringer et al’s broader governance framework.<sup>33</sup> Ensor et al also identify the importance of laws – including justice mechanisms – in addressing inequalities that limit resilience in human-environmental systems.<sup>34</sup> Hansson and Mokeeva also explicitly address governance arrangements, and even identify specific areas for potential law reform.<sup>35</sup> However, their study does not consider the broader legal context within which those reforms might be implemented. It is also confined to the Indonesian domestic setting, and may not readily translate to other legal, social and economic contexts.<sup>36</sup> Although these studies helpfully illustrate the connections between resilience, justice and governance in its broadest sense, they do not address the potential – or limits – on law’s capacity to enhance just resilience in addressing climate impacts.

More recently, a small number of legal scholars have turned their attention to the intersection of justice and resilience. Tony Arnold, a leading figure in the law and resilience field, has pointed to the importance of ‘resilience justice’ in addressing climate disasters. Arnold explains how a ‘resilience justice framework’ encompasses different understandings of resilience, alongside a contemporary approach to environmental justice that places particular emphasis on public participation.<sup>37</sup> While arguing persuasively that legal systems ought to embrace resilience justice in addressing climate change impacts,<sup>38</sup> Arnold does not

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<sup>30</sup> Caniglia et al (n 4) 422.

<sup>31</sup> LC Stringer et al, ‘A new framework to enable equitable outcomes: Resilience and nexus approaches combined’ (2018) 6(6) *Earth’s Future* 902, 908.

<sup>32</sup> Ibid 913-4.

<sup>33</sup> Ibid 906.

<sup>34</sup> Jonathan Ensor, John Forrester and Nilufar Matin, ‘Bringing rights into resilience: revealing complexities of climate risks and social conflict’ (2018) 42 *Disasters* S287, S292.

<sup>35</sup> Hansson and Mokeeva (n 6) 114-5.

<sup>36</sup> Eg Xiangbai He, ‘Legal and Policy Pathways of Climate Change Adaptation: Comparative Analysis of the Adaptation Practices in the United States, Australia and China’ (2018) 7 *Transnational Environmental Law* 347.

<sup>37</sup> Craig Anthony (Tony) Arnold, ‘Adaptive Law’ in Rosemary Lyster and Robert RM Verchick (eds), *Research Handbook on Climate Disaster Law: Barriers and Opportunities* (Edward Elgar, 2018) 186.

<sup>38</sup> Ibid.

explain in detail how resilience and justice principles might be best supported by laws. There are also tensions in his proposed features of adaptive law that require further attention. For example, Arnold does little to explain how the benefits of more flexible laws compare with its costs, and the opportunity costs of flexibility might mitigate its benefits.<sup>39</sup> Pieraccini also explores the role of law and governance in the pursuit of ‘just resilience’, emphasising that participation is essential to the pursuit of just resilience in response to climate impacts.<sup>40</sup> Recognising some of the shortcomings of mainstream resilience approaches,<sup>41</sup> Pieraccini argues that environmental law must entrench inclusive participatory procedures that facilitate diverse contributions to governance processes, while also enabling sophisticated monitoring and review procedures.<sup>42</sup> Drawing extensively on political theory and justice literature, Pieraccini adds significant depth to existing analyses of procedural justice in governance arrangements for resilience. However, there is arguably room to further explore the translation of this high-level analysis to the practicalities of (procedural) law reform for climate adaptation.

This thesis builds on these early insights by further investigating the intersection of resilience, environmental justice and laws. Each of the contributions summarised above identify crucial opportunities for laws to develop synergies and address tensions between resilience and justice. Although the existing literature covers a wide range of subject matters, it signals the importance of pursuing just resilience in addressing climate impacts. However, there is more work to do to explore how these important concepts might be given effect through climate adaptation laws.

The thesis does not, however, assume that laws are able to produce a unified, harmonious implementation of just resilience principles on all occasions. Rather, it accepts that tensions inevitably arise at the intersection of resilience, environmental justice and law. In a recent contribution that provocatively outlines a concept of ‘anti-resilience’, Baker eloquently demonstrates the potential for laws to perpetuate injustices in the name of a resilient energy system.<sup>43</sup> Her analysis expressly rejects the dominant approach to law and resilience scholarship,<sup>44</sup> pointing directly to the potential for law and policy to generate and embed

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<sup>39</sup> Ibid 182-3; see further discussion of this tension at 3.4.1 below.

<sup>40</sup> Margherita Pieraccini, ‘Towards Just Resilience: Representing and Including New Constituencies in Adaptive Governance and Law’ (2019) *Journal of Environmental Law* (forthcoming).

<sup>41</sup> Ibid 2, 6-8.

<sup>42</sup> Ibid 20.

<sup>43</sup> Shalanda Helen Baker, ‘Anti-Resilience: A Roadmap for Transformational Justice within the Energy System’ (2019) 54 *Harvard Civil Rights-Civil Liberties Law Review* 1 (forthcoming).

<sup>44</sup> Ibid 22-3.

conflicts between resilience and justice.<sup>45</sup> In so doing, Baker further demonstrates the importance of considered theoretical and empirical evaluation of links between resilience, justice and law. Understanding the potential for deleterious interactions is vital to efforts to enhance just resilience through climate adaptation law. The following analysis thus identifies both tensions and conflicts that require attention in the development of principles for the implementation of just resilience through law.

### **3.3 *Principles of 'Just Resilience' in Law***

Drawing on the above examination of resilience, environmental justice, and the interrelationship of those concepts with law, the discussion below distils and articulates four guiding principles for law to promote resilience and justice in climate adaptation. To achieve just resilience objectives, laws should:

- 1) address change;
- 2) account for the distributive effects of climate change and adaptation;
- 3) enhance participatory processes; and
- 4) facilitate multi-scalar, cross-sectoral legal and governance arrangements.

The following sections 3.3.1-3.3.4 sketch the broad parameters of each of these principles with reference to the existing scholarly literature. The following section 3.3.5 addresses cross-cutting features that underpin the four principles. Major connections with the following case studies are used to illustrate key aspects of the principles. In elaborating each principle, un- or under-explored assumptions and uncertainties are identified that require further consideration in developing the intersection of resilience, environmental justice and law.

#### *3.3.1 Principle One: Laws must Address Change*

Climate adaptation laws can promote resilience and justice by more effectively addressing change. In other words, climate adaptation laws must prepare for more dynamic, non-linear system behaviour. To do so, adaptation laws must incorporate forward-looking components that contemplate change, while also accommodating 'back-end'<sup>46</sup> decision-making where appropriate. These elements both involve a departure from traditional static approaches to law-making and implementation.<sup>47</sup>

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<sup>45</sup> Baker's analysis focuses on the emerging field of energy justice, which she rightly observes has largely escaped the attention of legal scholars to date: see *ibid* 7. However, her analysis is salient across a wider range of justice scholarship, especially given the broad similarities between energy justice and the more established environmental and climate justice lenses noted above.

<sup>46</sup> JB Ruhl, 'Panarchy and the Law' (2012) 17(3) *Ecology and Society* [31], 3-4.

<sup>47</sup> Static here means that 'no provision is made to facilitate change' in the law: Justin R Pidot, 'Governance and Uncertainty' (2015-2016) 37 *Cardozo Law Review* 113, 132.

In the first instance, climate adaptation laws must support ‘forward-looking’ measures that contemplate both expected – and unexpected – developments in socio-ecological systems. Forward-looking laws might be used to address anticipated future climate impacts, or even to trigger transformations to more desirable system states. For example, planning measures that either prohibit or discourage development in low-lying coastal areas will reduce exposure to changing coastal processes. Exposure to inundation and erosion would be reduced in the shorter term, and over the longer term it would promote patterns of settlement where exposure to coastal climate risks is greatly reduced.<sup>48</sup> The designation and protection of species ‘likely to become endangered’ and areas of ‘future climate habitat’ for protected species are examples of laws aimed at anticipating and improving responses to change.<sup>49</sup>

‘Back end’ decision-making processes allow for adjustments in the implementation and enforcement of laws as circumstances change.<sup>50</sup> Because climate change presents a range of uncertainties, ‘front end’ processes well-known to environmental and natural resources law (such as environmental impact assessments) are unlikely to prove adequate for the development and operationalisation of adaptation measures.<sup>51</sup> The most commonly cited back-end process is adaptive management,<sup>52</sup> which was discussed at length in Chapter Two. Adaptive management recognizes that management prescriptions and regulatory requirements may need to adjust to changes in socio-ecological systems.<sup>53</sup> In the Australian context, for example, adaptive management can be facilitated through laws that allow responsive adjustments to environmental licensing or development approval conditions.<sup>54</sup> Although adaptive management is not unknown to Australian law, more ambitious and extensive application of its principles is required to enhance the capacity of law to address

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<sup>48</sup> For discussion of the difficulties of implementing such an approach, and the complex interactions of law with social, economic and political dynamics, see Paul Govind, ‘Managing the Relationship between Adaptation and Coastal Land Use Development through the use of s 149 Certificates’ (2011) 7 *Macquarie Journal of International and Comparative Environmental Law* 94.

<sup>49</sup> See Jan McDonald et al, ‘Adaptation Pathways for Conservation Law and Policy’ (2018) *Wiley Interdisciplinary Reviews: Climate Change* e555; James Ming Chen, ‘The Fragile Menagerie: Biodiversity Loss, Climate Change, and the Law’ (2018) 93 *Indiana Law Journal* 303, 329-47 for a detailed overview of developments under the US’s *Endangered Species Act* 1973.

<sup>50</sup> Alejandro E Camacho and Robert L Glicksman, ‘Legal Adaptive Capacity: How Program Goals and Processes Shape Federal Land Adaptation to Climate Change’ (2016) 87 *Colorado Law Review* 711, 730-3.

<sup>51</sup> J B Ruhl, ‘Climate Change Adaptation and the Structural Transformation of Environmental Law’ (2010) 40 *Environmental Law* 363, 420.

<sup>52</sup> *Ibid.*

<sup>53</sup> For an overview of adaptive management, see Chapter 2.3. See also Craig R Allen and Ahjond S Garmestani, ‘Adaptive Management’ in Craig R Allen and Ahjond S Garmestani (eds), *Adaptive Management of Social-ecological Systems* (Springer, 2015) 1-10.

<sup>54</sup> Jan McDonald and Megan Styles, ‘Legal Strategies for Adaptive Management under Climate Change’ (2014) 26 *Journal of Environmental Law* 25, 45-9.

change.<sup>55</sup> Achieving the fullest theoretical potential of adaptive management may require adjustments in the broader legal framework,<sup>56</sup> but softer approaches in practice, without the need for substantial law reform.

A variety of conventional legal mechanisms are well-suited to increasing the responsiveness of substantive laws to change in socio-ecological systems. Judicial development allows the common law to develop incrementally with each judicial application; common law rules and principles can thus be interpreted and applied in a manner that responds to changing conditions.<sup>57</sup> Courts determining common law negligence claims, for example, may reshape the duty and standard of care reasonably expected of planning authorities in approving developments in areas of increasing flood, bushfire, coastal hazard, or even heatwave risk.<sup>58</sup> Courts engaged in merits or judicial review of climate adaptation decision-making are similarly well-placed to endorse or develop interpretations of decision-making powers that are more suited to emerging climate regimes.<sup>59</sup> Although court and tribunal decisions are subject to legislative override, they remain an important device for facilitating development of existing laws.

Legislative frameworks can also be designed to allow greater flexibility in responding to change. For example, objects clauses that stipulate climate adaptation as a statutory objective might allow decision-makers greater scope to adjust existing legal processes as environmental or social conditions change.<sup>60</sup> Broader principles and wider discretion might be preferred to narrower rules and powers in drafting statutes, allowing laws to be more readily applied to changing circumstances.<sup>61</sup> Sunset clauses, which place a time limit on the operation of laws or require a review of the law's operation and effect, should be used to

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<sup>55</sup> See Chapter 2.3.

<sup>56</sup> Ibid.

<sup>57</sup> Robin K Craig et al, 'A Proposal for Amending Administrative Law to Facilitate Adaptive Management' (2017) 12 *Environmental Research Letters* 074018.

<sup>58</sup> Jan McDonald, 'A Risky Climate for Decision-Making: The Liability of Development Authorities for Climate Change Impacts' (2007) 24 *Environmental and Planning Law Journal* 405; Philippa England, 'Heating Up: Climate Change Law and the Evolving Responsibilities of Local Government' (2008) 13 *Local Government Law Journal* 209, 216-9.

<sup>59</sup> See Elizabeth Fisher, Eloise Scotford and Emily Barritt, 'The Legally Disruptive Nature of Climate Change' (2017) 80 *Modern Law Review* 173 for a detailed analysis of role courts' play in legal responses to climate change.

<sup>60</sup> Eg *Coastal Management Act 2016* (NSW) s 3(f). On the importance of objects clauses in climate adaptation laws, see Phillipa C McCormack, 'The Legislative Challenge of Facilitating Climate Change Adaptation for Biodiversity' (2018) 92 *Australian Law Journal* 546. Compare Victor B Flatt, 'Adapting Laws for a Changing World: A Systemic Approach to Climate Change Adaptation' (2012) 64 *Florida Law Review* 269, 288-9.

<sup>61</sup> Craig et al (n 57) 9.

stimulate law reform through legislative, agency and democratic processes.<sup>62</sup> Mandating a five-year review of adaptation plans, for example, may help to ensure that legal requirements reflect scientific advances, changing socio-economic conditions and contemporary community expectations.<sup>63</sup> Alternatively, laws might stipulate deadlines by which objectives, targets and measures should be reviewed following release of major international climate science outputs, such as Intergovernmental Panel on Climate Change (IPCC) assessment reports.<sup>64</sup>

However, there are also opportunities to experiment with new rule-making techniques to enhance law's capacity to address change. For example, climate adaptation laws might be drafted so that their substantive content adjusts automatically to changing circumstances. In the coastal context, for example, rolling easements place restrictions on use of land automatically upon the occurrence of natural events, such as the recession of shoreline vegetation in coastal areas.<sup>65</sup> More sophisticated approaches might involve extensive scenario building in order to plan adjustments to a range of foreseeable future conditions.<sup>66</sup> To extend the above example, rolling easements often set out a range of adjustments (eg restrictions on land use, followed by retreat) to be implemented as climate impacts manifest.<sup>67</sup> These approaches might help laws to respond more nimbly to change.

While flexibility is vital to the implementation of adaptive responses to climate impacts,<sup>68</sup> laws can be unhelpfully responsive to change. Indeed, rigid laws may have benefits.<sup>69</sup> Laws that resist change might enhance public confidence and legitimacy, while also allowing administrative authorities to devise and implement plans over longer time periods.<sup>70</sup> For example, adaptation to slow onset impacts such as sea level change might be facilitated by static laws that limit or prevent development in areas at risk from future climate impacts.<sup>71</sup> Rigid rules might also be useful in practice, where they can be used by interested parties either to trigger change, or to prevent backsliding where innovative approaches are

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<sup>62</sup> Jan McDonald, 'A Short History of Climate Adaptation Law in Australia' (2014) 4 *Climate Law* 150, 157; see also Daniel A DeCaro et al, 'Legal and Institutional Foundations of Adaptive Environmental Governance' (2017) 22(1) *Ecology and Society* [32], 5, 9, 13 and Pidot (n 47) 143.

<sup>63</sup> *Climate Change Act 2017* (Vic) s 34(2).

<sup>64</sup> Eg *Climate Change Response Act 2002* (NZ) s 225.

<sup>65</sup> McDonald and Styles (n 54) 48-9; James G Titus, 'Rolling Easements' (Climate Ready Estuaries and US EPA, 2011).

<sup>66</sup> Pidot (n 47) 165; Robin Kundis Craig, "Stationarity is Dead" - Long Live Transformation: Five Principles for Climate Change Adaptation Law' (2010) 34(1) *Harvard Environmental Law Review* 9, 59.

<sup>67</sup> Titus (n 65).

<sup>68</sup> Ruhl (n 51) 418.

<sup>69</sup> See Craig et al (n 57) 3 on the meaning of rigidity.

<sup>70</sup> Aaron L Nielson, 'Sticky Regulations' (2018) 85 *Chicago Law Review* 85, 93, 125; see also Craig et al (n 57) 2-3.

<sup>71</sup> Note that this is a tradeoff, rather than a binary proposition.

implemented.<sup>72</sup> Enabling flexibility in climate adaptation laws also creates risks from a justice perspective. Accelerating the speed or frequency at which decisions are made may reduce opportunities for public participation and judicial review.<sup>73</sup> Reducing the capacity for citizens to observe and contribute to decision-making processes diminishes transparency, accountability, and potentially, legitimacy.<sup>74</sup> High levels of discretion may also be open to manipulation and the influence of interest groups.<sup>75</sup> Care is therefore required to safeguard the legitimacy of core legal values, such as procedural fairness, public participation and the rule of law in developing more flexible climate adaptation laws.

The routine collection and evaluation of information about environmental and other conditions is also an important procedural mechanism to ensure that responses to change do not come at the detriment of environmental justice. However, matching the demands of increasingly flexible climate adaptation laws will require significant improvements in the scope and rigour of current monitoring activities. An important first step is to systematically monitor the performance of existing laws so that valuable lessons regarding their effectiveness and operation in practice inform the subsequent development of adaptation laws.<sup>76</sup> Although relevant procedures may be grafted onto existing implementation and compliance processes where appropriate, it may be necessary to develop new processes and practices in some instances.<sup>77</sup> Regular reporting requirements can also support a learning approach that connects legal decision making with a wider range of information. For example, adaptation laws might include requirements that a standard suite of climate impact indicators be routinely reported on, with requirements that decision makers demonstrate how they have taken relevant data into account.<sup>78</sup> This will help to ensure that legal decision making is connected to the broader socio-ecological system.

Developing climate adaptation laws that better prepare for, and respond to, change will facilitate both resilience and justice. Laws attuned to the inherent dynamics of socio-ecological systems should enhance resilience by facilitating more timely responses to

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<sup>72</sup> Barbara A Cosens et al, 'The Role of Law in Adaptive Governance' (2017) 22(1) *Ecology and Society*, 14

<sup>73</sup> McDonald and Styles (n 54) 53; Craig et al (n 57) 8-10.

<sup>74</sup> Barbara Cosens et al, 'Identifying Legal, Ecological and Governance Obstacles, and Opportunities for Adapting to Climate Change' (2014) 6 *Sustainability* 2338, 2350-1.

<sup>75</sup> Eric Biber and Josh Eagle, 'When Does Legal Flexibility Work in Environmental Law?' [787] (2015) 42 *Ecology Law Quarterly* 787-840.& , 790, 828-31. See also Pidot (n 47) 149-50.

<sup>76</sup> Alejandro Camacho, 'Adapting Governance to Climate Change: Managing Uncertainty through a Learning Infrastructure' (2009-10) 59 *Emory Law Journal* 1, 66.

<sup>77</sup> This is especially the case in legislation that reflects the dominant 'front-ended' approach as discussed above.

<sup>78</sup> Eg *Climate Change Act 2017* (Vic) s 36(c).



climate hazards. They may also promote justice, by providing additional opportunities for public participation and by better recognizing different experiences of climate hazards. In turn, this will enable substantive inequities to be addressed more promptly. Laws attuned to change may also respond more effectively to the loss of key capabilities, such as access to core ecosystem services like water. Of course, resilience and justice require that law does more than merely identify change; substantive responses to the distributive implications of climate adaptation are also required. These are considered below.

### *3.3.2 Principle Two: Laws must account for the Distributive Implications of Climate Change and Adaptation*

Adaptation to climate change will – along with climate impacts themselves – create winners and losers.<sup>79</sup> The individuals and communities likely to bear the brunt of climate impacts often have the most limited capacity to respond to them. For example, as many parts of the world become drier, communities with insecure access to water will experience further disadvantage, while people or entities holding legal entitlements to water and having the resources necessary to protect and utilize those entitlements may benefit from those impacts.<sup>80</sup> In order to promote resilient and just adaptation, adaptation laws must therefore address the distributive effects of both climate change impacts and adaptation measures. Climate adaptation laws that are blind to these dynamics are likely to entrench inequity.

There are at least three ways in which climate adaptation laws and processes can address distributive issues. Firstly, decision-making processes should explicitly consider the inequitable distribution of climate hazards and benefits.<sup>81</sup> Revealing those inequities requires attention to existing social and political structures, including the conferral of risks and benefits in the operation of climate adaptation laws themselves. For example, lower-income communities are often concentrated in areas exposed to heatwave.<sup>82</sup> Once this phenomenon is acknowledged in decision making, planning and building laws should ensure that development and building design is suited to temperature extremes and, where

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<sup>79</sup> JB Ruhl, 'The Political Economy of Climate Change Winners' (2013) 97 *Minnesota Law Review* 206, 222. The question of how 'wins' and 'losses' associated with climate impacts are determined and valued raises complex considerations; see Karen O'Brien et al, 'Toward a Sustainable and Resilient Future', in Christopher B Field et al (eds), *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation: A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2015) 456-7.

<sup>80</sup> Anthony Kiern, 'Drought and Water Policy in Australia: Challenges for the Future Illustrated by the Issues Associated with Water Trading and Climate Change Adaptation in the Murray-Darling Basin' (2013) 23 *Global Environmental Change* 1615, 1624.

<sup>81</sup> Richard J Lazarus, 'The Meaning and Promotion of Environmental Justice' (1994) 5 *Maryland Journal of Contemporary Legal Issues* 1, 7.

<sup>82</sup> Jason Byrne et al, 'Could Urban Greening Mitigate Suburban thermal Inequity?: The Role of Residents' Dispositions and Household Practices' (2016) 11 *Environmental Research Letters* 095104, 1-2.

possible, actually mitigates the urban heat island effect. Those distributive measures may help to reduce the individual burden of heatwaves (by reducing energy consumption for cooling, for example), thus enhancing the capacity of those communities to adapt to other changes (such as health and wellbeing impacts). The effectiveness of laws that explicitly recognize and account for inequitable distributions of impacts and adaptive capacity should be regularly evaluated. Evaluation processes should be broadly participatory and include safeguards that ensure the perspectives of the intended beneficiaries of such efforts are heard.

Another key mechanism by which laws can address the distributive impacts of climate change is to require articulation of how competing interests are to be prioritized in decision making.<sup>83</sup> This includes priorities about resource allocation or trade-offs between protection of natural versus built infrastructure assets (for example wetlands vs coastal infrastructure), between different uses of resources (such as irrigation vs domestic water consumption), as well as between different places or groups within the same community. For example, when determining operational responses to fire, emergency management laws might specify that resources be focused first on protecting human lives, then on critical public infrastructure, private property and environmental assets (in that order). Setting out priorities in advance improves transparency and promotes public participation in establishing those distributive objectives. More inclusive and transparent decision-making processes may also help to resolve tensions between competing interests.<sup>84</sup> Distributive priorities that are clearly articulated can also be more easily reviewed in light of changing circumstances.<sup>85</sup>

For laws to promote just adaptation in the long term, they must also account for the structural causes of environmental injustice. It is obviously beyond the scope of sectoral laws, such as land use planning or emergency management legislation, to address all the underlying causes of poverty or social disadvantage.<sup>86</sup> At the very least, however, adaptation laws should acknowledge, and where possible address, imbalances in power relations that affect how legal processes operate in practice, including mechanisms for participation.<sup>87</sup>

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<sup>83</sup> Eg Emergency Management Victoria, *Victorian Bushfire Handbook* (State of Victoria, 2015), 1.

<sup>84</sup> This chapter does not take a stance on the relative merits of these priorities; it merely provides a simple illustrative example. Note too that the competing interests outlined for the purposes of this example may not be mutually exclusive in all circumstances.

<sup>85</sup> As discussed in the previous section.

<sup>86</sup> Alice Kaswan, 'Seven Principles for Equitable Adaptation' (2012-13) 13 *Sustainable Development Law and Policy* 41, 45-6.

<sup>87</sup> Alice Kaswan, 'Domestic Climate Change Adaptation and Equity' (2012) 42 *Environmental Law Reporter* 11125, 11139, 11141.

Providing access to relevant experts,<sup>88</sup> while also ensuring that information relating to climate impacts is presented to citizens in an appropriate manner and form,<sup>89</sup> will empower communities to utilize legal processes and remedies.

Adaptation laws should also facilitate the connection of adaptation actions with wider socioeconomic agendas that are likely to enhance the adaptive capacity of vulnerable groups.<sup>90</sup> For example, measures that provide economic relief from rising electricity prices may – at least in the short term – contribute to the resilience of at-risk groups to heatwaves by allowing the use of mechanised cooling.<sup>91</sup> The delivery of adaptation strategies through mechanisms that entrench unfair distributive outcomes should also be avoided. While market mechanisms will play an important role in adaptation, reliance on lightly regulated markets carries the risk that economically-powerful vested interests prosper at the expense of weaker groups.<sup>92</sup> For example, insurance premiums are likely to increase in areas of existing vulnerability (such as those increasingly exposed to fire, storm or flood risk), and requirements to rebuild to higher standards will increase the costs of recovery for uninsured groups, thus exacerbating vulnerability to climate impacts. Without careful regulation, such mechanisms may perpetuate structural injustices, decreasing both resilience and justice.<sup>93</sup>

Although judicial decisions often have distributive implications, Australian courts are highly unlikely to establish distributive laws or policies of the nature and scale required by climate adaptation. Law reform that increases attention to climate adaptation's distributive implications is therefore likely to require legislative intervention. A range of well-known legislative devices may be harnessed for this purpose. For example, legislation may expressly identify relevant distributive considerations as a mandatory consideration for decision-makers.<sup>94</sup> Framework climate adaptation legislation, such as the Victorian *Climate Change Act 2017* (Vic) might be used to achieve cross-sectoral implementation of this principle.<sup>95</sup> Existing laws might also be used to achieve distributive outcomes. For example,

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<sup>88</sup> Alice Kaswan, 'Environmental Justice: Bridging the Gap between Environmental Laws and "Justice"' (1997) 47 *American University Law Review* 221, 296-8.

<sup>89</sup> Daniel A DeCaro et al, 'Understanding and Applying Principles of Social Cognition and Decision Making in Adaptive Environmental Governance' (2017) 22(1) *Ecology and Society*.

<sup>90</sup> Kaswan (n 86) 46.

<sup>91</sup> Recognise that this may impair resilience in the longer term, but might be vital to the safety of vulnerable groups in the more immediate future (ie before a transformation provides other adaptation alternatives).

<sup>92</sup> Kaswan (n 87) 11139.

<sup>93</sup> Alice Kaswan, 'Environmental Justice: Bridging the Gap between Environmental Laws and "Justice"' (1997) 47 *American University Law Review* 221, 286; see also Kaswan (n 28) 482-4.

<sup>94</sup> See, eg, *Minister for Aboriginal Affairs v Peko Wallsend* (1986) 162 CLR 24.

<sup>95</sup> See s 33.

Australia's existing social security laws are already used to provide financial assistance to those worst affected by extreme weather events.<sup>96</sup> Establishing these legal mandates – or extending existing programs – might also provide the political insulation necessary to implement distributive policies and programs in the face of resistance.<sup>97</sup>

Adaptation laws that address inequities in the allocation and experiences of climate impacts clearly address the key element of environmental justice that hazards and benefits should be distributed equitably. Addressing these concerns also promotes resilience. Ensuring that climate impacts are not funnelled inequitably towards vulnerable communities will preserve adaptive capacity in the face of unavoidable climate impacts. Where appropriate, transformative change might also be triggered (by changes in planning and building laws to address heatwave, for example) in order to avoid or minimize inequities in experiences of climate impacts. Understanding peoples' lived experiences of climate change impacts and addressing distributive issues requires wider public participation. The development of participatory processes that better account for power imbalances is addressed in the following principle.

### 3.3.3 *Principle Three: Laws must Promote Participation in Adaptation Processes*

Adaptation laws must place a major emphasis on participatory processes to enhance just resilience in addressing climate impacts. Participatory processes – those that involve citizens in the development and implementation of measures addressing climate impacts – have multiple benefits. For example, DeCaro et al point out that participation can promote social learning, increase societal acceptance of governmental policies and enhance motivation for action.<sup>98</sup> More instrumentally, participatory processes are seen to increase transparency in governmental processes and thus increase the accountability of decision-makers.<sup>99</sup> At a higher level, public participation is seen to enhance procedural justice and thus increase trust in decision-makers and the legitimacy of legal processes.<sup>100</sup> These benefits are ever more vital in the climate adaptation context. The size of the adaptation imperative, the resources involved, and the potential for special interest influence in the

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<sup>96</sup> Department of Home Affairs, *Disaster Recovery Funding Arrangements 2018* (2018).

<sup>97</sup> Holly Doremus, 'Adapting to Climate Change with Law That Bends Without Breaking' (2010) 2 *San Diego Journal of Climate and Energy Law* 45, 83.

<sup>98</sup> Daniel A DeCaro et al, 'Legal and Institutional Foundations of Adaptive Environmental Governance' (2017) 22(1) *Ecology and Society* [32], 8.

<sup>99</sup> Ibid 10.

<sup>100</sup> Cosens et al (n 74).

allocation of adaptation benefits further underscore the significance of participatory processes.<sup>101</sup>

The term ‘public participation’ is used – in both the scholarly literature, and legal and policy documents – to describe a diverse range of procedures. The diversity of processes often described as ‘participatory’ is usefully demonstrated by the International Association of Public Participation’s ‘Spectrum of Public Participation’ – set out in Figure X below. The spectrum includes measures that involve the unidirectional transfer of information to the public (ie ‘inform’) through those that confer decision-making authority directly on citizens (ie ‘empower’). However, it is the processes representing the middle ground – those that move beyond tokenism to recognize some degree of citizen power<sup>102</sup> – that have the greatest potential for meaningful implementation in climate adaptation laws.



INCREASING IMPACT ON THE DECISION					
	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
PUBLIC PARTICIPATION GOAL	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the public.
PROMISE TO THE PUBLIC	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

***Figure 3.1: International Association of Public Participation’s Spectrum of Public Participation***

***Source: IAP2.***

<sup>101</sup> Ibid 2350-1.

<sup>102</sup> Sherry R Arnstein, ‘A Ladder of Citizen Participation’ (1969) 35 *American Institute of Planning Journal* 216, 217.

Broader participation is effectively meaningless unless contributions might actually influence the design and implementation of climate adaptation measures.<sup>103</sup> This might be achieved by simply consulting and involving citizens in the design and implementation of climate adaptation laws. Revealing the ways in which public contributions influence decisions – through steps as simple as indicating where draft or proposed laws are amended after public comment – will demonstrate the influence of participatory processes and thus further empower citizens.<sup>104</sup> However, laws cannot, and perhaps should not, guarantee that all contributions will be reflected in adaptation strategies – especially where expert knowledge relating to climate impacts is vital to decision making, where resources are limited, or where time constraints prohibit broad engagement. The implementation of emergency management policies in response to fire or flooding events, for example, provides little room for public participation.

However, a wider range of innovative processes could be used to facilitate meaningful public participation in the development, implementation, monitoring and evaluation of climate adaptation laws. Collaborative mechanisms such as citizens juries or consensus conferencing, in which a representative sample of citizens is brought together to hear from experts and propose recommendations to address socially and politically challenging issues, could be trialled as a more cost-effective way of facilitating participation on important policy choices.<sup>105</sup> For example, a citizen advisory group has shaped the development of local adaptation plans that address rising water levels in the Lake Macquarie area of New South Wales.<sup>106</sup> If implemented to their theoretical maximum, these mechanisms may go so far as to empower citizens in the development and operation of adaptation laws. Citizen-science initiatives might also aid the monitoring and evaluation of adaptation laws. The Redmap website,<sup>107</sup> for example, enables recreational fishers and divers to log and record sightings of marine species beyond their historical range, affords a valuable mechanism for engaging affected communities and enhancing the information base on which adaptation decisions are made.<sup>108</sup>

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<sup>103</sup> DeCaro et al (n 98) 5.

<sup>104</sup> This approach has been embedded in reserve management laws in Tasmania, and its operation in practice will be examined in Chapter 4.

<sup>105</sup> C Daniel Myers, Tara Ritter and Andrew Rockway, 'Community Deliberation to Build Local Capacity for Climate Change Adaptation: The Rural Climate Dialogues Program', in Walter Leal Filho JM Keenan (eds), *Climate Change Adaptation in North America: Fostering Resilience and the Regional Capacity to Adapt* (Springer, 2017) 13-4; see also Olivia Woolley, *Ecological Governance: Reappraising Law's Role in Protecting Ecosystem Functionality* (Cambridge University Press, 2014) 210-4.

<sup>106</sup> These activities are discussed in greater detail in Chapter 5.

<sup>107</sup> Available at: <http://www.redmap.org.au>.

<sup>108</sup> Vicki P Mahoney, 'Environmental Justice: From Partial Victories to Complete Solutions' (1999) 21 *Cardozo Law Review* 361, 411.

Participation is itself a dynamic undertaking. As DeCaro et al observe, meaningful participation might require multiple participatory mechanisms spread across several steps in order to address the needs of participants.<sup>109</sup> Local adaptation planning in the Lake Macquarie area of New South Wales has, for example, used surveys, focus groups, public meetings, expert visits and information sessions, and a community advisory group – alongside public display and comment processes – to meaningfully involve the public in adaptation planning activities to address increases in lake levels.<sup>110</sup> Extensive information sharing processes underpinned these mechanisms.<sup>111</sup> Viewed as a whole, these processes effectively cover the range of participatory processes identified in the IAP2 participation spectrum. While the combination and timing of participatory mechanisms is likely to vary across different adaptation challenges, locations and time,<sup>112</sup> this remains a useful example of how a range of measures might be combined in order to enhance public participation in climate adaptation.

Broader public participation is not without its risks. Multiplying participatory processes is likely to be financially costly and slow. There is also the chance that participatory processes embed, rather than alleviate, the power differentials that fair procedures seek to ameliorate or avoid.<sup>113</sup> And while the legitimacy enhancing effects of effective participatory processes are well-recognised,<sup>114</sup> the failure – real or perceived – of participatory mechanisms might have equally deleterious effects on the legitimacy of climate adaptation laws. These potential downsides merit some consideration before extensive participatory processes are developed and implemented.

Courts will play a key role in facilitating public participation in decision-making. Judicial or merits review proceedings allow members of the public to challenge the application of climate adaptation laws in specific decisions.<sup>115</sup> Other forms of administrative redress are also vital. Freedom of information laws, for example, along with the requirement that administrators provide reasons for their decisions,<sup>116</sup> can help to ensure that the public is informed about adaptation processes. Ombudsmen can monitor the implementation of

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<sup>109</sup> DeCaro et al (n 89) 8.

<sup>110</sup> These mechanisms are discussed in greater detail in Chapter 5.

<sup>111</sup> Cross ref 3.3.5 below.

<sup>112</sup> Kaswan (n 86) 45.

<sup>113</sup> DeCaro et al (n 89) 8.

<sup>114</sup> Ibid 8.

<sup>115</sup> Felicity Millner, 'Access to Environmental Justice' (2011) 16 *Deakin Law Review* 189, 196-7.

<sup>116</sup> This obligation exists at common law (see, eg, *Public Service Board (NSW) v Osmond* (1986) 159 CLR 656, 676 (Deane JJ)) and under statute (see, eg, *Administrative Decisions (Judicial Review) Act 1977* (Cth) s 13(1)).

laws at a systemic level. An even wider range of integrity bodies (including auditors-general, and anti-corruption bodies, for example) might also provide opportunities to monitor the implementation of adaptation laws. In combination, these mechanisms are important means of enhancing transparency and accountability in the operationalisation of climate adaptation laws.

Legislative frameworks also have an important role to play. The range of public consultation processes embedded in existing Australian climate adaptation laws already provide some measure of openness. However, those processes do not always achieve the desired levels of public engagement in practice,<sup>117</sup> and further refinements are likely to be required. Although more nuanced participatory practices such as community advisory groups and citizens juries may develop organically, they may benefit from enhanced legal protection. It may be necessary, for example, to augment existing laws to ensure that the outputs of these processes are considered by decision-makers implementing adaptation laws.<sup>118</sup> In other instances, relevant procedures may be set out in detail in legislation.<sup>119</sup> The appropriate design of these legal protections must balance the benefits of flexibility that allows experimentation with the certainty provided by rigid legal frameworks.

Participation is a major consideration in the existing just resilience scholarship. As Pieraccini usefully explains, environmental justice perspectives offer a normative justification for enhanced participation. Well-designed participatory processes can – if implemented appropriately – allow underrepresented, misrecognised and otherwise disempowered groups to put their views to relevant decision-makers. Such processes are consistent with democratic ideals, and are likely to enhance the legitimacy of decision-making processes.<sup>120</sup> Resilience, on the other hand, provides a pragmatic explanation for enhanced procedures that facilitate meaningful participation.<sup>121</sup> Wider participation can increase adaptive capacity because drawing on a wider range of knowledge and data opens the way for novel adaptation strategies and measures. Similarly, a wider information base may provide earlier signals of changes in key variables, which in turn allows for adaptive behaviour that avoids undesirable transformations or facilitates desirable shifts. To best understand system dynamics, however, adaptation laws must also recognize connections

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<sup>117</sup> See subsequent analysis of participatory processes in Chapters 4, 5 and 6.

<sup>118</sup> See (n 94) above.

<sup>119</sup> This may be an appropriate course in jurisdictions or areas where participatory processes are not well established, or there is a high risk of regulatory capture, for example.

<sup>120</sup> Pieraccini (n 40) 10; see also DeCaro et al (n 89) 8.

<sup>121</sup> Pieraccini (n 40) 9.



across sectors and cross-scalar interactions. These are addressed in the fourth principle below.

### 3.3.4 *Principle Four: Laws must Operate Across Sectors and Scales*

Climate impacts span multiple sectors, occur at geographic scales from the local to the global, and across timescales. Effective adaptation to climate impacts therefore requires the development of laws that also span multiple sectors and spatial and temporal scales,<sup>122</sup> preferably creating a network of protections that interact to build diversity and redundancy.<sup>123</sup> Diversity encourages the use of multiple adaptation strategies that, in combination, increase the overall likelihood that adaptation objectives are achieved.<sup>124</sup> Building diversity also creates redundancy, so that the limitations (or failure) of one method might be counteracted by others – a legal safety net if one sector, scale or governance actor fails to perform their functions.<sup>125</sup> Biodiversity conservation laws, for example, might pursue a range of adaptation strategies, including increasing the scope of protected areas, actively managing sites or species, and *ex situ* conservation or translocation of species threatened by climatic shifts.<sup>126</sup> Laws may implement each of these strategies through diverse methods. For example, expansion of the protected area network may come through a combination of public acquisitions, covenanting of private land, and other incentives for land owners and managers.<sup>127</sup> If managed effectively, laws that facilitate greater diversity and redundancy increase the likelihood of just and resilient adaptation; they facilitate experimentation and learning, and the tailoring of adaptation measures to local circumstances.<sup>128</sup>

Climate adaptation laws can also play a vital role in coordinating or integrating adaptation measures across sectors, modes and scales.<sup>129</sup> Adaptation to climatic change will require a wide range of responses to address various impacts. Although some measures may be complementary, others are likely to conflict. Limiting land clearing to facilitate biodiversity

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<sup>122</sup> Jacqueline Peel, Lee Godden and Rodney J Keenan, 'Climate Change Law in an Era of Multi-Level Governance' (2012) 1 *Transnational Environmental Law* 245, 272-5.

<sup>123</sup> Cosens et al (n 72) 2, 4.

<sup>124</sup> Karen Kotschy et al, 'Principle 1: Maintain Diversity and Redundancy' in Reinette Biggs, Maja Schlüter and Michael L Schoon (eds), *Principles for Building Resilience: Sustaining Ecosystem Services in Social-Ecological Systems* (Cambridge University Press, 2015) 53-4.

<sup>125</sup> Ibid 52-3.

<sup>126</sup> Phillipa McCormack and Jan McDonald, 'Adaptation Strategies for Biodiversity Conservation: Has Australian Law Got What It Takes?' (2014) 31 *Environmental and Planning Law Journal* 114.

<sup>127</sup> Ibid; see also Jan McDonald, Phillipa C McCormack and Anita Foerster, 'Promoting Resilience to Climate Change in Australian Conservation Law: The Case of Biodiversity Offsets' (2016) 39 *University of New South Wales Law Journal* 1612.

<sup>128</sup> Camacho (n 76) 67-8; Cosens et al (n 72) 4.

<sup>129</sup> Craig (n 66) 60-1; Cosens et al (n 72) 5.

conservation, for example, may unintentionally increase bushfire risk.<sup>130</sup> Contrarily, fire management laws that oblige property owners to maintain a large firebreak around buildings may undermine nature vegetation laws.<sup>131</sup> Those complementary and conflictual interactions are also likely to span scales. Important aspects of Australia's biodiversity conservation laws are found at the national level, while fire management arrangements are largely the responsibility of the States, and are in practice implemented at local levels.<sup>132</sup> This complex network of connections and feedbacks creates further complications for adaptation governance.

Climate adaptation laws can also help to minimize and manage these conflicts by establishing substantive coordination of adaptation measures. Bridging organizations – institutions that span legal or sectoral boundaries – can draw governments and/or agencies together to coordinate or integrate adaptation efforts. This approach may be especially useful where socio-ecological and jurisdictional boundaries are misaligned. River systems such as the Murray-Darling river system in Australia, which spans four States and countless local municipalities,<sup>133</sup> provide a useful illustration. Developing legal arrangements that enhance cooperation and coordination across local, State and national boundaries is therefore likely to enhance adaptation measures.<sup>134</sup> In developing new legal arrangements, law-makers should be mindful of existing informal or 'shadow' networks that might provide useful guidance on the most effective means of enhancing coordination in a particular social, political and legal context.<sup>135</sup> The importance of these arrangements – the law 'in action' – is highlighted at various intervals in the three case studies that follow this chapter. Through these three approaches, climate adaptation laws can facilitate the development of coherent and more effective management of responses to climate impacts.

Laws that facilitate diversity and redundancy, or attempt to coordinate or integrate adaptation responses, may be problematic. Laws might promote adaptation strategies or

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<sup>130</sup> Don A Driscoll et al, 'Resolving Conflicts in Fire Management using Decision Theory: Asset-Protection versus Biodiversity Conservation' (2010) 3 *Conservation Letters* 215, 216-7, 221; Douglas K Bardsley et al, 'Climate Change, Bushfire Risk, and Environmental Values: Examining a Potential Risk Perception Threshold in Peri-Urban South Australia' (2018) 31 *Society and Natural Resources* 424, 427.

<sup>131</sup> Anita Foerster, Andrew Macintosh and Jan McDonald, 'Transferable Lessons for Climate Change Adaptation Planning? Managing Bushfire and Coastal Climate Hazards in Australia' (2013) 30 *Environmental and Planning Law Journal*. 469, 474.

<sup>132</sup> See Chapter 4.2.

<sup>133</sup> For an overview and history of governmental arrangements in the Murray-Darling Basin, see Daniel Connell, 'The Murray-Darling Basin', in Dustin E Garrick et al (eds), *Federal Rivers: Managing Water in Multi-Layered Political Systems* (Edward Elgar, 2014) 309-22.

<sup>134</sup> Ahjond Garmestani and Melinda Harm Benson, 'A Framework for Resilience-based Governance of Social-Ecological Systems' (2013) 18(1) *Ecology and Society*. [9], 7; Cosens et al (n 74) 2346, 2352.

<sup>135</sup> Cosens et al (n 74) 2348.

methods of implementation that are in tension, for example where translocating species threatens the conservation values of protected areas. Laws may themselves conflict,<sup>136</sup> or create tensions between governmental agencies, the private sector and/or the wider public. The development and implementation of laws that define jurisdictional boundaries, or empower governmental actors to act across sectors and scales, are especially likely to be the source of conflict.<sup>137</sup> Developing mechanisms for resolving those conflicts is thus a priority for adaptation laws.<sup>138</sup>

Adaptation laws will be required to fulfil two distinct roles to enhance cross-sectoral and multi-scalar interactions. Law will perform a coordinating function, helping to establish connections between otherwise disparate adaptation measures. Legislative frameworks typically create – either directly, or by omission – the architecture for these interactions. In other instances, governments and agencies in different sectors, or at different scales, might reach a negotiated compromise; this may involve a shared understanding of working arrangements, or be formalised eg through an intergovernmental agreement.<sup>139</sup> Obversely, law will also play a major role in resolving disputes, especially between different levels of the legal hierarchy. Contests over jurisdictional boundaries and the scope of legal authority will often be resolved in courts.<sup>140</sup> However, adaptation laws may also helpfully promote less-adversarial means of addressing conflict.

Cross-sectoral and multi-scalar processes have the potential to promote both resilience and justice. Cross-sectoral and multi-scalar legal arrangements most directly address resilience's panarchy concept,<sup>141</sup> interventions across various geographic areas, sectors and time scales may be required to fairly distribute the costs and benefits of climate adaptation.<sup>142</sup> Although overlapping adaptation strategies and laws may compromise efficiency and increase uncertainty for decision makers in the short term, they may help to avoid optimization or undesirable regime shifts within socio-ecological systems over longer time spans.<sup>143</sup>

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<sup>136</sup> In a federal system, e.g., local, regional and national laws may impose overlapping, and perhaps contradictory, legal requirements; see, e.g., A Dan Tarlock, 'Biodiversity Federalism' (1995) 54 *Maryland Law Review* 1315; Chris McGrath, 'One Stop Shop for Environmental Approvals a Messy Backward Step for Australia' (2014) 31 *Environmental and Planning Law Journal* 164, 166.

<sup>137</sup> Cosens et al (n 72) 5.

<sup>138</sup> Jan McDonald, 'The Role of Law in Adapting to Climate Change' (2011) 2 *Wiley Interdisciplinary Reviews: Climate Change* 283, 288.

<sup>139</sup> Eg *Intergovernmental Agreement on the Environment* (1992).

<sup>140</sup> See, eg, Robin Kundis Craig, 'Climate Change, Regulatory Fragmentation, and Water Triage' (2008) 79 *Colorado Law Review* 825, 879-80.

<sup>141</sup> See Chapter 2.2.

<sup>142</sup> Eg W Neil Adger, N.W. Arnell and Emma L Tompkins, 'Successful Adaptation to Climate Change Across Scales' (2005) 15 *Global Environmental Change* 77.

<sup>143</sup> See Chapter 2.2.

Addressing changes in coastal processes, for example, may require highly localised emergency responses to flooding events, supported by longer term adjustments in land use planning and insurance practices.<sup>144</sup> Procedural and recognition approaches to justice may also be enhanced by the availability of multiple processes and means of redress. Logically, cross-sectoral and multi-scalar legal arrangements will offer more opportunities for participation. Those legal arrangements may promote justice as recognition by providing more – and more varied – opportunities for input into decision-making processes. For example, local-level processes may involve community meetings and events, while higher level governmental processes may require participation through formal written submissions. Increasing the array of participatory processes may require additional resources,<sup>145</sup> and the hypothetical benefits of enhanced participation may not be achieved in reality.<sup>146</sup> Nevertheless, cross-sectoral and multi-scalar processes have, at least in theory, the capacity to enhance both resilience and justice in climate adaptation.

### 3.3.5 *Cross-cutting Considerations*

Together, the four principles set out above are central to the development of climate adaptation laws that promote resilience and environmental justice. However, some factors essential to their implementation in practice span all four principles outlined above.

Climate adaptation laws must promote information sharing.<sup>147</sup> Laws can only address change where information about socio-ecological system dynamics is available to decision-makers. Similarly, laws can only account for the distributive impacts of climate adaptation where those impacts are made known through information generating and sharing processes. However, access to information – and the capacity to generate and use it<sup>148</sup> – may be confined to privileged actors; it is therefore important that climate adaptation laws recognise that power dynamics can influence information sharing.<sup>149</sup> Information sharing will also benefit from increased participation as a wider range of knowledge and data

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<sup>144</sup> Jan McDonald, 'The Ebb and Flow of Coastal Adaptation in Australia', in Randall Abate (ed), *Climate Change Impacts on Ocean and Coastal Law: US and International Perspectives* (Oxford University Press, 2015) 631-43.

<sup>145</sup> This has distributive implications, as discussed in section 3.3.2 above.

<sup>146</sup> Roger Few, Karen Brown and Emma Tompkins, 'Public Participation and Climate Change Adaptation: Avoiding the Illusion of Inclusion' (2007) 7 *Climate Policy* 46.

<sup>147</sup> Resilience scholars have frequently emphasised the importance of information sharing for implementing adaptive governance strategies; see, eg, Camacho Alejandro E Camacho, 'A Learning Collaboratory: Improving Federal Climate Change Adaptation Planning' (2011) *Brigham Young University Law Review* 1821. However, access to, and use of information, has equally significant implications for environmental justice; see eg Millner (n 115).

<sup>148</sup> Cosens et al (n 72) 5, 6.

<sup>149</sup> Lourdes A Vera et al, 'When data justice and environmental justice meet: formulating a response to extractive logic through environmental data justice' (2019) 22 *Information, Communication and Society* 1012, 1013.

becomes available. This provides an important pathway for local knowledge to feed into decision-making processes,<sup>150</sup> and can help better integrate different perspectives and understandings in adaptation decision-making. Climate adaptation laws can also enhance cross-sectoral and multi-scalar linkages by supporting information sharing.<sup>151</sup> This could include requirements for government agencies to publish information or consult with other stakeholders when developing adaptation measures. These information sharing practices can play a vital role in balancing the benefits of diversity and redundancy with the practical requirement to use limited resources efficiently in developing and implementing adaptation measures.<sup>152</sup>

Leadership is also central to the pursuit of just resilience through climate adaptation laws.<sup>153</sup> Although it is only one factor contributing to ‘adaptation readiness’,<sup>154</sup> leadership is especially important for conceiving and implementing time, scale and space-specific adaptation actions.<sup>155</sup> Three types of leadership are typically identified in the adaptation literature:<sup>156</sup> visionary leadership, or the ability to identify and establish a strategic direction for adaptation action;<sup>157</sup> entrepreneurial leadership, or the ability to catalyse action;<sup>158</sup> and collaborative leadership, which includes building connections between sectors, across levels and among actors.<sup>159</sup> These domains map effectively onto the four key principles for enhancing just resilience through climate adaptation laws identified above. Visionary and entrepreneurial leadership allows laws to be used to address change and account for the distributive impacts of adaptation. Impactful leaders may even create opportunities for change.<sup>160</sup> Collaborative leadership is fundamental to developing connections across sectors and scales, including by reducing conflict and developing informal arrangements that

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<sup>150</sup> Eg Cosens et al (n 72) 5.

<sup>151</sup> Flatt (n 60) 284; Camacho (n 76) 65-70.

<sup>152</sup> Camacho (n 76) 68.

<sup>153</sup> T. Tanner et al, ‘Influencing resilience: the role of policy entrepreneurs in mainstreaming climate adaptation’ (2019) 43 Suppl 3 *Disasters* S388, S394.

<sup>154</sup> James D Ford and Diana King, ‘A framework for examining adaptation readiness’ (2015) 20(4) *Mitigation and Adaptation Strategies for Global Change* 505, 510.

<sup>155</sup> Sander Meijerink and Sabina Stiller, ‘What Kind of Leadership Do We Need for Climate Adaptation? A Framework for Analyzing Leadership Objectives, Functions, and Tasks in Climate Change Adaptation’ (2013) 31 *Environment and Planning C: Government and Policy* 240, 254.

<sup>156</sup> Catrien Termeer, Robbert Biesbroek and Margo Van den Brink, ‘Institutions for adaptation to climate change: comparing national adaptation strategies in Europe’ (2012) 11(1) *European Political Science* 41, 44.

<sup>157</sup> Ibid.

<sup>158</sup> Ford and King (n 154) 510.

<sup>159</sup> See eg Carl Folke et al, ‘Adaptive Governance of Social-Ecological Systems’ (2005) 30 *Annual Review of Environment and Resources* 441, 451.

<sup>160</sup> Mattias Hjerpe and Sofie Storbjörk, ‘Climate adaptation and the significance of different modes of local political leadership: views of Swedish local political leaders’ in Jorg Knieling (ed) *Climate Adaptation Governance in Cities and Regions : Theoretical Fundamentals and Practical Evidence* (EBSCO Publishing, 2016) 137.

support the implementation of laws in practice.<sup>161</sup> Collaborative leadership will also support enhanced participation by building trust and incorporating a wider range of actors in adaptation processes.<sup>162</sup> Each leadership type can be implemented by individuals both within and outside government at any level; those leaders are often described as ‘adaptation champions’<sup>163</sup> or ‘policy entrepreneurs’<sup>164</sup> in the adaptation literature.<sup>165</sup> Of course, leadership may also have undesirable consequences; some leaders are well positioned to maintain the status quo, and may have a vested interest in maintaining existing arrangements, or other specific interests.<sup>166</sup> There is also a well-recognised risk that leadership is concentrated in one person, who may not always be available to perform that role.<sup>167</sup>

Climate adaptation laws may themselves provide leadership in some instances. Legislation may, for example, establish or embed the substantive goals to be pursued in climate adaptation.<sup>168</sup> This formal identification of adaptation objectives may establish a level of ambition that helps to nullify the negative impacts of a leadership vacuum. However, leadership is a vital feature of the law ‘in action’. For example, governmental officials may – in the absence of formal law reform – advocate or implement new uses of legal tools to support climate adaptation. Many local governments in NSW, for example, have persisted in addressing sea level change through a range of legal tools despite the absence of formal guidance from higher levels of government.<sup>169</sup> In other words, leadership is about how decision-makers and non-governmental actors use legal tools to pursue adaptation – or navigate adaptation barriers – in a particular context.

These cross-cutting considerations and the four principles of just resilience are necessarily broad. Their implementation would likely require further tailoring on a ‘case by case’ basis. For example, climate adaptation laws focused on longer term impacts that develop incrementally may prioritize different aspects of the principles when compared with laws

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<sup>161</sup> Catrien Termeer et al, ‘The Regional Governance of Climate Adaptation: A Framework for Developing Legitimate, Effective and Resilient Governance Arrangements’ (2011) 2 *Climate Law* 159, 169-170.

<sup>162</sup> Per Olsson et al, ‘Shooting the Rapids: Navigating Transitions to Adaptive Governance of Social-Ecological Systems’ (2006) 11(1) *Ecology and Society* [18], 14.

<sup>163</sup> Nobuo Mimura et al (eds), ‘Adaptation Planning and Implementation’ in Christopher B Field et al (eds) *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2014) 887.

<sup>164</sup> Tanner et al (n 153).

<sup>165</sup> Small groups may equally perform a leadership function, although this is less common in the literature: see eg Olsson et al (n 162) 7, 16.

<sup>166</sup> Ibid 5, 14.

<sup>167</sup> Tanner et al (n 153) S394.

<sup>168</sup> Craig (n 66).

<sup>169</sup> See detailed analysis of leadership in Chapter 5.4.6.

addressing more abrupt disturbances. In that context, a wider range of participatory processes might be developed and implemented more effectively when compared with the demands of shorter term impacts that require faster responses to address change. Nevertheless, the principles provide a starting point for further investigation and analysis of the operation of existing laws and processes, which might be implemented (at least in part) through incremental reform and development of existing laws and processes.

### ***3.4 Linking the Principles to the Case Studies***

The principles for just resilience and their interactions are context- and scale-dependent. For these reasons, empirical testing of these principles uses three case studies which analyse the operation of climate adaptation laws in addressing climate impacts. Empirical data was collected using a combination of doctrinal and socio-legal research methods as explained in Chapter 1.

It was not possible to test empirically all aspects of every principle (or every potential conflict between principles) in this research project. Table 3.1 below summarises the treatment of the four principles across the three case studies. Doctrinal legal research provided an important guide to the major issues arising in each case study. However, the flexible and reflexive nature of the semi-structured interviews meant that crucial insights were often identified in investigation of the law ‘in action’. The case study chapters therefore address both the laws and interview data together. Each principle (or at least one element of each principle) was tested across at least two case studies, thereby generating valuable insights regarding the operation of the principles across different spatial and temporal contexts. Comparative analysis of the principles across the case studies is set out in Chapter 7.

### ***3.5 Conclusion***

This chapter has examined the intersection of resilience and environmental justice literatures. Particular attention was paid to contributions that have considered the role of law in the pursuit of just resilience, the limitations of those early contributions, and the need to further explore the influence of law on just resilience. Building on those earlier contributions, the chapter then distilled four principles for enhancing just resilience through laws. The chapter then discussed synergies and tensions between the principles, and pointed to the importance of examining those interactions in an applied context.

The following chapters now apply this conceptual framework to three case studies of Australian climate adaptation law.



**Table 3.1: Applying the Just Resilience Principles to the Case Studies**

<b>Principle</b>	<b>Case Study One: Bushfire in the TWWHA</b>	<b>Case Study Two: Changing Lake Levels in Lake Macquarie</b>	<b>Case Study Three: Heatwaves in Melbourne</b>
<b>Principle One: Laws must Address Change</b>	<i>4.4.3 Substantive Objectives in Fire Management 4.4.6 Timing and Legal Processes</i>		<i>6.4.1 Transformational Change in the Legal Framework 6.4.2 Incremental Adjustment of Regulatory Arrangements</i>
<b>Principle Two: Laws must Address the Distributive Effects of Climate Change and Adaptation</b>		<i>5.4.1 Distributive Implications of Changing Lake Levels</i>	<i>6.4.3 Addressing the distributive implications of heatwaves</i>
<b>Principle Three: Laws must Promote Participation in Adaptation Processes</b>	<i>4.4.4 Public Participation in addressing Fire in the TWWHA</i>	<i>5.4.2 Public Participation in Adapting to Changing Lake Levels</i>	<i>6.4.4 The nature and role of participatory processes</i>
<b>Principle Four: Laws must Operate Across Sectors and Scales</b>	<i>4.4.1 Linkages between sectors 4.4.2 Linkages across scales</i>	<i>5.4.3 Connections across sectors and between scales</i>	<i>6.4.5 Coordinating across sectors and scales</i>
<b>Cross-cutting Considerations</b>	<i>4.4.5 Information Sharing</i>	<i>5.4.4 Information Sharing 5.4.5 Leadership</i>	<i>6.4.6 Sharing information about extreme heatwaves</i>

*Note: numbering in the table refers to relevant sections in the subsequent case study chapters Four, Five and Six.*

## Chapter Four.: Case Study One: Bushfire in the Tasmanian Wilderness World Heritage Area (TWWHA)

The Tasmanian Wilderness World Heritage Area (TWWHA) is a central feature of the Tasmanian landscape. First inscribed on the World Heritage List in 1982, and further expanded on four subsequent occasions, the TWWHA includes both cultural and natural heritage for the purposes of the 1972 *Convention Concerning the Protection of the World Cultural and Natural Heritage* ('WHC').<sup>1</sup> The TWWHA is physically substantial, now comprising an area of almost 1.6 million hectares (or approximately 20% of the Tasmanian land mass) including some of the most remote terrain in Tasmania.<sup>2</sup> The TWWHA also contributes substantially to social and economic conditions in Tasmania by providing opportunities for recreation, ecosystem services and supporting a range of economic activities (eg tourism). The TWWHA is thus significant to Tasmania from biophysical, socio-economic and cultural standpoints.

Future climate change is likely to impact the TWWHA. Changes in the fire regime of the TWWHA will contribute to those impacts. Recent studies show that bushfire risk is greatly increased under weather conditions which are likely to become more frequent in the TWWHA as a result of climate change.<sup>3</sup> Climate-driven variation in fire regimes will contribute to changes in geodiversity,<sup>4</sup> the extinction of flora and fauna unique to the TWWHA,<sup>5</sup> and stimulate changes in vegetation patterns that contribute to the natural heritage values of the TWWHA.<sup>6</sup> In addition, changes in fire regimes threaten sites containing cultural heritage, and the cultural heritage values of the TWWHA in their broader sense.<sup>7</sup> As changing fire regimes affect the outstanding universal values of the TWWHA, its cultural and economic contribution to Tasmanian social and economic life will also be diminished. Adapting to changing fire regimes is thus essential to the preservation of the TWWHA's outstanding universal values (OUVs).

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<sup>1</sup> Convention Concerning the Protection of World Cultural and Natural Heritage 1037 UNTS 151 (adopted 16 November 1972, entered into force 17 December 1975) ('WHC').

<sup>2</sup> Department of Primary Industries, Parks, Water and Environment (DPIPWE), *Tasmanian Wilderness World Heritage Area Management Plan 2016* (DPIPWE, 2016) ('TWWHA Management Plan 2016') 17.

<sup>3</sup> See eg Peter T Love et al, *Impact of Climate Change on Weather-Related Fire Risk Factors in the TWWHA Part II Report* (2016) 1-8.

<sup>4</sup> Chris Sharples, *Potential Climate Change Impacts on Geodiversity in the Tasmanian Wilderness World Heritage Area: A Management Response Position Paper* (Nature Conservation Report Series 11/04, November 2011) 6-8.

<sup>5</sup> MJ Brown, *Monitoring the Impact of Climate Change on the Flora and Vegetation Values of the Tasmanian Wilderness World Heritage Area: A Review* (2010) 15-6.

<sup>6</sup> Stephen Mallick, *Potential Impacts of Climate Change on the Fauna Values of the Tasmanian Wilderness World Heritage Area* (Nature Conservation Report 13/2, 2013).

<sup>7</sup> Tony Press, *Tasmanian Wilderness World Heritage Area Bushfire and Climate Change Research Project* (Final Report, December 2016) ('Press Report') 42.

The legal framework relating to fire management in the TWWHA involves a complex array of international and domestic laws and processes. Although the WHC and its processes are central to the legal framework, a wider range of multilateral treaties also shape governance of the TWWHA. Measures addressing fire in the TWWHA are also shaped by a plethora of Australian laws, including national environmental and world heritage laws, emergency and fire management arrangements at the State level, and the implementation of relevant requirements at the local government level. Relevant laws and processes at all levels operate across multiple sectors, including fire management, emergency management, biodiversity and world heritage conservation, and land-use planning.

This chapter proceeds in four parts. The first briefly addresses key features of the TWWHA, with reference to the values underpinning its recognition on the World Heritage List. The second part explores the threat climate change poses to the TWWHA's outstanding universal values, focusing particularly on changes in fire regimes within the Area. The third part outlines the legal framework for management of the TWWHA, with a particular emphasis on laws relevant to fire management. The fourth and final part identifies key themes and questions relating to the intersection of social-ecological resilience, environmental justice and law emerging from the preceding analysis. The chapter identifies factors that support effective linkages between sectors and across scales in measures addressing fire in the TWWHA. It also explores the implications of new approaches to articulating fire management priorities for just resilience in addressing fire in the TWWHA. The chapter argues that increased public participation would enhance TWWHA governance arrangements, pointing to previously high levels of participation in the development of the TWWHA Management Plan. Measures to encourage the sharing of information, and to develop more systematic review and amendment processes for the legal framework, are also identified as opportunities to enhance just resilience in addressing fire in the TWWHA.

#### ***4.1 The Tasmanian Wilderness World Heritage Area: An Overview***

This part provides an overview of the Tasmanian Wilderness World Heritage Area (TWWHA), addressing in particular the physical and cultural features that have resulted in its inclusion on the World Heritage List. Before moving to those characteristics, the

following paragraphs outline major concepts and processes central to the identification of properties satisfying the requirements of the WHC.<sup>8</sup>

#### 4.1.1 *The World Heritage Convention (WHC): An Overview*

Developed to address deficiencies in existing piecemeal international agreements relating to heritage,<sup>9</sup> the WHC aims to ensure that heritage is protected, incorporated into community activities and conveyed to future generations in the interests of humankind.<sup>10</sup> Heritage, in the context of the WHC, comprises both cultural and natural heritage. ‘Cultural heritage’ includes monuments, groups of buildings or sites of outstanding universal value.<sup>11</sup> ‘Natural heritage’ includes ‘natural features consisting of physical and biological formations or groups of such formations ... geological and physiographical formations and precisely delineated areas which constitute the habitat of threatened species of animals and plants ... [and] natural sites or precisely delineated natural areas of outstanding universal value.’<sup>12</sup> These definitions have been applied to a broad range of properties in the implementation of the WHC.

The scope of the WHC is also shaped by its requirement that properties include cultural or natural heritage of ‘outstanding universal value’.<sup>13</sup> Outstanding universal value is defined in the *Operational Guidelines for the Implementation of the World Heritage Convention* (‘Operational Guidelines’) to mean ‘cultural and/or natural significance ... so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity’.<sup>14</sup> The Operational Guidelines go on to list ten (10) more particular criteria to aid assessment of outstanding universal value.<sup>15</sup> Properties must meet additional requirements relating to their authenticity (i.e. credibility of expression of cultural values),<sup>16</sup> integrity (i.e. whether the site is largely intact, and accurately represents features of

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<sup>8</sup> The obligations of States Parties to the WHC, and additional procedures through which the WHC is operationalised are addressed in greater detail at 4.4.1 below.

<sup>9</sup> Francesco Francioni and Federico Lenzerini (eds), *The 1972 World Heritage Convention: A Commentary* (Oxford University Press, 2008).

<sup>10</sup> Greg Terrill, ‘Climate Change: How Should the World Heritage Convention Respond?’ (2008) 14(5) *International Journal of Heritage Studies* 388, 389; WHC (n 1) arts 4 and 5; United Nations Educational, Scientific and Cultural Organisation, Intergovernmental Committee for the Protection of the World Cultural and Natural Heritage, *Operational Guidelines for the Implementation of the World Heritage Convention* (WHC.19/01) (‘WHC Operational Guidelines’) para 7.

<sup>11</sup> WHC (n 1) art 1

<sup>12</sup> *Ibid* art 2

<sup>13</sup> WHC (n 1) arts 1 and 2.

<sup>14</sup> WHC Operational Guidelines (n 10) para 49.

<sup>15</sup> *Ibid* para 77. Abstract treatment of these criteria is unhelpful; their application to the TWWHA is considered in greater detail below.

<sup>16</sup> *Ibid* para 82; see generally para 79-86.

significance)<sup>17</sup> and protection and management (to ensure that OUVs are sustained over time).<sup>18</sup> The concept of outstanding universal value, along with the definitions of cultural and natural heritage found in the WHC, is thus central to the identification and listing of World Heritage properties. The application of those concepts to the Tasmanian Wilderness is addressed below.

#### 4.1.2 *The Tasmanian Wilderness World Heritage Area: Physical and Socio-cultural Characteristics*

The TWWHA was one of the first Australian properties inscribed on the World Heritage list in 1982.<sup>19</sup> The evolution of the TWWHA, including its boundaries and defining characteristics, is representative of central aspects of the modern political and social history of Tasmania. After several years of fractious conflict regarding the proposed damming of the Franklin River, the Tasmanian and Australian governments nominated 769 355 ha of existing national parks for inscription on the World Heritage List as the Western Tasmanian Wilderness National Parks.<sup>20</sup> One outcome of subsequent conflict regarding forestry operations in and near to the inscribed area was a major extension of the property in 1989 to include a further 600 000 ha (approximately).<sup>21</sup> This extension saw the property renamed the TWWHA. A further 200 000 ha was added in three minor extensions to the property in 2010,<sup>22</sup> 2012<sup>23</sup> and 2013.<sup>24</sup> The TWWHA now covers almost 1.6 million hectares of the south and west of Tasmania, amounting to approximately 20% of the State's land mass (see Figure 4.1 below). Forestry operations were a central issue in the 2014 Tasmanian State election, and alterations to the use of the TWWHA and its boundaries were mooted following the election of the Hodgman Liberal government.<sup>25</sup> However, at the time of writing the boundaries of the property seem relatively stable, with the Tasmanian and Australian Governments undertaking to seek no further changes to the size and scope of the TWWHA.

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<sup>17</sup> Ibid para 88; see generally paras 87-95.

<sup>18</sup> Ibid; see generally paras 96-119.

<sup>19</sup> World Heritage Committee, 'Report of the Rapporteur: Sixth Session, Paris, 13-17 December 1982' (CLT-82/CH/CONF.015/8) 6.

<sup>20</sup> Tasmanian Government and Australian Heritage Commission, *Nomination of Western Tasmania Wilderness National Parks by the Commonwealth of Australia for Inclusion on the World Heritage List* (November 1981) ('1981 Nominating Documents').

<sup>21</sup> Commonwealth Department of the Arts, Sport, the Environment, Tourism and Territories and Government of the State of Tasmania, *Nomination of the Tasmanian Wilderness by the Government of Australia for Inclusion on the World Heritage List* (September 1989) ('1989 Nominating Documents').

<sup>22</sup> Australian Government, *State Party Report on the State of Conservation of the Tasmanian Wilderness World Heritage Area (Australia)* (2010) 4-6.

<sup>23</sup> Australian Government, *State Party Report on the State of Conservation of the Tasmanian Wilderness World Heritage Area (Australia)* (2012) 14-16.

<sup>24</sup> Australian Government, *Tasmanian Wilderness World Heritage Area (Australia): Proposal for a Minor Boundary Modification* (2013).

<sup>25</sup> Australian Government, *State Party Report on the State of Conservation of the Tasmanian Wilderness World Heritage Area (Australia)* (2017) 2.



Figure 4.1: Map of the Tasmanian Wilderness World Heritage Area (TWWHA)<sup>26</sup>

The World Heritage Committee has determined that the TWWHA, in its current form, meets seven (7) of the criteria for assessment of outstanding universal value established in

<sup>26</sup> TWWHA Management Plan 2016 (n 2) 18.

the Operational Guidelines for the Implementation of the World Heritage Convention.<sup>27</sup>

Three of those criteria focus on the cultural values associated with the property, including:

- (iii) bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared;
- (iv) be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history; ...
- (vi) be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance. (The Committee considers that this criterion should preferably be used in conjunction with other criteria);

World Heritage Listing on the basis of cultural heritage focused mainly on Aboriginal archaeological sites identified in explorations of the TWWHA. Both the 1982 and 1989 Nominating Documents focused primarily on sites (including rock art) that record and reflect ancient and historical practices as representative of indigenous culture.<sup>28</sup> More recent management initiatives have identified a much wider range of Aboriginal values within the TWWHA, with increasing recognition that the TWWHA as a whole is an integral aspect of indigenous communities. For example, the role of (historical) indigenous fire practices in shaping the landscape and vegetation patterns across the TWWHA (ie beyond narrowly defined archaeological sites) is increasingly acknowledged.<sup>29</sup>

The remaining four criteria of outstanding universal value satisfied by the TWWHA relate to its natural features, and include:<sup>30</sup>

- (vii) contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;
- (viii) be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features;
- (ix) be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals;
- (x) contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of Outstanding Universal Value from the point of view of science or conservation.

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<sup>27</sup> WHC Operational Guidelines (n 10) para 77; see also 1981 and 1989 Nominating Documents; 1982 and 1989 World Heritage Committee decisions.

<sup>28</sup> TWWHA Management Plan 2016 (n 2) Map 1, page 18.

<sup>29</sup> Ibid 38-43.

<sup>30</sup> WHC Operational Guidelines (n 10) para 77.

The TWWHA includes one of the last substantial areas of temperate wilderness remaining in the world.<sup>31</sup> The uniqueness of this landscape underpins many features contributing to the outstanding universal values of the property. The TWWHA contains geological formations and examples of glacial processes that provide a unique record of the Earth's history.<sup>32</sup> The TWWHA provides a refuge for several rare and threatened animal species, including the Tasmanian devil and orange-bellied parrot, alongside an extensive array of invertebrates that are unique to the TWWHA.<sup>33</sup> Similar patterns are observed in the Area's plant life, where a significant proportion of Tasmania's unique and endangered plants survive. The Huon, King Billy and Pencil pines found in the area, are just three examples of plant life of scientific importance (for their longevity and connection with the Gondwanan supercontinent).<sup>34</sup> Individual values aside, the geological features and vegetation patterns of the TWWHA often combine to produce landscapes of exceptional natural beauty.<sup>35</sup> Additionally, these features of the TWWHA are largely pristine, with the area essentially undisturbed by human populations and activities.<sup>36</sup> The isolation that contributes to the uniqueness of the TWWHA has thus also aided its preservation.

In addition to the cultural and natural values identified in the World Heritage Listing process, the TWWHA has assumed a central position in Tasmanian society in a number of other respects. The TWWHA supports a wide range of nature-based recreational activities, including bushwalking and camping, that have societal and health benefits.<sup>37</sup> The Area at large provides an array of ecosystem services; it is a source of food (eg fisheries, bee-keeping),<sup>38</sup> supports a significant proportion of Tasmania's hydro-electricity scheme<sup>39</sup> and is a significant carbon store.<sup>40</sup> The TWWHA supports leading edge research in a range of fields, while also offering unique educational opportunities for local communities.<sup>41</sup> The unique and striking landscapes of the Area also contribute to growth in Tasmania's internationally renowned arts sector.<sup>42</sup> In these respects the TWWHA, through both its outstanding universal values and more broadly, plays an increasingly significant role in constituting the Tasmanian community.

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<sup>31</sup> 1981 Nominating Documents (n 20) 14, 16.

<sup>32</sup> 1989 Nominating Documents (n 21) 30-4.

<sup>33</sup> Ibid 36.

<sup>34</sup> Ibid 39.

<sup>35</sup> TWWHA Management Plan 2016 (n 2) 53.

<sup>36</sup> 1989 Nominating Documents (n 21) 29.

<sup>37</sup> TWWHA Management Plan 2016 (n 2) 7.

<sup>38</sup> Ibid 93.

<sup>39</sup> Ibid 212.

<sup>40</sup> Ibid 53-4.

<sup>41</sup> Ibid 52-3.

<sup>42</sup> Ibid 53.



The contribution of the TWWHA to the Tasmanian economy must also be recognised. A 2008 assessment indicated that the TWWHA contributes more than A\$700 million in business activity on an annual basis.<sup>43</sup> Tourism associated with the TWWHA is a substantial contributor to that economic activity, with many visitors to the State visiting the TWWHA to undertake adventure tourism, use commercial facilities or services located within the area (such as accommodation options within the TWWHA, or simply taking advantage of bushwalking infrastructure within the Area.<sup>44</sup> The TWWHA is a major catchment area for Hydro Tasmania's electricity generation activities; Hydro employs more than 1000 people, and often returns financial dividends to the State government.<sup>45</sup> The TWWHA also indirectly supports the array of industries (eg agriculture) that benefit from Tasmania's reputation as pristine, wilderness environment.<sup>46</sup>

This brief overview has highlighted key features of the TWWHA, addressing the narrower requirements of the WHC to achieve World Heritage Listing while also acknowledging the wider integration of the TWWHA within diverse aspects of Tasmanian society more broadly. However, many of the ecological, social, cultural and economic benefits derived from the TWWHA are relatively fragile, and might easily be disrupted by changes in social and environmental conditions. The following section explores the implications of climate change for the TWWHA, with a particular focus on the Area's fire regime.

#### **4.2     *Climate Change and the Fire Regime of the TWWHA***

Climate change is recognised as the most significant threat to the management and preservation of World Heritage properties in the medium and longer terms.<sup>47</sup> Bushfire has long posed a complex challenge for management of the TWWHA. Some flora, ecosystems and biological processes contributing to the universal values of the TWWHA are extremely susceptible to fire events. Endemic conifers, such as King Billy, Huon and Pencil pine, for example, are especially vulnerable to fire, which is likely to severely alter or destroy them.<sup>48</sup> Other ecosystems and processes are dependent on fire regimes for their ongoing vitality.<sup>49</sup> For example, the species of eucalypt that characterise the tall forests of the south west are

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<sup>43</sup> Ibid 54.

<sup>44</sup> Ibid 54-5.

<sup>45</sup> Ibid 54.

<sup>46</sup> Ibid.

<sup>47</sup> United Nations Educational, Scientific and Cultural Organisation, *Policy Document on the Impacts of Climate Change on World Heritage Properties* (World Heritage Centre, 2008) 3.

<sup>48</sup> Press Report (n 8) 28, 42-3.

<sup>49</sup> TWWHA Management Plan 2016 (n 2) 113.

extremely sensitive to fire; if fires are too frequent, the trees do not reach maturity. Yet if fire does not periodically destroy the trees (and the forest understorey), triggering their regeneration process, the tall forest ecosystem will transform.<sup>50</sup> Buttongrass moorlands also require periodic exposure to fire to prevent tree invasion and slow down the growth of larger plants.<sup>51</sup> Changes in fire regimes are thus both a natural hazard and a driver that contributes to the maintenance of the natural features and processes that underpin the TWWHA's OUVs.<sup>52</sup>

Early assessments of the TWWHA<sup>53</sup> and management plans<sup>54</sup> identified the potential for fire to threaten the TWWHA's OUVs. The initial concern was that fires used in nearby forestry operations might enter the TWWHA, although only one instance of so-called 'fire escape' was recorded in 1989.<sup>55</sup> Although the potential for 'long term climate change' to influence fire regimes was recognised in the late 1980s,<sup>56</sup> this remained largely a background concern until the mid 2000s. Since that time, researchers have increasingly drawn attention to climate change's amplifying effect on the TWWHA fire regime. As Marsden-Smedley and Kirkpatrick have explained, increasing frequency of dry lightning events, combined with drier and larger fuel loads resulting from changes in longer term weather patterns, are likely to result in more frequent and more severe fire events.<sup>57</sup> The monitoring of bushfire risk has thus remained a constant theme in reporting activities relating to the TWWHA.

Two recent major fires have provided an indication of the future fire regime of the TWWHA. In January 2016, a dry lightning storm ignited multiple fires in the north and west of Tasmania. More than 200 fires burnt almost 125000 hectares of land from January to March 2016. Approximately 1.27% of the TWWHA was affected by these fires, including 1.8% of threatened and sensitive vegetation communities. The most sensitive of those communities are unlikely to recover from those fires.<sup>58</sup> An almost identical sequence of events occurred in December 2018 and January 2019, igniting two major groups of fires

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<sup>50</sup> 1989 Nominating Documents (n 21) 44.

<sup>51</sup> Ibid 38.

<sup>52</sup> Tilman Jaeger and Christophe Sand, Reactive Monitoring Mission to the Tasmanian Wilderness, Australia, 23-29 November 2015 (Mission Report, 2015) ('RMM 2015') 27.

<sup>53</sup> IUCN, *IUCN Summary – World Heritage Nomination: Tasmanian Wilderness (Australia)* (1989) 7.

<sup>54</sup> Department of Parks, Wildlife and Heritage, *Tasmanian Wilderness World Heritage Area Draft Management Plan 1991* (Tasmanian Government, 1991) 44.

<sup>55</sup> Kishore Rao, Nikita Lopoukhine and Kevin Jones, Tasmanian Wilderness (Australia): *Report of the Reactive Monitoring Mission (15-20 March 2008)* (2008) ('RMM 2008') 20.

<sup>56</sup> 1989 Nominating Documents (n 21) 13.

<sup>57</sup> Press Report (n 7) 43-7.

<sup>58</sup> AFAC, AFAC Independent Operational Review: A review of the management of the Tasmanian fires of January 2016 (2016) ('AFAC Report 2016') 4.

that impacted both the south and west of Tasmania for some months.<sup>59</sup> Those fires ultimately impacted more than 95 000 hectares or 6% of the TWWHA. Four extremely fire sensitive King Billy or Pencil Pine communities were affected by the fires (approximately 0.2% of the known population) and will not recover.<sup>60</sup> On both occasions, the post-fire reviews noted the increasing impact of fire on the TWWHA, and its connection with climate change.<sup>61</sup>

### **4.3 *Laws and Governance Arrangements for Fire Management in the TWWHA***

The legal and governance arrangements that define the TWWHA, and provide the basic framework for ongoing management of the Area, span the international, national, regional and local scales. This part provides an overview of that legal framework, with a particular focus on laws and policies implicated in fire management. This overview is not exhaustive, but provides background for subsequent more detailed analysis of specific features of the relevant law in the following part 4.4.

#### **4.3.1 *International Law and Fire Management in the TWWHA***

The WHC underpins governance arrangements for fire management in the TWWHA. In addition to the substantive requirements outlined in Part 4.2.1 above, the Convention also creates the institutions and procedures through which these substantive requirements are given effect. The WHC establishes the World Heritage Committee ('the Committee'), which is responsible for maintaining the 'World Heritage List'.<sup>62</sup> The World Heritage List formally recognises those properties the Committee has determined exhibit outstanding universal value(s).<sup>63</sup> The WHC also provides for a 'list of World Heritage in Danger', which identifies properties whose outstanding universal values are threatened.<sup>64</sup> The Committee also has the capacity to delete sites from the World Heritage List.<sup>65</sup> The Committee is assisted in these listing processes by the 'Advisory Bodies', the International Union for the Conservation of Nature (IUCN) and International Council of Monuments and Sites (ICOMOS), who evaluate nominations for inclusion in the World Heritage List<sup>66</sup> and inclusion on the list of World Heritage in Danger.<sup>67</sup> The Committee and the Advisory

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<sup>59</sup> AFAC, AFAC Independent Operational Review: A review of the management of the Tasmanian fires of December 2018-March 2019 (2019) ('AFAC Report 2019') 10.

<sup>60</sup> Ibid 21.

<sup>61</sup> AFAC Report 2016 (n 58) 8; AFAC Report 2019 (n 59) 22.

<sup>62</sup> WHC (n 1) art 11.

<sup>63</sup> Ibid.

<sup>64</sup> Ibid art 11(4).

<sup>65</sup> WHC Operational Guidelines (n 10) paras 192-8.

<sup>66</sup> Ibid 143-146.

<sup>67</sup> Ibid.

Bodies continue to monitor the condition and management of properties included in the World Heritage List, and are typically involved in ongoing dialogue with States Parties to the WHC.

States parties to the WHC are subject to a range of substantive and procedural legal obligations. States parties accept a general ‘duty of ensuring the identification, protection, conservation, presentation and transmission to future generations of ... cultural and natural heritage’ within their territory.<sup>68</sup> States parties are also subject to several more specific obligations to: integrate heritage within communities;<sup>69</sup> ‘set up ... services for the protection, conservation and presentation of the ... heritage with an appropriate staff and possessing the means to discharge their functions’;<sup>70</sup> ‘develop scientific and technical studies and research and to work out ... operating methods’ that enhance parties’ capacity to counteract threats to heritage;<sup>71</sup> and take ‘appropriate legal, scientific, technical, administrative and financial measures necessary’ to identify, protect, conserve, present or rehabilitate heritage.<sup>72</sup>

#### 4.3.2 *National Laws and Fire Management in the TWWHA*

The *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (‘EPBC Act’) is the primary national legislation relevant to the management of the TWWHA. Enacted in part to give effect to Australia’s obligations under the WHC, the EPBC Act *prima facie* prohibits actions that have, will have or are likely to have significant impacts on the TWWHA’s OUVs.<sup>73</sup> The *prima facie* prohibition is subject to a range of exemptions and exceptions, including where the actions are authorised or approved through assessment processes set out in the EPBC Act.<sup>74</sup> The EPBC Act and associated *Environment Protection and Biodiversity Regulations 2000* (Cth) (‘EPBC Regulations’) create a broad framework for management of World Heritage properties, including by setting out requirements for the development and implementation of management plans for World Heritage properties.<sup>75</sup>

A range of intergovernmental processes and agencies are vital to the implementation of national and State laws for the management of the TWWHA in practice. The 2009

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<sup>68</sup> WHC (n 1) art 4.

<sup>69</sup> Ibid art 5(a).

<sup>70</sup> Ibid art 5(b).

<sup>71</sup> Ibid art 5(c).

<sup>72</sup> Ibid art 5(d).

<sup>73</sup> *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (‘EPBC Act’) s 12.

<sup>74</sup> Ibid s 15A(4).

<sup>75</sup> *Environment Protection and Biodiversity Regulations 2000* (Cth) (‘EPBC Regulations’) regs 2B.01, 10.01, Sch 5.

*Australian World Heritage Intergovernmental Agreement* provides a general administrative framework for interactions between the Tasmanian and Commonwealth governments with respect to the TWWHA. A bilateral agreement between the Commonwealth and Tasmanian governments integrates environmental assessment processes under the EPBC Act and various Tasmanian statutes.<sup>76</sup> Additional *ad hoc* intergovernmental arrangements are agreed between the Tasmanian and Commonwealth from time to time. In addition, administrative agencies (such as Emergency Management Australia) and intergovernmental working arrangements (such as the Australasian Fire and Emergency Services Authorities Council (AFAC)) operate across scales in conducting their regular fire management activities.

#### 4.3.3 State (Tasmanian) Laws and Fire Management in the TWWHA

Tasmanian State laws are central to the management of the TWWHA and its fire regime. State administration of reserved land is shaped by the *National Parks and Reserves Management Act 2002* (Tas) ('NPRMA') and its companion *Nature Conservation Act 2002* (Tas) ('NCA'). The NCA establishes several categories of reserved land in Tasmania (eg national park, State reserves) that comprise the majority of tenures within the TWWHA.<sup>77</sup> The NPRMA creates the administrative infrastructure central to the management of those reserves; it confers authority to manage reserved lands on the Director of the Parks and Wildlife Service (PWS),<sup>78</sup> and provides power to manage those lands.<sup>79</sup> This includes a specific power 'to take any steps or undertake any activities that the managing authority considers necessary or expedient for the purposes of preventing, managing or controlling fire in reserved land, having regard to the management objectives for that reserved land'.<sup>80</sup>

The NPRMA also establishes processes for developing and implementing management plans for reserved land, including detailed requirements for public participation in that process.<sup>81</sup> The current TWWHA Management Plan 2016 was prepared and approved in accordance with these statutory requirements, before coming into effect in late 2016. The 2016 Plan sets out management prescriptions for the TWWHA, addressing several of the major challenges to the maintenance of the Area's OUVs. Fire Management receives

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<sup>76</sup> The detailed bilateral arrangements can be found at Department of Environment and Energy, 'Tasmania Bilateral Agreement Information' (Web Page) <<https://www.environment.gov.au/protection/environment-assessments/bilateral-agreements/tas>>.

<sup>77</sup> TWWHA Management Plan (n 2) 23.

<sup>78</sup> *National Parks and Reserves Management Act 2002* (Tas) ('NPRMA') s 29.

<sup>79</sup> *Ibid* s 30.

<sup>80</sup> *Ibid* s 30(3)(ca).

<sup>81</sup> Discussed further in section 4.4.4 below.

substantial attention in the 2016 Plan,<sup>82</sup> which details the complex challenges of fire management in the TWWHA.<sup>83</sup> The 2016 Plan identifies four Key Desired Outcomes (KDOs) relating to fire; two KDOs of particular relevance are summarised in Table 4.X below.<sup>84</sup>

**Table 4.1: Key Desired Outcomes for Fire Management in the TWWHA  
Management Plan 2016<sup>85</sup>**

KDO	Management Action(s)
8.1: Integrated fire management planning is undertaken in the TWWHA for public safety; asset protection; Aboriginal cultural practices and values; and management of natural values and processes	<ul style="list-style-type: none"> <li>• Develop a holistic fire plan for the TWWHA.</li> <li>• Implement and periodically update regional strategic fire management plans.</li> </ul>
8.4: Knowledge of climate change informs and improves changing fire risk and associated fire management practices	<ul style="list-style-type: none"> <li>• Continue climate change research in the TWWHA to determine the viability of planned burning as a long-term management tool, determine the changing fire weather and inform future fire risk assessments.</li> <li>• Determine strategies suitable for the projected fire weather and fire risk scenarios.</li> </ul>

KDO 8.1 requires the development of a fire management plan for the TWWHA; in late 2019 the plan was under development. While directly acknowledging that climate change will alter the TWWHA's fire regime, the management actions associated with KDO 8.4 focus largely on the implications for prescribed burning. Whether this KDO is itself so limited is a matter for debate.

The 2016 Plan also devotes lengthy passages to a description of Tasmania's fire and emergency management laws. These laws are a vital component of governance arrangements for addressing fire in the TWWHA. The *Emergency Management Act 2006* (Tas)

<sup>82</sup> Especially when compared with the first draft of the plan released in 2014; see DPIPWE, *Draft Tasmanian Wilderness World Heritage Area Management Plan 2014* (DPIPWE, 2016).

<sup>83</sup> TWWHA Management Plan 2016 (n 2) 169-172

<sup>84</sup> The other two KDOs address illegal campfires and the development of a visitor management strategy; they do not require further consideration in the context of this thesis.

<sup>85</sup> TWWHA Management Plan 2016 (n 2) 172-173.

(‘EMA’) creates the administrative structure through which Tasmania’s emergency management arrangements are developed and implemented. EMA’s objectives include ‘the protection of life, property *and the environment* in the event of an emergency’ (emphasis added).<sup>86</sup> The State Emergency Management Committee (SEMC) is responsible for setting the strategic direction for emergency management,<sup>87</sup> including the preparation of the *Tasmanian Emergency Management Arrangements* (TEMA).<sup>88</sup> The Tasmanian Emergency Management Plan (TEMP), which sets out governance arrangements for TEMA, identifies PWS as the Management Authority for prevention and mitigation, preparedness and response to fire in national parks.<sup>89</sup> However, those same arrangements appoint the TFS as the SEMC Advisory Agency for fire in national parks.<sup>90</sup> The broader DPIPWE is responsible for recovery from fire in national parks.<sup>91</sup> These formal arrangements are a significant pointer to the integrated approach to fire management in Tasmania, which is discussed in sections 4.4.1 and 4.4.2 below.

The *Fire Service Act 1979* (Tas) (‘FSA’) establishes the administrative and operational framework for fire management in Tasmania. This includes the State Fire Management Council (SFMC), which is a cross-agency body empowered to, among other functions, develop the *Tasmanian Vegetation Fire Management Policy*.<sup>92</sup> This Policy, which sets out a range of broad principles, is the basis for all fire management planning in Tasmania. Additional policies, such as the State Fire Protection Plan and the State Bushfire Safety Policy also shape the regulatory environment for addressing fire in the TWHHA. In addition, the FSA also imposes obligations on occupiers of land, including to extinguish or prevent the spread of fire<sup>93</sup> and to address fire hazards on land under their control.<sup>94</sup> As the managing authority and occupier of the TWHHA, PWS (through its Director) is required to satisfy these obligations under the FSA.

PWS is also subject to a range of legal obligations under general Tasmanian law. Among these laws are the *Threatened Species Protection Act 1995* (Tas) (‘TSPA’), which provides for the protection, management and conservation of native flora and fauna, including species

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<sup>86</sup> *Emergency Management Act 2006* (Tas) (‘EMA’) Long title.

<sup>87</sup> *Ibid* s 9.

<sup>88</sup> *Ibid* s 32.

<sup>89</sup> Department of Police and Emergency Management, *Tasmanian Emergency Management Plan – Issue 8* (Tasmanian Government) 34.

<sup>90</sup> *Ibid* 38.

<sup>91</sup> *Ibid* 34.

<sup>92</sup> *Fire Service Act 1979* (Tas) (‘FSA’) s 15(1)(a).

<sup>93</sup> *Ibid* s 64.

<sup>94</sup> *Ibid* s 49(1).

found only in the TWWHA.<sup>95</sup> The *Weed Management Act 1999* (Tas) also applies to all of the land tenures found within the TWWHA.<sup>96</sup> Although these laws may not be directly implicated in responses to fire events in the TWWHA, they nevertheless form part of the broader legal context for addressing fire in the TWWHA. Many species that underpin the unique ecosystem processes of the TWWHA are protected under TSPA, and TSPA authorisation may therefore be required before management activities, such as prescribed burning, are undertaken in the TWWHA.

#### 4.3.4 *Local Laws and Fire Management in the TWWHA*

The EMA and FSA also provide for a range of emergency and fire management activities that occur below the State level. The EMA creates a hierarchy of Regional and Municipal Emergency Management Committees (REMCs and MEMCs)<sup>97</sup> that are responsible for developing and operationalising Emergency Management Plans (REMPs and MEMPs) at regional and local scales.<sup>98</sup> The FSA similarly creates regional level Fire Management Area Committees (FMACs), which coordinate fire management activities (including fuel management) within defined areas.<sup>99</sup> FMACs are required to prepare and implement Fire Protection Plans (FPPs) for their areas. Those Committees and Plans form an integrated hierarchy.

Local councils are also integrated into the emergency and fire management frameworks. Local government boundaries are used to define municipal emergency management areas,<sup>100</sup> and local councils have significant powers to determine the membership of MEMCs.<sup>101</sup> Each local council within a fire management area must be represented on the relevant FMAC.<sup>102</sup> Local councils also perform other statutory functions relevant to fire in the TWWHA at the local level, such as assessing development applications within (or near to) the TWWHA under the *Land Use Planning and Approvals Act 1993* (Tas) ('LUPAA').<sup>103</sup> Local councils are thus part of the governance framework for addressing fire in the TWWHA.

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<sup>95</sup> Eg *lomatia tasmanica* and *eucalyptus gunii divaricata*, among others.

<sup>96</sup> TWWHA Management Plan 2016 (n 2) 115.

<sup>97</sup> EMA (n 86) Part 2 Divs 2 and 3 respectively.

<sup>98</sup> Ibid ss 33 and 34 respectively.

<sup>99</sup> FSA (n 92) s 20.

<sup>100</sup> EMA (n 86) s 19.

<sup>101</sup> Ibid s 21.

<sup>102</sup> FSA (n 92) s 18.

<sup>103</sup> *Land Use Planning and Approvals Act 1993* (Tas) ('LUPAA') s 58.



#### **4.4    *Law for Just Resilience in addressing Bushfire in the TWWHA***

Drawing together the preceding introduction to the TWWHA and relevant laws, the following analysis examines how the legal framework influences just resilience in addressing fire in the TWWHA. The section relates the principles of just resilience to aspects of this case study. The section draws together desktop analysis of the ‘law on the books’ with the views of expert practitioners who have seen the ‘law in action’ to identify opportunities for further development of the legal framework for addressing fire in the TWWHA, and transferable lessons for the pursuit of just resilience through law in other contexts.

##### **4.4.1    *Linkages between sectors***

Connections between sectors are an influential aspect of governance arrangements in social-ecological systems.<sup>104</sup> Linkages between sectors are a key feature of the legal framework relating to fire in the TWWHA. As indicated in section 4.3 above, the legal framework relating to fire in the TWWHA comprises a complex array of agencies and actors spanning the fire management, emergency management, world heritage and environmental sectors. This section explores the nature of connections between those laws. These linkages are often indirect and are not necessarily established formally by (or within) the legal framework. Factors identified by participants with experience of cross-sectoral linkages relevant to TWWHA governance as supporting or inhibiting those connections are examined.

A network of State legislation, agencies and actors is central to the governance of the TWWHA, including management of the Area in relation to fire. The Tasmania Parks and Wildlife Service (PWS) is primarily responsible for managing the TWWHA, including in relation to fire. PWS works closely with the Tasmania Fire Service (TFS), and Sustainable Timber Tasmania (STT) in addressing fire. The linkage between these three agencies is formalised in the *Interagency Fire Management Protocol* (the Protocol), which documents arrangements for cooperative responses to fire incidents among the three agencies. The Protocol itself focuses largely on operational matters, but has contributed to the development of strong working connections between the three Tasmanian fire agencies.<sup>105</sup> At present, the Protocol takes the form of an agreement between the relevant agencies; this perhaps reflects its informal conception among working partners in the early 1990s. Formal

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<sup>104</sup> See Chapter 3.3.4.

<sup>105</sup> Eg Participant 1.5.

recognition of the Protocol in legislation is currently under consideration.<sup>106</sup> Irrespective of its present legal status, the Protocol represents the strongest linkage between Tasmanian agencies responsible for addressing fire in the TWWHA.

The strong linkages between the three lead agencies are complemented by more subtle interactions with other components of the Tasmanian government. Natural and Cultural Heritage staff in DPIPWE support the management of the TWWHA, through research and management activities that inform efforts to understand and maintain the OUVs that constitute the TWWHA. Regulatory measures addressing fire are also influenced by aspects of Tasmania's emergency management arrangements, including particularly the development and implementation of fire management plans at State, regional and local levels.<sup>107</sup> These interactions are not generally formalised, but rather result from the implementation of laws of general application (such as the *Threatened Species Protection Act 1995* (Tas), for example) in addressing fire in the TWWHA. They are effected through cooperation between the staff of relevant governmental agencies.

Stakeholders highlighted two key drivers of the relatively successful operation of linkages between agencies in addressing fire in the TWWHA. First, many participants pointed to interpersonal associations as significant contributors to successful linkages between State agencies. The Interagency Fire Management Protocol, for example, was initially developed through the interpersonal connections of key figures within the relevant agencies. Participant 1.2, for example, attributed the successful development and implementation of the Protocol to: '[g]oing around to each other's houses for barbeques or bottle of wine. ... [B]asically it was personal relationships, building trust on a personal basis and then taking it professional.'<sup>108</sup> Thirty years on from its development, a more formal approach is taken to maintenance and operation of the Protocol, but close relationships between key personnel remain. This may, to some extent, reflect the shared experiences of personnel across relevant State agencies and be a unique feature of Tasmania's small size. Many participants working at the State level had previously worked in at least one other State level agency,<sup>109</sup> and maintain connections with former colleagues in their work related to fire in the TWWHA. Participant 1.7, for example, explained that: 'if I go anywhere in a fire station in Tasmania, certainly the big ones, I'll know quite a lot of the people and they'll know me.'

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<sup>106</sup> Tasmania Fire Service, 'Fire Service Act Review' (Web Page) <<http://www.fire.tas.gov.au/Show?pageId=collFireServiceActReview>>; see also AFAC Report 2019 (n 59) 36-9.

<sup>107</sup> Relevant plans are catalogued in the TWWHA Management Plan 2016 (n 2) 169-71.

<sup>108</sup> Participant 1.2.

<sup>109</sup> Eg Participants 1.2, 1.5, 1.6, 1.7, 1.8 and 1.10.

Those relationships extend up and down through the ranks as well as across agencies’.<sup>110</sup> These interpersonal connections have supported the development and implementation of linkages between State agencies, and continue to influence their operation into the future.

The second, related driver of successful linkages between Tasmanian agencies responsible for addressing fire in the TWWHA is geography. For many participants, the relatively small physical size of Tasmania (and the TWWHA)<sup>111</sup> has heavily influenced the development of close linkages in the legal framework. Some participants identified physical proximity as a driver of strong linkages between State agencies. For those participants, physical proximity (such as co- or close-location of relevant agencies, or interactions during operational activities, for example) contributed to the strong interpersonal connections described above. For other participants, the small population of Tasmania, including the relatively small number of staff responsible for addressing fire in the TWWHA, supported the development of close linkages across the legal framework. As one participant observed, ‘you can get the major players into the room agreeing to something reasonably quickly because of th[e] relatively flat [organisational] structure’.<sup>112</sup> Thus the state’s ‘islandness’<sup>113</sup> and associated low levels of staff turnover is also a key factor. The geography of Tasmania, in terms of size, proximity or population, is thus widely recognised as a driver of successful connections across sectors in addressing fire in the TWWHA.

One participant described close cooperation between agencies as an economic necessity, observing that:

cooperative fire management [has] been a massive, massive boost to the ability of Tasmania to effectively manage fire. ... Tasmania’s always been economically and resource-wise the very, very poor cousin. We had to [cooperate]. We didn’t have a choice about doing that. There was that or absolutely fail. [T]hey were the choices.<sup>114</sup>

Participants observed that the strong linkages between Tasmanian agencies addressing fire in the TWWHA typically resulted in savings for individual agencies and the government at

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<sup>110</sup> Participant 1.5.

<sup>111</sup> In most comments pertaining to this issue, the size of Tasmania and/or the TWWHA was contrasted with the area of mainland States and/or protected areas on the mainland; see, eg, Participants 1.2, 1.7 and 1.10.

<sup>112</sup> Participant 1.5.

<sup>113</sup> See, for example, Anna Lyth et al, ‘Place Influences in Framing and Understanding Climate Change Adaptation Challenges’ (2016) 21 *Local Environment* 730, 732-3.

<sup>114</sup> Participant 1.2.

large.<sup>115</sup> Although some participants identified a lack of resources as a factor influencing the pursuit of substantive outcomes in addressing fire in the TWWHA, a lack of resources was not commonly cited by participants as a barrier to successful linkages between agencies.

Participants identified relatively few weaknesses or barriers posed by the legal framework for successful cooperation between State agencies in addressing fire in the TWWHA. There were few accounts of contestation or substantial conflict between agencies, which is often cited in the academic literature as a barrier to connections across sectors.<sup>116</sup> While some jurisdictional overlaps occasionally arose at higher levels, participants suggested that these issues were resolved swiftly and without significant animosity.<sup>117</sup> At an operational level, participants suggested that the Protocol reflected and supported a collaborative effort to address technical differences, and did not involve assertions of legal authority. Rather, participants observed that the Protocol facilitates relatively nimble adjustments where legal boundaries are encountered. As one participant explained: ‘if it does jump the fence and end up on private property ... the control of it might slightly change because all of a sudden we’re doing house to house protection and that’s not our skill ... so we’ll slip under their direction in that particular area’.<sup>118</sup> This experience may be peculiar to Tasmania (and perhaps even the context of fire in the TWWHA); indeed, some participants observed that conflict is a feature of interagency responses to fire in other Australian jurisdictions.<sup>119</sup> However, it is a reminder that barriers to cooperation are often context specific.

Horizontal linkages between actors that address fire in the TWWHA were not limited to State government agencies. Many participants observed connections with the research community, including both formal and informal links with the University of Tasmania, and other independent researchers in the Tasmanian community.<sup>120</sup> Similarly, some participants described strengthening connections between State government agencies and various stakeholders, including environmental NGOs. Although these actors might be regarded as external to the legal framework, they nevertheless play an influential role in the operation and implementation of the relevant legal framework through participation in legal processes. Those contributions are discussed further in section 4.5.6 below.

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<sup>115</sup> See eg Participant 1.5.

<sup>116</sup> See Chapter 3.3.4.

<sup>117</sup> See eg Participants 1.2, 1.6 and 1.10.

<sup>118</sup> Participant 1.7.

<sup>119</sup> See eg Participants 1.2 and 1.10.

<sup>120</sup> See eg Participants 1.2, 1.5, 1.7 and 1.8.

#### 4.4.2 *Linkages across scales*

Connections across scales also shape the operation of laws addressing fire in the TWWHA. The legal framework comprises laws, agencies and actors at the international, national, State and local scales.<sup>121</sup> ‘Vertical’ linkages connect these actors and agencies.<sup>122</sup> While some linkages are primarily formal legal processes, such as those with the World Heritage Commission, others have developed and operate through informal channels. These varied interactions show how the nature and operation of vertical linkages shapes legal measures addressing fire in the TWWHA.

Connections across scales fall into three main categories, illustrated in Figure 4.X below. The first are linkages between the international and Australian domestic laws. Many of these interactions utilise pathways established by the World Heritage Convention. In the context of fire, these interactions include: aspects of the TWWHA’s nomination for World Heritage listing<sup>123</sup> (where the influence of the Area’s fire regime on ecosystem dynamics linked to OUVs is outlined, for example);<sup>124</sup> participation in Reactive Monitoring<sup>125</sup> and periodic reporting activities;<sup>126</sup> and decisions of the World Heritage Committee in its regular sessions.<sup>127</sup> Informal interactions between the Australian and Tasmanian governments, other stakeholders (such as environmental NGOs) and UNESCO, the World Heritage Committee and its Advisory Bodies (such as IUCN and ICOMOS) also shape the development and implementation of measures to address fire in the TWWHA. In combination, these linkages at the highest level of the vertical scale are a continuing influence on measures that address fire in the TWWHA.

Interactions between the national and State governments are the second category of cross-scale interactions, consisting of three thematic areas. First, Australia’s obligations under the World Heritage Convention are shared between national and State governments, with roles and responsibilities allocated in a formalised intergovernmental agreement.<sup>128</sup> Second, intergovernmental arrangements facilitate mutual assistance between fire services, including

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<sup>121</sup> See section 4.3 above.

<sup>122</sup> This observation is true both within particular sectors (eg fire management, heritage conservation) and across the range of laws relevant to fire in the TWWHA.

<sup>123</sup> WHC (n 1) art 4.

<sup>124</sup> Nominating Documents 1981 (n 23) and 1989 (n 24).

<sup>125</sup> WHC Operational Guidelines (n 10) paras 169-176; see eg RMM 2015 (n 52).

<sup>126</sup> WHC Operational Guidelines (n 10) paras 199-210.

<sup>127</sup> See eg World Heritage Committee, ‘Item 7B of the Provisional Agenda: State of conservation of properties inscribed on the World Heritage List’ Fortieth Session, Istanbul, Turkey, 10-20 July 2016 (WHC/16/40.COM/7B.Add) para 5.

<sup>128</sup> *Australian World Heritage Intergovernmental Agreement 2009*.

the deployment of firefighting personnel from other Australian jurisdictions.<sup>129</sup> Finally, broader emergency management arrangements make federal assistance available in addressing disasters that are beyond the capacity of the State to address, including major fires. This assistance can include both logistical and physical assistance (such as the provision of infrastructure) during responses to events, and also the provisions of financial assistance to aid recovery.<sup>130</sup> Measures addressing fire in the TWWHA therefore sit at the intersection of a complex array of national and State laws and process relating to both World Heritage and emergency and fire management, each contributing to the development and implementation of measures that address fire in the TWWHA.

A number of bridging organisations also span the national and State levels of the legal framework relating to fire in the TWWHA. Some bridging organisations are coordinated from the national level. The Forest Fire Management Group (FFMG), for example, is a subcommittee housed within the Commonwealth Department of Agriculture and Water Resources. The FFMG provides a forum for land management agencies to interact with respect to fire management and control.<sup>131</sup> Other bridging organisations are administered from the State level. For example, the National Parks and Wildlife Advisory Committee (NPWAC), provides advice to both the State and national governments on the management of the TWWHA.<sup>132</sup> Still other bridging organisations are more removed from the governmental framework. The Australasian Fire and Emergency Services Council (AFAC), the peak body for fire and emergency management agencies across Australia, is a not for profit company that connects with federal government processes (through the Australia New Zealand Emergency Management Council, for example). Despite their diverse organisational and legal structures, these organisations all perform similar functions in drawing together representatives from relevant State and Territory agencies, along with national government representation where appropriate, to develop practices and share information regarding responses to fire.

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<sup>129</sup> Eg Arrangements for Interstate Assistance, which were activated in both the 2016 and 2019 fire events; see AFAC Report 2016 (n 58) 34-7; AFAC Report 2019 (n 59) 41-3.

<sup>130</sup> Eg the *Disaster Recovery Funding Arrangements 2018* were activated in response to the 2019 fires; see DisasterAssist, 'Tasmania Bushfire: December 2018 and January 2019' (Web Page) <<https://www.disasterassist.gov.au/Pages/disasters/current-disasters/Tasmania/tasmanian-bushfires-december-2018-january-2019.aspx>>.

<sup>131</sup> Commonwealth of Australia, *National Bushfire Management Policy Statement for Forests and Rangelands* (Forest Fire Management Group, 2012) 9.

<sup>132</sup> NPRMA (n 78) s 14. Note that NPWAC now performs the functions previously allocated to the Tasmanian Wilderness World Heritage Area Consultative Committee (TWWHACC); for a review of historical intergovernmental arrangements, see Benjamin J Richardson, 'A Study of Australian Practice Pursuant to the World Heritage Convention' (1990) 20 *Environmental Policy and Law* 143.

Interactions between State and local levels also influence the development and implementation of measures to address fire in the TWWHA. These interactions are facilitated in part through local government participation in regional and local fire and emergency management hierarchies. For example, local councils must be represented on Fire Management Area Committees (FMACs) within which their municipality is located.<sup>133</sup> FMACs are required to coordinate fire management activities (including community education and information, and fuel management) within their fire management areas, and to develop fire protection plans for those areas on an annual basis.<sup>134</sup> The FMACs are the primary interface, at the strategic level, for State and local governments.<sup>135</sup> State and local levels are also connected through the organisational structure of relevant government departments; the PWS, for example, is organised into three regions, which each have responsibility for implementing strategic policy direction in the context of local conditions. While local level agencies have opportunities to contribute to development of strategic direction in addressing fire, their most important role is often in the translation of policy direction to specific local conditions.

Participants' views on cross-scale interactions were mixed. Some participants described relatively successful connections, especially across the national and State scales.<sup>136</sup> However, others described a weakening of connections between scales over time.<sup>137</sup> Participant views varied between sectors; connections were generally regarded as more effective in the fire and emergency management contexts,<sup>138</sup> while connections in world heritage management specifically (and environmental law more generally) were regarded as more problematic.<sup>139</sup>

The strongest connections across scales were typically those between the national and State levels in the fire and emergency management sectors. These connections typically shared two features. Many of the perceived successful linkages involved some form of bridging organisation. For example, connections between fire and emergency services are facilitated through a range of relatively informal working agreements between States, and the national government where appropriate. The Arrangements for Interstate Assistance, for example, are coordinated by a relatively small number of personnel at much the same level within

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<sup>133</sup> FSA (n 92) s 18.

<sup>134</sup> Ibid s 20(1).

<sup>135</sup> See eg Participant 1.1.

<sup>136</sup> See eg Participants 1.2, 1.3, 1.7.

<sup>137</sup> See eg Participants 1.1, 1.3, 1.4.

<sup>138</sup> Participants 1.3, 1.5, 1.7.

<sup>139</sup> Participant 1.9.

their respective agencies.<sup>140</sup> Although dispersed across several jurisdictions, these arrangements reflect the smaller and flatter organisational structure of many Tasmanian agencies as discussed in section 4.4.1 above. In addition, these structures were often supported by interpersonal connections; some participants, for example, had worked across relevant agencies in at least two different Australian jurisdictions.<sup>141</sup> This also largely mirrors the experience of cooperation across sectors within the Tasmanian context.

Cross-scalar connections between the international and Australian scales were typically perceived as more problematic. One participant observed:

I think the Federal Government used to interact rather more closely with the World Heritage Committee and IUCN than it does now. I think their only real concern these days is to avoid a particularly bad report card from the World Heritage Committee. ... [T]here've been a few rather alarming reports in recent years about Australia pressuring the World Heritage Committee to rewrite reports so that they're less critical of Australian government actions. [T]hat's ... alarming and I think a weakening of the influence of the World Heritage Committee generally.<sup>142</sup>

That same participant also described changes in the dynamics of national-State cooperation over time:

The Commonwealth back in the 1990s were really quite hands-on with their involvement in the management of the World Heritage Area. There was at that stage a World Heritage Area Consultative Committee which had a couple of Commonwealth members on it ... who were actively engaged. That's now been subsumed into the broader National Parks and Wildlife Advisory Committee which still does have Commonwealth people on it ... but it's not the same level of engagement. [T]hese days I think the Commonwealth's role could be summed up as being as hands-off as you possibly can given the requirements of the EPBC Act.<sup>143</sup>

That participant ultimately expressed concern at the effect that reduced connections across scales compromise management of the TWWHA:

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<sup>140</sup> AFAC Report 2016 (n 58) 34-7.

<sup>141</sup> Eg participants 1.4, 1.8, 1.9, 1.10.

<sup>142</sup> Participant 1.3.

<sup>143</sup> Participant 1.3.



my huge ongoing concern is that there are some major cracks between State and Federal responsibilities ... that Parks and Federal Government right at the moment are just passing the buck to each other so major issues don't end up [being addressed] by either.<sup>144</sup>

Two features distinguish these less successful connections across scales. First, these interactions tend to involve rigid protocols and procedures that are not readily adjusted to specific contexts. Cross-scalar interactions at the international level, such as the 2015 Reactive Monitoring Mission under the World Heritage Convention, are formal processes less readily adapted to individual circumstances. Second, these connections seem less conducive to the development of interpersonal relationships and informal connections that were crucial to cross-scalar interactions in the Tasmanian context. The relatively sporadic nature of World Heritage processes,<sup>145</sup> along with the scale of the World Heritage Committees activities, make it less likely that interpersonal connections develop over time. Participant accounts of Australia's domestic governance of the TWWHA also suggest that interpersonal connections are less likely to develop around those intergovernmental processes. Participants noted both reduced Commonwealth participation in formal processes, and increasingly high turnover of staff in the Commonwealth administration, when describing relevant aspects of the legal framework. Both trends are likely to militate against the development of interpersonal connections that might support more effective connections across scales.

Participant accounts of linkages between State and local levels of the legal framework were mixed. Participants at the State level tended to view such interactions favourably, recounting instances of informal collaboration with local government in the context of fire management generally.<sup>146</sup> Participants offering local level perspectives were less enthusiastic in their description of formal processes, observing that:

[there] was a bit of a gap between [local and regional bodies and] what was happening between some of the agencies within the State. So we would only meet with the State Fire Commission for instance once a year and it'd be an exchange of information. So

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<sup>144</sup> Participant 1.3.

<sup>145</sup> Reactive Monitoring Missions (RMMs), for example, are convened on an ad hoc basis. The two most recent RMMs to Tasmania were conducted in 2008 and 2015; see nn. 52 and 55 above. Although this is entirely reasonable on the WHC timescale, it does not support the development of interpersonal connections in the same way as more frequent interactions.

<sup>146</sup> See, for example, Participant 1.7.

there wasn't that ... sort of engagement where you would actually be talking and challenging and pushing back and forth, it was pretty much a meet and greet.<sup>147</sup>

The distinction between participant accounts of State and local level interactions seems to involve the opportunity to shape the strategic direction of measures addressing fire management. In that context, the 'thin' nature of the cross-scalar interaction was a source of disappointment for one participant working at lower levels of the legal framework.

Overall, linkages across scales of the legal framework have a varied influence on measures addressing fire in the TWWHA. Interactions at the national level, especially those that have a collaborative dimension and build on or facilitate strong interpersonal connections, were generally perceived as strengths of the existing framework. However, participants were less enthusiastic when explaining cross scalar interactions – connections between the international and Australian, and national and State levels in particular. The relatively rigid formal processes that characterise interactions at those scales, in the context of decreasing interpersonal connections, were the source of some concern for participants.

The findings relating to linkages between sectors and across scales can usefully be explained with reference to the resilience and environmental justice literatures that inform just resilience. The cross-sectoral and cross-scalar interactions that were most highly regarded by participants demonstrated some degree of diversity and redundancy. Both the horizontal linkages between Tasmanian State agencies, and the collaborative dimensions of cooperation between agencies across the State and national scales, increase diversity and redundancy in the development and implementation of measures addressing fire in the TWWHA. Even the potential for conflict (such as where jurisdictional authority of Tasmanian State agencies was uncertain or overlapped) did not cause significant concern in this context. In contrast, the vertical connections that were less well regarded by participants tended to be isolated processes with little or no redundancy. Similarly, those processes display little by way of diversity, tending to involve repeated instances of the same modes and procedures.

Environmental justice scholarship might also illuminate aspects of this analysis of linkages within the legal framework. For example, the connections across scales that are seen as problematic arguably demonstrate procedural deficits; they are often seen as exclusive decision-making fora lacking in transparency and largely immune from appeal or review.

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<sup>147</sup> Participant 1.1.

Difficulties in enforcing or implementing directives at lower scales (the outcomes of WHC processes, for example) also contribute to procedural injustice. The failure of actors and agencies to recognise different perspectives on management of fire in the TWWHA may also be understood as an injustice of recognition. While stakeholder engagement can almost always be improved, those processes are arguably more accessible than connections across scales.

#### *4.4.3 Substantive Objectives in Fire Management*

The legal framework plays a vital role in defining and facilitating the pursuit of substantive objectives of fire management in the TWWHA. This section explains how the formal legal treatment of substantive fire management objectives in the TWWHA has changed over time, before examining participant perspectives on the implementation of those legal objectives in practice. Ultimately, the section concludes that more clearly identifying the objectives of fire management in the TWWHA, including their relative priority, is likely to enhance resilience and justice.

Fire management objectives for the TWWHA are identified in the TWWHA Management Plan. Those objectives are context-specific guidance on the use of PWS's statutory power to address fire in the TWWHA.<sup>148</sup> As noted in section 4.3.3 above, PWS is subject to requirements under the general law relating to fire, including obligations under the FSA, TEMP and the common law. Similarly, PWS must also observe other laws, including Australia's world heritage obligations, and broader emergency management and environmental laws in addressing fire in the TWWHA.

There have been significant changes in both the substantive directions relating to fire management in the TWWHA Management Plan 2016, and the manner in which those directions are expressed, over time. The first TWWHA Management Plan 1992 incorporated a relatively direct statement of objectives that, while acknowledging the role of fire in protecting natural and cultural values, identified the protection of human life and property (other than park property) as first priority.<sup>149</sup> The earlier TWWHA Management Plan 1999 also included a more sophisticated statement of objectives, and included express acknowledgement that PWS legal obligations relating to fire are, 'at some times, and in

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<sup>148</sup> NPRMA ss 27, 30(3)(ca)

<sup>149</sup> Department of Parks, Wildlife and Heritage, *Tasmanian Wilderness World Heritage Area: Management Plan 1992* ('TWWHA Management Plan 1992') 46-7.

some locations’, incompatible.<sup>150</sup> The 1999 Plan contained a default statement of priorities for fire suppression, which placed an emphasis on protecting ‘rare and threatened fire sensitive species and communities’ over ‘substantial and valuable infrastructure’.<sup>151</sup> In addition, the 1999 Plan hints at trade-offs between active fire management and preservation of OUVs, such as by indicating that protection of fire sensitive communities could be achieved through earth moving measures. Although somewhat flexible, these management prescriptions provide baseline guidance as to the substantive purpose of fire management activities.

However, the TWWHA Management Plan 2016 provides significantly less guidance on the objectives of fire management, and the processes through which they are pursued. The 2016 Plan replaces earlier statements of management objectives and priorities with an obligation to ‘develop a holistic fire plan for the TWWHA’, that will, inter alia, ‘provide further guidance ... regarding the manner and the circumstances in which the protection of the OUV of the TWWHA are to be prioritised over other values or built assets’.<sup>152</sup>

Although existing PWS policies are noted in the 2016 Plan, it is much more difficult to access their content. And while some statements of fire management priorities can be located, such as the identification of ‘the protection of people [as] the highest priority’ in the PWS Fire Management Policy,<sup>153</sup> those statements do little to address the more nuanced trade-offs between features of the TWWHA that underpin the OUVs and infrastructure and property. In essence, the current TWWHA 2016 Management Plan has replaced relatively clear default statements of substantive fire management objectives with an undertaking to develop a fire management plan. The holistic fire plan for the TWWHA was still under development in late 2019. In the absence of that plan, there is considerable uncertainty over the objectives of fire management.

Some participants were concerned that the relative lack of direction and clarity in the 2016 Plan was a major weakness in the legal framework for addressing fire in the TWWHA. Those participants were typically located outside of the three fire agencies (PWS, TFS and STI) – or the governmental framework more broadly – and were thus not directly exposed to the determination and pursuit of operational priorities during fire suppression activities. As one participant – who is a member of an environmental NGO – explained:

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<sup>150</sup> Tasmania Parks and Wildlife Service, *Tasmanian Wilderness World Heritage Area: Management Plan 1999* (‘TWWHA Management Plan 1999’) 106.

<sup>151</sup> Ibid 108.

<sup>152</sup> TWWHA Management Plan 2016 (n 2) 172.

<sup>153</sup> Ibid 170; DPIPW, Parks and Wildlife Service: Policy – Fire Management (2014) 1.

There's a lot of reference to [the legislative framework] and the Parks Service's internal fire plans which in many respects probably makes good operational sense but the difference is that the management plan is actually a public document and potentially legally enforceable. If really important stuff like the top priority for firefighting gets subsumed into a regional strategic fire management plan or something like that ... I think in terms of just giving clear direction it's a big step backwards.<sup>154</sup>

For these participants, the clear statement of substantive objectives of fire management was crucial to their ability to participate in the development and formation of substantive fire management objectives, and to determine whether fire management practices were fulfilling those objectives. However, it is important to note the underlying concern that the absence of clear direction in legally enforceable documents would compromise the pursuit of substantive outcomes in fire management.

In contrast, participants operating within the legal framework for addressing fire in the TWWHA, or with closer connections to its operation, were less concerned that fire management objectives in the 2016 Plan appeared to have been diluted. Some participants felt that legal articulations of management priorities oversimplified and misrepresented the way that competing objectives are pursued in addressing fire. Participant 1.7, for example, explained that agencies adopt a nuanced approach to the pursuit of management priorities, in contrast with the binary approach often presented in media sources and public forums. Second, some participants were concerned that setting especially rigid fire management priorities through the legal framework might have unintended consequences:

[P]eople will concentrate on the 'you must do this' and then they forget about everything else or they go 'no, I'm concentrating on this, this is what I was told to do and I'm not going to worry about that'. And I think [that approach] could have unintended consequences in terms of that style of complacency. ... I can see what people would be trying to achieve through that type of change in legislation or policy or procedure but I'd just be very wary about the unintended consequences of what that might actually do.<sup>155</sup>

These perspectives point to the benefits of greater flexibility in the legal framework for addressing fire in the TWWHA. They also underline the challenges that trade-offs pose for

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<sup>154</sup> Participant 1.3.

<sup>155</sup> Participant 1.7.

implementing laws. In effect, the differing perspectives outlined above are concerned with decisions about which (if any) substantive objectives of fire management are pursued at the expense of others.

The resilience and environmental justice literatures provide useful insights regarding treatment of substantive objectives of fire management through the legal framework in the TWWHA. In many respects, the preference of governmental agencies for more flexible legal arrangements reflects claims in the academic literature that greater flexibility in law will enhance substantive responses to climate impacts.<sup>156</sup> However, concerns about the lack of transparency and accountability in the current arrangements equally reflect trends in the environmental justice literature. Participants variously expressed concerns at procedural deficits (including difficulty in participating in consultative processes), non-recognition of their interests and input in determining management priorities through the TWWHA management planning process, and a reduced capability to participate fully in addressing fire in the TWWHA.<sup>157</sup> In combination, those concerns might raise questions about the legitimacy – especially deliberative legitimacy<sup>158</sup> – of aspects of the legal framework for addressing fire in the TWWHA.

Enhancing monitoring and evaluation measures is one step towards remedying these weaknesses in the legal framework for addressing fire in the TWWHA. Although some monitoring and evaluation activities are clearly undertaken by the fire agencies, there are opportunities for further development. In some respects, the monitoring framework for fire in the TWWHA seems relatively ad hoc; the most visible aspects of the monitoring framework are often reactionary responses to large scale events (eg post-fire public inquiries).<sup>159</sup> These existing departmental practices might usefully be supplemented by new processes that are designed with ‘forward looking’ learning in mind. Learning infrastructure is well-known in other aspects of TWWHA management, such as the provision of visitor facilities and walking tracks;<sup>160</sup> There may be opportunities to learn from these earlier practices and experiences in designing and implementing monitoring and evaluation activities for addressing fire in the TWWHA. Developing this systematised learning

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<sup>156</sup> See Chapter 3.3.1.

<sup>157</sup> See further discussion of participation in Section 4.4.4 below.

<sup>158</sup> See, eg, Barbara Cosens et al, ‘Identifying Legal, Ecological and Governance Obstacles, and Opportunities for Adapting to Climate Change’ (2014) 6 *Sustainability* 2338, 2351.

<sup>159</sup> See section 4.4.6 below.

<sup>160</sup> See eg Glenys Jones, ‘The Adaptive Management System for the Tasmanian Wilderness World Heritage Area — Linking Management Planning with Effectiveness Evaluation’ in Catherine Allan and George H Stankey (eds) *Adaptive Environmental Management: A Practitioner's Guide* (Springer, 2009) 227.

infrastructure may go some way to addressing the some of the perceived limitations in developing and implementing substantive objectives for addressing fire in the TWWHA.

#### *4.4.4 Public Participation in addressing Fire in the TWWHA*

The legal framework shapes public participation in processes related to fire in the TWWHA. The following section identifies the legal requirements for participation in the development of measures addressing fire in the TWWHA. The section then presents research participant observations of participation in legal processes relating to fire in the TWWHA. The section concludes by exploring how legal processes might support increased participation, and thereby enhance just resilience in measures addressing fire in the TWWHA.

The legal framework establishes multiple opportunities for public participation in governance processes that address fire in the TWWHA. Relevant processes are listed in Table 4.2 below. The table shows that public participation is incorporated across all scales of the legal framework to some degree. However, the nature of that participation and its accessibility varies substantially across scales. The WHC permits public participation in World Heritage Committee processes; the brief description of that power sketches a relatively thick conception of participation; however, that process is likely to be inaccessible to most individuals. The Operational Guidelines encourage States Parties to employ participatory processes in their own activities, but do not themselves require public participation. At the national level, participatory processes are incorporated into the EPBC Act assessment and approval process in respect of proposed activities likely to have a significant impact on the TWWHA.<sup>161</sup> While processes relating to World Heritage properties merely require that the public be notified of certain activities, a slightly more robust participatory process requires some consultation in the management of threatened species. At the Tasmanian State level, processes under the NPRMA – the legislation under which the TWWHA Management Plan 2016 was developed – create a dialogue that appears to involve the public in some depth. Local level decision-making, such as development approval under Tasmanian planning laws, also provides some opportunities for public feedback. Processes at the national, State and local levels are at least notionally accessible to the wider public, although participation may in effect be restricted by the technical nature of the procedures.

**Table 4.2: Participatory Processes in the Legal Framework for addressing**

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<sup>161</sup> Eg EPBC Act (n 73) 131A.

## Bushfire in the TWWHA

Scale	Source	Description	Assessment
International	<i>World Heritage Convention</i>	Art 10(2): Participation in WHC processes (eg RMMs).	Involve
	<i>World Heritage Convention Operating Guidelines</i>	Stakeholder participation in identifying (para 64) and managing (paras 111 and 123) world heritage properties	Consult
National	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth)	The Minister must give notice of the making of plans for the management of a world heritage property (EPBC Act s 317; EPBC Regs regs 16.01-16.02)	Inform Consult
State	<i>National Parks and Reserve Management Act 2002</i> (Tas)	Detailed process for display, public input and subsequent response from government in developing management plans (NPRMA ss 20-25)	Involve
	<i>Threatened Species Protection Act 1995</i> (Tas)	Listing of threatened flora and fauna (Part 3, Division 2)	Inform
	<i>Land Use Planning and Approvals Act 1993</i> (Tas)	Publication of notice of application for development approval; open to public comment for 14 days (LUPAA s 57)	Inform

Even where legal processes contain relatively substantial and accessible opportunities for public participation, experiences of participation in practice can vary greatly between processes and over time. This was most dramatically illustrated in one participant's accounts of the preparation of the TWWHA 1999 and 2016 Management Plans. Although the legal requirements for public participation were substantially similar for both processes, there were vast differences in practice. In preparing the 1999 Plan, Tasmanian PWS staff went well beyond the formal legal requirements for public participation:

[Because of shortcomings in the 1992 Plan] there was a clear need to review the plan and to get a good groundswell of public support for it hence the almost over the top public consultation period where we had two big rounds of consultation, first tell us what the issues are and then put out discussion papers on a few of the major issues and sought comment on those. That was prior to the formal public comment on the draft plan which [was] a bit of a non-event having done so much beforehand. ...<sup>162</sup>

The development of the 2016 Plan, in contrast, involved substantially reduced public participation.

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<sup>162</sup> Participant 1.4.



[Formal public comment] generated a huge amount of comment on the 2016 Plan because they hadn't done any of that preliminary work at all. There were some token public meetings that they called consultation, but I went to the one in Hobart and it was just basically a brief spiel on this is the process for developing the plan. I mean [it was] stretching the point to call it consultation at all. So it got the expected reaction. It was hard to say [there was] any good faith on the government's part with the 2016 Plan; they just wanted to ram through the changes that they wanted and paid lip service to the legal requirements is how it looked to me. ...<sup>163</sup>

Although it is perhaps uncommon to encounter such marked differences within essentially the same legal process, experiences of public participation in practice often vary despite relative consistency in the formal rules and procedures.

Several participants also identified limits on the utility of public participation in addressing fire in the TWWHA. A number of participants observed that participation was not appropriate in relation to all aspects of fire management:

Fire management I see as being rather different [from other issues] in that it's very much an area where you really need the opinion of specialists. I wouldn't discount totally the opinion of knowledgeable locals, but there's an awful lot of unknowledgeable opinion out there. ... [I]t's a job for experts is what I'm trying to say.<sup>164</sup>

This sentiment was shared among all participants, although some drew a distinction between operational responses to fire (where participation was regarded as largely inappropriate) and decision-making over longer time periods. While still cautious, participants were generally more positive about the potential for meaningful public contributions to strategic decision-making process addressing fire in the TWWHA.

The formation of the TWWHA (and its expansion to its current size) was a heavily contested issue in Tasmania. It was therefore no surprise that a number of participants identified aggression and hostility in TWWHA governance processes as a potential barrier to meaningful public participation. However, some participants observed that public processes often reduced or defused potential conflict, even in difficult circumstances.<sup>165</sup> In some instances, participants observed that a lack of participation was the cause of

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<sup>163</sup> Participant 1.4.

<sup>164</sup> Participant 1.4.

<sup>165</sup> Participant 1.4.

misunderstanding and conflict. One participant, for example, explained that the TWWHA Management Plan 1992 created conflict with a range of stakeholders whose views and interests were not known or understood, and therefore not accounted for in the formulation of the plan.<sup>166</sup> Conflicts among stakeholders are likely only to increase as the TWWHA's fire regime intensifies under climate change.

Environmental justice literature helps to highlight some of the difficult challenges that must be balanced in developing and implementing processes that secure meaningful public participation in governance of the TWWHA, including in relation to fire. Despite the relatively prescriptive legal framework, procedural justice issues clearly arose during the development of the 2016 TWWHA Management Plan. Although the public consultation process did result in some changes to the draft Plan, there is little indication that participants' views were afforded any significant weight in the development of the Plan. Conversely, the fuller participatory process through which the 1999 Plan was developed allowed participants much greater input; it is notable that this step was taken deliberately to enhance the legitimacy of the 1999 Plan.<sup>167</sup> The failure to recognise – in more than the most superficial manner – the views of the wider Tasmanian community is itself a form of environmental injustice. The misrecognition of community concerns related to the 2016 Plan's emphasis on tourism and development within the TWWHA is also an example of the lack of justice by recognition in the development of the Management Plan. Although not directly related to fire, the undermining of public confidence in the integrity of the TWWHA management planning process has clearly had some effect on perceptions of the legitimacy of the 2016 Plan more broadly.<sup>168</sup> It is these decision-making processes relating to the longer term strategic management that offer the greatest opportunities for meaningful public participation in the development of measures addressing fire in the TWWHA.

There are likely to be multiple opportunities to develop and implement meaningful participatory processes in the governance of the TWWHA in the near future. The preparation and implementation of a prescribed burning strategy, perhaps as part of the forthcoming TWWHA Fire Management Plan, provides one example. There is a clear diversity of views within the broader Tasmanian community on fire management within

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<sup>166</sup> Participant 1.3; see also Participant 1.4.

<sup>167</sup> Participant 1.3.

<sup>168</sup> Participant 1.3.

the TWWHA.<sup>169</sup> In addition to the threshold question of whether active fire management is appropriate within the TWWHA, community views on whether prescribed burning should form part of the suite of mitigation strategies employed in managing fire in the TWWHA are also mixed. It may be that the fire agencies, led by PWS, are legally empowered to develop the forthcoming TWWHA Fire Management Plan with no further public participation. However, such an approach would seem to overlook the opportunity to engage the community in determining the strategic approach to addressing fire in the TWWHA. A more meaningful participatory approach might draw on previous successful planning efforts by using surveys, the preparation of discussion papers on key issues (such as the prioritisation of values in fires suppression activities), and public meetings to ascertain community views prior to and during the development of the Plan. Of course, these inputs ought not override the direction and advice of relevant experts. However, opportunities for meaningful participation would help to address the procedural and recognition deficits that impacted the preparation of the 2016 Plan itself. They may also enhance resilience by broadening the knowledge and resource base for addressing fire within the TWWHA. Ultimately, they offer an opportunity to enhance just resilience in addressing fire in the TWWHA.

#### *4.4.5 Information Sharing*

Information sharing shapes the operation of governance systems. This section outlines formal legal requirements for making information available to the public, while also examining how access to information influences the interaction of governmental agencies addressing fire in the TWWHA. These two activities are discrete; each is governed by distinct formal legal requirements and is approached differently by agencies in practice. Each also links with features of the preceding analysis; the sharing of information clearly affects linkages between agencies and is a necessary aspect of participatory governance. Building on that preceding analysis, this section demonstrates that information sharing extends beyond those two aspects of governance of fire in the TWWHA, and merits independent attention.

Two aspects of the legal framework are relevant to the sharing of information in governance of the TWWHA. First, governmental agencies involved in developing and implementing measures addressing fire in the TWWHA are subject to general right to

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<sup>169</sup> Community views on fire management were not directly investigated in this project. However, the anecdotal observations of participants provides a glimpse on the wide range of views on fire management in the TWWHA within the broader Tasmanian community.

information laws.<sup>170</sup> These laws have previously been used by interested parties to access governmental documents relating to the TWWHA.<sup>171</sup> Second, agencies are often required to share information in performing their statutory functions. In some instances, agencies fulfil express requirements that particular information be made publicly available; for example, PWS are required to make the TWWHA Management Plan available to the public in order to facilitate participation in the planning process.<sup>172</sup> In other instances, agencies share information in order to fulfil their broader statutory objectives. The TFS, for example, shares a wide range of information relating to fire safety and fire management practices; this is consistent with the agency's statutory remit, which includes activities such as promulgating the State Fire Protection Plan.<sup>173</sup> Collectively, these components of the legal framework establish a minimum level of information sharing in the governance framework for addressing fire in the TWWHA.

However, agencies typically go well beyond these minimum requirements in sharing information relating to fire in the TWWHA. For some agencies, disseminating information is a matter of routine practice; the Nature Conservation Branch of DPIPWE, for example, publishes research outputs relating to the TWWHA on its website as a matter of course.<sup>174</sup> The TFS also uses its website and social media extensively to disseminate information regarding active fire events, and also to provide access to a wide range of documentation relevant to fire prevention.<sup>175</sup> Some participants with experience in government reported attending various public meetings and forums as a means of sharing information relating to fire in the TWWHA with the broader public.<sup>176</sup> Those events were also an opportunity to build on links between agencies and to enhance existing relationships and linkages.<sup>177</sup> Tasmanian government agencies have also developed systems for sharing information; participants pointed to both the Bushfire Risk Assessment Model (BRAM), which provides an indication of the relative sensitivity of assets to fire<sup>178</sup>, and the use of the Australasian Inter-Service Incident Management System (AIIMS) in responding to fire events,<sup>179</sup> as examples of platforms that allow various agencies to interact and coordinate responses to

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<sup>170</sup> *Right to Information Act 2009* (Tas); this legislation is analogous to freedom of information laws in other Australian jurisdictions.

<sup>171</sup> Participant 1.4.

<sup>172</sup> As discussed in section 4.4.4 above.

<sup>173</sup> FSA (n 92) s 8(1)(d).

<sup>174</sup> See, eg, DPIPWE, 'TWWHA Publication List' (Web Page)

<<https://dpiipwe.tas.gov.au/conservation/publications-forms-and-permits/publications/twwha-publication-list>>.

<sup>175</sup> Tasmania Fire Service (n 106).

<sup>176</sup> Participants 1.2, 1.3, 1.6 and 1.10.

<sup>177</sup> Participants 1.6 and 1.10.

<sup>178</sup> Participant 1.5.

<sup>179</sup> Participant 1.6.

fire events in the TWWHA. These examples are complemented, over longer time frames extending beyond incident response, by the generally constructive linkages outlined in section 4.5.1 above. In combination, these activities demonstrate the plethora of information sharing activities that inform measures addressing fire in the TWWHA.

Participants pointed to several different motivations for information sharing. For some participants, information sharing was crucial because it facilitated public participation in governance of fire in the TWWHA. Ensuring that information regarding fire in the TWWHA was publicly available was variously described as facilitating transparency,<sup>180</sup> monitoring and evaluation of management activities,<sup>181</sup> and ultimately enforcement of legal obligations relating to fire and the TWWHA.<sup>182</sup> For other participants, information sharing between agencies was seen as an important efficiency measure, ensuring that available resources were used to greatest effect.<sup>183</sup> Some participants described information sharing as a key factor in maintaining the interpersonal connections seen as central to effective governance of fire in the TWWHA.<sup>184</sup> Information sharing was thus vital in these contexts as it facilitated the operation of the wider governance arrangements for addressing fire in the TWWHA.

Participants also placed great emphasis on the need to address misrepresentations of fire events and fire management. This was most clearly demonstrated in participants' comments relating to the implementation of management priorities during the 2016 fire event. At the time, several media reports criticised fire agencies for failing to protect fire sensitive vegetation; this was said to threaten the TWWHA's status as a wilderness area, thus representing a failure on the part of fire agencies (particularly PWS).<sup>185</sup> Participant reflections on these exchanges revealed three interesting themes. First, participants were concerned that publicly available information misrepresented the impact of the fires on TWWHA values.<sup>186</sup> In addition, the public discussion of fire suppression activities crystallised, for some participants, a lack of wider understanding of the practices employed to address fire in the TWWHA.<sup>187</sup> These sentiments were shared among participants that had experience within governmental agencies. Finally, some participants noted that

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<sup>180</sup> Participants 1.2 and 1.3

<sup>181</sup> Participant 1.5

<sup>182</sup> Participants 1.2 and 1.3.

<sup>183</sup> Participant 1.7.

<sup>184</sup> See, eg, Participants 1.2, 1.9.

<sup>185</sup> See, eg, Adam Morton, 'PR war over fires in Tasmania's world heritage area takes to the air' *Sydney Morning Herald* (online, 12 February 2016) <<https://www.smh.com.au/environment/pr-war-over-fires-in-tasmanias-world-heritage-area-takes-to-the-air-20160212-gmstxz.html>>.

<sup>186</sup> Participants 1.5 and 1.7

<sup>187</sup> Participant 1.7

agencies were criticised despite fulfilling their statutory obligations. One participant was highly critical of the failure to explain the legal basis for the fire suppression approach adopted during the incident: ‘they should have openly and explicitly disclosed why they [employed] the strategy they did because it was a legal requirement they do it and they did it very successfully’.<sup>188</sup> The subsequent 2019 fires saw a revised approach, with more information made publicly available via the PWS website during and after the fire event.<sup>189</sup> Although the potential for the 2019 fires to impact OUVs attracted some public commentary, it seems that fewer misrepresentations of the fire event were shared.

At face value, these accounts may seem relatively trivial. There are, after all, relatively few barriers to the communication of vast swathes of information in contemporary society. This was amply demonstrated by the use of websites, social and conventional media, and public forums to share information during and after the 2019 fire event.<sup>190</sup> However, both resilience and environmental justice literatures help to highlight the significance of information sharing in addressing fire in the TWWHA. Information sharing is vital from a resilience perspective, as it allows coordination of diverse and redundant responses across sectors and scales.<sup>191</sup> The implementation of systemic information sharing through the BRAM and AIIMS platforms discussed above is a relevant example. These tools also facilitate environmental justice by providing a means through which different communities and perspectives are recognised. The use of the BRAM to facilitate a broad comparison of the human, social, structural and environmental values threatened by fire is a useful example.<sup>192</sup> While the relative inaccessibility of those management tools to the general public raises issues of procedural justice, their contribution to information sharing between agencies must not be underestimated.

These observations are likely relevant to addressing future challenges as climate change amplifies the severity of fire events in the TWWHA. Discussions around fire prevention and suppression provide helpful examples. As noted above, there is significant divergence in public opinion regarding the appropriate fire regime for the TWWHA.<sup>193</sup> Fire events often result in calls for greater fire suppression, including the use of aircraft to immediately

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<sup>188</sup> Participant 1.2.

<sup>189</sup> Tasmania Parks and Wildlife Service, ‘Alerts’ (Web Page) <<https://parks.tas.gov.au/explore-our-parks/know-before-you-go/alerts>> was updated regularly during and after the fire event.

<sup>190</sup> AFAC Report 2019 (n 59) 16.

<sup>191</sup> See Chapter 3.3.4.

<sup>192</sup> Participant 1.5

<sup>193</sup> See Chapter 4.4.5

suppress all fires that might impact the TWWHA.<sup>194</sup> However, such actions are often either impractical or impossible,<sup>195</sup> and do not accord with expert views on management of fire in the TWWHA. These misunderstandings, which can negatively affect relations between fire agencies and the community,<sup>196</sup> might be addressed by ensuring that information regarding fire suppression activities and capacity is shared as widely as possible. There is also a need to ensure that governmental actions are aligned across sectors and agencies. The development of the *Tasmanian Vegetation Fire Management Policy 2017* provides a useful example. The Policy was developed through a consultative process that involved a wide range of stakeholders, including those components of government most directly implicated in fire management.<sup>197</sup> The result is a set of principles and strategies for managing fire in Tasmania, including in the TWWHA. Those principles and strategies both encourage information sharing through communication between the parties, and rely on it in order to achieve relevant objectives. Information sharing of this nature thus has the potential to enhance just resilience in measures addressing fire in the TWWHA.

#### 4.4.6 *Timing and Legal Processes*

Calls for greater flexibility are prominent within the scholarly literature examining the relationship between resilience and law. However, these calls for flexibility are not often grounded in empirical analysis; the literature often assumes that greater flexibility will enhance management outcomes, and has few or no disadvantages.<sup>198</sup> This section uses participant's experiences of disconnects between legal processes and measures addressing fire in the TWWHA to show that greater procedural flexibility is likely to enhance just resilience in measures addressing fire in the TWWHA.

Participant accounts identified several aspects of the legal framework that were out of sync with the current practices and challenges in managing fire in the TWWHA. In some instances this disconnect was embedded in legislation. For example, one participant explained how the *Fire Service Act 1979* (Tas), which was drafted prior to the formation of the TWWHA, had not been amended to account for the changing responsibilities of various land managers within Tasmania. In particular, the expansion of Tasmania's parks system (including the TWWHA), and thus PWS's increased responsibility as a land manager, was not reflected in the allocation of powers (authorisation to enter private

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<sup>194</sup> AFAC Report 2019 (n 59) 43.

<sup>195</sup> Eg Participant 1.2.

<sup>196</sup> Eg Participant 1.7.

<sup>197</sup> Participant 1.10.

<sup>198</sup> See Chapter 3.3.1.

property, for example) in the *Fire Service Act*.<sup>199</sup> The legislation is now subject to review, and it seems likely that anomalies of this nature will be attended to through that process.<sup>200</sup> There is no indication that the failure to update the legislation has caused any significant impairment in the collective capacity of Tasmania's fire agencies to address fire in the TWWHA. However, this is a useful example of the disconnect that can emerge between the law on the books and the requirements of governmental agencies responsible for addressing climate impacts.

In other instances, general laws and processes (ie features that are common across the legal system, rather than specific to one sector) shape sectoral responses. A second participant, for example, described the emergence of a pattern relating to post-fire reviews and inquiries; in their experience, review processes typically followed very quickly in the aftermath of a fire event, and often resulted in change in leaders. In the participant's words, 'instead of having senior managers ... that have learnt from those lessons, they're gone. That was an incredibly expensive training exercise and you've just sacked the [person] who's learnt a hell of a lot'.<sup>201</sup> Thus laws provide both positive and negative feedbacks that shape the development of institutions for addressing fire in the TWWHA.

The resilience and adaptive governance literatures suggest that more systematic review and reform of laws is likely to enhance just resilience in addressing fire in the TWWHA. One key advance would be to systematise the review and implementation of the TWWHA management planning process. As described above,<sup>202</sup> the TWWHA Management Plan has been updated at irregular intervals over the past three decades; the relatively short time between the first (1992) and second (1999) management plans was followed by a lengthy delay in developing the most recent (2016) plan. This lapse may have contributed to the generally negative view of the process through which the 2016 Plan was developed. An alternative structure would see State of the TWWHA reporting<sup>203</sup> integrated with participatory procedures<sup>204</sup> to comprehensively evaluate the effectiveness of TWWHA management planning arrangements. These activities might be scheduled at intervals that allow for implementation of the previous plan, but are frequent enough that adaptive management practices can be utilised effectively. Although a rigid framework oblivious to

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<sup>199</sup> No participants reported any past or pending jurisdictional conflict.

<sup>200</sup> This review had not been completed prior to submission of this thesis in late 2019; see Tasmania Fire Service (n 106) for updates.

<sup>201</sup> Participant 1.7.

<sup>202</sup> Cross ref 4.4.3

<sup>203</sup> See, eg, Department of Tourism, Parks, Heritage and the Arts, *State of the Tasmanian Wilderness World Heritage Area – An Evaluation of Management Effectiveness* (Report No 1, 2004).

<sup>204</sup> See section 4.4.4.



changing social-ecological system dynamics would likely prove counterproductive, significant benefits may follow from a more structured and coordinated approach to the development of the legal framework addressing fire in the TWWHA.

More frequent review and adjustment of the legal framework is also likely to enhance justice in addressing fire in the TWWHA. In addition to the procedural justice benefits associated with increased participation,<sup>205</sup> a more responsive legal framework is also likely to enhance distributive justice. More regular adjustment of governance arrangements may allow distributive inequities to be addressed more swiftly. For example, substantive fire management objectives might be updated in light of increasing risks to fire sensitive vegetation, in an effort to see that vulnerable ecological communities are afforded protections that better match their exposure to fire. This approach would also enhance justice by recognition, as more nimble governance arrangements are more likely to reflect changes in social-ecological system dynamics. More frequent revision of the legal framework is also more likely to result in incremental adjustments to governance arrangements for addressing fire in the TWWHA; these adaptive developments are less likely to pose the substantial justice challenges that transformative change. Developing the adaptiveness of the legal framework in this way is thus likely to enhance justice in measures addressing fire in the TWWHA.

#### **4.5 Conclusion**

This chapter has used the principles of just resilience to analyse the legal framework relating to bushfire in the TWWHA. It has demonstrated how existing laws have a significant influence on just resilience in responses to climate impacts. Although those laws have not undergone major change for several decades, they are shaping resilience and justice as the TWWHA's fire regime changes. This case study highlights the importance of interpersonal connections for coordinating across sectors and scales; in this respect the case study has a distinct Tasmanian character. However, there is also a cautionary tale. Reducing the clarity with which fire management objectives are stated, while also retreating from high historical levels of public participation, has created uncertainty around fire management in the TWWHA. The next chapter will explore how new approaches – involving creative use of existing laws – can enhance just resilience in climate adaptation..

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<sup>205</sup> These are described at length in 4.4.4. above

## Chapter Five: Case Study Two: Changing Water Levels in Lake Macquarie, New South Wales

Lake Macquarie is the estuary, and local government area, most exposed to sea level rise in south-eastern Australia.<sup>1</sup> The lake is Australia's largest coastal saltwater lagoon, covering an area of approximately 110 km<sup>2</sup>.<sup>2</sup> More than 200,000 residents inhabit the fast-growing City of Lake Macquarie, which is dispersed around the lake's shores. Low-lying suburbs such as Marks Point and Swansea –small communities on the lake's eastern shore – have historically experienced localised flooding during heavy rainfall events, or where lake levels have risen sharply due to tidal variations.<sup>3</sup> Thousands of properties would be affected by a significant inundation event under present conditions.<sup>4</sup>

Adapting to changing lake levels has already proven controversial in the Lake Macquarie area. In 2008, Lake Macquarie City Council (LMCC) adopted a sea level rise policy and action plan that had wide ranging implications for council activities across the land use planning and coastal management sectors.<sup>5</sup> In 2009, the Council began adding notations relating to future flooding and sea level rise to planning certificates of several thousand low lying properties.<sup>6</sup> This approach was consistent with NSW State Government policy direction in relation to land use planning in coastal areas.<sup>7</sup> These measures proved controversial, with residents claiming the Council's measures had decreased property values and increased insurance costs.<sup>8</sup> Although the State level policy was formally withdrawn in 2012,<sup>9</sup> LMCC has continued to advance its planning for changing lake levels. Future flood risks continue to inform Council's land-use planning activities. More recently, and despite apparent public resistance to measures addressing changing lake levels, the Council has pursued the collaborative development of Local Adaptation Plans (LAPs) to prepare

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<sup>1</sup> David J Hanslow et al, 'A regional scale approach to assessing current and potential future exposure to tidal inundation in different types of estuaries' (2018) 8 *Scientific Reports* [7065], 7.

<sup>2</sup> G Giles, T Boyle and H Stevens, 'Planning to Adapt – The Marks Point and Belmont South Local Adaptation Plan' (2015) 1.

<sup>3</sup> Matthew Kelly, 'King Tides Cause Flooding' *Newcastle Herald* (online, 2 January 2014) <<https://www.newcastleherald.com.au/story/2001735/king-tides-cause-flooding-pics-video/>>.

<sup>4</sup> Giles, Boyle and Stevens (n 2) 2.

<sup>5</sup> Lake Macquarie City Council, *Lake Macquarie Sea Level Rise Preparedness and Adaptation Policy* (2008).

<sup>6</sup> Planning Certificates are discussed in detail in section 5.4.3 below.

<sup>7</sup> NSW Government, *NSW Sea Level Rise Policy Statement* (2009); NSW Government *Coastal hazard notations on section 149 planning certificates* (Planning Circular PS 14-003, 2014).

<sup>8</sup> Ben Cubby, 'Developer may sue to trigger rethink on sea level rises' *Sydney Morning Herald* (online, 6 March 2012) <<https://www.smh.com.au/environment/climate-change/developer-may-sue-to-trigger-rethink-on-sea-level-rises-20120305-1uecc.html>>.

<sup>9</sup> Tayanah O'Donnell and Louise Gates, 'Getting the balance right: a renewed need for the public interest test in addressing coastal climate change and sea level rise' (2013) 30 *Environmental and Planning Law Journal* 220, 225.

particularly vulnerable lakeside communities for changing lake levels. Since 2013, the Council has developed and implemented an LAP for the suburbs of Marks Point and Belmont South,<sup>10</sup> with local adaptation planning efforts continuing in the Pelican and Blacksmiths,<sup>11</sup> and Swansea areas.<sup>12</sup>

This chapter proceeds in four sections. The first provides a brief snapshot of the biophysical and socio-economic characteristics of the Lake Macquarie area. It explores socio-economic characteristics of Marks Point, a suburb significantly exposed to changing lake levels. The second explains the influence of climate change on biophysical processes linked to changing water levels in the Lake Macquarie area, before briefly describing the likely effects of increasing water levels on communities surrounding the lake. In its third section, the chapter sketches the legal framework and governance arrangements relating to changing lake levels in the Lake Macquarie area. It incorporates a brief history of legal and policy developments – at both the State and local levels - relevant to the Lake Macquarie local government area. This contextual framing is vital to understanding and evaluating the development and implementation of collaborative approaches to planning for changing flood conditions.

The fourth and final section explores the influence of the legal framework on just resilience in addressing changing lake levels. The section explains how the legal framework influences the distribution of the costs and benefits of changing lake levels. It goes on to reaffirm the importance of public participation for just resilience through a detailed analysis of the highly participatory local adaptation planning (LAP) process conducted in the Belmont South and Marks Point communities, which are among the areas most vulnerable to changing lake levels. Connections between sectors and across scales, well recognised as crucial to the pursuit of just resilience, are then addressed briefly. Finally, the section points to information sharing and leadership as two key drivers of adaptation responses addressing changes in lake levels.

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<sup>10</sup> Lake Macquarie City Council, Planning for future Flood Risks: Marks Point and Belmont South Local Adaptation Plan (2016) ('MPBS LAP').

<sup>11</sup> Lake Macquarie City Council, 'Pelican and Blacksmiths: Planning for Future Flood and Coastal Risks' (Web Page) <<https://shape.lakemac.com.au/futurepelicanblacksmiths>>.

<sup>12</sup> Lake Macquarie City Council, 'Adapting Swansea: Planning for future flood risks' (Web Page) <<https://shape.lakemac.com.au/adapting-swanssea>>.

### 5.1 *Lake Macquarie: Biophysical and Socioeconomic Characteristics*

Lake Macquarie is a tidal saltwater lake located between Sydney and Newcastle on the east coast of Australia (see Figure 5.1). The largest coastal lake in eastern Australia, Lake Macquarie covers an area of approximately 110km<sup>2</sup>. The catchment area of the Lake extends over a much larger area of 700km<sup>2</sup>, including more than 30 smaller sub-catchments. The perimeter of Lake Macquarie includes some 170km of foreshore, approximately 75% of which has been subject to some form of residential, commercial or industrial development.<sup>13</sup> Approximately 85% of the Lake foreshore, and 95 % of the Lake catchment area,<sup>14</sup> is within the City of Lake Macquarie local government area.<sup>15</sup> Lake Macquarie is connected to the Pacific Ocean by a relatively narrow and shallow entrance at



Figure 1: Lake Macquarie

**Figure 5.1 Map of Lake Macquarie, NSW, Australia**  
(Source: Marks Point and Belmont South Local Adaptation Plan, 6).

<sup>13</sup> Greg Giles and Heather Stevens, 'Sometimes I Wonder How We Keep from Going Under: Planning for Sea Level Rise in Established Communities' (2011) 1.

<sup>14</sup> WMA Water and Lake Macquarie City Council, *Lake Macquarie Waterway Flood Study* (2012) ('LM WFS') ii.

<sup>15</sup> The remaining proportions of both the Lake foreshore and catchment areas fall within the neighbouring Wyong Shire Council local government area; *ibid* 8.

Swansea Channel. Swansea Channel has been substantially modified by deliberate management actions (such as the construction of sea walls, and repeated dredging of the channel area) over the past 150 years; the channel now permanently connects the Lake and ocean.<sup>16</sup>

Although the Lake is permanently connected with the Pacific Ocean, regular ocean tides alone have a negligible impact ( $\pm 0.05\text{m}$ ) on lake levels.<sup>17</sup> However, Lake Macquarie periodically experiences sharp rises in lake levels.<sup>18</sup> Four main biophysical processes drive rises in lake levels. First, changes in ocean levels are generally reflected in Lake Macquarie. Because the Lake is connected to the Pacific Ocean, extreme astronomic tides (often colloquially referred to as ‘king’ tides) and storm surges result in increases in lake levels.<sup>19</sup> In addition, sea level rise due to climate change will also be reflected in changes in lake levels; lake levels are expected to effectively mirror coastal sea level rise.<sup>20</sup> Second, changes in the size of Swansea Channel control the entry and release of water from the Lake.<sup>21</sup> Third, the volume of rainfall within the Lake catchment area also causes changes in lake levels over shorter periods. For example, a significant rainfall event in 2007 caused a dramatic increase in lake levels.<sup>22</sup> Finally, wind wave action within the Lake often causes increases in lake levels in more particular locations.<sup>23</sup> In combination, these processes shape water levels on the lake’s shoreline.

The risk of inundation due to changes in lake levels is not distributed evenly around the Lake’s perimeter. Communities proximate to the Swansea Channel (see Figure 5.1) are substantially exposed to flood events. In the lakeside community of Swansea itself, more than 80% of residential properties and significant proportions of public infrastructure located in areas exposed to flood risk. Other communities face little or no risk of flooding.<sup>24</sup> Even within lakeside communities, there can be significant differences in exposure to inundation from rising lake levels. For example, the Marks Point area, long recognised as a “hotspot” for flooding events,<sup>25</sup> includes land located more than 5 metres above average lake levels (and thus largely protected from the direct effects of changes in

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<sup>16</sup> Ibid 9-10.

<sup>17</sup> Ibid 1-2.

<sup>18</sup> Ibid 4.

<sup>19</sup> Ibid.

<sup>20</sup> Ibid.

<sup>21</sup> Ibid.

<sup>22</sup> WMA Water and Lake Macquarie City Council, *Lake Macquarie Waterway Flood Risk Management Study and Plan* (2012) (‘LM WFRMSP’) 2.

<sup>23</sup> LM WFS (n 14) 4.

<sup>24</sup> Giles and Stevens (n 13) 4.

<sup>25</sup> MPBS LAP (n 10) 4.

lake levels) alongside areas within a metre of current average lake levels.<sup>26</sup> Although this differentiation in exposure to inundation is often a feature of the Lake's geomorphology,<sup>27</sup> there are also indications that historical land-use patterns have contributed to the concentration of human populations in some low-lying areas at greater risk of inundation.<sup>28</sup>

The physical location of human populations shapes experiences of inundation in the Lake Macquarie area. The Lake Macquarie local government area is home to approximately 200,000 people.<sup>29</sup> Much of that population lives in close proximity to the Lake foreshore, or relies on the Lake for a range of social, economic and cultural ecosystem services. The population of Lake Macquarie is expected to grow rapidly – by approximately 30% – over the next two decades,<sup>30</sup> thus increasing demand for residential housing and associated infrastructure. Some of this population growth will be accommodated by intensifying existing land uses,<sup>31</sup> including in residential areas. Much of the Lake's perimeter consists of public land (including parks and conservation areas) that acts as a barrier between the Lake and residential areas.<sup>32</sup> However, existing residential areas already exposed to inundation are not immune from pressures to facilitate increased development and intensification of land use.

Inundation of areas surrounding the Lake also has broader social-ecological implications. Increasing lake levels will limit use of recreational areas,<sup>33</sup> and would seem to reduce amenity. Rising lake levels have direct economic costs, especially where homes, commercial-use buildings and other infrastructure are inundated.<sup>34</sup> Other indirect economic impacts, such as decreases in tourism and other commercial activities, may also be associated with flooding events on the Lake's perimeter.<sup>35</sup> Changes in lake levels also impact ecological values in the Lake. Rises in water levels are likely to alter foreshore erosion processes within the Lake.<sup>36</sup> Estuary wetlands are impacted either directly by higher

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<sup>26</sup> Lake Macquarie City Council, Lake Macquarie Local Environmental Plan 2014 (NSW), Flood Planning Map: Marks Point.

<sup>27</sup> Many of the "safest" areas are protected by the step rise of land surrounding the Lake, rather than good management practices; see LM WFRMSP (n 22) 25.

<sup>28</sup> Giles and Stevens (n 13).

<sup>29</sup> MPBS LAP (n 10) 6.

<sup>30</sup> Giles and Stevens (n 13).

<sup>31</sup> LM WFRMSP (n 22) 25.

<sup>32</sup> Ibid 25.

<sup>33</sup> Ibid 76.

<sup>34</sup> Ibid 41.

<sup>35</sup> Ibid 41, 42.

<sup>36</sup> LM WFS (n 14) 8.

water levels, or indirectly (by changes in salinity, for example).<sup>37</sup> Resultant changes in the lake ecosystem have flow-on consequences for threatened and migratory species reliant on the wetland habitat.<sup>38</sup>

The socio-economic characteristics of lakeside communities are also likely to shape residents' experiences of changing lake levels. In general terms, less affluent communities are likely to have lower resilience to climate impacts (such as changes in lake levels). A brief analysis of demographic data collected in the 2016 census suggests that the lakeside communities most exposed to the changes in lake levels might be among those least equipped to address changing conditions. For example, median household income for Marks Point (\$955) was well below the Lake Macquarie (\$1313) and State-wide (\$1486) figures.<sup>39</sup> These figures suggest, *prima facie*, that residents in the Marks Point communities are more vulnerable to the impacts of flood events than residents in other parts of Lake Macquarie and NSW.

Of course, lakeside communities might themselves display a degree of stratification. There are marked differences in tenure type, for example, within the Marks Point community.<sup>40</sup> While some 33% of residents owned their dwellings outright, a not insignificant 11% of residents rented properties from State housing authorities.<sup>41</sup> Similarly, while 9% of households reported gross weekly income of more than \$3000, some 31% indicated a gross weekly income of less than \$650. Again, these figures point to significant differences in socio-economic circumstances within the Marks Point community itself. While broad generalisations of this nature should be approached with some caution, and the brief statistical overview set out above is relatively crude, they remain a salient reminder of the inequitable distribution of the risk of inundation across communities within the Lake Macquarie area.

Having outlined the general biophysical and socio-economic features of the Lake Macquarie area, the following section considers the impacts of climate change on lake levels.

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<sup>37</sup> Umwelt and Lake Macquarie City Council, Lake Macquarie Coastal Zone Management Plan – Part B for the Estuary (October 2015) ('LM CZMPB') 36-37.

<sup>38</sup> Ibid 37.

<sup>39</sup> Australian Bureau of Statistics, '2016 Census Quick Stats Marks Point' (Web Page) <[https://quickstats.censusdata.abs.gov.au/census\\_services/getproduct/census/2016/quickstat/SSC12492](https://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/SSC12492)>.

<sup>40</sup> Ibid.

<sup>41</sup> Ibid.

## **5.2 Climate Change and Changing Lake Levels in Lake Macquarie, New South Wales**

This section first explains the biophysical processes through which climate change is causing changes in water levels in Lake Macquarie, and will continue to do so into the future. The section concludes with a brief discussion of the social and ecological consequences of those impacts for the Lake Macquarie area.

### *5.2.1 Biophysical Processes*

Sea level rise will be one of the main drivers of rising lake levels under climate change. Because Lake Macquarie is directly connected to the Pacific Ocean through a permanent opening, sea level rise will be immediately reflected in lake levels. The expected sea level rise of 0.4m by 2050, and 0.9m by 2100, is therefore likely to be mirrored in the Lake itself.<sup>42</sup> This means that the “normal” Lake level will rise increasingly over the remainder of the 21<sup>st</sup> century, and is only likely to increase further in the period beyond 2100.

In addition, climate change is likely to amplify some of the drivers of changes in lake levels discussed in Part 5.1 above. Tidal changes (especially ‘king’ tides) will further increase lake levels above the new “normal” lake levels.<sup>43</sup> Storm events may not increase in frequency, but are likely to become more severe. More intense rainfall events in the Lake Macquarie catchment (such as the East Coast Lows that manifested near to Lake Macquarie in June 2007 and April 2015) will increase lake levels in the shorter term.<sup>44</sup> High wind speeds associated with storm events may also result in increased lake levels, either directly by increasing lake levels at specific locations,<sup>45</sup> or indirectly by affecting the draining of the Lake through Swansea Channel.<sup>46</sup> In addition, storm events may cause changes in the geomorphology of the Swansea Channel that affect lake levels over longer time periods.<sup>47</sup> It is likely that these conditions will coincide in many instances, meaning that it is the cumulative effect of extreme weather conditions (along with longer term sea level rise) that is likely to produce the most significant changes in lake levels.<sup>48</sup>

Previous storm events in the Lake Macquarie area provide some indication of changes in lake levels that may occur more frequently in a climate impacted future. The East Coast

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<sup>42</sup> LM WFRMSP (n 22) 17.

<sup>43</sup> LM WFS (n 14) 24.

<sup>44</sup> LM WFRMSP (n 22) 53.

<sup>45</sup> LM WFS (n 14) 43-44.

<sup>46</sup> Ibid 42-43.

<sup>47</sup> LM WFRMSP (n 22) 53.

<sup>48</sup> LM WFS (n 14) 48.



Low storm event that impacted Newcastle and Lake Macquarie in 2007 is one example. Significant rainfall in the Lake Macquarie catchment area was accompanied by cyclonic winds and storm surge that caused elevated ocean levels at the Swansea Channel.<sup>49</sup> As the storm event itself dissipated, lake levels rose to a height of 1.05m AHD.<sup>50</sup> The suburbs of Belmont South, Marks Point, Pelican and Swansea were among the worst affected areas;<sup>51</sup> many properties in the area were inundated, while also suffering additional damage (eg wind damage) from the storm event. Research conducted by the Eastern Seaboard Climate Change Initiative (Adapt NSW) suggests a significant increase in high wind summer storms is likely in the medium term.<sup>52</sup> As such, this relatively recent event provides some indication of the challenges that low-lying communities on the eastern shore of Lake Macquarie must now address, and are likely to face more frequently under future climate change.

### *5.2.2 Consequences of Changes in Lake Levels resulting from Climate Change*

The primary consequence of changes in lake levels is, of course, the inundation of areas of land. LMCC's 2012 study of Lake flooding found that more than 7500 residential properties might be affected by a severe Lake flood by 2100, assuming sea level rise of 0.9m by that time. Properties already affected by changing lake levels would be flooded more often – or perhaps permanently inundated – within the same time frame.<sup>53</sup> A significant area – much larger in spatial terms – of public lands, including parkland and conservation areas, would also experience more frequent flooding, or permanent inundation, as climate change impacts manifest in the Lake Macquarie area.<sup>54</sup>

The social-ecological impacts of climate driven changes in lake levels are likely to be wide ranging. The physical effects of inundation include damage to buildings (public and private, residential and commercial) and infrastructure (eg utilities and roads). Flooding also adversely affects communities; some lakeside areas may be isolated by rising lake levels, and social networks within those communities will also be disrupted.<sup>55</sup> While floods in the Lake Macquarie area pose little direct threat to human life (because lake levels tend to rise relatively slowly, and without high velocity water flow), they can indirectly cause physical and mental health impacts as a result of isolation and the failure of key infrastructure (eg

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<sup>49</sup> Greg Jones, 'The June 2007 Long Weekend Storm and Flood Event in the City of Lake Macquarie, NSW – Risk Reduction Actions and Lessons Learnt over Five Years' (2012) 3.

<sup>50</sup> LM WFRMSP (n 22) 11.

<sup>51</sup> Jones (n 49) 3.

<sup>52</sup> AdaptNSW, *Eastern Seaboard Climate Change Initiative: East Coast Low's Research Program – Synthesis for NRM Stakeholders* (Office of Environment and Heritage, State of NSW, 2016) 23.

<sup>53</sup> MPBS LAP (n 10) 6.

<sup>54</sup> Giles and Stevens (n 13).

<sup>55</sup> LM WFS (n 14).

waste and potable water systems).<sup>56</sup> More frequent flooding, and the permanent inundation of some properties, will decrease land values, with one study estimating an annual loss in land value of more than \$50 million per year in 2100.<sup>57</sup> The economic impacts of changing lake levels also include both direct (eg damage to buildings and other personal property) and indirect (eg increased living expenses where people are displaced) costs of flooding.<sup>58</sup> In ecological terms, permanent inundation is likely to up to 90% of saltmarshes, and about a quarter of the Lake's other wetland areas.<sup>59</sup> This will increase pressures on ecological communities and threatened species reliant on those habitats and the ecosystem services they provide.

Having explained the biophysical processes, and explored the physical, ecological and socio-economic consequences through which climate change will affect water levels in Lake Macquarie, the following section outlines aspects of the legal system relevant to addressing changing lake levels.

### ***5.3 Legal Framework relating to Changing Lake Levels in Lake Macquarie, New South Wales***

This section provides a brief introduction to the legal framework for addressing changing lake levels in Lake Macquarie as at July 2018. By sketching major components of the legal framework, the section provides background essential to understanding the law's influence on resilience and justice in responses to sea level rise and storm events in the Lake Macquarie area.

#### ***5.3.1 National Laws and Changing Lake Levels in Lake Macquarie, New South Wales,***

Australia's national laws are not directly implicated in addressing changing flood conditions in the Lake Macquarie area. As outlined in Chapter 2, the national government has relatively limited powers to pass legislation relating to climate change adaptation, or the environment more generally.<sup>60</sup> Australia's major national environmental law, the EPBC Act, is only triggered in a limited range of circumstances.<sup>61</sup> There are no signs that those laws will be activated in the immediate future.

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<sup>56</sup> Ibid.

<sup>57</sup> Giles, Boyle and Stevens (n 2) 13.

<sup>58</sup> LM WFS (n 14).

<sup>59</sup> LM WFRMSP (n 22) 49.

<sup>60</sup> See Chapter 1.3.2.

<sup>61</sup> See Chapter 4.4.2.

The Australian national government retains an important role in addressing climate impacts through national emergency management arrangements. The Department of Home Affairs administers the national Disaster Response Plan and Disaster Recovery Funding Arrangements, each of which might be activated or utilised in addressing changing water levels in the Lake Macquarie area.<sup>62</sup> However, these arrangements would only be activated where it is beyond the capacity of the State to respond to the emergency. Although the measures might be activated in response to significant flooding events in the shorter term, it is unlikely they would be implicated in measures to address more gradual changes in lake levels over longer time scales.

Despite the absence of direct legal powers, the national government has also shaped governance of coastal areas, including coastal adaptation, through the development of national policies in the past decade. The impact of climate change on Australia's coasts has been an area of substantial policy interest. In the late 2000s, two developments in the policy space (the Department of Climate Change's "first pass" national assessment of climate risks to Australia's coasts, and the Australian Parliament's *Managing our Coastal Zone in a Changing Climate* inquiry) documented and analysed the potential effect of coastal climate change at the national scale. Although interest in developing a national approach to coastal adaptation has dissipated in the interim, the national government may yet play an increasing role in coastal adaptation into the future.

### 5.3.2 *State (New South Wales) Laws and Changing lake levels in Lake Macquarie, New South Wales*

In contrast, many laws relevant to changes in water levels in Lake Macquarie are found at the State level. Those laws are comprised of four major groups of legislation, each of which is supplemented by extensive policy guidance. The first major piece of legislation is the *Environmental Planning and Assessment Act 1979* (NSW) ('EPAA'), which provides the architecture for land-use planning in NSW, including in coastal areas. The EPAA establishes a hierarchy of planning instruments through which land-use and environmental planning is conducted.<sup>63</sup> State Environmental Planning Policies (SEPPs) are used to address matters of State environmental planning significance.<sup>64</sup> Local Environmental Plans (LEPs)<sup>65</sup> and Development Control Plans (DCPs)<sup>66</sup> provide more specific direction regarding land-

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<sup>62</sup> See Chapter 4.4.2.

<sup>63</sup> *Environmental Planning and Assessment Act 1979* (NSW) ('EPAA') Pt 3.

<sup>64</sup> *Ibid* s 3.29.

<sup>65</sup> *Ibid* Div 3.4.

<sup>66</sup> *Ibid* Div 3.6; *Environmental Planning and Assessment Regulations 2000* (NSW) Part 3.

use planning at the local level.<sup>67</sup> The Act allocates responsibility for assessing development applications to various public authorities. While some assessments are conducted at the State level, the vast majority of applications (such as for residential housing developments) are dealt with by local councils.

In the coastal context, the EPAA is complemented by the *Coastal Management Act 2016* (NSW) ('CMA'), which came into force in April 2018. The overarching objective of the CMA is to 'manage the coastal environment of New South Wales in a manner consistent with the principles of ecologically sustainable development for the social, cultural and economic well-being of the people of the State'.<sup>68</sup> More particular objectives of the Act include 'protect[ing] and enhanc[ing] ... coastal environmental values',<sup>69</sup> recognising social and economic values in coastal areas,<sup>70</sup> 'support[ing] public participation in coastal management and planning',<sup>71</sup> and promoting integrated and coordinated coastal planning and management.<sup>72</sup> The CMA expressly acknowledges climate change,<sup>73</sup> including both short and longer-term impacts.

The CMA establishes the principal architecture through which legal responses to changing flood conditions are mediated. First, the CMA details the physical areas to which the Act applies. It adopts a relatively dynamic approach to identifying the coastal zone to which the Act applies. The coastal zone includes four different types of coastal management area: the coastal wetlands and littoral rainforests area,<sup>74</sup> the coastal vulnerability area,<sup>75</sup> the coastal environmental area,<sup>76</sup> and the coastal use area.<sup>77</sup> The locations of these coastal management areas are detailed in a series of maps, which are relatively easily updated to reflect changes in the natural environment.<sup>78</sup> The Act goes on to establish specific management objectives for each of the different coastal management areas.<sup>79</sup> Secondly, Part 3 of the CMA then details the substantive requirements of coastal management programs (CMPs),<sup>80</sup> which are the principal planning documents through which local councils and public authorities

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<sup>67</sup> See section 5.4.3 below.

<sup>68</sup> *Coastal Management Act 2016* (NSW) ('CMA') s 3

<sup>69</sup> *Ibid* s 3(a).

<sup>70</sup> See eg *ibid* ss 3(b)-(e).

<sup>71</sup> *Ibid* s 3(k).

<sup>72</sup> See eg *ibid* ss 3(h),(j).

<sup>73</sup> *Ibid* ss 3(f),(i).

<sup>74</sup> *Ibid* s 6.

<sup>75</sup> *Ibid* s 7.

<sup>76</sup> *Ibid* s 8.

<sup>77</sup> *Ibid* s 9.

<sup>78</sup> *Ibid* ss 6(1), 7(1), 8(1), 9(1).

<sup>79</sup> *Ibid* ss 6(2), 7(2), 8(2), and 9(2).

<sup>80</sup> *Ibid* s 15. Note also that mandatory requirements can be imposed through the Coastal Management Manual; see *ibid* s 21.

discharge their obligations under the Act, and the process through which CMPs are developed and implemented.<sup>81</sup> Third, the CMA establishes the NSW Coastal Council,<sup>82</sup> a panel of experts to advise on matters referred by the Minister, and to conduct performance audits of local councils' coastal management programs.<sup>83</sup> Finally, the Act also outlines the limited circumstances in which coastal protection works can be approved.<sup>84</sup>

The relatively lean architecture of the CMA is augmented by a range of statutory instruments, policies and programs to facilitate its operationalisation. The *State Environmental Planning Policy (Coastal Management) 2018* (NSW) establishes more detailed development controls for the various coastal management areas.<sup>85</sup> The *Coastal Management Manual* (CMM) provides guidance on the development, implementation and review of CMPs.<sup>86</sup> Local Planning Direction 2.2 outlines further requirements for councils in fulfilling their land use planning obligations.<sup>87</sup> A range of, 'The *Coastal Management Toolkit* provides further technical information and guidance to assist local councils in fulfilling their obligations under the CMA and CMM.<sup>88</sup> The *NSW Coastal Design Guidelines 2003* establish design principles for coastal settlements, with an emphasis on addressing coastal hazards.<sup>89</sup> The NSW State government also provides funding to support the implementation of measures in CMPs, including through the Coastal and Estuary Grants Program<sup>90</sup> and the Coastal Lands Protection Scheme.<sup>91</sup> In combination, these instruments, policy directions and programs provide the depth of the legal framework for coastal management in New South Wales, along with some of the resources necessary to activate that framework.

A suite of NSW general environmental laws are also relevant to responses to changing flood conditions resulting from anthropogenic climate change. For example, laws for the protection of terrestrial biodiversity, such as the *Threatened Species Act 2016* (NSW), may be implicated in responses to changing coastal systems. Terrestrial biodiversity may be directly impacted as coastal ecosystems change in response to changing coastal processes, including where coastal ecosystems retreat from the coastline. Those laws also have a less direct role

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<sup>81</sup> Ibid ss 12-14, 16-20.

<sup>82</sup> Ibid s 24.

<sup>83</sup> Ibid s 25.

<sup>84</sup> Ibid s 27.

<sup>85</sup> Part 2.

<sup>86</sup> CMA (n 68) s 21(2).

<sup>87</sup> Local Planning Direction 2.2; see EPAA (n 63) s 9.1. Cross ref discussion below re local government and changing coastal processes.

<sup>88</sup> <<https://www.environment.nsw.gov.au/topics/water/coasts/coastal-management/toolkit>>

<sup>89</sup> NSW Coastal Design Guidelines (2003), Part 2.

<sup>90</sup> <<https://www.environment.nsw.gov.au/coasts/coastalgrants.htm>>

<sup>91</sup> <<https://www.planning.nsw.gov.au/Policy-and-Legislation/Coastal-management/Coastal-Lands-Protection-Scheme>>

to play in responses to changing coastal processes, as they might be used to mitigate non-climate stressors on coastal ecosystems. For example, terrestrial biodiversity laws may be used to limit or restrict land clearing adjacent to coastal areas, with implications for the viability of coastal ecosystems. In addition, the *Protection of the Environment Operations Act 1997* (NSW), through which licences to engage in environmentally hazardous activities are granted, may also impact responses to changing flood conditions. The responsiveness to change of utilities providers, for example, may be shaped by the requirements of environmental licences central to their activities.

This bricolage of laws (and myriad supporting documents) addressing the drivers of change in lake levels has been informed by a fluid State government policy approach over the past decade.<sup>92</sup> Sea level rise policy in New South Wales have generally been addressed through non-mandatory policy guidance that sits outside existing legislation. Cognisant of the likely coastal impacts of climate change, NSW's coastal policy had required consideration of climate change in planning decision-making since 1997.<sup>93</sup> The NSW government responded to national interest in coastal adaptation, and increasing concern regarding the legal liability of local councils for coastal climate impacts, by introducing a range of non-mandatory mechanisms relating to sea level rise.<sup>94</sup> In 2009, the *NSW Sea Level Rise Policy Statement* was adopted as government policy. The Statement established uniform planning benchmarks of 0.5 m above 1990 level by 2050, and 0.9 m above 1990 levels by 2100 for future sea level rise;<sup>95</sup> the benchmarks influenced strategic policy at the State level, and councils were required to consider them when performing functions under land-use planning and coastal management laws.<sup>96</sup> However, the State-level planning benchmarks were withdrawn in 2012 following a change of government in NSW.<sup>97</sup> There is no indication that State-wide policy guidance will be implemented in the foreseeable future.

Finally, State emergency management laws are implicated in responses to changing flood conditions in the Lake Macquarie area. The *State Emergency and Rescue Management Act 1989* (NSW) provides the overarching framework for emergency management in NSW, and

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<sup>92</sup> On the NSW experience, see Joseph Wenta and Jan McDonald, 'The Role of Law and Legal Systems in Climate Change Adaptation Policy' in ECH Keskitalo and BL Preston (eds), *Research Handbook on Climate Change Adaptation Policy* (Edward Elgar, 2018) 80-1.

<sup>93</sup> *NSW Coastal Policy* (1997).

<sup>94</sup> Tayanah O'Donnell, 'Legal geography and coastal climate change adaptation: the *Vaughan* litigation' (2016) 54 *Geographical Research* 301.

<sup>95</sup> NSW Government (n 7).

<sup>96</sup> *Ibid.*

<sup>97</sup> On the implications of the withdrawal of the policy, see Bruce M Taylor, Ben P Harman and Matthew Inman, 'Scaling-up, scaling-down, and scaling-out: local planning strategies for sea-level rise in New South Wales, Australia' (2013) *Geographical Research* 292, 300.

establishes a hierarchy of State, regional and local emergency management plans for responding to, inter alia, flood events. At the local level, responsibility for maintaining and implementing the *Lake Macquarie City Flood Emergency Sub Plan* is shared between the NSW SES Lake Macquarie City Local Controller and the Lake Macquarie City Local Emergency Management Committee and Officer.<sup>98</sup> While the Flood Emergency Sub Plan has a strong emphasis on the operational response to flooding events, it is intended to interface with flood management activities more broadly.

### 5.3.3 *Local Laws and Changing lake levels in Lake Macquarie, New South Wales,*

Local councils play a vital role in the implementation of several aspects of the legal framework relating to changing lake levels. The following outline addresses specifically the implementation of relevant laws by LMCC, while also identifying bespoke local practices directed to addressing climate impacts in coastal areas.

LMCC addresses changing lake levels through an array of functions and powers under the EPAA. The Council performs a strategic planning role, primarily by developing and implementing the LEP for the Lake Macquarie area. The current Lake Macquarie LEP restricts development on land that is at exposed to changing lake levels, primarily through controls relating to flooding. Development on flood affected land is only permitted in limited circumstances, including where it is ‘compatible with the flood hazard of the land’.<sup>99</sup> The flood hazard of the land is determined with reference to ‘projected changes as a result of climate change’.<sup>100</sup> The LEP also restricts development in areas of coastal risk, and permits development only where the Council is satisfied that that the development is unlikely to adversely impact coastal risks, hazards and processes.<sup>101</sup> The Council is required to consider ‘the impacts of sea level rise’ in assessing developments applications in areas of coastal risk.<sup>102</sup>

The relatively broad directions in the LEP are complemented by more specific guidance in DCPs that apply in the Lake Macquarie area. Aspects of the DCPs are directed specifically at sea level rise; they include, among their objectives, to ensure that: ‘development

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<sup>98</sup> Lake Macquarie City Council and NSW State Emergency Service, *Lake Macquarie City Flood Emergency Sub Plan: A Sub Plan of the Lake Macquarie City Local Emergency Management Plan* (June 2013).

<sup>99</sup> *Lake Macquarie Local Environmental Plan 2014* (NSW) cl 7.3(3).

<sup>100</sup> *Ibid* cl 7.3(1)(b).

<sup>101</sup> *Ibid* cl 7.4(3).

<sup>102</sup> *Ibid* cl 7.4(3)(f).

adequately considers and responses to sea level rise projections’;<sup>103</sup> vulnerable developments are ‘situated and designed’ to minimise risk from sea level rise;<sup>104</sup> ‘development is designed to enable future adaptation if projections are realised, or that measures are implemented to [address] any adverse impacts of climate change or sea level rise’;<sup>105</sup> and ‘to encourage innovative responses to sea level rise impacts’.<sup>106</sup> Controls in the DCPs require that developments not be located on land that will be inundated during the life of the development, are designed and situated to reduce risk from the effects of sea level rise, and meet minimum floor height requirements.<sup>107</sup> A precinct area plan for Marks Point and Belmont South provides additional detail for developments within that local area.<sup>108</sup> While DCPs are the source of much more particular technical direction regarding developments, they are not themselves statutory instruments and are to be applied flexibly.<sup>109</sup> Councils are required to give effect to the suite of coastal management laws identified in section 5.4.2 above, including the suite of policy documents that inform the operation of the CMA, when developing their LEP.<sup>110</sup>

In addition to these strategic activities, LMCC also performs functions related to individual lots of land under the EPAA. The first of these functions is the assessment of development applications within the local government area.<sup>111</sup> Persons seeking to build a residential dwelling, for example, are required to prepare and submit an application for development consent within the detailed framework established by the EPAA.<sup>112</sup> Councils are responsible for assessing the development application with reference to a range of mandatory criteria,<sup>113</sup> and may either grant or refuse consent to the application.<sup>114</sup> It is through this decision-making process that councils play a major role in translating the strategic vision of the environmental planning instruments and DCPs into action relating to individual properties.

A second and vital function performed by councils is the provision of planning certificates relating to land within the council area. The EPAA requires that councils provide a range

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<sup>103</sup> Lake Macquarie City Council, *Lake Macquarie Development Control Plan 2014: Part 3* (cl 2.9) and *Part 7 – Development in Environment Protection Zones* (cl 2.9).

<sup>104</sup> *Ibid.*

<sup>105</sup> *Ibid.*

<sup>106</sup> *Ibid.*

<sup>107</sup> *Ibid.*

<sup>108</sup> Lake Macquarie City Council, *Lake Macquarie Development Control Plan 2014: Part 12.23*.

<sup>109</sup> EPAA (n 63) s 4.15(3A).

<sup>110</sup> See Local Planning Direction 2.2, issued under *ibid* s 9.1.

<sup>111</sup> EPAA (n 63) s 4.5 identifies local councils as consent authorities for an array of EPAA processes.

<sup>112</sup> *Ibid* Part 4.3.

<sup>113</sup> *Ibid* s 4.15.

<sup>114</sup> *Ibid* s 4.16.



of information relating to particular lots of land in planning certificates.<sup>115</sup> Information relating to hazard risk restrictions (including tidal inundation) and flood related development controls must be included in planning certificates.<sup>116</sup> In addition, councils are empowered to provide additional information relating to the land if they choose to do so.<sup>117</sup> The NSW Department of Planning and Environment has issued guidelines to shape the use of planning certificates by local councils, including detailed instruction on the circumstances in which voluntary disclosure of information regarding future coastal hazards is appropriate.<sup>118</sup> Because planning certificates must be obtained as part of the conveyancing process in New South Wales,<sup>119</sup> they are an especially useful device for distributing information regarding risks associated with particular properties.<sup>120</sup> While the use of planning certificates to disclose risk of future inundation has attracted some controversy,<sup>121</sup> they remain an essential function of local councils under the EPAA.

LMCC also addresses changes in coastal processes by performing several functions under the CMA. The Council's major obligation under the CMA is the preparation and implementation of a CMP. CMPs are required to address a range of mandatory requirements,<sup>122</sup> which are directed to ensuring that councils translate the broad objectives of the CMA into particularised actions relevant to the specific hazards and risks impacting their local government area. Inundation of foreshore areas – by either tidal or coastal waters – is recognised as a potential hazard potentially affecting , and requiring attention within CMPs.<sup>123</sup> In preparing their CMP, councils are required to consider the 'effects of projected climate change and how it may affect the relevant area'.<sup>124</sup> Given the CMAs emphasis on integrating coastal management actions within councils' integrated planning and reporting framework,<sup>125</sup> CMPs are likely to become more central to LMCC's coastal management activities in the future.

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<sup>115</sup> Ibid s 10.7(2).

<sup>116</sup> EPAA (n 66) reg 279, Sch 4. Note that the inclusion of information regarding coastal hazards has been dramatically reduced following the enactment of the CMA (or perhaps more accurately the repeal of old provisions of the CPA and EPAA that required disclosure of coastal risks).

<sup>117</sup> EPAA (n 63) s 10.7(5).

<sup>118</sup> See NSW Government (n 7).

<sup>119</sup> *Conveyancing (Sale of Land) Regulation 2010* (NSW) cl 4.

<sup>120</sup> Paul Govind, 'Managing the Relationship between Adaptation and Coastal Land Use Development through the use of s 149 Certificates' (2011) 7 *Macquarie Journal of International and Comparative Environmental Law* 94.

<sup>121</sup> Ibid; see also Jan McDonald, 'The Ebb and Flow of Coastal Adaptation in Australia', in Randall Abate (ed), *Climate Change Impacts on Ocean and Coastal Law: US and International Perspectives* (Oxford University Press, 2015) 631-43.

<sup>122</sup> CMA (n 68) s 15; Coastal Management Manual Part A (2018) 23-24 [8]-[14].

<sup>123</sup> Coastal Management Manual Part B (2018) 13, 15 and 22 regarding coastal wetlands and littoral rainforests area, coastal vulnerability area and the coastal environment areas respectively.

<sup>124</sup> Coastal Management Manual Part A (2018) 24 [13(iii)].

<sup>125</sup> CMA (n 68) s 3.

LMCC's coastal management planning obligations are, at present, satisfied by the continued operation of the *Lake Macquarie Coastal Zone Management Plan 2015-2023* (CZMP). Part B of the CZMP focuses particularly on the (internal) foreshore areas of Lake Macquarie.<sup>126</sup> Recognising the relationship between changing flood conditions and management of the Lake Macquarie estuary, the CZMP Part B does not include any additional measures to address inundation on the Lake's foreshores. The CZMP instead defers to the Waterway Flood Risk Management Plan, and recognises the importance of ensuring consistency in the management objectives and actions across the CZMP and Flood Risk Management Plans.<sup>127</sup> It is unclear whether this approach will satisfy the requirements for coastal management plans under the reformed CMA. However, integrating coastal management responses within existing LMCC activities appears to be consistent with the stated aim of the CMA to enhance integration of coastal management across the various functions of local government,<sup>128</sup> and seems a logical step in efforts to address the impacts of changing inundation patterns within the lake.

The *Local Government Act 1993* (NSW) ('LGA') provides councils with a suite of powers necessary to fulfil their obligations under the EPAA and coastal management laws. A range of general powers, such as to 'provide goods, services and facilities, and carry out activities, appropriate to the current and future needs [of] its local community',<sup>129</sup> to manage community land (such as natural and foreshore areas),<sup>130</sup> and to levy rates<sup>131</sup> all afford councils' the capacity to manage changing environmental conditions within their regular activities. In addition, councils are afforded more specific powers to fulfil obligations under the EPAA and coastal management laws, such as authority to levy annual charges for coastal protection services.<sup>132</sup>

The LGA also affords council protection from civil liability when undertaking some climate adaptation actions. LGA s 733 provides councils with protection from liability with respect to 'advice furnished in good faith' regarding the likelihood, or nature or extent, of

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<sup>126</sup> CZMP Part A focuses on open coast areas that are not the focus of this chapter. CZMP Part C develops management options specific to the Swansea Channel, but merely acknowledges that changes in the Channel will affect internal lake levels.

<sup>127</sup> LM CZMPB (n 37) 24.

<sup>128</sup> See section 5.4.2 above re the aims of the CMA (n 68).

<sup>129</sup> *Local Government Act 1993* (NSW) ('LGA') s 24.

<sup>130</sup> Ibid Ch 6, Part 2, Div 2.

<sup>131</sup> Ibid Ch 15.

<sup>132</sup> Ibid s 496B.

flooding or coastline hazards,<sup>133</sup> or any acts or omissions ‘done in good faith’ relating to the likelihood, or nature or extent, of flooding or coastline hazards.<sup>134</sup> Relevant advice, acts or omissions include performing functions under the EPAA,<sup>135</sup> the CMA,<sup>136</sup> the carrying out of flood mitigation<sup>137</sup> or coastal protection works,<sup>138</sup> failing to address erosion on Crown or council lands,<sup>139</sup> failing to ‘upgrade flood mitigation works or coastal protection works in response to projected or actual impacts of climate change’,<sup>140</sup> providing ‘information relating to climate change or sea level rise’,<sup>141</sup> or acts or omissions relating to the exercise of other statutory powers.<sup>142</sup> The LGA s 733 protection is thus likely to extend (prima facie) across the majority of local council’s statutory powers to address changing flood conditions resulting from climate change.

However, the statutory exemption in LGA s 733 is only available where councils have acted in good faith. The LGA itself further elaborates good faith for the purposes of s 733. In particular, the LGA creates a rebuttable presumption that a council has acted in good faith in where its advice, acts or omissions are substantially in accordance with the Floodplain Development Manual<sup>143</sup> or the ‘principles and mandatory requirements set out in the current coastal management manual under the [CMA]’,<sup>144</sup> or in accordance with a Ministerial direction regarding the preparation of a CMP.<sup>145</sup> LGA s 733 therefore provides a very strong incentive for councils to observe the procedures and guidance set out in the relevant manuals, so as to ensure that they retain the protection of the provision.

Councils are also afforded statutory protection from liability in tort under the *Civil Liability Act 2002* (NSW) (‘CLA’) Part 5.<sup>146</sup> CLA s 43A affords councils protection from civil liability based on their exercise (or failure to exercise) of a ‘special statutory power’, where their conduct was not so unreasonable that ‘that no authority having the special statutory power in question could properly consider the act or omission to be a reasonable exercise

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<sup>133</sup> Ibid ss 733(1)(a),(2)(a).

<sup>134</sup> Ibid ss 733(1)(b),(2)(b).

<sup>135</sup> Ibid ss 733(3)(a),(c),(d).

<sup>136</sup> Ibid s 733(3)(b).

<sup>137</sup> Ibid s 733(3)(e).

<sup>138</sup> Ibid s 733(3)(f).

<sup>139</sup> Ibid s 733(3)(f2).

<sup>140</sup> Ibid s 733(3)(f3).

<sup>141</sup> Ibid s 733(3)(f5).

<sup>142</sup> Ibid s 733(3)(g).

<sup>143</sup> Ibid s 733(4)(a).

<sup>144</sup> Ibid s 733(4)(b).

<sup>145</sup> Ibid s 733(4)(c).

<sup>146</sup> *Civil Liability Act 2002* (NSW) (‘CLA’) Part 5 applies to ‘public or other authorit[ies]’, which include local councils; see s 41(d).

of, or failure to exercise, [the] power'.<sup>147</sup> The Act also provides a similar protection against claims for breach of statutory duty.<sup>148</sup> In addition, the CLA also seems to narrow the circumstances in which local councils might be found negligent in performing their functions, by identifying a range of principles for consideration in assessing the liability of a local council in negligence. In combination, the LGA and CLA protections afford local councils in NSW a substantial area of protection from civil liability with respect to climate adaptation.

LMCC has also developed a Local Adaptation Planning (LAP) process directed to developing responses to changing flood conditions at a more granular “suburb” or community level. Straddling the EPAA, CMA and LGAs (and various policies outlined above), the LAP process aims to address the specific adaptation challenges at areas of the Lake foreshore most exposed to changing flood conditions. To date, only one LAP process has been completed in the Belmont South and Marks Point area.<sup>149</sup> This process involved a group of LMCC staff working intensively with the local community through an array of collaborative processes (including surveys, community meetings, and through a community advisory committee) to develop a plan for responding to changing flood conditions in the suburb in the short, medium and longer terms.<sup>150</sup> Implementation of the Belmont South and Marks Point LAP has been limited to date, the most notable success being modification of the relevant DCP.<sup>151</sup> It is impossible to know whether the LAP process will prove a success in terms of adaptation outcomes – at least in part because the plan will only become fully operational in the future. However, the process was well-received by the local community, and is being replicated in other vulnerable areas at present.<sup>152</sup>

Although the policy position at the State government level has been fluid, Lake Macquarie Council has developed and maintained a relatively robust approach to sea level rise, and changing flood conditions more generally, over the past decade. In 2008 the Council adopted the *Lake Macquarie Sea Level Rise Preparedness Adaptation Policy*,<sup>153</sup> which stipulated a sea level rise planning benchmark for use by the Council in assessing development applications.<sup>154</sup> In the period 2009-2012, sea level rise planning benchmarks were integrated across LMCC’s policies and practices, including in mandated processes such as the

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<sup>147</sup> See *Precision Products (NSW) Pty Ltd v Hawkesbury City Council* [2008] NSWCA 278..

<sup>148</sup> CLA (n 146) s 43.

<sup>149</sup> MPBS LAP (n 10) Parts A and B.

<sup>150</sup> Examples of outcomes from *ibid* Part A.

<sup>151</sup> Lake Macquarie City Council, *Lake Macquarie Development Control Plan 2014: Part 12.23*.

<sup>152</sup> See nn. 11-12 above.

<sup>153</sup> Lake Macquarie City Council, *Lake Macquarie Sea Level Rise Preparedness Adaptation Policy* (2008).

<sup>154</sup> *Ibid* 3-4.

Waterway Flood Study and Flood Risk Management Study and Plan. Despite the withdrawal of the State benchmarks in 2012, LMCC has continued to address sea level rise and other coastal risks in satisfying its statutory obligations, including through detailed treatment of the issue in its DCP.<sup>155</sup> LMCC has thus maintained a relatively consistent approach to addressing sea level rise in its activities.

Measures addressing future sea level rise and coastal risks in the Lake Macquarie area have not escaped controversy. In 2010, maps published via the OzCoasts website – with the endorsement of the then national Climate Change Minister Greg Combet – indicated areas around Lake Macquarie likely to be impacted by future changes in lake levels. The publication of that information was of some concern to residents in affected areas, who claimed that their property values and living costs were adversely affected by the availability of the information.<sup>156</sup> In 2013, LMCC’s policy of including information regarding future climate risk on planning certificates attracted similar criticism; property owners and developers expressed concern that the information contained in the planning certificates had a negative impact on property values, and saw a sharp rise in the cost – or complete withdrawal – of flood-related insurance.<sup>157</sup> At much the same time, residents expressed concern about overemphasis on climate impacts and flooding in responses to LMCC’s floodplain management process.<sup>158</sup> Similar concerns were also raised in early stages of the local adaptation planning process in the Belmont South and Marks Point areas.<sup>159</sup> Whether or not these fears were well-founded, they nevertheless shaped future steps to address coastal adaptation through the legal framework.

#### ***5.4 Law for Resilience and Justice in responding to Changing Lake Levels in Lake Macquarie, New South Wales***

This section analyses the effect of the legal framework on just resilience in addressing changing lake levels. It utilises the principles outlined in Chapter 3 to examine how the law – both on the books and in action – influences just resilience in addressing changing lake levels. The following subsections focus use select examples to illustrate key features of the legal framework, and to consider whether the lessons they offer are transferable to other contexts.

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<sup>155</sup> Lake Macquarie City Council, *Lake Macquarie Development Control Plan 2014: Part 3* (cl 2.9).

<sup>156</sup> Tom Arup, ‘Rising sea levels will swamp parts of Sydney’ *Sydney Morning Herald* (online, 16 December 2010) <<https://www.smh.com.au/environment/climate-change/rising-sea-levels-will-swamp-parts-of-sydney-20101215-18yak.html>>.

<sup>157</sup> Cubby (n 8).

<sup>158</sup> LM WFS (n 14).

<sup>159</sup> MPBS LAP (n 10).

#### 5.4.1 *Distributive Implications of Changing Lake Levels*

The distribution of the costs and benefits of changing lake levels is a concern in the Lake Macquarie area. As one participant emphasised, ‘we don’t want to see the slums of Swansea [as a result of changing lake levels into the future]’.<sup>160</sup> This section explores the role of the legal framework in shaping the distribution of the costs and benefits of changing lake levels. While recognising that the legal framework is but one of many factors affecting the distribution of climate impacts generally, the section draws on participant accounts to highlight the distributive effects of the law in operation, and to identify potential roles for law in mitigating inequitable allocation of climate benefits and harms. While the section provides some important insights on the ways that law contributes to distribution of climate costs and benefits, it concludes that further research is required to guide the design and implementation of legal mechanisms designed to achieve redistributive goals.

Before moving to analyse relevant aspects of the legal framework, it is important to note participant observations on the distribution of costs and benefits of changing water levels in Lake Macquarie. Participants with direct knowledge of the Lake Macquarie area typically agreed that some citizens were more vulnerable to changing lake levels than others.<sup>161</sup> This was especially true of the communities located in low-lying areas near to the Swansea Channel.<sup>162</sup> There was also general concurrence that funding for adaptation measures was limited, and that the allocation of the available resources would involve difficult decisions on the merits of competing claims. However, some participants emphasised that communities exposed to changing lake levels were ‘not too heavily stratified’ and that ‘communities were relatively mixed’.<sup>163</sup> Thus, ‘the social justice [issue] came up in individual things’<sup>164</sup> within those vulnerable communities, rather than at the suburb level as is often identified in the environmental justice literature.<sup>165</sup> This has important implications for the analysis of the distributive impacts of law, as will be explained further below.

The legal framework acknowledges, at least at a superficial level, the potential for unfairness in the distribution of the costs and benefits of changing lake levels. This is most often acknowledged in the objects provisions of State legislation. The EPAA, for example, includes among its objectives: the promotion of ‘social and economic welfare of the

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<sup>160</sup> Participant 2.3.

<sup>161</sup> Participants 2.3, 2.4, 2.5 and 2.7.

<sup>162</sup> Participant 2.2.

<sup>163</sup> Participant 2.7.

<sup>164</sup> Participant 2.7.

<sup>165</sup> See Chapter 2.7.

community and a better environment’;<sup>166</sup> recognises the importance of ecologically sustainable development<sup>167</sup> and affordable housing;<sup>168</sup> and the protection of the health and safety of building occupants.<sup>169</sup> The CMA similarly recognises the importance of public access to the coastal zone,<sup>170</sup> and points to the allocation of risks between generations.<sup>171</sup> Those objectives either explicitly or implicitly recognise the varied exposure of different communities and individuals to the costs and benefits of changing lake levels. The formal legal framework also provides some mechanisms for addressing distributive inequities, including by requiring developers to contribute to increased demands for public services associated with property developments,<sup>172</sup> pay levies relating to developments<sup>173</sup> or make special infrastructure contributions.<sup>174</sup> However, the law ‘on the books’ alone does little to see that climate adaptation costs and benefits are distributed fairly among local, State or national communities, or between the government, private sector and citizens.

In contrast, the legal framework ‘in action’ shapes the allocation of adaptation costs and benefits in multiple ways. Participant accounts emphasised that the costs and burdens of changing lake levels far outweigh any putative benefits. Participants were generally of the view that the costs of adaptation would overwhelm existing redistributive mechanisms, such as the levying of rates and the provision of services, especially by local and State governments.<sup>175</sup>

Participants pointed to a number of factors shaping the distribution of the costs and benefits of changing lake levels. Laws<sup>176</sup> and governmental policy<sup>177</sup> were identified as potential drivers of inequities in the distribution of climate impacts and adaptation costs in some accounts. However, participants also pointed to a wider range of institutions that enhance inequitable distribution of adaptation costs and benefits. A number of participants explained that insurance costs and availability often exacerbated existing inequities in the allocation of flooding and inundation risk.<sup>178</sup> A number of other participants suggested that

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<sup>166</sup> EPAA (n 63) s 1.3(a).

<sup>167</sup> Ibid 1.3(b).

<sup>168</sup> Ibid 1.3(d).

<sup>169</sup> Ibid 1.3(h).

<sup>170</sup> CMA (n 68) 3(b).

<sup>171</sup> Ibid 3(f).

<sup>172</sup> EPAA (n 63) s 7.11.

<sup>173</sup> Ibid s 7.12.

<sup>174</sup> Ibid s 7.24.

<sup>175</sup> See eg Participant 2.2.

<sup>176</sup> See eg Participant 2.6.

<sup>177</sup> See eg Participant 2.2.

<sup>178</sup> See eg Participants 2.3 and 2.4.

some individuals chose to move to areas at greater risk from changing lake levels.<sup>179</sup> These various accounts provide an indication of the complexity in establishing causation of inequities in climate adaptation.

Law also plays an important role in allocating costs and benefits of changing lake levels to particular actors. In some instances, participants described how laws and legal processes shaped the allocation of costs and benefits between individual citizens,<sup>180</sup> and between citizens and governments.<sup>181</sup> Other accounts pointed to the allocation of adaptation costs within the legal framework, describing differential allocation of costs and benefits between agencies within the same level of government,<sup>182</sup> or across scales of government.<sup>183</sup> Participants also pointed out that the legal framework often shaped the allocation of costs across timescales, by encouraging or compelling adaptation actions that either pre- or post-dated the manifestation of climate impacts.<sup>184</sup> These various accounts point to the additional complexity in analysing the role of law alone in shaping the allocation of adaptation costs and benefits.

Participants nevertheless explained how legal mechanisms that might be utilised in developing and implementing measures to address inequities in the distribution of the costs and benefits of changing lake levels. A number of participants explained how local government powers to levy rates and provide services might be used to ameliorate the unequal distribution of adaptation costs associated with changing lake levels.<sup>185</sup> One participant explained that participatory processes – some of which are created by the legal framework – have enhanced societal capacity to identify and address distributive consequences of changing lake levels.<sup>186</sup> Others pointed to an increasing role for other actors in the wider governance framework – such as insurance providers<sup>187</sup> and businesses<sup>188</sup> – to help in mitigating inequities in climate adaptation actions. Overall, participant accounts indicated that law must play some – but not an exclusive – role in addressing unfairness in the allocation of the costs and benefits of changing lake levels.

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<sup>179</sup> See eg Participant 2.3.

<sup>180</sup> See eg Participants 2.3 and 2.7.

<sup>181</sup> See eg Participants 2.6 and 2.7.

<sup>182</sup> See eg Participant 2.3.

<sup>183</sup> See eg Participant 2.3.

<sup>184</sup> See eg Participant 2.7.

<sup>185</sup> Participants 2.2 and 2.7. See also Participant 2.6's account of new mechanisms that allow for cost-sharing of coastal defences or adaptation measures under the CMA.

<sup>186</sup> Participant 2.2.

<sup>187</sup> See eg Participant 2.4.

<sup>188</sup> See eg Participant 2.6.



#### 5.4.2 *Public Participation in Adapting to Changing Lake Levels*

A major finding from this case study is that public participation has potential to enhance resilience and justice in addressing changing lake levels. On paper, the legal framework for responding to changing lake levels places significant emphasis on public participation in decision-making processes. The CMA, for example, includes ‘supporting public participation in coastal management and planning and greater public awareness, education and understanding of coastal processes and management actions’ among its varied objectives.<sup>189</sup> Mandatory requirements for community consultation are then detailed in the supporting CMM.<sup>190</sup> The EPAA similarly includes ‘provid[ing] increased opportunity for community participation in environmental planning and assessment’ in its statutory objectives.<sup>191</sup> These aspirations are also reflected in policy guidelines and manuals that support the implementation of legislation. The *Floodplain Development Manual 2005*, for example, explains that interactions with the affected community are crucial to the preparation and implementation of Floodplain Management Plans in NSW.<sup>192</sup> There is thus, in a broad aspirational sense, substantial congruence between the legal framework for addressing changing lake levels on paper and the emphasis that just resilience places on public participation and engagement.

The legal framework relevant to changing lake levels also helps to translate these broad objectives into specific procedural measures and entitlements in planning processes. As a whole, the legal framework incorporates a sizeable number of opportunities for participation in decision-making processes. Most of the legislative components of the framework contain their own provisions relating to public consultation; the EPAA, for example, establishes an array of procedures for securing public comment on the various statutory and environmental planning instruments (including LEPs and DCPs) that are central to the operation of the legal framework.<sup>193</sup> Similarly, various guidelines and policy manuals also set out objectives for councils and other agencies that are required to adhere to those processes. The *Floodplain Development Manual 2005*, for example, provides detailed guidance for local councils in involving local communities in the preparation and implementation of Floodplain Management Plans in NSW.<sup>194</sup> Many of these processes involve virtually identical procedural steps; the distinction, if any, is typically found in the

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<sup>189</sup> CMA (n 68) s 3(k).

<sup>190</sup> Coastal Management Manual Part A (n 122) 25.

<sup>191</sup> EPAA (n 63) s 1.3(j).

<sup>192</sup> NSW Government, *Floodplain Development Manual: The Management of Flood Liable Land* (2005) (‘FDM’) 2.

<sup>193</sup> EPAA (n 63) Div 2.6.

<sup>194</sup> FDM (n 192) Appendix D.

timeframes within which procedures are to be completed, or the persons who are entitled to participate in those processes. In addition to public consultation on the development of statutory plans, most environmental statutes also allow for those affected by planning determinations to seek review of those decisions. For example, the EPAA contains detailed provisions outlining the opportunities for review of, or appeal from, various decisions made under that legislation.<sup>195</sup>

However, these processes do not typically involve meaningful citizen involvement in decision-making. Indeed, such processes have long been criticised for their relatively superficial conceptualisation of participation<sup>196</sup> and for institutionalising an oppositional approach to public participation in land-use planning.<sup>197</sup> Despite the wide range of scholarship advocating for more inclusive approaches to environmental management, and several undertakings to review and reform aspects of the EPAA in particular, little progress has been made in designing more meaningful participatory processes and mandating their implementation through legislation.

In addressing changing lake levels in vulnerable communities through the LAP process, LMCC developed a more meaningful participatory process that would allow affected citizens the opportunity to contribute to the development, implementation and review of the adaptation plan over time. Drawing on experiences in the existing floodplain management and land-use planning processes, council officers – with the assistance of consultants Twyford – developed a collaborative, community-centred approach to the development and implementation of Local Adaptation Plans (LAPs) to address changes in lake levels.<sup>198</sup> The LAP process involved an array of participatory mechanisms, including: surveys of residents (as part of the Flood Plain Management process);<sup>199</sup> interviews with affected citizens;<sup>200</sup> an initial series of community meetings (open forums);<sup>201</sup> ongoing meetings between a community working group and council representatives;<sup>202</sup> meetings of community representatives with relevant technical experts;<sup>203</sup> and the publication of

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<sup>195</sup> See generally EPAA (n 63) Part 8.

<sup>196</sup> See eg Robert Stokes, 'Defining the Ideology of Public Participation: 'Democracy', 'Devolution', 'Deliberation', 'Dispute Resolution' and a New System for Identifying Public Participation in Planning Law' (2012) 8(2) *Macquarie Journal of International and Comparative Environmental Law* 1, 4.

<sup>197</sup> Amelia Thorpe, 'Public Participation in Planning: Lessons from the Green Bans' (2013) 30 *Environmental and Planning Law Journal* 93-102, 105.

<sup>198</sup> H Stevens et al, *Sea No evil, Hear No Evil – Community Engagement on Adaptation to Sea Level Change* (2012) 9-13.

<sup>199</sup> FDM (n 192) 8.

<sup>200</sup> Participant 2.3; see also Participant 2.6.

<sup>201</sup> Participants 2.3, 2.6 and 2.7.

<sup>202</sup> Participants 2.3, 2.6 and 2.7.

<sup>203</sup> Participants 2.3, 2.6 and 2.7.

relevant DCP provisions as part of council processes.<sup>204</sup> In addition, an array of publications and information was made generally available via the LMCC LAP portal during this period.<sup>205</sup> In combination, these measures each contributed to the design, development and implementation of the LAP planning process in the Belmont South and Marks Point area.

Several factors seem to have driven LMCC to undertake a broader and more meaningful participatory process in the development and implementation of the Belmont South and Marks Point LAP. In some respects, the LAP process was responding to the local communities' desire for greater input into floodplain management. In updating the Lake Macquarie Floodplain Risk Management Study in 2010, consultants BMT Water surveyed residents to identify their priorities for floodplain management. Participants identified the opportunity for greater input into decisions that would affect their local community as the most important priority; perhaps surprisingly, participation ranked above other options, such as the development of physical infrastructure to prevent or reduce inundation.<sup>206</sup> Some participants also pointed to more pragmatic reasons for testing the LAP process in the Belmont South and Marks Point area. Many participants identified the physical space and community dynamics as representative of the challenges presented by changing lake levels in other low-lying areas. For example, as Participants 2.4 and 2.7 (respectively) explained:<sup>207</sup>

It just also happened though that as an area it had a good representative sample of land use types so it has residential, it had some commercial, it had a little bit of marine industrial-type development. It had a primary school, it had lots of open space like playing fields and foreshore areas. It had a state road, the Pacific Highway as well as local roads so in a way it ended up giving us a good starting point for a pilot area that hopefully things we learn from that area could be translated to somewhere else.

Also part of the untold story was that our assessment was that it was a fairly typical community, both in terms of its social and infrastructure and other sort of – so it held elements of everything we'd have to deal with so it wasn't a big commercial centre, it wasn't solely a residential – it had medium-density development, it had rich, it had

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<sup>204</sup> See section 5.4.3 above.

<sup>205</sup> Lake Macquarie City Council, 'Implementing Marks Point and Belmont South Local Adaptation Plan' (Web Page) <<https://shape.lakemac.com.au/future-flood-planning>>.

<sup>206</sup> MPBS LAP (n 10) 12.

<sup>207</sup> Participants 2.4 and 2.7.

poor, there was public housing, there was millionaires' housing on the point, there was some major infrastructure.

As one participant eloquently summarised: 'we didn't think we're biting off more than we could chew with that first [LAP]'.<sup>208</sup>

Participant views on the role of law in stimulating the LAP process were mixed. Some participants regarded the legal framework as a driver of wider participation, especially where it allocated responsibility for addressing changing lake levels to local government.<sup>209</sup> However participants also expressed the more conservative view that, rather than driving a participatory approach in the circumstances, the legal framework simply did not pose a barrier to novel participatory processes.<sup>210</sup> On that account, it was the creative use of existing tools that resulted in the much more developed approach to public participation in the LAP process.

It is also important also to recognise the importance of LMCC staff who were, at both higher management levels and at the public interface, significant drivers of a broader and more meaningful participatory approach to the development of the Belmont South and Marks Point LAP. In one sense, this simply reflected a principled commitment to meaningful public participation.<sup>211</sup> One participant explained this commitment as follows:<sup>212</sup>

[Using the IAP2 Public Participation Spectrum as a guide], we decided [the LAP process] was a genuine consultation so we went to the community and said well we've made no decisions, everything's on the table, here's the planning framework in which we work, here's the flood management framework in which we work, here's the information we've got. We made all of that available to them online, we ran workshops just to familiarise them with what was actually in the flood study and how it worked, we got the consultants up [and generally made all information and people available to the local community].

Higher level council staff were able to create an environment where unique aspects of the LAP process were tolerated by the wider council organisation. A number of participants reported careful internal management of the LAP process to ensure that councillors

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<sup>208</sup> Participant 2.3.

<sup>209</sup> Participant 2.4.

<sup>210</sup> Participant 2.3.

<sup>211</sup> See eg Participants 2.3, 2.4, 2.6 and 2.7.

<sup>212</sup> Participant 2.7.

maintained support for the project.<sup>213</sup> Others managed relationships with other agencies that supported the process.<sup>214</sup> The unique nature of the LAP process also meant that key stakeholders and influential personnel (such as leading researchers) offered support for the project.<sup>215</sup> Managers were also able to secure additional resources required to ensure that the relatively time- and resource-intensive LAP process was seen through to completion. The process was supported in part by council funds, but also involved multiple applications for funding from State government sources. By ensuring political and financial support for the project, managers provided the opportunity for the LAP process to be tested in the Belmont South and Marks Point area, before it was expanded to other vulnerable locations.<sup>216</sup>

However, the process was also heavily dependent on skilled staff able to operationalise the vision for the LAP process within the relevant community. Those staff typically had significant experience in land-use planning and environmental management more broadly, which was invaluable in providing timely and meaningful assistance and guidance to the public during participatory processes. They were also well-connected across numerous State government agencies with interests in the project. In addition, those staff were able to translate the ambitious vision of the LAP process into a workable process. They were ably supported by Twyfords Consulting, who brought significant expertise in developing and operationalising participatory planning at the local government level to the LAP process.<sup>217</sup> These actors were uniquely positioned to implement the LAP process.

The Belmont South and Marks Point LAP process thus highlights several crucial features that contribute to the success of more meaningful participatory processes in addressing climate impacts. This initial LAP process was conducted in a relatively small and well-defined geographic area, with some sense of community identity. The relevant hazard (inundation of the suburb) had occurred at least twice in the previous decade, and more frequently in living memory. The project had broad support within the local council that was its primary administrative home. In addition, a number of ‘champions’ managed the process within the council over a number of years. Further, there was relative stability and expertise within the wider team who designed and implemented the LAP process. Sixth, sufficient resources were available to implement the relatively intensive program. Seventh,

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<sup>213</sup> See eg Participants 2.3, 2.4, 2.6 and 2.7.

<sup>214</sup> Participants 2.3 and 2.7.

<sup>215</sup> Participants 2.3, 2.4, 2.6 and 2.7.

<sup>216</sup> See section 5.5.5 below.

<sup>217</sup> Participants 2.3 and 2.7.

the legal framework provided a suite of tools that could be utilised to secure public participation. Eighth, the Council took the first steps in creating trust by sharing a wide range of information with the public in the early stages of the LAP process. And finally, among those legal tools was a liability shield that afforded the Council a degree of protection when conducting these activities. It is perhaps the combination of these factors that facilitated what – at least at present – seems to be a successful LAP process that involved extensive public participation.

To be sure, this case study also highlights several limitations that require attention where efforts are made to enhance public participation in climate adaptation processes. The first, and most obvious, would be to assume that more meaningful participatory processes are simple or straightforward to operate. They are not. Participants in this case study, drawing on both their personal experiences and observations of adaptation planning in action, pointed to a range of factors that complicated its development and operation, and require consideration in future adaptation planning activities. Participants reported some resistance from the local community, especially in the early stages of the LAP process.<sup>218</sup> Some residents rejected the base premise of the LAP process, and argued that changing lake levels did not require attention in the area.<sup>219</sup> There were difficult interpersonal interactions with residents that did not want the process to proceed.<sup>220</sup> Participants also reported some tensions in managing the boundaries of the process. Although no one was ultimately excluded from the process, staff had to make swift decisions to allow people from outside the Belmont South and Marks Point area to participate in community activities.<sup>221</sup> Obversely, the process allowed a relatively small community to make decisions that would have broad ramifications for the management of the entire local government area.<sup>222</sup>

Despite these challenges, the LAP process in the Belmont South and Marks Point area is typically regarded as a success. As one participant explained:<sup>223</sup>

I think our success with our first adaptation plan was the fact we had - the executive and the councils let us have the time it took to get it done properly and we ended up with a product that had so much buy-in. Ultimately the community almost took over and said well we've gone from a position of saying we don't want you to plan for this

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<sup>218</sup> Participants 2.3 and 2.7.

<sup>219</sup> Participants 2.3 and 2.7.

<sup>220</sup> Cubby (n 8).

<sup>221</sup> Participant 2.7 explained a difficult decision in allowing people from outside the LGA to participate.

<sup>222</sup> Participant 2.3.

<sup>223</sup> Participant 2.4.

because it's going to scare people and we're going to pay more insurance and we just want you to go away to actually saying well no, if we're not involved in planning for this now and – or no-one's planning for this, we as the landowner in 50 years' time are going to be stuck with a lemon and everybody else is going to be saying it's your problem and they as individuals will never have the capacity to deal with the problem.

The final Plan was published in 2017, and amendments to the relevant DCP (ie pursuant to the LAP) were subsequently approved by the Council in 2018.<sup>224</sup> LMCC has subsequently commenced two further rounds of local adaptation planning in the nearby Pelican and Blacksmiths<sup>225</sup> and Swansea<sup>226</sup> areas. Both of those ongoing processes reflect lessons learned during the initial Belmont South and Marks Point LAP process. In this respect, the initial LAP process fulfilled its objectives by providing insights allowing for incremental development before it was subsequently used in other areas.<sup>227</sup>

These findings can be usefully analysed with reference to the resilience thinking and environmental justice literatures that inform the concept of 'just resilience'. From a resilience thinking perspective, mechanisms that facilitate fuller participation are desirable for a number of reasons. First, participatory processes can enhance the knowledge base from which decisions are made. For example, local knowledge gathered during participatory processes can be used to guide the implementation of management measures.<sup>228</sup> Similarly, wider participation can enhance responsiveness to change by helping to see that change is detected and addressed more swiftly. However, resilience may equally be compromised through broader participatory processes. For example, it is rare for a diverse community to have uniform adaptation objectives; wider participation may thus reveal a multiplicity of views on preferred management activities and outcomes. Although there were differences in community perceptions of the need for adaptation to changing lake levels, it appears that they were resolved in this instance. However, in other circumstances they may compromise the effectiveness of adaptation activities, or potentially lead to conflict.

Environmental justice is also likely enhanced by broader participatory processes. Broader participation is likely to enhance procedural outcomes, including by facilitating procedural

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<sup>224</sup> Lake Macquarie City Council, *Lake Macquarie Development Control Plan 2014: Part 12.23*.

<sup>225</sup> Lake Macquarie City Council, (n 11).

<sup>226</sup> Lake Macquarie City Council, (n 12).

<sup>227</sup> See eg Participant 2.6.

<sup>228</sup> Participant 2.2 recalled the guidance of local residents in developing and implementing solutions to address drainage issues associated with changing lake levels.

fairness and offering increased opportunities for citizens to shape decision-making that effects their local area.<sup>229</sup> It is also likely to enhance justice as recognition. In some instances participatory processes will help to address non-recognition, by ensuring that more citizens and interests are identified in decision-making processes. Similarly, those processes provide more and greater opportunities to address misrecognition, or to ensure that the experiences and interests of those affected by decision are well-known to decision-makers. Environmental justice theories also highlight potential limitations of highly participatory processes. For example, power imbalances can persist in even the most participatory processes. The composition of citizens advisory groups, for example, may allow some individuals greater opportunity to shape management activities.<sup>230</sup> It is thus important that broader participation is not regarded as a panacea for all of the difficulties that might attend adaptation to climate impacts.

The LAP process outlined above served as a focal point for adaptation to changing levels in Lake Macquarie. As noted above, it brought together experts from a range of sectors, from both within and outside government, and from across levels of government. The process thus both shaped and reflected interactions across sectors and scales. The following section explores those interactions – in both the LAP process, and in the legal framework for addressing changing lake levels more broadly – in greater detail.

#### *5.4.3 Connections across sectors and between scales*

Responses to changing lake levels involve a large number of actors, especially at the local and State levels. Although this case study replicates a number of the dynamics observed in the previous Chapter 4,<sup>231</sup> it also provides some additional insights on the drivers of successful connections across sectors and scales. This section will focus on two particular features of this case study.

A number of participants pointed to the significance of coordinating across divisions within large organisations such as a local council.<sup>232</sup> Several participants observed that there were occasional challenges in coordinating actions across the various components of councils.<sup>233</sup> Some participants attributed these challenges to a lack of time, resources or

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<sup>229</sup> Note that the Belmont South and Marks Point communities also had the unusual opportunity to shape the processes through and by which they were heard – this is perhaps an unusual form of procedural justice, but should not be overlooked.

<sup>230</sup> See eg Participant 2.3.

<sup>231</sup> See Chapter 4.4.1-2.

<sup>232</sup> See eg Participants 2.4, 2.6 and 2.7.

<sup>233</sup> See eg Participants 2.4 and 2.7.



interest in the LAP project.<sup>234</sup> No doubt these challenges occur in many large organisations. However, one participant also observed that the challenge of engaging different components of the council was because the LAP process was so ‘different to what they normally do’.<sup>235</sup> This represents a different challenge for achieving connects across sectors – if it is difficult for personnel within an organisation to see how they might contribute to an adaptation planning project, it is no surprise that connections between agencies might be even more challenging to develop and maintain.

Participants reports on interactions across scales were also mixed. Some participants reported strong connections between State and local government. Those connections typically involved a context where people were able to develop a rapport by working together over time.<sup>236</sup> These connections were generally regarded as effective even where they spanned scales. On the other hand, participants were less enthusiastic about connections between the local and national levels.<sup>237</sup> Some participants reported that interactions with the national level government were:<sup>238</sup>

very much one-way, it was a case of they wanted to know what we were finding out, what the community were saying but if we wanted to have a chat to them about solving our problem the doors were shut.

In combination, these observations point to the importance of reciprocity for developing connections across sectors and scales. It is telling that – in the absence of the personal connections described in the previous Chapter 4<sup>239</sup> – it takes some work to develop and maintain those connections.

#### 5.4.4 *Information Sharing*

Information sharing is again a key feature of the operation of the legal framework for addressing sea level change in Lake Macquarie. This section identifies the formal requirements for information sharing in the relevant legal framework, while also presenting participants’ accounts on the practice and significance of information sharing in practice. As in the two previous chapters, these legal requirements for information sharing directly influence just resilience in adaptation to sea level change by ensuring a degree of openness

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<sup>234</sup> Participants 2.3, 2.4, 2.6 and 2.7.

<sup>235</sup> Participant 2.3.

<sup>236</sup> See, eg, Participants 2.2, 2.3.

<sup>237</sup> See, eg, Participants 2.3, 2.4 and 2.7. See also 2.2.

<sup>238</sup> Participant 2.4.

<sup>239</sup> See especially 4.4.2.

and transparency in the operation of the legal framework. In addition, information sharing also facilitates other features of the preceding analysis – especially the participatory processes analysed in section 5.5.1 above. This section builds on that preceding analysis by demonstrating the vital contribution of information sharing to governance of changing water levels in this case study. It notes broad similarities with analysis of information sharing requirements in the previous case study, but analyses in more detail those aspects of information sharing that are unique to the operation of the legal framework for addressing changing water levels in Lake Macquarie.

Formal legal requirements for the sharing of information again fall into three broad categories. First, general information access laws that can be used by the public (and other statutory actors) to access information<sup>240</sup> apply to governmental actors developing and implementing measures addressing sea level change in Lake Macquarie. Further, there are general laws that require the disclosure of information relating to real property in New South Wales. Planning certificates, for example, may be used to share information relating to current and anticipated future inundation and flooding risks.<sup>241</sup> Their important role in the operation of the legal framework – and its connection with the wider array of governance arrangements – will be analysed further below. Finally, each of the different sectoral laws implicated in responses to changing lake levels contain an array of information sharing requirements. Land use planning laws, for example, require the publication of draft planning instruments and DCPs to facilitate public engagement in the development of relevant planning thresholds and requirements.<sup>242</sup> In combination, these three aspects of the legal framework require relatively significant information sharing that supports the operation of various components of the legal framework in practice.

As in the previous case studies, many actors in the legal framework exceed these minimum legal requirements for publishing information in developing and implementing the relevant legal framework. Many actors and agencies published a wide range of information through governmental websites. This remains a particularly important medium for disseminating higher level policy documentation.<sup>243</sup> It was also integral to the substantial and ongoing information sharing that informed the Belmont South and Marks Point LAP process.<sup>244</sup> Participants who worked in government also reported sharing information at both formal

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<sup>240</sup> *Government Information (Public Access) Act 2009* (NSW) ('GIPA'). GIPA potentially applies to information held by both State and Local governments in NSW: s 4, Sch 4.

<sup>241</sup> See section 5.4.3 above.

<sup>242</sup> Ibid.

<sup>243</sup> See section 5.4.2 above.

<sup>244</sup> See Participants 2.3, 2.4, 2.6 and 2.7.

public meetings<sup>245</sup> and in less formal public processes, such as expert consultations with local communities.<sup>246</sup>

Participant accounts reflected a range of motivations for and drivers of information sharing identified in previous case studies. Many participants saw information sharing as a key driver of governmental accountability to the broader public. Participants variously identified increased transparency,<sup>247</sup> greater opportunities for holding governmental actors to account,<sup>248</sup> and monitoring and evaluation of strategies for addressing changing lake levels<sup>249</sup> as key outcomes of information sharing processes. Others saw information sharing as a key factor in practical problem solving.<sup>250</sup> For a number of participants, the main purpose of information sharing was to address misrepresentations of changes in lake levels and the adaptive actions that might be implemented in response to them. This was most evident in participant accounts of responding to the publication of inaccurate information in the local media. A number of participants explained that providing clear information that was an important step towards building trust with the local community.<sup>251</sup> For some participants, this was a crucial step towards establishing the legitimacy of the novel LAP process, especially in its first iteration in the Belmont South and Marks Point area.<sup>252</sup>

However, there were also some instances where the legal framework limited or adversely affected the sharing of information. One participant suggested that the legal framework at times posed a barrier by preventing the sharing of information between agencies.<sup>253</sup> A number of other participants explained how the use of planning certificates to share information regarding future flooding and tidal inundations risks had attracted negative attention.<sup>254</sup> As explained above, planning certificates are used during the conveyancing process to share information regarding risks associated with particular lots of real property. LMCC adopted a relatively robust approach to the use of planning certificates, and at one point was using them to provide information on the potential risks associated with future changes in lake levels.<sup>255</sup> However, the legal requirements for including information in the planning certificates were not always clear, and participants were typically of the view that

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<sup>245</sup> All participants in this case study.

<sup>246</sup> Participants 2.2 and 2.4.

<sup>247</sup> Participants 2.2 and 2.3.

<sup>248</sup> Participant 2.7.

<sup>249</sup> Participant 2.2.

<sup>250</sup> Participant 2.4; discussed further below.

<sup>251</sup> Participants 2.3, 2.4, 2.6 and 2.7.

<sup>252</sup> Participant 2.7.

<sup>253</sup> Participant 2.2.

<sup>254</sup> See eg Participants 2.4, 2.6 and 2.7.

<sup>255</sup> See section 5.4.3 above.

‘the ambiguity and the uncertainty [in the legal requirements for planning certificates] added costs and added time to [management activities]’.<sup>256</sup>

A number of participants also pointed to other factors that impaired information sharing. Several participants pointed to uncertainty in information as a barrier to information sharing. A number of participants cited uncertainty as a reason for caution in sharing projections of sea level change.<sup>257</sup> IPCC projections of sea level change were a common example. Although participants were generally in favour of sharing information widely, they emphasised the need to ensure that information is communicated accurately and in a meaningful way.<sup>258</sup> Others were cautious that information sharing might have unintended consequences, such as causing changes in premiums or even the availability of insurance.<sup>259</sup>

One unique feature of this case study is the emphasis placed on *generating* information to guide the development and implementation of the legal framework relating to changing lake levels. A number of participants explained how local residents offered important information regarding past changes in lake levels,<sup>260</sup> or offered ‘really sensible solutions [to] problems that needed to be addressed in the short term’.<sup>261</sup> Others pointed to the potential to use smart technology to optimise solutions to shorter term changes in lake levels.<sup>262</sup> Finally, a number of participants emphasised that the Belmont South and Marks Point LAP process was itself a learning activity that was intended to provide information and learning to inform future iterations of the LAP process.<sup>263</sup> Information sharing was thus a multi-dimensional activity that resulted in an enhanced knowledge base with the potential to support more nimble and effective responses to changing lake levels.

These information sharing activities may seem trite. Sharing a vast range of data is relatively easy given the wide array of communication tools available. However, this case study also offers some unique insights on the importance of information sharing for just resilience in adaptation to climate impacts. Sharing information with the community can help to increase preparedness, and thus reduce the costs and impacts of adaptation to changing lake levels. Providing details of expected lake levels through planning certificates, for example, can help to enhance resilience to future flooding events. Conversely, collecting

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<sup>256</sup> Participant 2.4.

<sup>257</sup> Participants 2.1, 2.2 and 2.7.

<sup>258</sup> Participants 2.1 and 2.2.

<sup>259</sup> Participant 2.2.

<sup>260</sup> Participant 2.4.

<sup>261</sup> Participant 2.6; see also Participant 2.5.

<sup>262</sup> Participant 2.5.

<sup>263</sup> See eg Participants 2.3, 2.4 and 2.7.

information from the community can help to facilitate more timely and nimble responses to change. Those same processes also have environmental justice benefits. Ensuring that information regarding changing lake levels is widely available may reveal inequities in the distribution of future flooding risk. It also enhances the decision-making capabilities of individuals. Collecting information from the community recognises their exposure to changing lake levels, and the role that they may play in developing fair and effective solutions. Information sharing activities thus have the potential to substantially influence just resilience in adaptation to climate impacts.

The Belmont South and Marks Point LAP process involved a substantial degree of information sharing. As explained above, this was a deliberate strategy pursued to enhance trust in – and the legitimacy of – the LAP process more broadly. This unusual approach was devised and implemented by LMCC officers. The following section takes this – and other examples – to demonstrate the importance of leadership in using the legal framework to develop and implement adaptation measures that enhance just resilience.

#### 5.4.5 *Leadership*

Leadership – and, in particular, the role of law in providing and supporting leadership – also emerged as a key feature of this case study. Although a lack of leadership is often cited as a barrier to effective climate adaptation at local levels,<sup>264</sup> effective leadership is also frequently identified as a source of adaptive capacity for adapting to climate impacts.<sup>265</sup> This section identifies the limited leadership that the formal legal framework provides for adapting to climate impacts, and uses participant accounts to explore how that deficit is ameliorated in practice. The section explains how leadership plays an important role in the use of legal mechanisms to achieve adaptation outcomes. It focuses particularly on the modes of leadership that were required to develop and implement the LAP process in the Belmont South and Marks Point area. The section concludes by linking leadership to two of the indicia of just resilience identified in Chapter 3;<sup>266</sup> accounting for change, and connecting across sectors and scales.

Existing scholarship on leadership in climate adaptation provides a useful framework for analysing the role of leadership in climate adaptation. Key contributions to the scholarly

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<sup>264</sup> John Nordgren, Missy Stults and Sara Meerow, 'Supporting local climate change adaptation: Where we are and where we need to go' (2016) 66 *Environmental Science and Policy* 344, 345 and the sources cited therein.

<sup>265</sup> Sabina Stiller and Sander Meijerink, 'Leadership within regional climate change adaptation networks: the case of climate adaptation officers in Northern Hesse, Germany' (2015) 16 *Regional Environmental Change* 1543, 1544.

<sup>266</sup> See Chapter 3, sections 3.3.1 and 2.3.4 respectively.

literature have identified several dimensions of leadership that are significant in the development and implementation of climate adaptation strategies.<sup>267</sup> Adaptation leadership has *visionary* dimensions, where key figures establish the strategic direction that will be followed by a particular institution and persuade others to pursue that vision.<sup>268</sup> It also has *directional* elements, involving the formulation of goals and guidelines that establish a pathway for pursuing visionary objectives. There are also pragmatic components to adaptation leadership, where influential actors and figures identify and secure the resources required to ‘get things done’.<sup>269</sup> Leadership has a *structural* dimension, where leaders provide the financial, administrative and other resources required to pursue an adaptation strategy.<sup>270</sup> Structural leadership may also require the creation of rules to guide future conduct. There is also an *entrepreneurial* or *problem-solving* component to adaptation leadership, where creative strategies for addressing deficiencies (such as a shortfall in resources) are addressed.<sup>271</sup> Finally *collaborative* leadership draws together an array of actors spanning multiple sectors and scales to pursue adaptation objectives.<sup>272</sup> Collaborative leadership may also have a temporal dimension, helping to span the longer term time scales over which many adaptation measures are likely to be implemented.<sup>273</sup> Successful adaptation activities are likely to draw upon different elements of leadership throughout their development and implementation.

The formal legal framework provides a degree of visionary and directional leadership for addressing changing water levels in Lake Macquarie. This is most readily seen in the high level objectives often enshrined in the objects clauses of relevant statutes. As noted above,<sup>274</sup> the EPAA includes among its objectives: the promotion of ‘social and economic welfare of the community and a better environment’;<sup>275</sup> and recognises the importance of ecologically sustainable development<sup>276</sup> and affordable housing.<sup>277</sup> and the protection of the

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<sup>267</sup> Framework developed with reference to Catrien Termeer, Robbert Biesbroek and Margo Van den Brink, ‘Institutions for adaptation to climate change: comparing national adaptation strategies in Europe’ (2012) 11 *European Political Science* 41 and Mattias Hjerpe and Sofie Storbjörk, ‘Climate adaptation and the significance of different modes of local political leadership: views of Swedish local political leaders’ in Jorg Knieling (ed) *Climate Adaptation Governance in Cities and Regions : Theoretical Fundamentals and Practical Evidence* (EBSCO Publishing, 2016).

<sup>268</sup> Termeer, Biesbroek and Van den Brink (n 267) 44.

<sup>269</sup> Ibid.

<sup>270</sup> Hjerpe and Storbjörk (n 267) 139.

<sup>271</sup> Ibid 139.

<sup>272</sup> Termeer, Biesbroek and Van den Brink (n 267) 44.

<sup>273</sup> Ibid.

<sup>274</sup> See section 5.5.1 above.

<sup>275</sup> EPAA (n 63) 1.3(a).

<sup>276</sup> Ibid 1.3(b).

<sup>277</sup> Ibid 1.3(d).

health and safety of building occupants.<sup>278</sup> Similarly, the *Local Government Act 1993* (NSW) signals the importance of accountability, sustainability and effectiveness in local government.<sup>279</sup> All are laudable objectives, and are visionary in the broadest sense. However, the normative force of law aside, they do little to establish strategic direction or persuade others to follow them. Rather, the formal legal framework seems merely to provide an array of tools that can be used in pursuing visionary objectives.

Participant accounts of the development and implementation of measures addressing changing water levels in Lake Macquarie point to the importance of directional, structural, problem-solving and collaborative leadership in putting the law into action. LMCC staff have, in committing to the LAP process, and in convincing others both inside the council and beyond it to support the project, demonstrated directional leadership. This was most clearly evidenced in participant accounts of how internal processes – especially LMCC’s internal working committee – raised the profile and priority of adaptation to changing lake levels within the council.<sup>280</sup> And as Participant 3.7 explained, the project attracted the attention of experts and researchers outside of the council who were interested to see how the vision of local adaptation planning was put into effect.<sup>281</sup>

There is also evidence of structural leadership in the use of the legal framework to address changing water levels in Lake Macquarie. Structural leadership was arguably demonstrated in the use of existing rules and resourcing processes to spur the LAP process. For example, the LAP process had its genesis in, and was ultimately supported by, efforts to comply with obligations to complete floodplain management and land-use planning activities. Further, many stages in the development and implementation of the LAP process were supported (or made possible) by grant funding accessed through State government coastal management schemes.<sup>282</sup> However, the LAP process also involved the creation of internal council rules that motivated different aspects of the council to participate in its development and implementation. As one participant explained:<sup>283</sup>

[T]he asset providers and people who maintained the assets ... could see that we were coming up with little rules that were going to say when you rebuilt that road you have to rebuild it 300 [millimetres] higher or whatever and they were like hang on, that’s

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<sup>278</sup> Ibid 1.3(h).

<sup>279</sup> LGA (n 129) s 7(e).

<sup>280</sup> Participant 2.3.

<sup>281</sup> See also Participant 2.4.

<sup>282</sup> Participant 2.3.

<sup>283</sup> Participant 2.4.

planners telling engineers what to do. But because of the way I suppose the Local Government Act works, the Floodplain Development Manual works ... they realised that they wouldn't be able to say no, we're not going to do that. ... I think it was only because there were some risk management consequences but also some legal consequences they thought they should get involved.

Problem-solving leadership also featured strongly in participant accounts of the LAP process. Securing the funding necessary to translate the LAP process from an idea into concrete actions is perhaps the archetypal example of 'getting things done'. Continuing to share information and encourage enthusiasm in the face of adverse media coverage is also a form of problem-solving leadership.<sup>284</sup> Many other less glamorous tasks involved in navigating a range of obstacles in the 'day to day' operation of the LAP process (eg facilitating public meetings and processes) arguably also evidence problem-solving leadership. Further, the LAP process is itself a problem-solving exercise in a much larger sense. As one participant explained:

The collaborative mode of leadership was also prominent in participant accounts of the development and operationalisation of the LAP processes. For example, the LAP process brought different components of LMCC together to share resources and expertise with a view to addressing changing lake levels.<sup>285</sup> The process also sought to expand on existing connections with relevant State government agencies, most notably the then Office of Environment and Heritage.<sup>286</sup> Finally, the heavy emphasis on public participation helped to secure a good level of support from local residents, and thus developed collaborative links with the wider community.<sup>287</sup> While each of these dimensions of measures addressing changing Lake levels has been discussed in greater detail above, it is important to emphasise here that the leadership of the council was an important aspect of successful collaboration in each instance.

The preceding analysis points to both strengths and limitations of the legal framework in providing leadership that enhances just resilience in addressing climate impacts. It is perhaps unsurprising that the law on the books provides a suite of tools for use in adaptation to changing lake levels, rather than any substantive direction on how to go about addressing the problem. This is especially the case when considering the broad

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<sup>284</sup> See section 5.5.4.

<sup>285</sup> See section 5.5.3.

<sup>286</sup> See section 5.5.3.

<sup>287</sup> See section 5.5.2.



formulation of objectives in State level legislation that is to be adapted to local circumstances by local level actors. However, the use of the law in action to address changing lake levels in Lake Macquarie evidences multiple modes or dimensions of leadership, and demonstrates the importance of that leadership in implementing relevant rules and policies. This point is reinforced by one participant's identification of leadership as a crucial extra-legal support for climate adaptation:<sup>288</sup>

It has been a struggle not having leadership at the federal and state level, that feeling of – and it happens time and again for local government, the feeling that you have to invent the wheel and every council's having to do it because for some reason at state and federal level they're not wanting to show leadership and say well – say generally to the community, this is a problem, it is a risk we have to manage and we need to get in and start planning for it and doing it.

This case study also suggests that leadership is important to the pursuit of just resilience in addressing climate impacts such as changes in water levels in Lake Macquarie. From a just resilience perspective, leadership is vital to the development and implementation of 'forward-looking' measures that anticipate the prospect of change. It also seems that leadership is crucial to addressing the distributive dimensions of climate adaptation, including by securing the resources necessary for adaptation. Leadership is also important to the implementation of participatory processes in practice; the LAP process analysed above is unlikely to have succeeded without committed leadership. The importance of leadership for connections across sectors and scales has also been emphasised above, and need not be repeated here. Leadership in the use of the legal framework has thus emerged from this case study as an important factor influencing just resilience to changing lake levels, and in adaptation to climate change more broadly.

## **5.5 Conclusion**

The story of the Marks Point and Belmont South LAP process is compelling. It provides a clear example of how existing laws can be used in novel ways to enhance just resilience in addressing climate impacts. And although the LAP is yet to be implemented in full, the replication of the process at other sites exposed to changing lake levels is an indication of its significance and success. The combination of a well-developed and patiently implemented participatory approach alongside visionary and collaborative leadership was crucial in this case study. And the LAP process was well-resourced and implemented at the

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<sup>288</sup> Participant 2.4.

community scale. The next case study explores mechanisms for developing adaptation laws that might facilitate the best of this approach at higher scales.

## Chapter Six: Case Study Three: Urban Heatwaves in Melbourne, Victoria

This chapter analyses the influence of law on just resilience in addressing heatwaves in the Greater Melbourne area of Victoria, Australia. Heatwaves are easily overlooked among the plethora of natural disasters that affect the Australian continent – they lack the obvious visual impact and tangible legacy of other extreme weather events (such as bushfires, floods and cyclones). Yet heatwaves are by far the most deadly natural disasters in Australia. Described as a ‘silent killer’,<sup>1</sup> since the mid-19<sup>th</sup> century heatwaves have accounted for more deaths than all other natural hazards combined.<sup>2</sup> Mortality from heatwaves in Australia is expected to double by 2050<sup>3</sup> as more frequent, more intense and longer heatwaves are expected.<sup>4</sup>

Heatwaves are experienced across the Australian landmass and marine environment and have different effects in those different contexts.<sup>5</sup> Urban heatwaves are a particular concern for Australia<sup>6</sup> because they will have pronounced effects on human life in the built-up areas of Australia’s cities.<sup>7</sup> In the last decade, two major heatwaves (2009 and 2014) have recently tested Melbourne’s capacity to tolerate extreme heat, and have spurred changes in relevant laws. Those heatwaves are representative of the type of conditions likely to be experienced in a climate-affected future and therefore provide a useful case study of the challenges for climate adaptation in a multicultural and rapidly expanding urban environment.

Section 6.2 provides a basic overview of the Greater Melbourne area. It points to the substantial demographic, social and economic diversity within the Greater Melbourne area itself which is a crucial factor that must shape adaptation to achieve just resilience to

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<sup>1</sup> Climate Council of Australia, *The Silent Killer: Climate Change and the Health Impacts of Extreme Heat* (2016).

<sup>2</sup> Lucinda Coates et al, ‘Exploring 167 years of vulnerability: An examination of extreme heat events in Australia 1844–2010’ (2014) 42 *Environmental Science and Policy* 33-44., 41.

<sup>3</sup> Price Waterhouse Coopers, *Protecting Human Health and Safety During Severe and Extreme Heat Events: A National Framework* (2011) 30.

<sup>4</sup> John Nairn and Robert Fawcett, *Defining Heatwaves: Heatwave Defined as a Heat-Impact Event Servicing All Community and Business Sectors in Australia* (CAWCR Technical Report No 060, 2015) 2.

<sup>5</sup> Marine heatwaves – where there is a prolonged, discrete increase in ocean temperatures in a particular location – can have significant effects on marine biodiversity while also impacting related human systems (eg fisheries); see Alistair J Hobday et al, ‘A hierarchical approach to defining marine heatwaves’ (2016) 141 *Progress in Oceanography* 227, 229. In the rural (terrestrial) environment, atmospheric heatwaves are likely to cause extensive biodiversity loss and substantially impact agricultural practices: see Lesley Hughes, ‘Climate Change and Australia: Key Vulnerable Regions’ (2010) 11(S1) *Regional Environmental Change* 189.

<sup>6</sup> As they are internationally; see Climate Council of Australia (n 1) 14-5.

<sup>7</sup> Coates et al (n 2) 39.

heatwaves. Section 6.2 explores the nature and consequences of urban heatwaves, and explains how climate change will drive more frequent, more intense and longer heatwaves in Greater Melbourne. Section 6.3 then outlines the legal framework relating to heatwaves in the Melbourne area, with a major emphasis on the State and local level laws that shape efforts to address heatwave in Greater Melbourne.

Section 6.4 then explains how the implementation of current laws both enhances and imp[airs] just resilience in addressing heatwaves. The responsiveness of the legal framework to change, the capacity for frequent adjustment of laws to socio-ecological change, and the increasing utilisation of participatory processes are all signs that the legal framework can enhance resilience and justice in addressing heatwaves. However, there are also alarming signs that the current framework will perform poorly under more frequent and severe heatwaves. While current laws and processes identify several groups especially at risk from heatwaves, they do not afford decision-makers a correlative capacity (or obligation) to address that vulnerability. There are also difficulties in coordinating the myriad of State and local level actors involved in addressing heatwaves. Section 6.5 concludes with a brief synthesis of the major lessons for enhancing just resilience through laws.

### **6.1     *Features of the Greater Melbourne area***

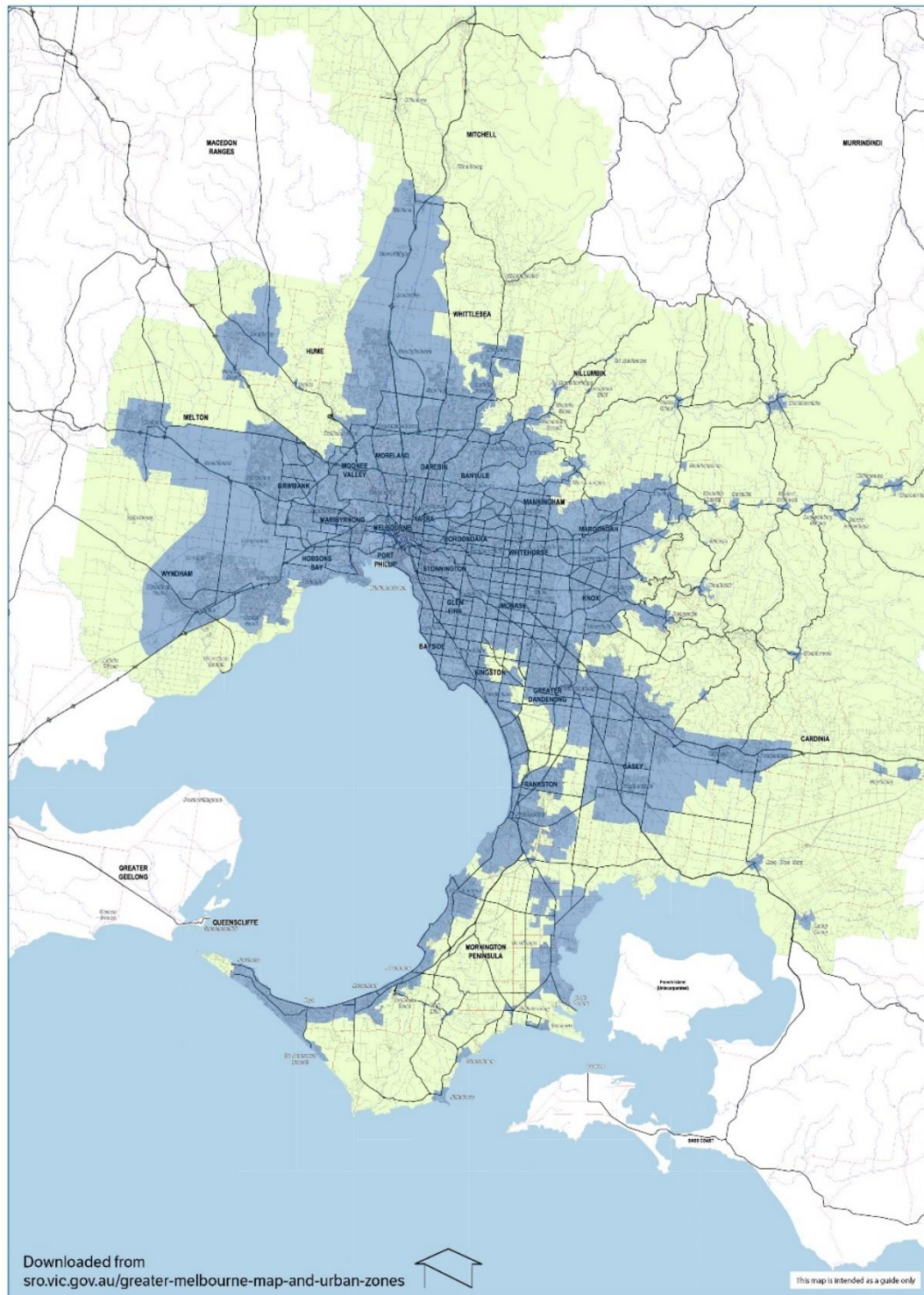
Melbourne is located in the southeastern corner of mainland Australia. bounded by Port Phillip Bay to the south, and the Great Dividing Range to the northeast. The Greater Melbourne area extends over approximately 10,000 km<sup>2</sup>, encompassing the northern and eastern shores of Port Phillip Bay (Figure 6.1).<sup>8</sup> It includes a central business district and substantially developed inner city areas surrounded by suburban sprawl to the west, east and north of the city centre. The outer boundaries of Greater Melbourne are expanding rapidly as the area's population continues to grow. The area has a temperate climate with rainfall spread relatively evenly throughout the year. Melbourne typically experiences warm summers and relatively mild winter temperatures.<sup>9</sup> However, heatwaves are a regular feature of Melbourne summer weather.

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<sup>8</sup> Greater Melbourne is a designation used in the groupings of local government areas used in Victoria; see State Revenue Office Victoria, 'Greater Melbourne and Urban Zones (Web Page) <<https://www.sro.vic.gov.au/greater-melbourne-map-and-urban-zones>>.

<sup>9</sup> Margaret Loughnan, Neville Nicholls and Nigel J. Tapper, 'Mapping Heat Health Risks in Urban Areas' (2012) *International Journal of Population Research* 1, 2.

Melbourne is perhaps the best representation of the modern, multicultural Australian city. The Greater Melbourne area has a population of approximately 5 million people<sup>10</sup> across 30 local government areas, including both small and densely populated inner city municipalities alongside larger areas that incorporate the urban fringe. Melbourne is



**Figure 6.1 – Greater Melbourne Area (Source: State Revenue Office Victoria)**

<sup>10</sup> < <https://www.abs.gov.au/ausstats/abs@.nsf/mf/3218.0> >.

*Table 6.1 – Social, economic and demographic characteristics of Greater Melbourne*

	<b>Greater Melbourne</b> <sup>11</sup>	<b>Melbourne City</b> <sup>12</sup>	<b>Brimbank</b> <sup>13</sup>	<b>Banyule</b> <sup>14</sup>	<b>Victoria</b> <sup>15</sup>	<b>Australia</b> <sup>16</sup>
<b>Age</b>						
<i>Median</i>	36	28	35	39	37	38
<i>20-24 yrs</i>	7.4	21.9	7.8	6.1	7.0	6.7
<i>40-44 yrs</i>	7.0	4.6	6.6	7.2	6.8	6.8
<i>60-64 yrs</i>	4.9	2.7	5.4	5.7	5.4	5.6
<i>80-84 yrs</i>	1.9	0.7	1.7	2.3	2.0	2.0
<b>Education</b>						
<i>Tertiary</i>	49.8	56.1	36.5	54.4	47.9	46.6
<i>Nil</i>	1.2	0.5	3	0.6	1.0	0.8
<b>Language</b> (only English spoken at home)	62.0	40.5	35.7	73.8	67.9	72.7
<b>Employment</b>						
<i>Professionals</i>	25.0	39.4	14.5	30.2	23.3	22.2
<i>Labourers</i>	8.1	5.4	14.8	5.8	9.0	9.5
<i>Median personal income</i>	673	642	487	728	644	662
<i>Household income &gt;\$3000</i>	17.9%	18%	10.1%	20.1%	15.5%	16.4%
<i>Travel to work: Car</i>	64.1	20.7	71.8	63.1	65.8	66.1
<i>Travel to work: PT</i>	7.2	25.4	7.9	10.0	5.8	4.6
<b>Dwellings</b>						
<i>Owned</i>	66.4	30.3	69.5	72.2	67.6	65.5
<i>Rented</i>	30.0	65.9	26.0	24.8	28.7	30.9
<i>Median rent</i>	350	450	300	350	325	335

*All data was collected from 2016 Census results (ABS); Education (Tertiary) data obtained by adding Bachelor Degree level and above, Advanced Diploma and Diploma level, Certificate IV and Certificate III categories of Level of highest educational attainment; Travel to work: Car determined by adding Car, as driver and Car, as passenger together; Travel to work: PT determined by adding Tram, Train etc where data available.*

<sup>11</sup> <[https://quickstats.censusdata.abs.gov.au/census\\_services/getproduct/census/2016/quickstat/2GMEL](https://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/2GMEL)>

<sup>12</sup> <[https://quickstats.censusdata.abs.gov.au/census\\_services/getproduct/census/2016/quickstat/20604](https://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/20604)>

<sup>13</sup> <[https://quickstats.censusdata.abs.gov.au/census\\_services/getproduct/census/2016/quickstat/LGA21180](https://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/LGA21180)>

<sup>14</sup> <[https://quickstats.censusdata.abs.gov.au/census\\_services/getproduct/census/2016/quickstat/LGA20660](https://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/LGA20660)>

<sup>15</sup> <[https://quickstats.censusdata.abs.gov.au/census\\_services/getproduct/census/2016/quickstat/2GMEL](https://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/2GMEL)>

<sup>16</sup> <[https://quickstats.censusdata.abs.gov.au/census\\_services/getproduct/census/2016/quickstat/2GMEL](https://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/2GMEL)>

Australia's second largest city (behind only Sydney), and fastest growing capital city, with population increasing by 2.5% in 2017-18.<sup>17</sup> Perhaps unsurprisingly, Melbourne's population – representing roughly 20% of the larger Australian population – largely replicates the demographics of the Victorian and Australian communities more broadly. However, there are also important and marked differences in the demographic characteristics of different locations within the greater Melbourne area. Table 6.1 below illustrates a selection of these key characteristics across a number of local government areas within the Great Melbourne region:

Table 6.1 suggests important demographic differences within the Greater Melbourne area. The population of Melbourne City is, for example, much younger than that of other areas; conversely, a much greater proportion of the City of Banyule's population is aged 80-84. Educational attainment is relatively low in the Brimbank local government area, where a much greater proportion of the population is employed in manual labour occupations. Unsurprisingly, the Melbourne City area is much more reliant on public transport for mobility, and a much larger proportion of the population is housed in rental properties. Each of these characteristics is potentially a source of vulnerability to climate impacts, including heatwaves.

## **6.2 *Climate Change and Heatwaves in Melbourne***

Climate change is already altering experiences of heatwaves in Melbourne.<sup>18</sup> This section explains the concept of heatwave, describes the main effects of heatwaves in general terms, and outlines the urban heat island (UHI) effect, which amplifies the effect of heatwaves in urban areas generally. It then explains how climate change will alter patterns of heat exposure in Melbourne over the coming decades.

### **6.2.1 *What are Heatwaves?***

There is no settled definition of a heatwave in Australian legal or policy circles; a variety of approaches are also employed in contemporary scientific research.<sup>19</sup> The functional description currently employed by the Bureau of Meteorology (BoM) is one prominent approach. It defines heatwaves as '[t]hree or more days of high maximum and minimum

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<sup>17</sup> < <https://www.abs.gov.au/ausstats/abs@.nsf/mf/3218.0> >

<sup>18</sup> The label 'Melbourne' is used to describe the greater Melbourne area in the remainder of this chapter.

<sup>19</sup> See eg SE Perkins-Kirkpatrick et al, 'Natural hazards in Australia: heatwaves' (2016) 139 *Climatic Change* 101, 103.

temperatures that are unusual for that location’.<sup>20</sup> The definition is operationalised through a measure of excess heat factor (EHF), which assesses daily temperature against local long-term climate and more recent local weather patterns.<sup>21</sup> Based on their relative EHF, heatwaves are subdivided into three categories:

- *Low-intensity*: heatwaves that have little or no effect and are effectively addressed through local adaptation (both autonomous and planned);
- *Severe*: relatively rare events that pose a risk to vulnerable communities, such as people in poor health, the young and elderly, people working outdoors and people experiencing social isolation;<sup>22</sup>
- *Extreme*: especially rare events that have widespread adverse effects on human health, otherwise robust infrastructure (eg power and transport) and the broader social and economic landscape;<sup>23</sup> these heatwaves present health risks for all persons (ie vulnerable or otherwise) who do not take precautions to avoid risk.

These categories provide an indication of the potential consequences of heatwaves, and inform the operation of the Heatwave Service for Australia during the summer months.

Heatwaves are caused by a combination of longer-term climatic processes and more transitory localised weather conditions. Large scale climate variations such as the El Nino-Southern Oscillation (ENSO) and the Madden Julian Oscillation (MJO) are associated with an increase in heatwave days and intensity.<sup>24</sup> Conversely, La Nina periods are typically characterised by higher than average rainfall and lower average temperatures, making heatwaves less common.<sup>25</sup> Shorter-term weather patterns cause temperature variations at local scales. Anticyclonic high pressure systems draw hot air from central Australia to more mild areas and cause sharp increases in air temperature.<sup>26</sup> Where these high pressure systems are stationary, they can cause excessively hot temperatures for several days.<sup>27</sup> Other more localised weather patterns, such as reduced rainfall, can further exacerbate the intensity of heatwaves.<sup>28</sup> It is the combination of these drivers in any one location that can lead to the most severe heatwave events.

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<sup>20</sup> John r Nairn and Robert JB Fawcett, ‘The excess heat factor: a metric for heatwave intensity and its use in classifying heatwave severity’ (2014) 12 *International Journal of Environmental Research and Public Health* 227, 228.

<sup>21</sup> For full detail on the development and implementation of the EHF measure, see Nairn and Fawcett (n 4).

<sup>22</sup> Ibid 13.

<sup>23</sup> Those effects may be, but are not necessarily, interdependent: *ibid*.

<sup>24</sup> Perkins-Kirkpatrick et al (n 19) 103

<sup>25</sup> Climate Council of Australia, *Heatwaves: Hotter, Longer, More Often* (2014) 10.

<sup>26</sup> Ibid 10; the frequency of anticyclonic high pressure systems is affected by larger planetary scale meteorological processes, such as Rossby waves; Perkins-Kirkpatrick et al (n 19) 104.

<sup>27</sup> Climate Council of Australia (n 25) 10.

<sup>28</sup> Perkins-Kirkpatrick et al (n 19) 104.



The urban heat island (UHI) effect compounds extreme temperatures in built areas such as cities.<sup>29</sup> The UHI effect refers to the difference between temperatures in rural and urban areas because urbanised areas retain more of the heat accumulated during the hottest parts of the day.<sup>30</sup> The relative density of urban buildings, the nature of building and urban materials (eg concrete and asphalt),<sup>31</sup> a lack of vegetation, changed wind patterns and reduced air movement, combined with the generation of heat through human activity, combine to cause temperatures that are noticeably hotter in the urban environment.<sup>32</sup> Those same areas are relatively slow to lose heat at night, resulting in a higher minimum temperature and increased cumulative heating during sustained hot weather.<sup>33</sup> While the UHI effect increases maximum temperatures during day times, the storage of heat and night – and the resultant increase in minimum temperatures – is especially devastating for people and communities vulnerable to extreme heat.<sup>34</sup> Although measures can be taken to reduce the UHI effect (such as the preservation or installation of urban ‘green space’; changes in building construction and design<sup>35</sup> to increase albedo and/or decrease energy consumption),<sup>36</sup> they will take time to implement and do not address the need for more immediate relief from heatwave effects.

Heatwaves have significant biophysical consequences for urban populations. The most extreme heatwaves cause substantial loss of human life. Heatwaves are Australia’s most deadly natural disaster, and have caused more than 4500 deaths in recorded history.<sup>37</sup> They also cause a substantial increase in illness and disease, both by exacerbating existing physical (eg cardiovascular) and mental illnesses,<sup>38</sup> and by causing otherwise healthy people to become unwell (eg heat stroke).<sup>39</sup> Extreme heatwaves devastate the urban environment,

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<sup>29</sup> Gertrud Hatvani-Kovacs and John Boland, ‘Retrofitting precincts for heatwave resilience: Challenges and barriers in Australian context’ (2015) 6 *Challenges* 3, 3.

<sup>30</sup> Ibid.

<sup>31</sup> H. J. Bambrick et al, ‘Climate change and health in the urban environment: adaptation opportunities in Australian cities’ (2011) 23(2 Suppl) *Asia Pacific Journal of Public Health* 67S, 70S-71S.

<sup>32</sup> Ibid 68S-69S; see also Hatvani-Kovacs and Boland (n 29) 3.

<sup>33</sup> Bambrick et al (n 31) 68S-69S.

<sup>34</sup> Nairn and Fawcett (n 20) 229.

<sup>35</sup> On the paradox of energy efficient building design in Australia, which may increase heat stress, see Gertrud Hatvani-Kovacs et al, ‘Heat Stress-resistant Building Design in the Australian Context’ (2018) 158 *Energy and Buildings* 290.

<sup>36</sup> See eg D. Lowe, K. L. Ebi and B. Forsberg, ‘Heatwave early warning systems and adaptation advice to reduce human health consequences of heatwaves’ (2011) 8(12) *International Journal of Environmental Research and Public Health* 4623, 4643-4.

<sup>37</sup> Coates et al (n 2) 41.

<sup>38</sup> E. G. Hanna et al, ‘Climate change and rising heat: population health implications for working people in Australia’ (2011) 23(2 Suppl) *Asia Pacific Journal of Public Health* 14S, 18S.

<sup>39</sup> Ibid 16S.

compromising – or causing failure in – the transport and energy<sup>40</sup> sectors. In addition to being overwhelmed by the demands of affected persons, public health infrastructure may be directly affected by extreme heat.<sup>41</sup> These infrastructure failures may amplify the effects of extreme heatwaves by limiting the capacity of urban populations to implement cooling strategies (eg using air-conditioning, or reaching a cooler space)<sup>42</sup> to alleviate the effects of extreme heat.

Heatwaves also have a wider range of damaging socioeconomic impacts. Sustained heatwaves damage the social fabric by reducing opportunities for social interactions, and increasing aggression and crime levels.<sup>43</sup> Heatwaves also limit opportunities for (safe) recreation and use of outdoor spaces.<sup>44</sup> Although some businesses may benefit from increased patronage, others may be forced to close or restrict trading.<sup>45</sup> Extreme heatwaves have a negative effect on productivity, especially for workers in manual labour or largely outdoor occupations (eg construction and maintenance work, and tourism).<sup>46</sup> Infrastructure failures can disrupt transport of goods and provisions of services, causing further economic harm.

Although these heatwave effects typically affect the entire population, they have particularly devastating effects on several vulnerable groups in urban communities. People with pre-existing medical conditions are often more vulnerable to heatwaves; this includes people suffering from chronic illnesses (such as heart disease or diabetes), people taking medication or with physical conditions that affect acclimatisation to heat, and people who have a mental illness.<sup>47</sup> Other physical characteristics, such as age (both very young and elderly people), body weight and pregnancy can also reduce tolerance of extreme heat.<sup>48</sup> Socio-economic circumstances can also increase the vulnerability of population groups to heatwave. There is substantial evidence that unemployed people, people with reduced social networks and those who work in hot environments or in jobs that require outdoor

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<sup>40</sup> Ibid 20S.

<sup>41</sup> Health infrastructure here includes both healthcare infrastructure in a narrower sense (eg hospitals) and in the broader public health sense (eg sanitation); see Lindsay F Wiley, 'Moving Global Health Law Upstream: A Critical Appraisal of Global Health Law as a Tool for Health Adaptation to Climate Change' (2010) 22 *Georgetown International Environmental Law Review* 439, 455.

<sup>42</sup> Price Waterhouse Coopers (n 3) 18.

<sup>43</sup> Ibid.

<sup>44</sup> In the longer term, this may increase the burden of chronic disease and increase the number of people vulnerable to heatwaves, as is discussed further below.

<sup>45</sup> Price Waterhouse Coopers (n 3) 18.

<sup>46</sup> Bambrick et al (n 31) 69S.

<sup>47</sup> P. Bi et al, 'The effects of extreme heat on human mortality and morbidity in Australia: implications for public health' (2011) 23(2 Suppl) *Asia Pacific Journal of Public Health* 27S, 30S.

<sup>48</sup> Ibid.

activity are also at increased risk from heatwaves.<sup>49</sup> Finally, cultural factors, such as proficiency in English, visitors from other countries and people whose cultural observances increase exposure to heat are especially vulnerable to heatwaves.<sup>50</sup> Many people belong to more than one of these population groups which compounds their vulnerability to heatwaves. Although the most extreme events affect all people, the impacts often manifest more quickly, and are more severe, for those most vulnerable to heatwaves.

There is strong evidence that the frequency, intensity and duration of heatwave events is already increasing in southeastern Australia.<sup>51</sup> Heatwaves are now occurring more frequently, lasting longer, and the hottest day of a heatwave is becoming hotter. The first heatwave of the season is also occurring much earlier, thus extending the heatwave season.<sup>52</sup> These changes in heatwaves patterns are typically associated with greenhouse gas emissions.<sup>53</sup> The following section therefore addresses the relationship between climate change, heatwaves and the UHI effect in Melbourne in further detail.

#### *6.2.2 How Climate Change will affect Heatwaves in Melbourne*

Melbourne – like much of southeastern Australia – is likely to experience more frequent, more intense and longer heatwaves under a climate impacted future. The city is geographically exposed to weather patterns that cause extreme heatwaves; those weather patterns are likely to worsen in coming decades. In addition, the city's relatively large population, along with a substantial UHI effect,<sup>54</sup> mean that its residents and infrastructure are especially vulnerable to prolonged instance of extreme heat.

Melbourne has a long history of extreme heatwaves. In 1908 an extreme heatwave impacted southeastern Australia, with Melbourne experiencing six consecutive days with maximum temperatures exceeding 40C.<sup>55</sup> Melbourne was again impacted by heatwave in January 1939, with maximum temperatures exceeding 43C on several days in the period 8-13 January. Although estimates of heat-related deaths for these events are imprecise, 20

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<sup>49</sup> Bambrick et al (n 31) 71S.

<sup>50</sup> Ibid.

<sup>51</sup> Note that heatwave characteristics vary between location due to the effect of local conditions on temperatures; see eg Climate Council of Australia (n 25) 9.

<sup>52</sup> Perkins-Kirkpatrick et al (n 19) 106; Climate Council of Australia (n 25) 9.

<sup>53</sup> Climate Council of Australia (n 25).

<sup>54</sup> DA Sachindra et al, 'Impact of Climate Change on Urban Heat Island Effect and Extreme Temperatures: A Case Study' (2016) 142 *Quarterly Journal of the Royal Meteorological Society* 172, 175.

<sup>55</sup> Queensland University of Technology (QUT), *Impacts and adaptation response of infrastructure and communities to heatwaves: The southern Australian experience of 2009* (NCCARF, 2010) 148.

(1908) and 6 (1939) deaths have been attributed to heatwave in the Melbourne area alone.<sup>56</sup> An even more deadly heatwave impacted Melbourne in January and February 1959, causing more than 100 fatalities.<sup>57</sup> Although heatwaves are well-known to the Melbourne area, cultural attitudes have tended to trivialise experiences of extreme heat.

The extreme heatwave of 2009 was a clear landmark in Melbourne's heatwave history. Weather conditions resulted in a hot air mass being directed to the south-eastern corner of the Australian continent. The heatwave occurred in two phases; an initial period from 27-31 January, followed by another intensification on 6-8 February. Melbourne experienced near-record high temperatures during the first stage of the heatwave, falling just short of its highest ever recorded temperature. The first phase did, however, set a record for Melbourne of three consecutive days with maximum temperatures over 43 degrees Celsius. After a brief respite, extreme conditions returned and Melbourne recorded its highest daily maximum temperature of 46.4 degrees Celsius on 7 February.

While the 2009 heatwave would have been remarkable for the weather conditions alone, it is prominent in the memories of many people for its devastating effects on the people and infrastructure of the urban area. The most obvious impact was increased mortality: 374 excess deaths were attributed to the heatwave, representing a 60% increase on the number of deaths expected at that time of year.<sup>58</sup> The city's public health network was placed under extreme pressure. Ambulance Victoria reported that direct heat-related call-outs were 34 times higher than previously experienced, while general practitioners and emergency departments also reported a surge in presentations for heat-related and other illnesses.<sup>59</sup> Public infrastructure – including public transport and electricity networks – were substantially disrupted, especially during the first phase of the heatwave.<sup>60</sup> Financial losses from the first phase of the heatwave alone were estimated at \$800 million.<sup>61</sup>

A similarly severe heatwave impacted much of south-eastern Australia in January 2014. A mass of hot air moved across central Australia from early January, eventually causing a record period of sustained heat in the Melbourne area from 15-17 January 2014. High minimum temperatures were a distinctive feature of this heatwave, with Melbourne

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<sup>56</sup> Nairn and Fawcett (n 4) 33.

<sup>57</sup> Coates et al (n 2) citing Rankin 1959.

<sup>58</sup> Victorian Auditor-General, *Heatwave Management: Reducing the Risk to Public Health* (Report, October 2014) ('VAGO Report') 2.

<sup>59</sup> Department of Health Services, January 2009 Heatwave in Victoria: an Assessment of Health Impacts (2011) 6-14.

<sup>60</sup> QUT (n 55).

<sup>61</sup> Climate Council of Australia (n 25) 32.

recording the highest daily mean temperature<sup>62</sup> on record. While the 2014 heatwave was less intense than that of 2009, it was of longer duration. 167 excess deaths were ultimately attributed to the 2014 heatwave, making it the second most deadly heatwave in Melbourne's history.<sup>63</sup>

Climate change will influence Melbourne's heatwave regime in several ways. First, and most simply, rising mean surface air temperatures – currently measured at approximately 0.9°C above 1910 levels – increase the likelihood of heatwaves. Climate change will also affect the drivers of heatwaves outlined above; recent research, for example, suggests that climate change will increase the severity of El Nino climate patterns, with potential to contribute to more intense heatwaves.<sup>64</sup> Air drawn from the interior of the Australian continent by anticyclonic high pressure systems will be hotter, thus increasing the severity of heatwave events. Finally, the increased use of air-conditioning and other cooling mechanisms in adapting to increased surface temperatures will further exacerbate the UHI effect, thus further amplifying warming in urban areas.<sup>65</sup> These climatic, weather and behavioural patterns are already affecting Melbourne, and are likely to increase over the next century.

### ***6.3 Legal and Governance Arrangements for Heatwave in Melbourne***

The following section details the legal and governance arrangements relevant to heatwave events in the Melbourne area. The section focuses on those aspects of Australian domestic law most directly relevant to addressing heatwaves.

#### ***6.3.1 National Laws and Heatwaves in Victoria***

National laws and agencies play an important role in addressing heatwaves in Melbourne and Australia more broadly. A key agency is the Bureau of Meteorology (BoM), the national government agency responsible for collecting and managing meteorological information at the national level. The *Meteorological Act 1955* (Cth)<sup>66</sup> empowers the BoM to: forecast weather;<sup>67</sup> issue warnings of 'weather conditions likely to endanger life or property';<sup>68</sup> supply meteorological information;<sup>69</sup> and promote the use of meteorological

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<sup>62</sup> I.e. average of minimum and maximum temperatures.

<sup>63</sup> VAGO Report (n 58) 2.

<sup>64</sup> Climate Council of Australia (n 25) 10.

<sup>65</sup> Sachindra et al (n 54) 184.

<sup>66</sup> See *Constitution* s 51(viii) re astrological and meteorological observations. This likely extends to the provision of data *Airlines of NSW Pty Ltd v New South Wales* (1964) 113 CLR 1.

<sup>67</sup> *Meteorology Act 1955* (Cth) s 6(1)(b).

<sup>68</sup> *Ibid* s 6(1)(c).

<sup>69</sup> *Ibid* s 6(1)(d).

information.<sup>70</sup> While the BoM has a developed national level structure spanning six major work groups, it also performs major functions through dedicated State and Territory divisions.<sup>71</sup> The BoM uses these powers to provide early warnings and updated through its Heatwave Service.<sup>72</sup> The Heatwave Service combines a ‘Heatwave Assessment’ showing the location of heatwave conditions over the previous two days, alongside a ‘Heatwave Forecast’ that provides a prediction of heatwave conditions over the following five days.<sup>73</sup> A series of shaded maps indicate the likely severity of heatwave conditions, from low intensity through severe and extreme heatwaves.

It is not immediately clear how national level disaster resilience or funding arrangements apply to heatwaves. Heatwaves are not ‘natural disasters’ for the purposes of the current *Disaster Recovery Funding Arrangements*.<sup>74</sup> It seems unlikely that funding would be available to governments or individuals under those arrangements. Yet it seems possible that interjurisdictional assistance – especially in the response phase – might be available in relation to heatwave. The COMDISPLAN and NATCATDISPLAN contemplate a wide range of disasters and may extend to include heatwave. Further, heatwaves often occur at the same time as other disasters such as bushfires that are natural disasters for the purposes of those Arrangements and Plans. It may be difficult – if not impossible – to achieve separation in the effects of other hazards that occur simultaneously with heatwaves. It is thus possible that heatwaves might be addressed – albeit incidentally – where national level emergency management arrangements are activated.

The bulk of emergency management law and practice occurs at the State level. Victoria’s emergency management arrangements – which have developed substantially over the past decade – are reviewed in the following section.

### 6.3.2 *State (Victorian) Laws and Heatwaves in Melbourne*

Several Victorian laws are relevant to the development and implementation of measures addressing heatwave in the Melbourne area. Climate adaptation measures are shaped by Victoria’s overarching climate change legislation, the *Climate Change Act 2017* (Vic).<sup>75</sup> In

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<sup>70</sup> Ibid s 6(1)(f).

<sup>71</sup> Chloe Munro, *Review of the Bureau of Meteorology’s capacity to respond to future extreme weather and natural disaster events and to provide seasonal forecasting services* (Report, 2011) 61-2, Appendix D.

<sup>72</sup> <<http://www.bom.gov.au/australia/heatwave/>>

<sup>73</sup> <<http://www.bom.gov.au/australia/heatwave/about.shtml>>

<sup>74</sup> Department of Home Affairs, *Disaster Recovery Funding Arrangements 2018* (2018) 7.

<sup>75</sup> See Alannah Calabro, Stephanie Niall and Anna Skarbek, ‘The Victorian Climate Change Act: A Model’ (2018) 92 *Australian Law Journal* 814 for an account of the development of this Act.

addition to extensive emission reduction commitments,<sup>76</sup> this Act establishes a framework for adaptation planning and action at the State level. The Act requires the preparation of adaptation action plans across a range of sectors, including the built environment, health and human services, natural environment, primary production and transport.<sup>77</sup> Adaptation action plans must be prepared by 2021, and are to be updated every five years.<sup>78</sup> Those Plans must identify the role and responsibility of the Victorian government, other governments and non-governmental actors in adaptation of each sector; assess whether existing policies are capable of meeting the government's wider climate change priorities; and identify any further actions required to achieve those priorities over the coming five year period.<sup>79</sup> In addition, Plans must include a report on the implementation and effectiveness of previous Plans.<sup>80</sup> The Minister must consider the policy objectives and guiding principles of the CCA, alongside climate science reports and written submissions received through the Act's processes.<sup>81</sup> Draft plans must be published on relevant departmental websites for public comment before they are finalised.<sup>82</sup> Finalised Plans must be presented to Parliament after they are prepared.<sup>83</sup>

Both adaptation action plans, and a wider range of governmental decision-making relating to climate adaptation, are informed by a range of policy objectives and principles set out in the CCA. Policy objectives relevant to adaptation include 'build[ing] the resilience of the State's infrastructure, built environment and communities',<sup>84</sup> 'managing [Victoria's] natural resources, ecosystems and biodiversity to promote their resilience',<sup>85</sup> and 'support[ing] vulnerable communities and promot[ing] social justice and intergenerational equity'.<sup>86</sup> The guiding principles relevant to adaptation include that decisions are informed by a 'comprehensive analysis of the best practicably available information about the potential impacts of climate change' relevant to governmental action;<sup>87</sup> integrate environmental, economic, health and other social considerations relevant to climate change across the short-, medium- and long-terms<sup>88</sup> through a risk management approach.<sup>89</sup> Intergenerational

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<sup>76</sup> See eg Parts 2, 7 and 8; see also Calabro, Niall and Skarbek (n 75).

<sup>77</sup> *Climate Change Act 2017* (Vic) ('CCA') s 34(4).

<sup>78</sup> Ibid s 34(1),(3).

<sup>79</sup> Ibid s 35(1); see subs (2) for other non-mandatory considerations.

<sup>80</sup> Ibid s 35(3).

<sup>81</sup> Ibid s 36; these policy objectives and guiding principles are discussed in greater detail below.

<sup>82</sup> Ibid s 37.

<sup>83</sup> Ibid s 40.

<sup>84</sup> Ibid s 22(b)

<sup>85</sup> Ibid s 22(c)

<sup>86</sup> Ibid s 22(e)

<sup>87</sup> Ibid s 23(a)

<sup>88</sup> Ibid s 24

<sup>89</sup> Ibid s 25

equity is emphasised,<sup>90</sup> along with the importance of engaging the public – ‘especially members of vulnerable or marginalised communities’ – in decision-making processes.<sup>91</sup> Finally, the CCA also requires that decisions seek to promote coherent policy approaches to climate adaptation within Victoria, and pursue cohesion with other State, national and international adaptation activities.<sup>92</sup>

The CCA contains an overarching commitment that Victorian government decisions, and the development and implementation of policies, programs and processes, appropriately take account of climate change.<sup>93</sup> This is further reinforced by a more particular requirement that makes the ‘potential impacts of climate change’ a mandatory relevant consideration for a range of decisions under Victorian law.<sup>94</sup> The potential impacts of climate change include biophysical, economic, environmental, health and other social impacts, be they beneficial or detrimental, direct or indirect.<sup>95</sup> Potential cumulative impacts are also listed as mandatory relevant considerations to be accounted for.<sup>96</sup> However, that directory provision is limited in its scope, applying only to decisions or actions that are listed in Schedule 1 to the CCA.<sup>97</sup>

Because the *Climate Change Act 2017* (Vic) commenced only in late 2017, there is little or no scope for evaluating its impact on government decision making or its wider effectiveness to date.<sup>98</sup> Much will ultimately be revealed in the continued observance of the Act’s requirements over the coming years. In particular, the development of second generation adaptation action plans in the years up to 2026 are likely to be revealing of the merits of the Victorian approach.<sup>99</sup> But whatever level of effectiveness the Act ultimately attains, it is likely to provide crucial lessons regarding the development and implementation of adaptation measures through framework legislation.

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<sup>90</sup> Ibid s 26

<sup>91</sup> Ibid s 27

<sup>92</sup> Ibid s 28

<sup>93</sup> Ibid s 20.

<sup>94</sup> Ibid s 17(2)(a).

<sup>95</sup> Ibid s 17(3)(a)-(d).

<sup>96</sup> Ibid s 17(3)(e).

<sup>97</sup> Ibid s 17(1).

<sup>98</sup> One preliminary indication in *Fishermans Bend Planning Review Panel (AC)* [2018] PPV 71 that the Act has some purchase, where the Panel observed that ‘[c]onstant ESD improvements will be required to ensure that Fishermans Bend remains a world leading example of sustainable urban renewal, and the government’s decision making obligations under the Planning and Environment Act and the Climate Change Act are met’: 11.2(iii).

<sup>99</sup> That is the statutory time frame for production of the second round of adaptation action plans.



Victoria's emergency management legislation provides much of the framework for addressing heatwave in Melbourne. The *Emergency Management Act 2013* (Vic) ('EMA') is at the heart of these arrangements. The overarching objective of the EMA is to support emergency management arrangements that 'minimis[e] the likelihood, effect and consequences of emergencies'.<sup>100</sup> The legislation sets out to achieve this objective by establishing clear roles and responsibilities for governmental agencies, while also facilitating cooperation between agencies and the implementation of an 'all hazards-all agencies' approach to emergency management.<sup>101</sup> The Act also sets out to facilitate a coordinated reform of Victoria's emergency management arrangements.<sup>102</sup>

The EMA pursues these objectives through two key steps. First, the Act created a number of new actors that shape the trajectory of emergency management in Victoria. The EMA established the State Crisis and Resilience Council as the peak emergency management body in Victoria, with responsibility for providing high level policy and strategy advice in relation to emergency management in Victoria.<sup>103</sup> The Act also establishes Emergency Management Victoria (EMV), a body corporate<sup>104</sup> that has primary responsibility for coordinating the development of whole of government emergency management policy and reform in Victoria.<sup>105</sup> EMV also provides a key connection with the national government on emergency management.<sup>106</sup> The Act also creates the office of the Emergency Management Commission (EMC),<sup>107</sup> who has primary responsibility for overseeing the conduct of emergency management activities in Victoria. In essence, the EMC has responsibility for coordinating agencies involved in emergency responses,<sup>108</sup> overseeing the response to relevant emergencies,<sup>109</sup> coordinating aspects of recovery from emergencies,<sup>110</sup> and engaging in quality assurance processes for emergency management.<sup>111</sup> As such, many of the EMC's responsibilities relate to the operational dimensions of emergency responses.<sup>112</sup> Finally, the EMA also creates the office of the Inspector-General for

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<sup>100</sup> *Emergency Management Act 2013* (Vic) ('EMA 2013') s 5(a).

<sup>101</sup> *Ibid* ss 5(b)(i),(ii);(c).

<sup>102</sup> *Ibid* s 5(c).

<sup>103</sup> *Ibid* ss 6, 7.

<sup>104</sup> *Ibid* ss 14-16.

<sup>105</sup> *Ibid* ss 17(2)(a)-(c).

<sup>106</sup> *Ibid* s 17(2)(d).

<sup>107</sup> *Ibid* s 24.

<sup>108</sup> *Ibid* s 32(1)(a).

<sup>109</sup> *Ibid* ss 32(1)(b)-(e). Relevant emergencies are those captured by the definitions in EMA 2013 (n 100) s 3, with much greater detail in the *Emergency Management Manual Victoria* ('EMMV').

<sup>110</sup> EMA 2013 (n 100) ss 32(1)(e)(ii)-(g).

<sup>111</sup> *Ibid* s 32(1)(j)-(m).

<sup>112</sup> See also *ibid* s 32(1)(h), which is revealing of this emphasis.

Emergency Management (IGEM),<sup>113</sup> who performs crucial monitoring and review functions relating to emergency management.<sup>114</sup>

Second, the Act requires the production of several State-wide plans that influence emergency management arrangement across all scales of government. The State Crisis and Resilience Council is required to maintain the Strategic Action Plan, a rolling three year plan that sets out work programs for responder agencies to maintain and develop their emergency management capabilities.<sup>115</sup> The EMC is required to prepare and update the State Emergency Response Plan (SERP), which sets out command arrangements for emergencies, while also outlining the roles and responsibilities of agencies in the response phase.<sup>116</sup> The State Emergency Recovery Plan similarly sets out roles and responsibilities of agencies and Departments in coordinating recovery from emergency events.<sup>117</sup> In combination, these documents provide the overarching framework for the development and implementation of measures addressing heatwaves.

Much of the operational detail for addressing heatwave is found in the *Emergency Management Manual Victoria* ('EMMV'), which integrates into a single resource the primary planning documents and response arrangements for all emergencies in Victoria. The Manual translates the wider emergency management framework into more specific roles and responsibilities for addressing various emergencies, including heatwave.<sup>118</sup> Part 7 of the Manual identifies the EMC as the control agency for responses to heat emergencies.<sup>119</sup> The Manual also identifies the Department of Health and Human Services (DHHS) and the Department of Environment, Land, Water and Planning (DELWP) as other components of government with supporting responsibilities relating to heatwave.<sup>120</sup> The Manual is further complemented by the *Extreme Heat Sub-Plan*, which provides a much more detailed account of the arrangements for addressing heatwaves.<sup>121</sup> A range of additional Sub-Plans, such as the *State Health Emergency Response Plan* and the *State Public Transport Disruption Plan* also contain complementary provisions relating to heatwave events.

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<sup>113</sup> Ibid s 61.

<sup>114</sup> IGEM's roles and responsibilities are discussed in further detail in section 6.4.2 below.

<sup>115</sup> EMA 2013 (n 100) s 12.

<sup>116</sup> Ibid s 54.

<sup>117</sup> Ibid s 60; note that responsibility for maintaining the recovery plan is reposed in the Minister, who also has a power to delegate responsibility to the EMC (EMA s 59).

<sup>118</sup> See EMMV (n 109) 3-ix which explicitly identifies connections between aspects of the Manual and obligations under the EMA 2013, especially s 54.

<sup>119</sup> EMMV (n 109) 7-2; heat is unique among natural event emergencies; Vic SES is the control agency for all other natural emergencies.

<sup>120</sup> Ibid 7-48 and 7-56 respectively.

<sup>121</sup> *Extreme Heat Sub-Plan*, Edition 2 (2014), 1; Sub-Plan approved by SCRC. The Sub-Plan is further supported by a set of *Operational Arrangements – Extreme Heat* that are not available to the public.

Victoria's public health legislation is also influential in the development and implementation of measures addressing heatwave. At the State level, the *Public Health and Wellbeing Act 2008* (Vic) ('PHWA') sets out a framework for strategic planning in relation to public health concerns. The Act recognises that government has a role to play in promoting and protecting public health, including through public health interventions, to 'achieve the highest attainable standard of public health and wellbeing'.<sup>122</sup> This objective is to be pursued through evidence-based decision-making that places a primary emphasis on the prevention of public health concerns.<sup>123</sup> Because public health spans multiple sectors and scales, actions are to be taken through a collaborative approach that involves all levels of government alongside business, individuals and the community.<sup>124</sup> The PHWA also encourages transparency and accountability in decision-making that is proportionate to the risk posed to public health.<sup>125</sup> The Act also invokes the precautionary principle, such that 'lack of full scientific certainty' does not preclude action to address a public health risk.<sup>126</sup>

The principles of the PHWA are given effect in both State and local level decision-making. Much of the State level decision-making relates to strategic considerations. For example, the relevant Minister is required to oversee the preparation of a State Public Health and Wellbeing Plan that identifies the needs of people in the State and establishes objectives and priorities for the promotion and protection of public health and wellbeing through necessary interventions.<sup>127</sup> The current<sup>128</sup> *Victorian Public Health and Wellbeing Plan 2015-19* ('VPHWP') recognises that climate impacts pose serious health challenges through its impacts on the built and natural environments, and acknowledges that certain groups are more exposed to health related consequences of climate change.<sup>129</sup> It counts the development of the State heat plan and responses to the 2014 heatwave event among the achievements in advancing public health in Victoria to 2015.<sup>130</sup> The potential impacts of climate change are a mandatory relevant consideration in the preparation of this State level plan.<sup>131</sup> Beyond recognising the link between climate change and public health, the current Plan does offers little in the way of policy direction or guidance on climate adaptation

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<sup>122</sup> *Public Health and Wellbeing Act 2008* (Vic) ('PHWA') ss 4(1),(2).

<sup>123</sup> *Ibid* ss 5,7.

<sup>124</sup> *Ibid* s 10.

<sup>125</sup> *Ibid* ss 8,9.

<sup>126</sup> *Ibid* s 6.

<sup>127</sup> *Ibid* s 49(2).

<sup>128</sup> The Plan is reviewed and revised on a four yearly cycle: *ibid* s 49(1).

<sup>129</sup> 43-44.

<sup>130</sup> *Ibid* 7.

<sup>131</sup> CCA (n 77) s 17, Sch 1.

generally or responses to heatwave specifically. However, climate adaptation is likely to feature more prominently when a revised plan is published late in 2019.

Two other pieces of Victorian State legislation ought be noted for their potential influence on measures addressing heatwave. The first is Victoria's general land-use planning statute, the *Planning and Environment Act 1987* (Vic). The Act establishes the rules and mechanisms for determining how land is used, developed and protected in Victoria. Although the Act makes no specific reference to heatwave (or climate adaptation), its statements of the broad objectives indicate its relevance to measures addressing heatwave. Included among its objectives are providing for the 'fair, orderly, economic and sustainable use and development of land'<sup>132</sup> and ensuring a 'pleasant, efficient and safe working, living, and recreational environment' in Victoria.<sup>133</sup> The *Local Government Act 1989* (Vic) provides local councils with a suite of powers and responsibilities with ultimate purpose of achieving the best outcomes for their local community.<sup>134</sup> Those outcomes include promoting the social, economic viability and sustainability of their local government areas,<sup>135</sup> improving the 'overall quality of life' of the local community,<sup>136</sup> and to ensure equity in access to services and facilities.<sup>137</sup> Although heatwaves and climate adaptation are not identified expressly in this legislation, it is clear that addressing climate impacts is an important step in pursuing these objectives. Both pieces of legislation are typically implemented by local councils in the context of their local conditions, and are therefore discussed further in section 6.4.4 below.

The Andrews Labor Government in Victoria has also committed to the development and implementation of a whole of government environmental justice plan.<sup>138</sup> Although the plan has yet to be developed and implemented, there are some indications that environmental justice concerns are already influencing the development of Victorian laws relating to climate adaptation. The language of environmental justice is found in the State level *Victorian Public Health and Wellbeing Plan 2015-19* which recognises the justice implications of the allocation of environmental goods and harms in the areas where people 'live, learn,

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<sup>132</sup> *Planning and Environment Act 1987* (Vic) s 4(1)(a).

<sup>133</sup> *Ibid* s 4(1)(c).

<sup>134</sup> *Local Government Act 1989* (Vic) s 3C(1).

<sup>135</sup> *Ibid* s 3C(2)(a).

<sup>136</sup> *Ibid* s 3C(2)(c).

<sup>137</sup> *Ibid* s 3C(2)(e),(f).

<sup>138</sup> See, eg, Penny Armytage, Jane Brockington and Janice van Reyk, *Independent Inquiry into the Environment Protection Authority* (Report, Victoria, 2017) 136-46; see also Brad Jessup, 'Trajectories of Environmental Justice: From Histories to Future and the Victorian Environmental Justice Agenda' (2017) 7 *Victoria University Law and Justice Journal* 48.

work and play'.<sup>139</sup> The *Climate Change Act 2017* (Vic), for example, includes equity and community engagement among the guiding principles informing the Act.<sup>140</sup> Transparency and access to environmental information is also reinforced in aspects of the emergency management framework outlined above.

This array of State level legislation is essential to the development and implementation of measures addressing heatwave in Melbourne. However, it is in the adjustment of these requirements to best serve local conditions that real progress is achieved.

### 6.3.3 *Local Laws and Heatwaves in Melbourne*

The Greater Melbourne area combines more than 30 local authorities, each of which has its own arrangements for addressing heatwave. Cataloguing those approaches would not be helpful in instance. Instead, this section focuses on the general obligations shared by councils in addressing heatwaves.

Local governments play a crucial role in the implementation of the *Public Health and Wellbeing Act 2008* (Vic). Councils are expected to protect and promote public health within their municipal districts by creating an environment that seeks to maintain and improve health including through the development and implementation of public health policies and programs.<sup>141</sup> Council activities are typically coordinated through the Municipal Public Health and Wellbeing Plan,<sup>142</sup> which identifies 'goals and strategies ... for creating a local community in which people can achieve maximum health and wellbeing'.<sup>143</sup> The plans must also explain how local councils will work with State government departments and agencies in achieving those goals, and consider the State level plan.<sup>144</sup> The plan also connects across the local scale, and must be consistent with councils strategic plans under other statutes.<sup>145</sup> Plans must also provide for public participation in the 'development, implementation and evaluation' of the Plan,<sup>146</sup> which is to be reviewed annually.<sup>147</sup> The potential impacts of climate change are a mandatory relevant consideration in the preparation of these

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<sup>139</sup> 43-44.

<sup>140</sup> Sections 26 and 27 respectively.

<sup>141</sup> PHWA (n 122) s 24

<sup>142</sup> Note here that public health and wellbeing matters can be dealt with in other documents, including the Council Plan or in a Strategic Plan; see *ibid* s 27.

<sup>143</sup> *Ibid* s 26(2)(b).

<sup>144</sup> *Ibid* ss 26(2)(d), (3)

<sup>145</sup> Including the *Local Government Act 1989* (Vic) and *Planning and Environment Act 1987* (Vic); see PHWA (n 122) s 26(2)(e).

<sup>146</sup> PHWA (n 122) s 26(2)(c); cf subs (5)

<sup>147</sup> *Ibid* s 26(4).

municipal plans.<sup>148</sup> Local councils are also required to appoint appropriate persons as ‘environmental health officers’.<sup>149</sup> These officers play an important role in the development and implementation of municipal public health and wellbeing plans.

Having sketched the broad parameters of the legal framework for addressing heatwaves in Melbourne, the next section analyses the implementation of this framework in practice.

#### **6.4    *Law for Just Resilience in addressing Heatwaves in Melbourne***

Laws addressing heatwaves in Victoria have developed substantially over the past decade. However, several aspects of the framework have recently undergone substantial reform. The following section begins by examining participants’ accounts of those changes in the wider legal framework, while contrasting the relative lack of attention afforded the incremental development of more detailed regulatory regimes in that same time.

##### *6.4.1    Transformational change in the legal framework*

Resilience-enhancing legal frameworks are typically able to identify and respond more rapidly to socio-ecological change. Although this proposition has been advanced largely as a theoretical claim, the existing literature refers to several instances where legal frameworks have developed over time to enhance resilience to particular hazards.<sup>150</sup> This case study provides another example of the capacity of legal frameworks and regulatory arrangements to enhance resilience. As described in section 6.2.2 above, Melbourne has experienced two major heatwaves in the past decade. The 2009 heatwave caused 374 excess deaths.<sup>151</sup> In the aftermath, the Victorian Bushfires Royal Commission prompted substantial changes to Victoria’s emergency management laws and arrangements. Although the Royal Commission focused primarily on bushfire, the subsequent reforms altered the emergency management framework more broadly. A second heatwave in 2014 caused 167 excess deaths. Although the heatwaves exhibited different meteorological characteristics,<sup>152</sup> a subsequent audit indicated that Victoria’s response to the 2014 heatwave – including the development of a state-wide heatwave plan,<sup>153</sup> and the enactment of the first tranche of the new emergency management arrangements – contributed to the reduction in fatalities

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<sup>148</sup> CCA (n 77) s 17, Sch 1.

<sup>149</sup> PHWA (n 122) s 29.

<sup>150</sup> See Chapter 2.5.

<sup>151</sup> See section 6.2.2 above.

<sup>152</sup> See section 6.2.2 above.

<sup>153</sup> See section 6.4.3 below.

associated with the 2014 heatwave.<sup>154</sup> The legal framework relating to heatwaves has been further revised after the 2014 event.

This overview of the development of the legal framework for addressing heatwaves in Melbourne points to a reactive process where major and devastating biophysical events are a trigger for major law reform. The relevant events and major legal developments are summarised in Table 6.2 below. So much was confirmed by a number of interview participants, who indicated that major reforms were primarily driven by biophysical events.<sup>155</sup> However, as one participant explained, the nature of the event was also significant:

what was driving it [before 2009 were concerns about] public health and there really wasn't anything in that. We were looking at things in the Local Government Act to see what people had responsibilities for. But certainly that whole change in the Emergency Management Act was very much driven by the need to change because both the fires of February in 2009 and the floods a year later had shown that the legal framework was inadequate for responding. The framework around emergency management was old ... So I think ... overwhelming evidence that [the law isn't] working [drives change].<sup>156</sup>

This statement is revealing in two respects. First, it points to the long history of retroactive development of Victorian emergency management laws in the aftermath of major natural disasters. This is hardly unique to either Victoria or heatwaves,<sup>157</sup> and is not necessarily problematic from a resilience perspective. Indeed, *ex post* review and amendment of relevant laws might be regarded as 'learning by doing' in the broad spirit of adaptive management.<sup>158</sup> Second, it explains 'overwhelming evidence' that the relevant law is not working triggers change. Implicitly, it seems short events that have a very direct and tangible impact on people and the environment (ie fires and floods) satisfy this criterion more readily than relatively intangible events with less obvious consequences (eg heatwave). These findings mirror the broader lack of awareness and attention devoted to heatwave events as described in the introductory parts of this chapter.<sup>159</sup>

Several participants suggested reasons why only the most significant events trigger law reform. They included: the lengthy timeframe associated with significant law (or policy)

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<sup>154</sup> VAGO (n 58) vii, ix.

<sup>155</sup> Participants 3.2, 3.4, 3.5, 3.6.

<sup>156</sup> Participant 3.6.

<sup>157</sup> Compare the post-fire inquiries discussed in Chapter 4.

<sup>158</sup> See Chapter 2.3.

<sup>159</sup> Cross ref 6.2.

reform;<sup>160</sup> the cultural challenge of achieving change across a number of diverse and independent agencies;<sup>161</sup> and the availability of funding or other resources to implement changes.<sup>162</sup> It is only the most significant regulatory failures that motivate efforts to develop and implement new or revised legal frameworks.<sup>163</sup> When the existing legal framework fails to achieve the desired regulatory outcomes, the legal framework is broken apart and reorganised so as to preserve those aspects of the socio-ecological system that are most keenly valued. In the language of resilience thinking, these might be described as transformational changes.<sup>164</sup>

**Table 6.2: Major changes to the law relating to heatwaves in Victoria**

<b><i>Year</i></b>	<b><i>Event</i></b>	<b><i>Law</i></b>
2009	2009 heatwave and Black Saturday Bushfires	Victorian Bushfires Royal Commission established
2010	Major floods	Victorian Bushfires Royal Commission reports
2013		<i>Emergency Management Act 2013</i> (Vic) enacted
2014	2014 heatwave	<i>Emergency Management Amendment (Critical Infrastructure Resilience) Act 2014</i> (Vic) enacted; Victorian Auditor-General's Heatwave Management inquiry completed
2016	Thunderstorm asthma event	
2017		IGEM Review of Response to Thunderstorm Asthma Event finalised
2018		<i>Emergency Management Legislation Amendment Act 2018</i> (Vic) enacted; Coroner's Report on Thunderstorm Asthma deaths delivered

Responses implicitly defined 'change' in the legal framework as a significant reworking of legislative frameworks, and reconsideration and redesign of the fundamental principles underpinning regulatory arrangements.<sup>165</sup> Paradoxically, those same participants were aware of the difficulties of achieving such substantial changes in the relevant law. A number of participants observed that it had taken almost a decade to conceive, design, implement and

<sup>160</sup> Participant 3.6.

<sup>161</sup> Participant 3.1.

<sup>162</sup> Participant 3.4.

<sup>163</sup> To be sure, the development of the legal framework for addressing heatwaves also involves a good deal of incremental change. Both participant accounts and desktop research reveal a range of processes designed to achieve less ambitious adjustments in the legal framework for addressing heatwave on much shorter timescales. These are analysed in greater detail in section 6.4.2 below.

<sup>164</sup> See Chapter 2.2.

<sup>165</sup> See eg Participants 3.2, 3.6.



embed revisions to Victoria's emergency management laws.<sup>166</sup> A number of those participants explained that the relatively lengthy process was unavoidable because of the complexity<sup>167</sup> and scale<sup>168</sup> of the relevant reforms.<sup>169</sup> It is difficult to draw further insights from this aspect of the research data, as no questions were directed to understanding participants' understandings of 'change' in this context. It is nevertheless interesting to observe that 'change' was generally associated with the most major steps in the development of the legal framework.

Although these dynamics featured prominently across interviews in this case study, some participants also pointed to signs that the legal framework is increasingly open to a forward-looking approach to addressing heatwaves. As some participants observed, the relatively detailed elaboration of the emergency management framework – in particular, its directions for response to heatwaves – obscures the important preventative components of the wider legal framework for addressing heatwaves.<sup>170</sup> More recently, greater attention has been paid to the longer-term planning demands of climate adaptation. The *Climate Change Act 2017* (Vic), for example, requires the development and implementation of forward-looking adaptation action plans across several different sectors.<sup>171</sup> Adaptation action plans must include an assessment of the capacity of existing policies to meet the priorities of the government's climate change strategy, and set out further actions that might be required to address any relevant deficits.<sup>172</sup> This is, in some respects, a fundamentally different approach when compared with the emergency management framework; rather than responding after the fact to an active event, adaptation action planning requires forward-looking assessments of the adequacy of governmental policies, and the identification of relevant measures to address any inadequacies in those policies.<sup>173</sup>

As one participant explained, a forward-looking approach makes quite different demands of the legal framework. 'Trying to 'get out ahead of the problem' involves a significant degree of work to:

understand our exposure and our capability to deal with impacts, to build capability across government [and other stakeholders]. Some of that's legal, some of that's extra-legal ... There's

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<sup>166</sup> See eg Participants 3.1, 3.2, 3.3, 3.6.

<sup>167</sup> See eg Participants 3.7-3.9.

<sup>168</sup> See eg Participant 3.6.

<sup>169</sup> A detailed account of those reforms can be found in section 6.4.3 above.

<sup>170</sup> Participants 3.7-3.9.

<sup>171</sup> See section 6.4.3 above.

<sup>172</sup> CCA (n 77) s 35(1); see more detailed discussion above.

<sup>173</sup> Participants 3.3 and 3.7 placed great emphasis on this point.

a huge chunk of capability-building work which is not about the laws, it's about the implementation and the culture and the practice but to [some] extent you can use laws to drive that.<sup>174</sup>

Thus, while formal reform of laws may achieve a change 'on the books', that change alone might not be enough to produce a significant difference in the law in action.

#### 6.4.2 *Incremental adjustment of regulatory arrangements*

Although transformational change has captured most attention, incremental adjustment of regulatory arrangements is an equally significant aspect of the development of the Victorian legal framework for addressing heatwaves. This section identifies a range of less prominent legal processes that require frequent updating of the law for addressing heatwaves. These various processes are typically concerned with the adaptation of broader principles to specific local circumstances, while also requiring the translation of those principles into actions that can be implemented and monitored to assess whether the legal framework is achieving its desired objectives. These incremental processes are often central to the operation of 'longer-term' aspects of the legal framework, such as those laws relating to public health and land-use planning. Adaptation action plans under the *Climate Change Act 2017* (Vic) will also reflect this kind of approach as the legislation commences and enters full operation over the coming years.

The legal framework for heatwaves in Melbourne compels incremental updating of regulatory arrangements through a number of statutory devices. The first are provisions that mandate revision and updating of statutory plans on a regular basis. The *Public Health and Wellbeing Act 2008* (Vic), for example, requires annual review and amendment (if appropriate) of municipal public health and wellbeing plans.<sup>175</sup> Other statutes such as the *Emergency Management Act 2013* (Vic) are less prescriptive, simply requiring that plans be updated 'as required'.<sup>176</sup> Finally, a wider range of supporting policy documents are typically subject to review on an irregular basis, or when departmental processes require review.<sup>177</sup> Relevant obligations are summarised in Table 6.3 below.

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<sup>174</sup> Participant 3.7.

<sup>175</sup> PHWA (n 122) s 26(4).

<sup>176</sup> EMA 2013 (n 100) s 53(1)(b) re state emergency response plan.

<sup>177</sup> See eg Department of Health and Human Services, *Heat Health Plan for Victoria* (2018).

**Table 6.3: Timeframes for Review of Victorian Laws related to Heatwave**

Legislation	Plan	Frequency
<i>Emergency Management Act 2013</i> (Vic)	State Emergency Response Plan	As required (s 53)
	State Emergency Recovery Plan	Not specified (s 59)
<i>Emergency Management Act 1986</i> (Vic)	Municipal Emergency Management Plan	3 years (s 21A)
<i>Public Health and Wellbeing Act 2008</i> (Vic)	State Public Health and Wellbeing Plan	4 years (s 49)
	Municipal Public Health and Wellbeing Plan	1 year (s 26)
<i>Climate Change Act 2017</i> (Vic)	Adaptation action plans (various sectors)	5 years (s 34(3))

Victorian legislation also creates a framework for ‘continuous improvement of emergency management in Victoria’<sup>178</sup> through the office of the Inspector-General for Emergency Management (IGEM).<sup>179</sup> IGEM performs crucial monitoring functions relating to emergency management. It is responsible for developing and maintaining an ‘assurance framework for emergency management’ that facilitates monitoring and assessment of the emergency management apparatus.<sup>180</sup> IGEM also undertakes system-wide reviews of emergency management agencies and processes,<sup>181</sup> monitors the implementation of reports relating to the emergency management sector,<sup>182</sup> conducts training and exercising arrangements to enhance management capabilities,<sup>183</sup> and monitors the implementation of longer-term strategic plans.<sup>184</sup> In essence, this framework is about learning from the operationalisation of the *Emergency Management Act 2013* (Vic) with a view to adjusting the emergency management framework as lessons are learned regarding its implementation in practice. At a deeper level, these reforms attempt to instil a culture of learning and revision that reduces the likelihood of a substantial failure in emergency management arrangements.

Of course, other incremental adjustments of the relevant legal framework occur without any specific statutory direction. The finetuning of Victoria’s revised emergency management arrangements provides a relevant example. In January 2014, an extreme

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<sup>178</sup> EMA 2013 (n 100) s 62(b).

<sup>179</sup> Ibid s 61.

<sup>180</sup> Ibid s 64(1)(a)

<sup>181</sup> Ibid s 64(1)(b)

<sup>182</sup> Ibid s 64(1)(ba),(c)

<sup>183</sup> Ibid s 64(1)(d)

<sup>184</sup> Ibid s 64(1)(e)

heatwave impacted the greater Melbourne area, causing more than 150 excess deaths. Although the *Emergency Management Act 2013* (Vic) had not commenced operation at the time of that heatwave,<sup>185</sup> many components of the current emergency management arrangements were in place. Heatwave had been included in emergency management arrangements in the aftermath of the 2009 event. While a direct causal link could not be established, there was a sense that the new governance arrangements had helped to reduce deaths and illnesses during the 2014 heatwave.<sup>186</sup> Nevertheless, a post-heatwave review highlighted several shortcomings in the implementation and operation of the relevant governance arrangements.<sup>187</sup> For example, the review identified that the interim allocation of control responsibility to Victoria Police had not been revised during the development of the new framework.<sup>188</sup> The EMMV was subsequently revised to designate the EMC as the control agency for heatwave events. This type of adjustment – which reflects ‘adaptability’ in resilience thinking<sup>189</sup> – helps to maintain major features of the legal framework while adjusting to changing socio-ecological circumstances.

Overall, this case study provides a useful illustration of how the legal framework experiences both transformation and adaptability. On the one hand, some aspects of the legal framework for addressing heatwaves in Victoria have undergone transformation; major reforms of Victorian emergency management laws and arrangements are the clearest example of this type of change. On the other, several aspects of the legal framework have demonstrated adaptability; longer-term planning mechanisms in the public health and land-use planning sectors offer important examples of how a legal framework can facilitate adaptation, both in the law itself and in the wider socio-ecological system. Experiences in these sectors are likely to helpfully inform the implementation of the adaptation action planning mechanism in the *Climate Change Act 2017* (Vic) over the coming years.

By providing for the adjustment of relevant rules and processes, the legal framework allows for the implementation of the law to be monitored and adjusted over time. This is most important where the effects of longer, more frequent and more severe heatwaves require new or enhanced management actions. This responsiveness will be vital to identifying and accounting for inequities in the distribution of the costs or ‘bads’ of heatwaves on the most

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<sup>185</sup> The legislation commenced on 1 July 2014.

<sup>186</sup> VAGO Report (n 58) 45.

<sup>187</sup> Ibid.

<sup>188</sup> Ibid 14-5.

<sup>189</sup> See Chapter 2.2.

vulnerable sectors of communities. The distributive implications of heatwaves are therefore addressed in the next section.

#### 6.4.3 *Addressing the distributive implications of heatwaves*

This section examines how the legal framework for addressing heatwaves in Melbourne accounts for the differential impacts of heatwaves on different sectors of the community. As with many other climate impacts, heatwaves typically have the most devastating effects on the most vulnerable members of society, including people. This section explores the level of protection that current laws provide for those most vulnerable to heatwave. While current laws recognise the disproportionate exposure of various parts of the community to heatwaves, they do relatively little in practice to address the difficulties that heatwaves present for vulnerable groups. This section explores the influence of the legal framework on the distribution of the benefits and burdens of heatwaves in Melbourne. It draws particularly upon environmental justice principles to identify opportunities for the law to enhance just resilience to heatwaves in Melbourne.

As explained in section 6.2.1 above, a wide range of community members experience heightened vulnerability to heatwaves. For some people, that vulnerability is the result of biophysical or health issues (eg age, pregnancy). For others, socio-economic (eg affordability of electricity for cooling) or cultural (eg non-English speaking) factors place them at increased danger from extreme heat. Regardless of the particular cause, it is clear that policymakers are well aware of the increased vulnerability of certain population groups to heatwave events. The *State Extreme Heat Sub-Plan*, for example, contains a detailed listing of ‘people vulnerable to the effects of heat’.<sup>190</sup> And while that level of detail is not found in relevant legislation, some statutes include more abstract references to vulnerability among their guiding principles. The *Climate Change Act 2017* (Vic), for example, includes ‘consider[ing] opportunities to increase the [adaptive capacity] of those people most vulnerable to the potential impacts of climate change’ among its guiding principle of equity.<sup>191</sup> The inequitable distribution of vulnerability to heatwave is thus acknowledged in the relevant legal framework.

Participants generally agreed that the legal and policy framework identified the majority of population groups most exposed to heatwaves in the Melbourne area.<sup>192</sup> Although

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<sup>190</sup> Appendix A (32).

<sup>191</sup> CCA (n 77) s 27(b).

<sup>192</sup> See eg Participants 3.2, 3.3 and 3.6.

participants used different examples to highlight the consequences of vulnerability, those examples were typically reflective of the content of existing policies. Participants were not concerned that vulnerable groups were overlooked in policy formulation. However, those same participants expressed concerns that the implementation of laws and policies falls some way short of addressing that vulnerability in practice. As one participant explained, '[the *State Extreme Heat Sub-Plan*] and all of those plans are designed for all Victorians so everyone's kind of lumped in under this one thing'. However, the participant continued:

I think there is a growing understanding that the impacts aren't felt equally and that emergency management plans need to be flexible and need to recognise that. So if you have a state heat health plan, that plan really needs to prioritise those people that are going to experience it worst. The middleclass people with air-conditioners in their homes [are] going to be fine ... What you need to worry about are those people who are marginalised and disadvantaged.<sup>193</sup>

In contrast, other participants pointed to practical difficulties in implementing highly differentiated measures that target vulnerable groups in addressing heatwave. One participant explained that very practical considerations such as the mobility of the population can make it difficult to effectively target vulnerable groups in addressing heatwave, especially in the immediate response to a heatwave event.<sup>194</sup> Another participant pointed out that vulnerability to heatwave can be transitory (eg some medical conditions or treatments may temporarily increase vulnerability to extreme heat) such that differential treatment is impossible in practical terms.<sup>195</sup>

There was a general consensus that resource constraints pose the greatest barrier to fuller implementation of approaches that effectively prioritise those groups most vulnerable to heatwaves. Some participants indicated that the total resource base is ultimately inadequate for addressing the consequences of heatwaves. As one participant observed: '[y]ou can bet your boots that a public hospital has got heaps of people coming in on a hot day; that [cost] gets put onto another part of the sector but it still all comes out of the same [resource] base'.<sup>196</sup> For other participants, misallocation between the State and local levels exacerbated resource limitations:

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<sup>193</sup> Participant 3.3.

<sup>194</sup> Participant 3.2.

<sup>195</sup> Participant 3.3.

<sup>196</sup> Participant 3.6.

you've got plenty of investment at [the State] level in terms of emergency planning frameworks but then at the local municipal level there's just not the investment going in so I don't think you're actually seeing the effectiveness on the ground.<sup>197</sup>

In the absence of effective governmental intervention to protect those most vulnerable to heatwaves, assistance is often provided by non-governmental actors. As one participant observed:

You know who picks up the pieces? It's the NGO sector so people that raise funds from the rest of the community and who will help people occasionally pay a bill so they don't frizzle to death. There's that sort of notion that we do have a degree of safety net that's built into [governance arrangements]. You might access cheaper electricity if you're poorer –there's that sort of built-in stuff but when people fall through that the NGO sector are there to pick them up.<sup>198</sup>

This observation is revealing of the complexities of addressing the distributive implications of heatwave in the context of existing governmental arrangements. In most instances, it seems, some kind of governmental program attempts to address inequities associated with heatwaves. Whether through the provision of direct financial relief, subsidised support or additional services, there is typically some governmental contribution directed to addressing the vulnerabilities of those most exposed to heatwave risk. However, the extent and effectiveness of that relief seems to be increasingly limited. On the one hand, governmental intervention seems to be spread relatively widely, and is not obviously directed to those groups in the greatest need of assistance. Simultaneously, the degree and frequency of support required to address vulnerability to heatwaves is increasing as their intensity increases. Nevertheless, it does seem that there has been – on the whole – an increasing reallocation of responsibility for addressing the distributive implications of heatwaves from government to individuals, communities and the NGO sector.

The passing of responsibility from government to individuals and the community arguably reflects the broader principle of 'shared responsibility' that has informed emergency management in Victoria for the last decade. Since the 2009 Royal Commission into the Black Saturday bushfires, 'shared responsibility' has been embedded in Victorian emergency management, and in governmental responses to larger and longer-term activities

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<sup>197</sup> Participant 3.3.

<sup>198</sup> Participant 3.6.

such as climate adaptation.<sup>199</sup> In the canonical statement from the 2009 Royal Commission report, the guiding principle of shared responsibility was outlined as follows:

The Commission uses the expression ‘shared responsibility’ to mean increased responsibility for all. It recommends that State agencies and municipal councils adopt increased or improved protective, emergency management and advisory roles. In turn, communities, individuals and households need to take greater responsibility for their own safety and to act on advice and other cues given to them [in relation to hazards] ...<sup>200</sup>

It is telling that many references to ‘shared responsibility’ emphasise this passage. Alone, it might be taken to imply that the burden of addressing future hazards – including future climate impacts – is increasingly to be borne by communities, individuals and households. Indeed, it would seem that interpretation has already been adopted across a range of governmental policy guidance and documents.<sup>201</sup> However, the original statement in the Victorian Bushfires Royal Commission continues:

*‘Shared responsibility’ does not mean ‘equal responsibility’.* The Commission considers that in some areas the State should assume greater responsibilities than others ... It is also necessary for the State, municipal councils and families to recognise the specific needs of vulnerable people, who might need early warning, assistance or separate consideration particularly on code red days. (emphasis added)<sup>202</sup>

It is increasingly unclear that the spirit of ‘shared responsibility’ has been operationalised in its complete sense in relevant aspects of Victorian law and governance. By focusing primarily on the first extract above, many policy documents create the impression that responsibility is to be shared evenly between governments and communities. This is not to deny the critically important reasons that Victoria focused on increased individual responsibility, especially in the aftermath of the 2009 bushfires.<sup>203</sup> It is the further step towards equal responsibility that presents difficulties. As climate change progresses, and with few indications to date that Australian governments (especially at the national and State levels) will ramp up adaptation efforts, it is increasingly likely that individuals, households and communities will meet adaptation deficits as a matter of necessity. This is not, however, an adaptation strategy available to the many people most vulnerable to climate impacts such as longer, more frequent and more intense heatwaves. Failing to pre-

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<sup>199</sup> See eg CCA (n 77).

<sup>200</sup> Victorian Bushfire Royal Commission (2010) Summary, 6.

<sup>201</sup> See eg State Extreme Heat Sub-Plan (n 121).

<sup>202</sup> Victorian Bushfire Royal Commission (2010) Summary, 6.

<sup>203</sup> Ibid Volume 2, Ch 9.



emptively address or mitigate vulnerabilities is likely to increase the *ex post* costs of recovery from heatwaves.

One concerning aspect of the Victorian experience is the extent to which it reflects existing critiques of resilience thinking. The Victorian government has effectively embedded resilience as both an objective of, and an approach to, emergency management. Resilience – especially community resilience – is further particularised as an objective in a number of the hazard specific or agency level plans that relate to heatwave events.<sup>204</sup> Although enhancing community resilience is a laudable goal, it is also an uncertain and open-ended objective. There is no guarantee that enhanced community resilience necessarily leads to increased resilience on the part of vulnerable groups. Policy and legal measures that directly address the requirements of at-risk groups are likely to alleviate vulnerability to heatwaves most effectively. In addition to providing distributive justice, such approaches also help to ensure recognition of the differential exposure of parts of the community to heatwave risks.

Participatory processes are often identified as one strategy to address the justice deficits of resilience approaches.<sup>205</sup> Participatory processes can be a most powerful mechanism for demonstrating the lived experiences of those most exposed to heatwaves. The following section therefore moves to consider how public participation is incorporated into the legal framework for addressing heatwaves in Melbourne.

#### *6.4.4 The nature and role of participatory processes*

Participatory processes are integrated throughout the legal framework for addressing heatwaves in Melbourne. Many of the participatory processes addressed in this section mirror those discussed in the previous chapter;<sup>206</sup> to avoid repetition, those participatory pathways are not analysed in great detail here. However, two unique features of this case study require particular attention. First, the recently completed public consultation on Victoria's emergency management arrangements included a particular focus on the operational response to heatwave events. While that consultation is yet to produce outcomes, the section explains why the use of the consultative process is significant. The chapter also considers the interesting emphasis on public participation in adaptation planning under the new *Climate Change Act 2017* (Vic). These two examples suggest that

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<sup>204</sup> See eg State Extreme Heat Sub-Plan (n 121) 10.

<sup>205</sup> See Chapter 3.3.3.

<sup>206</sup> See Chapter 4.5.4.

creative uses of participatory processes might enhance the development and implementation of climate adaptation laws into the future.

Victorian environmental laws have long placed an emphasis on public participation in the development and implementation of the law.<sup>207</sup> That emphasis on public participation has been carried into climate adaptation laws; the legal framework for addressing heatwaves in Melbourne includes a range of participatory processes. These are summarised in Table 6.X below. The most prominent participatory process is the publication of draft plans or statutory instruments to allow public comment on their content. As was explained in Chapter 4,<sup>208</sup> while these processes create a sense of public involvement, they typically offer the public relatively limited opportunity to exercise any influence on governmental decision-making. The data collected in this case study was not inconsistent with that analysis.

Two particular features of the Victorian legal framework for addressing heatwaves deserve more detailed attention. First, IGEM has recently completed a review of the development of Victoria's emergency management sector in the ten years following the 2009 bushfire event.<sup>209</sup> While this wide-ranging review encompasses the full spectrum of emergency management in Victoria, it is at least in part addressing responses to heatwaves. Using the Engage Victoria online platform, IGEM sought feedback on, inter alia, the allocation of control responsibilities for heatwave events in Victoria. As discussed above, this aspect of the emergency management framework has changed on multiple occasions over the past decade.<sup>210</sup> The consultation process has also collected information from the Victorian public on their experiences of the emergency management framework over the past decade. This effort to evaluate the current framework by collecting data from the general public is a departure from regular uses of participatory processes. With a final report expected in late 2019, whether and how public input shapes the review remains to be seen.

The second innovative use of public participation is in the development and enforcement of Victoria's adaptation action plans developed under the *Climate Change Act 2017* (Vic). To adapt the thoughts of one participant, the Act eschews the use of a 'big legal stick' for

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<sup>207</sup> In many respects, the Victorian experience mirrors the increasing use of public participation in environmental laws in other Australian jurisdictions, as discussed in relation to Tasmania (Ch 4) and New South Wales (Ch 5) respectively.

<sup>208</sup> See Chapter 4.5.4.

<sup>209</sup> Inspector-General for Emergency Management, *Review of Emergency Management for High-risk Victorian Communities* (2019).

<sup>210</sup> See section 6.4.2.

enforcement of adaptation obligations in favour of transparency and accountability mechanisms.<sup>211</sup> The *Climate Change Act 2017* (Vic) empowers the relevant Minister(s) to establish adaptation goals, develop a plan for achieving those goals and then evaluate its implementation over a five year period.<sup>212</sup> The ultimate accountability is to the public through the Parliament. As one participant explained, this approach can help to develop a ‘community of practice’ which places emphasis on ‘learning by doing’. They continued:

[I]t’s trying to do it in a less threatening way [than standard compliance mechanisms] and so for example you can use legal architectures which mandate certain activities, actions, obligations or you can say you have to come up with a plan and you have to tell people about what that plan is and then you have to evaluate how you went. We’re not going to tell you what has to be in that plan apart from some broad parameters but you have to do it. Use that practice of saying, reporting, doing to try and build an accountability which goes beyond [standard compliance mechanisms]. It’s much more about ‘well, if you don’t go very well you’re going to have to stump up in Parliament and say we didn’t do very well and you’re going to have to explain why and try and do better next time’.<sup>213</sup>

Viewed through the lens of just resilience, this use of public participation has both advantages and potential limitations. There is a clear emphasis on iterative development, implementation and evaluation of adaptation action plans in a manner that broadly reflects an adaptive management approach. Although ‘learning by doing’ alone may be adaptive management lite,<sup>214</sup> this step towards incremental development of goals and actions is more consistent with resilience thinking approaches to managing change. Integrating public input into both the design of adaptation action plans<sup>215</sup> and their enforcement mechanisms necessarily enhances public participation. However, relying on the democratic process to assure adaptation outcomes is problematic from an environmental justice perspective. In the first instance, it is easy to see how people vulnerable to heatwave might not be able to engage fully in democratic processes.<sup>216</sup> Even if disadvantaged groups are able to engage in that process, it is not clear that the processes will cater to the needs of all citizens. For example, research has already demonstrated that people with limited English language skills are especially vulnerable to heatwave.<sup>217</sup> It seems unlikely that the Parliamentary processes

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<sup>211</sup> Participant 3.7.

<sup>212</sup> These activities are completed with reference to the policy objectives and guiding principles of the Act.

<sup>213</sup> Participant 3.7

<sup>214</sup> See Chapter 2.3.

<sup>215</sup> See Table 6.3.

<sup>216</sup> See Chapter 2.8.

<sup>217</sup> See section 6.2.2.

will be more easily navigated than the communication procedures used to inform the wider community of impending heatwave conditions.<sup>218</sup>

The transparency and accountability mechanisms set out above are unique in Australian climate adaptation law and deserve to be tested on their full implementation over the next decade. These criticisms are not intended to diminish enthusiasm or optimism regarding the adaptation action planning model adopted in the *Climate Change Act 2017* (Vic). Rather, they point to the need for complementary measures that might reduce the gap between the democratic ideal and its lived experience for the vast majority of citizens. There are any number of ways that these processes might be augmented to support the meaningful participation of all those with an interest in the efficacy of adaptation action plans. For example, the Engage Victoria website referred to above might be used to collect public feedback on the implementation of adaptation action plans as part of the evaluation process. This might provide more accessible processes that enhance procedural justice. The process could equally be augmented to enhance recognition of groups vulnerable to heatwaves. For example, relevant ministers might be required to publish evaluations of adaptation action plans in multiple languages, or to share that information via multiple platforms. Peak bodies that advocate for the interests of vulnerable groups might be afforded a more prominent role in the process, such as the opportunity to produce their own evaluation to which the Minister must respond. In sum, this process could easily be developed to address the types of concerns that environmental justice theories suggest are likely to impact its future implementation.

It is difficult at this stage to assess the capacity of these different uses of public participation to enhance just resilience in addressing heatwaves in the Melbourne area. It may take some time before the operation of the adaptation action planning processes itself can be evaluated and refined to the point that it represents an optimal process that produces effective adaptation outcomes. Translating those plans into adaptation outcomes will require the collaboration and coordination of approaches across a wide range of sectors and governmental agencies, and across different scales of government. The coordination of measures addressing heatwave in Melbourne is addressed in the following section.

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<sup>218</sup> These measures are discussed in more detail at 6.4.6 below.

#### 6.4.5 Coordinating across sectors and scales

The effects of heatwaves and the legal measures directed to addressing heatwave risk span multiple sectors. As explained in section 6.2 above, heatwaves directly affect human health (causing death and illness), socioeconomic circumstances (eg loss of productivity and reduced trading activities) and the natural and built environment (eg transport and energy infrastructure). While the legal framework must provide adequate support within each sector, it also plays an important role in supporting linkages between a range of sectors that pose quite different adaptation challenges. The following section explores how these connections are developed and maintained in the context of addressing heatwaves in Melbourne, and also points to some of the difficulties that lawmakers face.

The legal framework for addressing heatwaves encourages linkages between sectors in a variety of ways. Each of the major components of the legal framework makes some attempt to support coordination of adaptation measures across the wide range of sectors involved in addressing heatwaves. In some instances, legislation strongly encourages or mandates coordination between governmental actors and agencies who typically operate in separate areas. The *Climate Change Act 2017* (Vic), for example, allows for responsibility to develop an adaptation action plan to be shared between more than one Minister.<sup>219</sup> This may mean, for example, that responsibility for preparing the health and human services system adaptation action plan may be shared by ministers with responsibility for emergency management and the public health system.<sup>220</sup> Heatwave will similarly require attention in other adaptations action plans, such as those relating to the built environment and the energy system.<sup>221</sup> Although this legislative direction operates at the highest level of government, ministers would be supported by the relevant departments in fulfilling these obligations.<sup>222</sup> This is just one indication that the adaptation plans and actions are to be coordinated across governmental agencies, with a view to achieving cross-sectoral synergies in the development and implementation of adaptation actions.

Coordination between governmental agencies is also crucial on much shorter timescales, such as in response to and recovery from heatwave emergencies. As the *Extreme Heat Sub-Plan* recognises, '[a]lmost all government agencies and a wide range of non-government

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<sup>219</sup> CCA (n 77) s 38(3).

<sup>220</sup> This is a hypothetical example closely linked to this case study.

<sup>221</sup> CCA (n 77) s 38(4)(a) specifies the built environment as an area requiring an adaptation plan; the energy system may be addressed as a prescribed system under s 38(4)(h).

<sup>222</sup> See Martijn Wilder, Anna Skarbek and Rosemary Lyster, Independent Review of the *Climate Change Act 2010* (Vic) Recommendation 21 (92) where the proposed adaptation plans were to be completed by departments.

agencies have a role in managing the impact and consequences of heat events on their interests'.<sup>223</sup> This distribution of roles and responsibilities, as part of an 'all agencies, all hazards' approach, makes coordination a priority in addressing heatwave events.

The legal framework responds to the challenge of coordinating a large range of governmental agencies (and some non-governmental actors) in two ways. First, the legal framework clearly allocates responsibility for coordination of measures addressing heatwave to a select number of governmental actors. The *Emergency Management Act 2013* (Vic), for example, requires EMV to coordinate the development of whole of government policy for emergency management;<sup>224</sup> the EMC is similarly obliged to coordinate the activities of agencies that have a part to play in responding to emergency events<sup>225</sup> and the recovery process.<sup>226</sup> The EMMV and its *Extreme Heat Sub-Plan* provide much greater detail on the way that various agencies contribute to a coordinated response to heatwave emergencies. The EMMV clearly identifies the EMC as the control agency for heatwave emergencies,<sup>227</sup> and outlines the roles and responsibilities of other governmental agencies (such as DHHS and DELWP) in the immediate response to heatwave events.<sup>228</sup> The legal framework thus ensures that a coordinating agency or office is in place for the duration of heatwave emergencies.

Secondly, the legal framework can go further and specify the processes through which coordination is managed, and the substantive roles and responsibilities of the various components of government involved in addressing heatwaves. The *Extreme Heat Sub-Plan* provides much of this practical and operational detail in relation to heatwaves in Victoria.<sup>229</sup> The Sub-develops arrangements to facilitate coordination of response to heatwaves across government. It allows the EMC to appoint a State Controller – Heat (SC-H) to lead the response to heatwave events, and to work collaboratively with the controllers of other concurrent events (eg bushfires).<sup>230</sup> The State Coordination Team (SCoT) brings together senior officials with expertise in the emergency management, health, energy, transport, agriculture and education sectors to support the EMC in their coordination role. The SCoT meets weekly during the summer period to maintain readiness to address expected

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<sup>223</sup> State Extreme Heat Sub-Plan (n 121) 27.

<sup>224</sup> EMA 2013 (n 100) s 17(2)(a).

<sup>225</sup> Ibid s 32(1)(a).

<sup>226</sup> Ibid s 32(1)(g).

<sup>227</sup> EMMV (n 109) p 7-2.

<sup>228</sup> EMMV (n 109) 7-48 and 7-56.

<sup>229</sup> State Extreme Heat Sub-Plan (n 121) 15-26.

<sup>230</sup> Ibid 16-17.

heatwave events.<sup>231</sup> A similarly constituted State Control Team (SCT) oversees responses to heatwaves.<sup>232</sup> A Joint Public Information Committee (EMJPIC Heat) is responsible for sharing information regarding heatwaves with the public.<sup>233</sup> These teams provide a central hub from which each department or agencies own internal processes can be coordinated to achieve the best possible overall outcomes in responding to a heatwave event.<sup>234</sup>

Participants generally took a positive view of coordination between the various agencies in addressing heatwave events in Melbourne. Several accounts described personnel working together effectively across a wide range of different governmental agencies. Participants pointed to several factors that facilitated cooperation across sectors, including interchange of personnel over time;<sup>235</sup> joint training and exercising of plans and procedures;<sup>236</sup> the integrated approach to the review of emergency management activities;<sup>237</sup> the frequency with which Victoria's new emergency management activities have been activated since 2013;<sup>238</sup> and personal relationships and connections, especially within the emergency management and response community.<sup>239</sup> A number of participants referred to shared understandings of agency roles and responsibilities – informal agreements – and existing working relationships as central to the coordination of agency action in practice.<sup>240</sup> Participants generally adopted the view that those connections and relationships were valuable supports to the operationalisation of the relevant legal framework.

However, some participant accounts also pointed to difficulties encountered in the implementation of coordinated responses in practice. One participant cited the size of government agencies as a barrier to coordination; '[an agency] like the Department of Health is a massive beast and a massive sector within itself. So trying to bring one segment of that and have it be prepared to play its part in something else [is difficult]'.<sup>241</sup> Other difficulties were related more directly to EMV itself. Some participants expressed concern that EMV was 'operat[ing] in a little bit of a silo [and] it's not very well connected with the other government departments'.<sup>242</sup> Others pointed out that any new agency would

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<sup>231</sup> Ibid 19, 24.

<sup>232</sup> Ibid 24.

<sup>233</sup> EMJPIC is discussed in further detail in section 6.4.6 below.

<sup>234</sup> Ibid goes into some detail on the particular roles of each agency see 20-23.

<sup>235</sup> Participants 3.1, 3.2 and 3.6.

<sup>236</sup> Participant 3.6.

<sup>237</sup> Participant 3.6.

<sup>238</sup> Participant 3.3.

<sup>239</sup> Participant 3.2.

<sup>240</sup> See eg Participant 3.2.

<sup>241</sup> Participant 3.4.

<sup>242</sup> Participant 3.4

encounter some difficulties in establishing connections with agencies that have a long history of independent governance.<sup>243</sup> Those participants nevertheless expressed the view that those barriers would be addressed as the new emergency management framework was operationalised in full and itself became embedded in agency practice and culture.<sup>244</sup>

Participants also explained that agencies often exhibited different attitudes to coordination and cooperation in different contexts. One participant emphasised that while coordinated approaches were rarely opposed in operational contexts (ie in the active response to a heatwave event), there was greater resistance to coordination in relation to strategic planning or management activities.<sup>245</sup> This observation mirrors the level of detail on coordination found in the existing legal framework. While the EMA, EMMV and *Extreme Heat Sub-Plan* provide a relatively substantial level of detail on coordination of operational activities across agencies, relatively little attention is directed to coordination of longer-term strategic planning in the emergency management sector. Similarly, the broader legal framework does not obviously mandate coordination across areas that drive exposure to heatwave over longer time scales, such as land use planning. While the adaptation planning requirements of the *Climate Change Act 2017* (Vic) may go some way to addressing this gap, that framework provides no express guidance on coordination between agencies. The nature and degree of coordination and collaboration achieved in that context remains to be seen.

#### 6.4.6 *Sharing information about heatwaves*

Information sharing serves a number of purposes in the operation of legal framework.<sup>246</sup> Information sharing is vital to the performance of governmental activities that span multiple sectors and scales. It is equally essential to the operation of participatory processes that allow the public to play a role in governmental decision-making. These themes are equally significant in addressing heatwaves in Victoria. Information sharing is central to the operation of monitoring and enforcement activities which ensure that the governance frameworks achieve their substantive purposes, while also providing an accountability and transparency mechanism that helps to ensure that legal processes observe the basic tenets of good government.

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<sup>243</sup> Participant 3.1.

<sup>244</sup> See eg Participant 3.1.

<sup>245</sup> Participant 3.1.

<sup>246</sup> See Chapter 4.5.5



The legal framework for information sharing in relation to heatwaves has two streams. First, the various governmental agencies involved in addressing heatwaves are required to comply with the processes and practices set out in general freedom of information laws.<sup>247</sup> Further, relevant agencies and governmental actors are also required to observe the requirements for publication of information set out in their constitutive statutes, and in the various statutes that they administer. For example, State government agencies such as the Department of Health and Human Services are subject to general obligations under FOI laws, and must also observe the public notice requirements set out in public health laws such as the *Public Health and Wellbeing Act 2008* (Vic).

Agencies also engage in a wide range of information sharing practices that are not mandated by legislation. Each of the governmental agencies identified in Parts 6.4.3 (State) and 6.4.4 (local) above share vast quantities of information, in particular via their official websites. At the State level, the Department of Health and Human Services and Emergency Management Victoria place a particular emphasis on making information relating to heatwave available to the public. This information ranges from generalised advice on preparing for, responding to and recovering from heatwaves events directed to individual citizens and communities,<sup>248</sup> through the publication of response arrangements and strategies implemented immediately prior to, during and after emergency level heatwave events.<sup>249</sup> In addition, information is shared between agencies during heatwave events, including through management systems coordinated by Emergency Management Victoria.

The targeted sharing of information is itself an important adaptation strategy in addressing heatwaves in Victoria. The DHHS's Heat Health Alert system is used to advise governmental agencies (emergency services and relevant departmental components), major service providers (such as aged care and private education providers), local governments, peak bodies or advocacy groups and the general public of extreme heatwaves that are likely to negatively impact human health and the built environment.<sup>250</sup> Heat health alerts are issued by the Chief Health Officer (via email) when the forecast temperature is likely to reach or exceed pre-determined heat health temperature levels for forecast districts within

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<sup>247</sup> *Freedom of Information Act 1982* (Vic).

<sup>248</sup> See eg <<https://www2.health.vic.gov.au/public-health/environmental-health/climate-weather-and-public-health/heatwaves-and-extreme-heat>>.

<sup>249</sup> See section 6.4.3 above.

<sup>250</sup> See <<https://www2.health.vic.gov.au/public-health/environmental-health/climate-weather-and-public-health/heatwaves-and-extreme-heat/heat-health-alerts>>.

Victoria.<sup>251</sup> These alerts are expected to trigger organisational and local level heat health plans in anticipation of a heatwave, and so to activate the various shorter-term adaptation measures set out in those plans.<sup>252</sup> In addition, the information is made available to the general public (via a relatively simple email subscription) such that individuals and community groups can activate their own response measures in anticipation of heatwaves. Participants variously described how heat health alerts have been incorporated in measures addressing heatwave, indicating that the government plays an important role in activating heatwave adaptation measures.<sup>253</sup> Information sharing in this sense is itself a direct and pragmatic adaptation strategy that plays an important role in alleviating the impacts of heatwaves.

Information sharing is also crucial to the coordination of measures across sectors and scales. As explained above, heatwaves in Victoria are addressed within an ‘all agencies, all hazards’ framework that distributes roles and responsibilities for responding to emergencies across the breadth and depth of governmental agencies.<sup>254</sup> That framework can only function with a high degree of coordination across the various elements of government implicated in responses, and with the range of non-governmental agencies that support measures addressing heatwaves. The Victorian government has used some of its resources to create the human, physical and virtual infrastructure necessary to facilitate such information sharing. For example, the development of a network of liaison officers that connects the wider Victorian government with EMV helps to ensure that information is available across the various governmental agencies that play a role in addressing heatwave emergencies. In addition, EMV provides some of the physical infrastructure for coordination of emergency responses to heatwaves, including a command centre that includes workspaces for the liaison officers from across the breadth of Victorian government. Those physical workspaces are complemented by information technology that allows liaison officers to perform their role from within the command centre. Together, these components help to create a mechanism for collecting and disseminating relevant

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<sup>251</sup> There are nine (9) weather forecast districts used to determine and issue heat health alerts; see eg Department of Health and Human Services, *Heat Health Alert System: Information for Local Government and Other Stakeholders* (2019) 1. The threshold temperature varies across these forecast districts; greater Melbourne is located in the Central District, and has a heat health temperature threshold of 30 degrees Celsius (1). Other districts have a higher threshold that accounts for acclimatisation of the population to local temperatures, and the absence of the urban heat island effect.

<sup>252</sup> DHHS Information Sheet, 2. This expectation is reflected in the incorporation of heat health alerts into the vast majority of the statutory and additional plans analysed in the conduct of this case study; references to the heat health alert systems were observed across various State government level plans, in local government documents and in documentation prepared by organisations outside of government, such as peak groups and advocacy bodies. See eg Participant 3.2.

<sup>253</sup> See eg Participant 3.5.

<sup>254</sup> See section 6.4.3 above.

information within government and with major stakeholders to assist the coordination of measures addressing heatwaves.

Despite these relatively sophisticated formal arrangements and infrastructure, informal information sharing is also an important aspect of adaptation to more frequent, intense and severe heatwaves in Victoria. Participants reported that interpersonal networks are an important source of practical guidance and accrued wisdom on the implementation of measures addressing heatwaves in practice.<sup>255</sup> Several participants had personal work experiences that spanned multiple aspects of the Victorian (or other) governments; this interchange of personnel was most obvious in the emergency management sector, where a relatively high level of interchange was described.<sup>256</sup>

In addition to the availability of the heat health alert service, Victoria's emergency management arrangements also provide for a coordinated approach to sharing information regarding active heatwave events with the public. The Emergency Management Joint Public Information Committee's (EMJPIC) primary role is to ensure that communication of information with the public is coordinated across agencies.<sup>257</sup> In the urban heatwave context, EMJPIC coordinates messaging from the Chief Health Officer, DELWP and Public Transport Victoria to ensure that critical information is shared with the public.<sup>258</sup> While the development of information sharing processes supports wider adaptation measures, it is also itself an important adaptation strategy for addressing heatwaves.

These examples are indicative of the wider significance of information sharing in facilitating just resilience to climate impacts such as heatwaves. Information sharing facilitates the governmental framework the opportunity to identify and adjust to changes in the socio-ecological system in a relatively prompt and timely manner. Further, information sharing with the general public is itself an important adaptation strategy in the context of heatwaves. Proactive information sharing also has environmental justice implications; communicating up-to-date information – especially to the general public – can help to ameliorate the substantive impacts of heatwaves, and is a recognition of the impacts of heatwaves on individuals and the community. These mechanisms thus make an important contribution to just resilience.

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<sup>255</sup> See eg Participants 3.1, 3.2.

<sup>256</sup> See eg Participants 3.1, 3.2 and 3.7.

<sup>257</sup> EMMV (n 109) 3-17.

<sup>258</sup> State Extreme Heat Sub-Plan (n 121) 13.

## **6.5 Conclusion**

This chapter has used the just resilience principles to analyse the development of Victoria's laws relating to heatwaves. The case study demonstrates some of the challenges in developing and implementing major reforms to climate adaptation laws. The development of adaptation action plans under the *Climate Change Act 2017* (Vic) will likely prove a useful case study on the effectiveness of the framework approach. Conversely, the step changes to emergency management arrangements demonstrate the capacity to enhance just resilience through the development of existing laws. However, Victoria's laws require further development if they are to meaningfully account for the distributive implications of more intense and more frequent heatwaves. Tensions between the current approach to shared responsibility in practice and the demands of just resilience will not be resolved swiftly, but will determine the trajectory of Victoria's heatwave laws in the coming decades.

## **Chapter Seven:        Synthesis and Analysis: Just Resilience in Australian Climate Adaptation Laws**

This chapter draws together findings from the previous three case studies to present broader insights on the influence of adaptation laws on just resilience to climate impacts. Each case study addressed a climate impact of significant public policy importance that is already presenting difficulties for Australia's laws. Each case study analysed one particular climate impact in a different Australian jurisdiction. However, the three diverse case studies were selected with a view to meaningful cross-case analysis.<sup>1</sup> This chapter therefore steps back from the detail of the case studies to examine the broader dynamics of pursuing just resilience through climate adaptation laws. In so doing, the chapter develops broader propositions and insights that are potentially relevant to the wider development, implementation and evaluation of climate adaptation laws.

The chapter proceeds in four main parts. Section 7.1 identifies some important points of comparison emerging from the case studies. It considers the significance of different approaches to connections between sectors and across scales, information sharing and public participation mechanisms in each of the three case studies. Section 7.2 then goes on to address two cross-cutting considerations that underpin analysis of the three case studies: information sharing and leadership. These issues transcend the just resilience principles and individual case studies, but are nevertheless crucial to the pursuit of just resilience through Australia's climate adaptation laws.

The remaining two sections return directly to the principles of just resilience as set out in Chapter 3. Section 7.3 explores relationships between the principles, identifying linkages described by participants in the interview data, before sketching a wider range of potential interactions between the principles. Although links between the principles were not an express focus of this research, it nevertheless provides some important insights relevant to the implementation of the principles in practice. Finally, section 7.4 identifies legal devices that might be utilised to support or accelerate the implementation of the principles in practice and some of the major legal barriers to the pursuit of just resilience in climate adaptation. It concludes by signalling important ways in which the law can drive the implementation of the just resilience principles.

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<sup>1</sup> See Chapter 1.5.1.

## 7.1 *Comparisons across the Case Studies*

This section synthesises the findings on each of the four principles of just resilience distilled from the three case studies. These cross-case comparisons are helpful in revealing commonalities and differences that might inform the development of climate adaptation laws across a wider range of contexts and jurisdictions. The comparisons highlight particular opportunities for the law to enhance justice resilience in adaptation to climate impacts.

### 7.1.1 *Climate Adaptation Laws and Change*

The development of Australia's climate adaptation laws has been largely a reactive process to date. Many of the major legal developments in each of the case studies is an after-the-fact response to the manifestation of a particular climate impact or event. The reshaping of Victoria's legal framework for addressing heatwaves is perhaps the most striking example. As explained in Chapter 6, those laws have undergone significant changes to address shortcomings revealed by major heatwave events. The legal framework for addressing fire in the TWWHA exhibits a similar episodic dynamic in response to major fire events and associated review processes. The reforms do not involve any systematic experimentation or learning to determine optimal legal arrangements for climate adaptation, but rather involve ad hoc processes concerned with addressing the shortcomings of the existing framework.

There are, however, ongoing efforts to institute systematic learning and review processes that more closely resemble the 'back end' approach of adaptive management. Victoria's *Climate Change Act 2017* (Vic), for example, requires that the sector-based adaptation action plans include a report on the implementation and effectiveness of previous iterations of the plan.<sup>2</sup> This systematic monitoring of previous plans may result in incremental improvements in the design, implementation and effectiveness of adaptation action plans over time. The efficacy of this approach will become clearer as the first iteration of adaptation action plans are developed, implemented, monitored and reviewed over the coming decade.

Conversely, there are some examples of 'forward-looking' processes that seemingly enhance adaptation laws' capacity to address change. Victoria's adaptation action plans are necessarily forward-looking as they identify future actions in pursuit of the State's climate change strategy.<sup>3</sup> The wider array of statutory plans that help to address heatwaves in

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<sup>2</sup> *Climate Change Act 2017* (Vic) s 35(3).

<sup>3</sup> *Ibid* s 35(1).

Victoria are similarly concerned with addressing future developments. But perhaps the most obvious example comes from coastal management. The Belmont South and Marks Point Local Adaptation Plan (LAP) sets out a selection of future management options to be implemented as water levels change in Lake Macquarie. The LAP provides for a range of future adaptation options, without dictating a particular adaptation pathway. However, that plan addresses a relatively conservative range of potential adaptation outcomes. It may be easier to develop ‘forward-looking’ plans where incremental change is likely to be sufficient to preserve the status quo and where transformative change is therefore unlikely to occur.

The three case studies contain many examples of legislative devices likely to facilitate greater flexibility. Many of the relevant statutes across each of the case studies identify climate adaptation as a statutory objective. Those same statutes typically provide for discretionary decision-making in accordance with a range of principles. This approach is most clearly reflected in Victorian laws relevant to heatwave, where relevant guiding principles are listed and defined in legislation.<sup>4</sup> Those same statutes also typically place a time limit on the operation of statutory plans. Those statutes do not mandate systematised learning from the development and implementation of those existing laws. Nor do they create the legal infrastructure that might facilitate such learning. They do, however, provide the opportunity for incremental development of existing laws informed by the experiences and insights of the expert practitioners charged with designing and implementing subsequent iterations of those laws.

It is telling that laws in each of the three case studies already contain many of the devices identified as sources of the flexibility required in future adaptation laws.<sup>5</sup> While there are some examples of transformative development in existing adaptation laws, those periods of growth are typically driven by external events, rather than the exclusive operation of legal processes. Participants in each of the three case studies identified significant natural events as a major driver of legal change. Conversely, there were relatively few accounts that emphasised the importance of legal processes in facilitating incremental development of adaptation laws. This conclusion may simply reflect the development of the law in the three case studies. But it might also indicate that laws are not yet sufficiently nimble in adapting to experiences of climate impacts.

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<sup>4</sup> CCA (n 2) and *Public Health and Wellbeing Act 2008* (Vic).

<sup>5</sup> See Chapter 3.3.1.

Responsiveness to change alone will be insufficient to address climate impacts. Substantive responses will be required to address inequities and unfairness resulting from climate adaptation. The following section therefore evaluates the capacity of Australia's current adaptation laws to address the distributive implications of climate adaptation.

### 7.1.2 *Distributive Implications of Climate Adaptation*

Climate adaptation will have inequitable impacts on socio-ecological systems. The costs and benefits of adaptation will be distributed unequally between individuals and communities, between the social and ecological domains, and over time. Those individuals and communities that have contributed least to climate change are likely to experience a disproportionate quantum of its impacts. This section draws together key lessons emerging from the case studies on the role that law might play in ameliorating inequities in adaptation to climate change.

Existing adaptation laws often identify distributive implications of climate change as a relevant consideration in adaptation decision-making. Equity is most notably a guiding principle in the *Climate Change Act 2017* (Vic), which helpfully points to the social, ecological and intergenerational dimensions of environmental justice.<sup>6</sup> Some statutory plans and guidelines go further, identifying expressly those groups most at risk from particular climate impacts. The Victorian *Extreme Heat Sub-Plan*, for example, lists a range of groups widely recognised as being especially vulnerable to heatwaves.<sup>7</sup> That plan guides operational responses to heatwave events, and its recognition of vulnerable groups is important of itself. However, the identification of a particular group does little or nothing to see that their vulnerability is accounted for in medium- or longer-term decision-making on adaptation to heatwaves. Although the legal framework cannot remedy all of the structural causes of environmental injustice, superficial success in identifying vulnerable groups in law may in fact obscure longer-term failings to substantively remedy prevailing inequities.

However, existing laws in the three case studies do little to guide trade-offs between competing interests in climate adaptation. There is little express guidance on management priorities in adaptation laws. Earlier versions of the TWWHA Management Plan had set out a hierarchy of operational responses to fire, but those details were controversially omitted from the current plan. There is no direct guidance on management priorities in addressing heatwaves in urban Melbourne or for the LAP process in Lake Macquarie.

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<sup>6</sup> CCA (n 2) s 26.

<sup>7</sup> *Extreme Heat Sub-Plan*, Edition 2 (2014), Appendix.



Although various statutes identify broad objectives for their respective sectoral responses, those objectives are often articulated at such a high level that their application to particular impacts is contestable. And although the precautionary principle is invoked across a range of contexts, it too provides only limited assistance in implementing the law in the context of decreasing resources and increasing climate risks.

The case studies did reveal some existing mechanisms that have redistributive dimensions. Participants in the heatwave and Lake Macquarie case studies pointed to subsidies and programs that are designed to address inequities associated with climate impacts. In the Lake Macquarie case study, a number of participants observed that local government has some capacity to address inequity through its rating powers.<sup>8</sup> However, participants were typically of the view that those mechanisms were inadequate for addressing the distributive implications of climate adaptation, and none expressed any confidence that they were appropriate for a climate-changed future.

The difficulties confronting laws that address the effects of climate adaptation on the most vulnerable members of society are well-recognised. The scholarly literature often emphasises the importance of public participation as a means of introducing and incorporating a wider range of perspectives in legal processes.<sup>9</sup> Those participatory mechanisms also provide – at least in theory – an opportunity for those most vulnerable to climate impacts to share their knowledge and experiences and thus shape the development and implementation of adaptation measures. The following section explores the implications of this research for the use of a wider range of participatory mechanisms in developing and implementing climate adaptation laws into the future.

### *7.1.3 Public Participation*

An appreciation of the importance of public participation in the development, implementation and monitoring of adaptation laws was central to the design of this research project. The issue had received significant attention in the academic literature published at the commencement of this research, and has subsequently assumed greater importance as scholars have articulated the core elements of just resilience.<sup>10</sup> Many of these theoretical contributions are extremely optimistic about the potential for, and benefits of, enhanced public participation in climate adaptation processes. This section emphasises the

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<sup>8</sup> See eg Participants 2.4, 2.6 and 2.7.

<sup>9</sup> See Chapter 3.3.3.

<sup>10</sup> See Chapter 3.2 and 3.3.3.

key lessons emerging from analysis of a diverse range of participatory processes encountered across the three case studies.

Data gathered during the course of this project reinforces the emphasis on public participation in the scholarly literature. In the Lake Macquarie case study, for example, participatory processes themselves highlighted the significance of public participation from a citizen's perspective. Data collected during the development of the Lake Macquarie Flood and Flood Risk Management Studies for example, showed that citizens saw the opportunity to contribute to planning measures as the most important feature of the floodplain management process.<sup>11</sup> Participants in those studies regarded participation as even more important than physical adaptation measures in addressing the risk of changing lake levels.<sup>12</sup> Interviews with representative NGOs in both the bushfire and heatwave case studies similarly emphasised the importance of public participation, especially for increasing the diversity of inputs into governmental processes and the accountability benefits of more transparent processes.

The research data also provides strong indications that the nature and implementation of participatory processes is highly contextual. A wide range of participatory processes were utilised across the three case studies. Some processes were clearly at the 'thin' end of the IAP2 public participation spectrum, involving little more than the provision of information to the public. The significant balance of participatory processes focused on consultation and involvement of citizens in a manner that is broadly consistent with the public engagement objectives that have influenced Australia's environmental laws for the past 40 years. With one exception of the Belmont South and Marks Point LAP, these participatory processes typically involved a relatively strict adherence to the requirements of the relevant legal frameworks. The most developed participatory process was the integration of a community advisory group in the Belmont South and Mark Point LAP process, which involved collaboration with, and empowerment of, local residents.

Much of the existing research emphasises the significance of participatory processes for citizens and points to its legitimacy-enhancing effects. However, less attention is typically paid to the challenges of designing and implementing participatory processes, especially from a governmental perspective. This research provides two major insights on the design

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<sup>11</sup> WMA Water and Lake Macquarie City Council, *Lake Macquarie Waterway Flood Risk Management Study and Plan* (2012) 36.

<sup>12</sup> Ibid.

and operation of participatory processes. First, agencies must determine the style and degree of participation best suited to particular adaptation activities. Adaptation to longer-term processes should involve participatory processes that go some way towards empowering citizens. Where timeliness is a consideration, simpler, faster participatory processes may be more appropriate. Further relevant factors include: the importance of expert input in assessing particular impacts or developing relevant adaptation strategies; the range of adaptation options feasibly available in the circumstances; and the likelihood that adaptation causes transformative change in the object of governance. Finally, public participation processes must be adequately resourced to achieve the desired ambition and scale. This includes financial and administrative resources, and the expertise necessary to conduct meaningful public processes.

Perhaps the greatest insight from this project is that participatory mechanisms are most likely to be effective where they are consistent with citizen expectations and the capacities of government. It is crucial that public participation correlates with citizen expectations, especially where the legal framework allows government relative freedom in designing and implementing participatory processes. For example, the efforts of LMCC staff to follow through on the promise of a collaborative process – despite a range of difficulties was key to the success of the Belmont South and Marks Point LAP process. Governments must also be able to deliver on the outputs of participatory processes to maximise their legitimacy enhancing effect. This was clearly a concern in the design of the Belmont South and Marks Point LAP process. Whether the LAP is accepted by the local community into the future will likely depend on the capacity of the council to secure financial and other support to deliver its commitments.

The project demonstrates that governmental agencies can thrive when afforded the freedom to implement participatory processes tailored to the climate impact and relevant community. The development and implementation of the Belmont South and Marks Point LAP process has been widely recognised as a touchstone in this regard. However, that process was borne of a unique combination of leadership, resourcing and legal protection that is unlikely to be replicated on larger scales. Obversely, the data also points to the potential for inappropriately designed and poorly implemented participatory processes to undermine legitimacy and trust in adaptation laws. This is most clearly demonstrated in the dissatisfaction reported over opportunities for participation in the development of the TWWHA Management Plan 2016. Some of that disappointment is no doubt attributed to the scaling back of participation compared with previous planning activities. It is perhaps

no coincidence that these processes were coordinated at a higher (ie State) level of government and in an otherwise politically-charged context. Nevertheless, those experiences point to the potential benefits of a prescriptive legal framework that does more to guarantee the opportunity for citizens to contribute meaningfully to the development, implementation and operation of climate adaptation laws.

Although public participation is a central feature of the legal framework for climate adaptation, a wider network of governmental actors is involved in the development and operation of adaptation laws in practice. The following two sections explore connections between actors in different sectors and across different scales of government.

#### *7.1.4 Connections between Sectors*

‘Horizontal’ linkages across sectors within one level of government are well-recognised as an important influence on the operation of adaptation laws in practice and were one of the most important features of each case study. Adaptation activities were typically shared across a range of actors and agencies at the same scale of government.<sup>13</sup> In the bushfire case study, for example, fire management activities typically involved State level emergency services and parks management personnel. Similarly, measures addressing changing water levels in Lake Macquarie were brought together across a range of sectors at the local government level. Although measures addressing heatwave in urban Melbourne were shared between State and local levels, the State level took a large degree of responsibility for developing the policy and legal framework, which was then subsequently tailored to local circumstances. This serves only to highlight the real importance of connections across sectors for the design and implementation of adaptation laws.

Laws and related policies play an important role in coordinating adaptation activities across sectors. In the bushfire case study, for example, a formalised agreement enhanced coordination between the three Tasmanian agencies responsible for fire management in the TWWHA. While those arrangements provide for the allocation of operational authority, they also facilitate coordination and cooperation across the agencies. In the heatwave case study, detailed operational arrangements are set out in the statutory plans (and sub-plans) for addressing heatwave events. These plans also have an operational focus, but adopt a contrasting approach by providing a detailed command structure and series of directions for responses to heatwave events. These two quite different legal approaches point to the potential range of methods that might be employed to facilitate coordination across sectors.

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<sup>13</sup> See section 7.1.5 below.

The legal framework typically favours a lighter touch in coordinating measures addressing climate impacts over longer timescales. The TWWHA Management Plan 2016, for example, points to the range of agencies and laws that might contribute to fire management over the longer term, but does little to prescribe their contributions and interactions. The Victorian legal framework similarly facilitates input from a broader range of actors and stakeholders in developing longer-term measures addressing heatwave. And, as has been described in the Lake Macquarie case study, at times the legal framework does no more than encourage actors to consider climate adaptation and cooperation. Despite the apparent success of the Belmont South and Marks Point LAP process, it is not clear that the relatively permissive legal framework enhances just resilience in climate adaptation over longer timescales. Yet neither does it seem that the law necessarily inhibits adaptation actions.

Each of the three case studies points to the importance of interpersonal connections in achieving cooperation and coordination between sectors. In some instances, connections between staff at various agencies and actors was serendipitous. In both the TWWHA and heatwave case studies, participants described work histories that included a range of relevant governmental agencies and non-governmental actors and described the interchange of personnel over time as a positive for coordination between sectors. Similarly, the familiarity of Lake Macquarie council officers and other local experts facilitated the development and implementation of the Belmont South and Marks Point LAP. These existing relationships were often complemented by additional processes such as joint training exercises and workshops that further enhanced interpersonal connections across wider networks. Although some participants emphasised the importance of formalised connections between agencies to accommodate changes in personnel, many of the most positive assessments of connections between scales described personal contacts as a major factor in their success.

However, it is important not to overstate the significance of these findings. In many ways, these case studies represent the optimal environment for coordination between sectors in climate adaptation. Each of the case studies has focused on a relatively confined geographic area. Many participants described the small population and rather confined zones of expertise as a factor supporting coordination between sectors. Similarly, the involvement of the emergency management sector, where coordination and cooperation is especially significant, in the bushfire and heatwave case studies is also significant. Finally, the very small team driving the Belmont South and Marks Point LAP process similarly created an

environment likely to produce strong cooperation. It is unlikely that such arrangements will be replicated across the legal framework relevant to all adaptation efforts in the future.

The size and scale of the governmental agencies involved in climate adaptation activities is also a complicating factor when analysing connections between sectors. In the Lake Macquarie case study, for example, the local council has responsibility for several of the sectors implicated in measures addressing changing lake levels. Indeed, a number of participants described the Council's internal working processes when reflecting on the challenges of working across multiple domains, and describing strategies that aided coordination across sectors.<sup>14</sup> On the other hand, only a relatively small component of large State level agencies (such as the Department of Health and Human Services in the heatwaves case study) might be implicated in measures addressing climate impacts. For some participants, the need to draw together elements of many larger agencies was a potential barrier to coordination of adaptation responses between sectors.<sup>15</sup> Connections between sectors might thus be obscured within or by large agencies or actors. These details are rarely reflected in the formal legal arrangements for climate adaptation. Careful analysis is therefore required to identify the demands of coordination between sectors in different legal and governance contexts.

The above discussion has focused on laws, processes and actors that operate at the same level of government. However, each case study also has a multi-level dimension, where laws, processes and actors from other levels are involved in adaptation activities. The following section analyses the operation of those related vertical connections that span scales of the governmental framework.

#### *7.1.5 Connections across Scales*

Connections across scales play a vital role in the operation of the legal framework for climate adaptation in practice. These 'vertical' linkages often connect the local to the international scale. While it is convenient to describe these connections using one label, a simple descriptor masks a significant diversity in the nature and operation of connections across scales, based on a wide range of variables. First, linkages between different scales often have contrasting dynamics. There is a marked difference, for example, between connections across the national and international scales when compared with connections across the local and State level scales. The connection of the Australian government with

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<sup>14</sup> See eg Participants 2.3, 2.4 and 2.7.

<sup>15</sup> See eg Participant 3.3.

UNESCO bodies in the world heritage process, for example, is substantially different from the connection between national and State levels in the same bushfire case study. This is not an entirely surprising observation, especially given Australia's dualist approach to international law,<sup>16</sup> and the highly localised nature of adaptation activities. It nevertheless emphasises the importance of the legal framework in shaping connections across scales.

Vertical connections also differ substantially where lower scales of governance are 'nested' in higher scales. The Lake Macquarie case study provides a relevant example. The relevant local authority is, to a large degree, nested within State-level governance arrangements. In Australia, States delegate authority to municipal bodies through statute.<sup>17</sup> Local level authorities therefore cannot exceed the bounds of State level power. In a more practical sense, local authorities are often heavily reliant on State level actors for resources and expertise and typically follow State level policy guidance. It is therefore unsurprising that vertical connections between State and local levels develop quite differently to connections at higher scales.

Connections also differ where they cross multiple scales. Each case study offers at least one example of such a connection, be it between the State and international levels (in the bushfire case study, where the Tasmanian State government performs significant functions relevant to Australia's international legal obligations), or between the local and national level governments (such as in the heatwave and Lake Macquarie case studies). These 'multi-scalar connections' were often more tenuous, even within the Australian domestic legal framework. Participants were typically less satisfied with those connections when compared with their experience of connections that reached across only one level of government.<sup>18</sup>

Two key drivers of successful vertical interactions are apparent across the three case studies. First, bridging organisations are likely to facilitate more effective vertical linkages. Those bridging organisations may include formalised committees or procedures (such as the national arrangements for coordinating emergency responses, outlined in Chapter 4). However, less formal working arrangements (such as cooperation between State and local level agencies in both the heatwave and Lake Macquarie case studies) have proven equally useful for facilitating connections across scales. Interpersonal relationships are a second, less tangible driver of successful connections across scales. Participants generally reflected

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<sup>16</sup> See Ch 1.3.1.

<sup>17</sup> See Ch 1.3.4.

<sup>18</sup> See eg Participants 2.4, 3.10.

more favourably on linkages across scales where those connections developed organically, either in the absence of, or as a complement to, formal committees and procedures.

Ultimately, it is doubtful that either formal or informal bridging arrangements are preferable *per se*. Rather, it seems that formal arrangements are more important when building new connections or when high turnover of personnel limits the capacity for interpersonal connections to manifest over time. Conversely, it seems that informal networks achieve a greater degree of flexibility and ‘fit’ that should be preferred where available. This suggests a limited role for law in developing connections across scales: the real question might be how to ensure that laws do not inhibit connections, rather than expecting that detailed legal prescriptions can build effective connections.

This research has also revealed linkages that simultaneously span both sectors *and* scales. Often labelled ‘diagonal’<sup>19</sup> linkages in the scholarly literature, these types of connections were prominent at lower levels in the legal framework, especially in the complex interactions between State and local scales of government. Such connections were prominent in the Lake Macquarie case study, but were to some extent masked by the (often stronger) connections within particular sectors. These diagonal linkages were also more prominent between the national and international scales of government. In the bushfire case study, for example, the connections between the Australian and Tasmanian governments and the various international actors administering the *World Heritage Convention* often spanned multiple sectors. Those linkages tended to replicate the challenges and limits of connections across sectors and scales, while providing few or none of the associated benefits. Further research is required to better understand the role of these linkages in the operation of the legal framework.

There are also signs that laws enhance diversity and redundancy in adaptation to climate impacts. A good example is found in the content of the Belmont South and Marks Point Local Adaptation Plan, which sets out an array of alternative measures and options to be adopted and implemented as changing lake levels impact those communities. The LAP sets out a range of future adaptation actions directed to the overall objective of maintaining those communities *in situ* into the future. These include modifying drainage infrastructure, constructing physical defences and raising the height of buildings and roads. Those

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<sup>19</sup> Elke Herrfahrdt-Pähle, ‘South African Water Governance between Administrative and Hydrological Boundaries’ (2010) 2 *Climate and Development* 111, 122.



strategies are implemented through a number of legal devices, including local planning controls, and documentation in the conveyancing process.

Interestingly, the case studies also provide examples of diversity and redundancy in the law itself. To take just one example, the legal framework for addressing heatwave in Melbourne, which involves extensive and detailed operational plans for addressing heatwaves, is complemented by a guide produced by the Department of Health and Human Services (DHHS). Although the DHHS guide is not strictly binding, it has the potential to influence a range of actors who might not consult the far more complex and detailed directions on responses to heatwaves in the EMMV and Extreme Heat Sub-Plan. The maintenance and updating of the DHHS guide alongside the other statutory (sub-)plans suggests that diversity and redundancy has some place in the legal framework.

However, there are also examples of the legal framework eschewing redundancy. Actors clearly shift away from redundancy and diversity in operational areas involved in emergency responses to climate impacts. For example, participants in both the TWWHA and heatwave case studies pointed to the benefits of clear and direct guidance on the roles and responsibilities of actors involved in emergency responses to climate impacts. Another relevant example is found in laws addressing changing water levels in Lake Macquarie, where compliance with a number of statutory reporting and planning obligations is achieved primarily through reference to the Flood and Flood Risk Management Studies and Plans. In those circumstances, clarity, accuracy and efficiency seem to have prevailed over the potential benefits of redundancy and diversity. It seems that actors who might be held accountable to diverse and redundant legal obligations are unlikely to find the theoretical benefits of diversity and redundancy more compelling than the threat of potential legal consequences.

Connections across sectors and scales provide one important pathway for the sharing of information relating to climate adaptation. The following section explores differences in approaches to information sharing across the three case studies, and thus highlights the wider importance of information sharing for the development and implementation of laws that facilitate just resilience in climate adaptation.

#### *7.1.6 Information Sharing*

Although not initially identified as a principle of just resilience, information sharing emerged as a crucial aspect of climate adaptation laws during the course of this research.

Participant accounts of the operation of the law in action prompted closer attention to laws influencing information sharing in each of the case study legal frameworks. The following section highlights important synergies and differences emerging from analysis of information sharing across the three case studies. The section emphasises the significance of information sharing for implementing laws in practice, and highlights instances where providing information is itself a vital adaptation strategy.

The term ‘information sharing’ is notoriously broad and imprecise. It encompasses – as its plain English meaning might suggest – any activity where information is conveyed from one party to another or others.<sup>20</sup> There is no agreed meaning of ‘information’, which includes facts, opinion and advice along with objects (ie documents) that represent or attempt to replicate those ideas and observations.<sup>21</sup> ‘Sharing’ includes a wide range of actions ranging from unidirectional transfer or dissemination of information to reciprocal exchanges where the ideas or objects comprising information are meaningfully received. Indeed, for Sonnenwald, information is not shared until it ‘changes [another] person’s image of the world [or] creates a shared, or mutually compatible working, understanding of the world’.<sup>22</sup> Unidirectional sharing activities often focus on the transmission of information to different locations and recipients, while reciprocal exchanges typically involve more nuanced ‘rituals’, often developed over time, that play some role in the development, reinforcement or challenge of shared understandings.<sup>23</sup> These rituals include everyday activities such as ‘small talk’ alongside more formalised processes (such as publication of documents).<sup>24</sup> The term information sharing can thus mask a significant variation in what is shared between parties, and the activities through which such information is shared.

This broad understanding of information sharing is reflected in the climate adaptation literature, where the term is rarely defined with any degree of precision – if it is defined at all. Rather, that literature uses the term to describe an extremely wide range of activities and processes that might be necessary components of broader adaptation actions (eg the communication of changes in sea levels), or perhaps constitute adaptation actions themselves (eg the issuing of heatwave warnings to the general public). While the breadth of the term accounts for the wide range of practices observed in particular contexts, it does

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<sup>20</sup> Reijo Savolainen, ‘Information Sharing and Knowledge Sharing as Communicative Activities’ (2017) *Information Research*, 1.

<sup>21</sup> Ibid.

<sup>22</sup> Diane H Sonnenwald (2006) 11 *Information Research*.

<sup>23</sup> Savolainen (n 20).

<sup>24</sup> Ibid.

little to conceptualise or support analysis of the important role that information sharing plays in adaptation in practice.

Information sharing is similarly both a purpose and a feature of adaptation laws. In some instances, adaptation laws create mechanisms purposefully designed for the sharing of information. Planning certificates that incorporate details of potential future inundation risks for real property, for example, are essentially information sharing documents.<sup>25</sup> Disclosure requirements – such as obligatory public consultation in the development of statutory management plans – are also examples of laws directed to information sharing.<sup>26</sup> Other aspects of adaptation laws less directly require information sharing. Laws that emphasise coordination of adaptation measures across sectors, for example, seemingly assume that information will be exchanged between the various actors implicated in particular adaptation activities, but typically do little to establish the process and pathways through which such transactions occur. Much, it seems, is left to actors and agencies who are involved in putting adaptation laws into action.

There were substantial commonalities in the information sharing laws relevant to each case study in this project. First, each case study involved a combination of laws of general application (such as freedom of information legislation) along with impact- or issue-specific laws that contained particular information sharing obligations. Those laws typically conceive information sharing as a unidirectional activity requiring the mere transmission of information from governmental agencies to other actors and citizens. This is especially true of freedom of information laws, which create a regime through which information is made available to the general public. There is no immediate connection between the release of that information and input that might influence governmental decision-making.<sup>27</sup> Even issue-specific laws – such as laws requiring the publication of statutory management plans for reserved areas in Tasmania – exhibited a similar dynamic. Much greater emphasis was placed on the publication of information – especially the draft TWWHA Management Plan 2016 – than any responses (from either other governmental agencies or the wider public) it elicited. These formal information sharing laws and processes are therefore primarily concerned with the unidirectional transmission of information by governmental actors.

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<sup>25</sup> See Anita Foerster, Andrew Macintosh and Jan McDonald, 'Transferable Lessons for Climate Change Adaptation Planning? Managing Bushfire and Coastal Climate Hazards in Australia' (2013) 30 *Environmental and Planning Law Journal*. 469, 476-7 on information instruments as part of the suite of spatial planning instruments implicated in climate adaptation.

<sup>26</sup> See section 7.1.3 above.

<sup>27</sup> Although such input might occur on much longer timescales (such as over the course of an electoral cycle), information sharing activities are rarely – if ever – the sole or major driver of those longer term processes.

There were also important similarities in the informal information sharing in each case study. Participants in each case study observed that agency and governmental practices typically extended beyond mere compliance with formal legal obligations to include a much wider range of standard or established practices. In some instances governmental agencies shared non-binding policy guidance (such as information on the role of land-use planning on experiences of heatwaves) intended to shape planning and future adaptation actions. Participants in each case study described the use of webpages and social media both to make information available and (in some instances) to receive information from other parties. Many participants also described productive interactions across governmental agencies where information was shared in order to enhance coordination of adaptations strategies across organisations, sectors and scales. Participants often emphasised the importance of interpersonal connections for building linkages, including through ongoing interpersonal communication, informal discussions between actors and agencies, and participation in boundary organisations. These activities and practices were developed by agencies and actors to support the implementation of adaptation laws in particular contexts. Although not mandatory legal processes, they are an increasingly important feature of the operation of adaptation laws in practice.

These informal information sharing practices strongly reflect the ritual viewpoint on information sharing practices.<sup>28</sup> In most instances, these informal practices are ‘two-way’ processes involving the mutual exchange of information with a view to representing or constructing shared beliefs or understandings that support the implementation of adaptation laws in practice.<sup>29</sup> The relevant communications are thus variously directed to understanding climate impacts and the adaptation measures that address them, or to facilitating the implementation of adaptation laws in practice. These ‘ongoing activities taking place in everyday contexts’<sup>30</sup> help to bridge the gap between the ‘law on the books’ and the requirements of adaptation actions.

In some instances, information sharing practices are themselves an adaptation measure. In the heatwave case study, for example, the issuing of heat health alerts by Victoria’s Chief Health Officer plays a crucial role in advising the general public of an imminent or active heatwave event, while also triggering the operation of heatwave response plans across a

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<sup>28</sup> Savolainen (n 20).

<sup>29</sup> Ibid.

<sup>30</sup> Ibid.

range of governmental agencies. Those alerts are supported by a coordinated approach to delivering further information to the public through a joint information committee. In the Lake Macquarie case study, information regarding future inundation risks for particular lots of land was shared via planning certificates as part of the conveyancing process. In both these instances, the provision of information regarding future climate risks is itself a form of adaptation to climate impacts. Information sharing alone may not address the distributive implications of climate adaptation, but measures for ensuring that the public is informed of future climate risks in a meaningful way must necessarily contribute to the pursuit of just resilience through climate adaptation laws.

Collectively the three case studies did, however, suggest that adaptation laws present some obstacles to information sharing practices. In some instances formal prohibitions limited information sharing. This was most obvious where adaptation measures might benefit from the use of personal information. Legal restrictions on the sharing of personal health information, for example, could (at least in theory) impair efforts to identify vulnerable people in implementing responses to heatwave events. However, participant accounts suggested that such restrictions do not practically limit adaptation responses, where other actors and agencies implement processes that offer protection to vulnerable groups and individuals.<sup>31</sup> This is an indication of the importance of redundancy and diversity in climate adaptation laws; in this instance, what might be seen as an inefficiency or duplication of adaptation measures provides a level of protection to persons otherwise at greater risk of adverse climate impacts.

In other instances information was simply not available for sharing. In the emergency and fire management contexts, for example, operational practices and procedures were typically not shared with the wider public. There are clear justifications for withholding operational information from the general public, and there is no suggestion that those practices compromise the implementation of adaptation laws. While restricting access to information might create some difficulties in the coordination of adaptation across sectors and scales, these challenges were typically accounted for within the relevant legal framework. For example, the statutory plans that guide operational responses to heatwaves in the Melbourne area create a hierarchical structure for directing short-term measures addressing heatwave events. In that context, any information sharing deficit between agencies is accounted for within the legal framework.

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<sup>31</sup> See eg Participant 3.4.

The quality (or perceived quality) of information also shapes information sharing practices. Some participants described a cautious approach to sharing uncertain information, especially where that information would likely influence other actors within the wider legal framework. That caution reached its peak where the release of information might have adverse effects on citizens, such as by influencing the cost or availability of insurance. These accounts indicated that participants were more cautious in sharing modelling or projections of potential future impacts when compared with measurements of past events. Conversely, the need to correct inaccuracies or misinformation was generally a motivation *for* sharing information. Across the three case studies, participants variously pointed to misinformation about climate impacts, misrepresentations of adaptation actions and misunderstandings of the legal obligations of governmental agencies as reasons for increased information sharing. Information sharing was thus directed to developing a ‘shared ... or mutually compatible working ... understanding of the world’<sup>32</sup> that would support the operation and monitoring of adaptation laws in practice.

Information sharing was thus a crucial factor in the operation of adaptation laws across the three case studies. In each instance existing laws both create obligations for publishing information and also impose some limitations on the transmission of that information. However, a range of complementary practices developed by the organisations and agencies allocated formal responsibilities under the legal framework play an important role in the implementation of adaptation laws in practice. Those practices typically attempt to balance the formal requirements of information laws with the actions necessary to give effect to adaptation laws in practice. While the formal legal requirements differed between case studies, there were also notable differences in the development of context-specific information sharing practices and rituals in each case study. Both the formal requirements and limitations on information sharing, and the context-specific rituals are crucial to the four principles of just resilience through adaptation laws. The role of information sharing in the pursuit of those four principles is explored in greater detail in the following section.

Having set out insights emerging from comparison of key themes emerging across the case studies, the following section examines a number of cross-cutting considerations that each support the implementation of multiple principles in practice.

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<sup>32</sup> Sonnenwald (n 22).

## **7.2 Cross-Cutting Considerations**

A number of cross-cutting considerations are relevant to the implementation of each of the principles of just resilience in practice. Returning to the conceptual outline set out in Chapter 3,<sup>33</sup> this section synthesises insights on the cross-cutting considerations from each of the three case studies. The following passages explain how information sharing, the wider network of feedbacks, resourcing issues and leadership are relevant to the implementation of a number of the principles of just resilience through law. The section concludes that each of these cross-cutting considerations is likely to prove influential in the development of laws that promote just resilience in climate adaptation.

### *7.2.1 Information Sharing*

Information sharing is vital to the implementation of each of the four principles of just resilience in practice. Building on the earlier comparative analysis of information sharing across the three case studies,<sup>34</sup> this section explains how information sharing contributes to each of the principles of just resilience. Although information sharing is itself an important aspect of adaptation and adaptation law, the collection and delivery of information is crucial to justice and resilience in addressing climate impacts. The section highlights how and why information sharing is crucial to the four principles of just resilience and thus substantially influence the pursuit of just resilience through adaptation law.

Information sharing is crucial to addressing change. ‘Back end’ adaptive management processes are dependent on information for their implementation in practice. This research shows that information sharing is crucial to addressing change through adaptation laws in two ways. The first – and unsurprising – finding is that information sharing is vital to the implementation of responsive and flexible adaptation laws. In the Bushfire case study, for example, the sharing of information regarding successes and shortcomings in responses to the 2016 fires saw several agencies employ different practical measures to protect and conserve relevant values during the 2019 fire event. The combination of formal review processes and informal sharing of experiences across relevant agencies likely contributed to a relatively swift adjustment in operational practice in an attempt to meet relevant obligations under Tasmanian, Australian and international law.

This project also highlights the importance of adaptive management of adaptation laws and processes themselves. In the Lake Macquarie case study, the Belmont South and Marks

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<sup>33</sup> See Chapter 3.3.5.

<sup>34</sup> See section 7.1.6 above.

Point LAP served as an important learning opportunity for the development of local adaptation planning processes in the Lake Macquarie area. The process was designed to facilitate incremental development of the planning process over time. Although there are no signs of a formal, legislated adaptive management process,<sup>35</sup> participant accounts explained how the Belmont South and Marks Point LAP was established as a learning opportunity for local adaptation planning at large. There is a similar emphasis on evaluation and incremental improvement in adaptation action plans in the heatwave case study. These are clear examples of the ‘adaptive management lite’ approach well-known to law being applied to laws and legal processes themselves. These initiatives may provide important insights on the development of laws that are more responsive to change.

Laws can only account for known or recognised distributive implications of climate adaptation. Sharing information to identify those distributive implications is therefore crucial to equitable climate adaptation. Information sharing that allows for the generation or co-construction of new information on impacts can help ensure that adaptation actions account for the differential experiences of vulnerable groups exposed to climate impacts. Legal processes can facilitate these process by, for example, providing opportunities for vulnerable groups to have input into decision-making, planning and review processes. Information sharing may also help agencies to limit duplication of adaptation measures,<sup>36</sup> which might help to ensure that limited resources are used to greatest effect. Publication of management plans, for example – along with informal sharing of agency priorities and practices – can help to avoid unnecessary and unhelpful replication of adaptation actions.

Public participation is inherently an information sharing process. All participatory process – from those that simply require a one-dimensional transfer of material to ‘inform’ the public, through those that ‘empower’ citizens to exercise decision-making authority<sup>37</sup> – involve a transfer of information. Participatory processes that allow citizens to meaningfully impact decision-making are likely to involve information sharing that allows citizens to shape a shared understanding of climate impacts and adaptation. This is helpfully illustrated by the LAP process for Belmont South and Marks Point, where citizens were encouraged to contribute to the development of a shared vision for the future of their local community that was compatible (at least to some degree) with the local council’s powers and capacities to pursue that vision. Citizens participated through surveys, interviews, public meetings and

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<sup>35</sup> See Chapter 2.3 and 2.6, and Chapter 3.3.1.

<sup>36</sup> There is a balance to be drawn here between fostering redundancy and diversity, and pursuing economic efficiency. See section 7.3 below on interactions between principles of just resilience.

<sup>37</sup> See Chapter 3.3.3.



– for a select group – through membership of an advisory committee that worked closely with the council to develop and begin implementing the LAP. Although developing a shared understanding of climate processes and impacts was challenging, the Belmont South and Marks Point LAP process highlights the benefits of involving the public in shaping a shared vision for their community in a climate-impacted future. Ongoing information sharing – between the council and the local community – was a major factor in the success of the LAP process.

Information sharing is also crucial to the wider accountability and legitimacy enhancing benefits of participatory processes. A number of participants across all three case studies emphasised that information sharing is an important transparency measure that facilitates checks and balances on the exercise of governmental power. Participants – again across all three case studies – explained that information sharing was vital to the monitoring and evaluation of adaptation laws and processes. Information sharing is thus vital not only to the operation of participatory processes, but also to the pursuit of the purported benefits of openness and transparency in the operation of adaptation laws and decision-making processes.

Information sharing also underpins the development and maintenance of connections between sectors and across scales. As was explained above, the ‘law on the books’ typically does little more than to identify coordination as an objective for adaptation laws. The implementation of coordinated or cooperative adaptation actions is thus dependent on the development of practical and effective means of connecting between sectors and across scales in practice. Information sharing mechanisms are an important source and driver of those connections. In some instances those information sharing mechanisms are formalised, such as where government provides the physical space for agencies to cooperate (eg emergency management facilities) and/or the information technology (eg management platforms) required for cooperation. Those formal processes are typically buttressed by interpersonal connections that allow the experience and expertise of personnel to support the implementation of formal procedures in practice. In combination, these formal and informal mechanisms for information sharing may help to connect across diverse agencies, or support connections between or within larger governmental organisations.

Although information sharing is crucial to the operation of law, the implementation of Australia’s adaptation laws in practice is also shaped by a wider range of feedbacks. The

following section goes on to sketch the broader collection of feedbacks that shape the operation of adaptation laws, and reflects on their influence on just resilience in climate adaptation.

### 7.2.2 *Leadership*

Leadership is frequently identified as a major driver of successful and effective climate adaptation. Similarly, a lack of leadership is regularly cited as a barrier to adaptation actions. Leadership is crucial for the development of strategic ambitions for adaptation, especially where the law is relatively silent on the ultimate aims or objectives of climate adaptation. Leadership is equally important in resolving practical problems in the development and implementation of laws, and in building the collaborative networks and approaches that drive successful adaptation actions.<sup>38</sup> This project has confirmed the importance of leadership as a driver of the development and implementation of laws that enhance just resilience in climate adaptation. It has examined in detail how leadership facilitated the development and implementation of local adaptation planning in the Lake Macquarie area of New South Wales. Key actors in the local council provided visionary and directional leadership for the pursuit of ambitious local adaptation actions, and the structural, problem-solving and collaborative leadership required to realise those goals. This section draws on that prominent example – along with relevant insights from the other case studies – to highlight the importance of leadership for the principles of just resilience through law.

Leadership is crucial for the development and implementation of measures that address change. Actors and agencies that provide leadership can help to facilitate ‘back end’ evaluation of adaptation laws and processes. Non-governmental organisations in both the TWWHA and heatwave case studies, for example, demonstrated structural and problem-solving leadership in using legal processes to point to limitations and shortfalls in the operation of adaptation laws. Those same actors also demonstrate visionary and directional leadership in identifying opportunities to develop laws and improve their implementation in practice. The project also suggests that leadership is crucial to translating the broad aims and purposes of laws (such as those expressed in objects clauses) into appropriate and achievable objectives at local scales. The conception and implementation of the LAP process in Lake Macquarie is perhaps the strongest example. Leadership thus supports the development and implementation of measures addressing change, and is especially important in the tailoring of measures to the contextual requirements of adaptation at local scales.

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<sup>38</sup> See Chapter 3.4.

This research also demonstrates the significance of leadership in recognising and addressing the distributive implications of adaptation. Leaders can play an important role in identifying and acknowledging the differential impacts of adaptation, especially for vulnerable groups. This is an important step towards achieving justice as recognition for vulnerable groups, while also facilitating the development and operation of mechanisms that might address their vulnerability. Obversely, the mis-, non- or mal-recognition of the impacts of climate change and adaptation on vulnerable groups can negatively influence just resilience in climate adaptation.

Leadership is also a driver of the most meaningful, participatory processes observed in this project. As was discussed at length in Chapter 5, the leadership provided by council officers was central to the creative and extensive integration of participatory processes in the LAP process. That leadership saw the use of a wide array of participatory processes, and the persistence with a high level of community engagement in the face of difficulties and challenges. On one view, the LAP process involved more – and more significant – participation than strictly required by the letter of the law. However, it also maximised the opportunities provided by existing participatory processes spread across disparate laws and sectors. Leadership was thus crucial to the conception and design of highly participatory processes, and their implementation in practice at local scales.

This research also confirmed the significance of leadership for connections across sectors and scales. The collaborative dimension of leadership is well-recognised in the scholarly literature,<sup>39</sup> and its importance was apparent in each of the three case studies in this project. For example, leadership was central to the development of the interagency management protocol that guides operational responses to fires in the TWWHA. In that instance, key figures across Tasmania's three fire agencies recognised the problems caused by a lack of cooperation, and devised arrangements to strengthen coordination between the agencies. Those arrangements have not entirely eliminated friction between the agencies, and their different sectoral objectives are often still in tension. However, the arrangements help to minimise conflict and promote coordination between sectors.

Leadership is also important for connections across scales. The Belmont South and Marks Point LAP process, for example, involved a range of connections between the State and local levels of government. Directional and problem-solving leadership of the LAP process

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<sup>39</sup> See Chapter 3.4.

helped to ensure that State level assistance was targeted in a manner that enhanced the project. Higher level visionary and structural leadership can also be important in establishing the goals or ambitions of climate adaptation, and shaping its implementation in practice. The broad aims of the *World Heritage Convention*, for example, have had an inestimable impact on the development and implementation of Australia's environmental laws, and remain relevant to the day-to-day management of the TWWHA in the face of climate change. World Heritage Committee processes often emphasise the importance of adaptation consistent with the objectives of the Convention. This is most clearly demonstrated in the decisions of the Committee that called for action and reporting after the 2016 fires. Although those decision may not have direct management implications, they remain an important source of visionary leadership in that case study.

The project also hints at the significance of failures of leadership for the pursuit of just resilience through laws. The reduced use of public processes in the development of the TWWHA Management Plan 2016, for example, might be construed as a failure of leadership. On one view, those processes failed to account for the distributive implications of climate adaptation, and did not adequately recognise a range of interests in the TWWHA. In another case study, one participant also explained that a lack of visionary or directional leadership from higher levels of government can limit the ambition and implementation of adaptation measures at local scales.<sup>40</sup> Such failures of leadership – or a leadership vacuum – may have disproportionately negative consequences for just resilience in climate adaptation.

This analysis of these cross-cutting considerations also points to the close connections between the four principles for just resilience in law. The following section directly analyses connections between the principles, pointing to synergies and tensions between the principles in both theory and in practice.

### **7.3 *Links between the Principles of Just Resilience through Law***

The four principles of just resilience are clearly interlinked. This section explores the complex relationships between the principles, identifying both synergies and tensions that are likely to influence their implementation in practice.<sup>41</sup> In some instances, the principles seem to be mutually reinforcing. For example, approaches that prepare for and respond nimbly to change may consume fewer resources, so savings can be redistributed to address

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<sup>40</sup> Participant 2.4.

<sup>41</sup> See eg Matin Nilufar Matin, John Forrester and Jonathan Ensor, 'What is equitable resilience?' (2018) 109 *World Development* 197, 203.

other priorities. This is illustrated by the expense of responding to natural disasters such as fire and flood, when compared with the much lesser cost of engaging in preparatory and planning activities that enhance resilience events occur. In other instances, the principles may conflict. Broader and more inclusive participatory processes, for example, may be resource and time-intensive, which undermines rapid responsiveness to change. The section concludes with a brief reflection on the challenges of negotiating those conflicts in pursuing just resilience through adaptation laws.

There were multiple examples of conflict between the principles in each case study. For example, several participants in the Lake Macquarie case study discussed the resource intensiveness of the nuanced participatory process involved in creating and monitoring the Belmont South and Marks Point LAP. In the Bushfire case study, participants pointed to the challenges of negotiating conflicts that cross sectors, such as in balancing the emergency response to fire with obligations to conserve and protect world heritage values. However, there were also examples of synergies between the principles. In the Lake Macquarie case study, for example, participants reported that the participatory nature of the LAP process increased enthusiasm for addressing change and enhanced the legitimacy of the processes involved in managing that change. These examples demonstrate that interactions between the principles will require further attention, and may themselves warrant further research. The fuller range of interactions between the principles is set out in Table 7.1 below.

**Table 7.1: Interaction of Principles for Just Resilience in Climate Adaptation Law**

	<b>Addressing Change</b>	<b>Addressing Distributive Effects</b>	<b>Promote Participation</b>	<b>Operate Across Sectors and Scales</b>
<b>Addressing Change</b>		S: vulnerabilities can be addressed more swiftly as they emerge; T: rapid change can have substantial (and amplifying) distributive effects in its own right; long term change difficult to address in the shorter term (ie intergenerational issues)	S: willingness (even perceived) to address change can enhance enthusiasm for and legitimacy of participatory processes; T: change can render lengthy and involved participatory processes moot;	S: cross-sectoral and multiscale impacts may be reduced where system is more attuned to change; T: cross-sectoral and multiscale drivers of change are often difficult to identify, and perhaps even more difficult to meaningfully address;
<b>Addressing Distributive Effects</b>	S: dealing with substantive effects is more effective, and can enhance legitimacy of governmental processes; T: distributive impacts are difficult to identify and address in the context of rapid change (plus causal issues)		S: (as above); T: addressing distributive impacts may cause conflict in participatory processes, especially where resources are dwindling/diminished;	S: cross-sectoral and multiscale approaches can be harnessed to address inequities, especially in resource poor sectors and at lower scales; T: cross-sectoral and multiscale (re)distribution of climate impacts is difficult to identify, and may not be capable of adjustment through law

<b>Promote Participation</b>	S: Participatory process can allow change to be identified more swiftly and with greater nuance T: participatory processes alone will not identify all change; only part of a suite monitoring and evaluation measures	S: Participatory processes can allow distributive impacts to be identified more swiftly and with greater nuance T: participatory processes can't identify all distributive impacts, and are especially vulnerable to capture by powerful actors/interest groups; participatory processes are often themselves resource intensive		S: participatory processes provide an important connection between scales and valuable feedbacks T: participatory process are time consuming and may not be an effective means of connection (especially across scales)
<b>Operate Across Sectors and Scales</b>	S: connections across scales and sectors can provide buffers to change, especially where larger changes occur T: cross-scalar connections often cause unexpected/ unanticipated change that is difficult to address;	S: attention to cross-scalar impacts can ensure wider distributive impacts are identified and accounted for; T: distributive effects may be confounding between sectors (eg biodiversity conservation v fire management) very difficult to address cross-scalar impacts;	S: cross-scalar and cross-sectoral connections can provide/ broaden participatory options, especially where they are limited/culturally uncommon; T: participation across scales is challenging (eg differences in expectations);	

*S = synergy between principles (ie principles are complementary, and/ or each is enhanced by the pursuit of the other)*

*T = tension between principles – (ie principles are in conflict, and/ or each is diminished by the pursuit of the other)*

The trade-offs required to reconcile tensions and to maximize co-benefits of the principles, may well be context- and scale-dependent. Measures accounting for the distributive impacts of climate change, for example, might be feasible at higher scales that have greater flexibility in allocating large pools of resources, but a less appropriate use of relatively scarce resources at the local level. Conversely, the financial costs of participatory processes may be a sound investment where greater public engagement has significant legitimacy enhancing effects. The substantive challenges posed by these trade-offs – and the design and development of mechanisms for resolving associated conflicts – between these principles is an important factor in the implementation of just resilience through law.

#### ***7.4 Implementing Law Reform for Just Resilience in Australian Climate Adaptation Laws***

This section presents a preliminary sketch of law reforms and pathways that might enhance just resilience to climate impacts. Drawing on both the empirical data and theoretical literature, the section argues that a combination of incremental and transformative reforms are likely required to increase climate adaptation law's capacity to enhance just resilience. The section suggests that a series of relatively simple incremental reforms may have significant impact on the law's capacity to support and enhance just resilience in climate adaptation. However, it also identifies other potential reforms that are likely to differ in approaches to the development, implementation and evaluation of law. Although such reforms may seem improbable in the current Australian political climate, they are nevertheless a potentially significant element of law's contribution to just resilience in climate adaptation.

There are already helpful examples demonstrating how incremental reforms of adaptation laws can be supported within the existing legal framework. Victorian law relating to heatwaves, for example, mandates regular reviews of the statutory plans through which higher level policies and principles are translated into local action. Recent additions to that framework also require an evaluation of the operation of previous additions of those statutory plans.<sup>1</sup> This approach greatly enhances the adaptive capacity of law by removing the appearance that it is to endure in perpetuity in the face of changing socio-ecological conditions. By rejecting a 'set and forget' approach to law-making, while also adding a layer of transparency to the process of incremental policy development, this approach is broadly consistent with the calls of just resilience for more flexible approaches that enhance public participation in adaptation decision-making. While this example is prominent in the

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<sup>1</sup> CCA (n 2) s 35(1)(b).



Victorian context, there seems no reason it could not be readily adopted in other Australian states.

Incremental changes that are wholly inadequate may obscure the importance of transformative reforms to develop adaptation laws that advance just resilience.

Transformative changes may be necessary in two related but distinct sets of circumstances. First, wholly inadequate laws might require transformative reform. This may mean abandoning efforts to incrementally improve wholly unsuitable laws in favour of designing and implementing new arrangements that better meet the demands of climate adaptation. Transformative change in the law tends only to occur in the wake of devastating and deadly failures in the existing regime. The development of Victorian laws relating to heatwaves – explained at length in Chapter 6 – are a prominent example. Yet there have been instances of anticipatory transformation in Australian law. One relevant example is the enactment and enforcement of the *World Heritage Properties Conservation Act 1983* (Cth) that ultimately prevented the destruction of parts of the TWWHA. A detailed analysis of causal factors spurring that legal development is beyond the scope of this thesis. It is enough for present purposes, however, to note that a once revolutionary legal action is now the foundation of Australian environmental law. It may be that climate adaptation law that enhances just resilience requires similarly ambitious and progressive legal developments.

A second and related question is whether transformation in law would necessarily produce the changes in socio-ecological systems necessary for just resilience in climate adaptation. That question is ultimately beyond the scope of this thesis. The preceding commentary does not assume the answer is ‘yes’. Laws have limited capacity to shape social dynamics, and even less ability to alter biophysical conditions. However, those well-recognised limitations of law are only illogical and unhelpful objections to efforts to enhance adaptation laws. It is no serious objection that adaptation laws cannot prevent all climate impacts; that is not their purpose, and – if appropriately monitored and amended – the worst of their negative impacts can be accounted for in their implementation. Further, such objections seem only to perpetuate the greatest injustice of climate change – that those least responsible for greenhouse gas emissions are most vulnerable to climate impacts and most exposed to adaptation costs. The failure of adaptation laws to provide any meaningful pathway through which vulnerable individuals and communities can shape governmental decision-making and/or have errors addressed in a timely and cheap manner is unconscionable, and demands immediate redress.

There is also a need for adaptation laws to move beyond traditional legal dispute resolution to embrace a wider range of dispute resolution options. At present, disputes relating to adaptation law are typically resolved through adversarial judicial or merits review proceedings. Although those proceedings have at times spurred progress in adaptation law, they are neither a suitable vehicle for substantive policy development nor adequate for the range and nature of disputes likely to emerge as adaptation progresses. Judicial and merits review proceedings are fundamentally concerned with the limits of governmental power. Merits review proceedings require an independent decision-maker re-exercise the decision-making power, and might thus result in qualitatively improved adaptation decision-making. But they are only a vehicle for addressing individual decisions directly, and there are large questions about the capacity of decision-makers in generalist tribunals to attend to the nuances and demands of context-specific decision-making. Judicial review – even on the most progressive contemporary approaches – is concerned only with preventing misuse or abuse of administrative discretion, and typically results only in the quashing of an exercise of power. Both pathways may ultimately lead only to a (lawful) re-exercise of decision-making power that achieves no substantive change in outcome. While such processes are crucial to enhancing accountability and transparency in decision-making, they are not suited to progressive policy development. They have only a limited capacity to enhance just resilience in climate adaptation.

Alternative modes of administrative review therefore require greater attention in the development adaptation laws that reflect the principles of just resilience. Less prominent review mechanisms and processes – such as the Ombudsman model common to all Australian jurisdictions – have some promise. An appropriately empowered ‘Adaptation Ombudsman’ would be able to interrogate adaptation decision-making processes in a more holistic manner. Ombudsman processes are better suited to exposing and remedying systemic deficiencies in administrative processes. Other bodies with investigatory or review powers – such as anti-corruption bodies and auditors-general, and including the information laws addressed earlier in this chapter – might also help to enhance the quality of administrative decision-making in the first instance.

Such systemic measures must also be complemented by more appropriate processes for the individualised resolution of disputes and grievances. Adversarial processes are likely to compound tensions associated with climate adaptation. Non- or less-litigious processes – such as formalised negotiation, mediation and conciliation procedures – could play a vital role in implementing and monitoring adaptation laws. Such approaches have proven

tractable in other heavily contested contexts such as family dispute resolution, and might be adapted to the climate adaptation context. This wider range of processes and procedures might be developed such that they account for the wider structural dynamics that underpin the inequitable distribution of climate impacts. Access to government funded expert witnesses, or even procedures that reduce the need to call expert evidence, might help to address the information deficits likely to be faced by vulnerable groups who attempt to use legal procedures to challenge adaptation decision and outcomes.

However, even the best dispute resolution procedures cannot resolve tensions inherent in the law itself. A number of principles and concepts central to Australian law will present ongoing challenges for the development of just and resilience adaptation laws. A number of participants identified the significance of private property, for example, as a potential barrier to the development of laws that help to provide more nimble and fairer adaptation outcomes. ‘Property’ is deeply embedded across many aspects of the Australian legal framework, ranging from a constitutional prohibition on the acquisition of property other than on just terms<sup>2</sup> through laws that empower emergency services to enter private property when responding to emergencies. ‘Property’ will thus inevitably influence the development and implementation of adaptation laws for the foreseeable future. It is therefore vital that law- and decision-makers engage fully with the concept when designing and implementing adaptation laws in conditions that will jeopardise personal property holdings.

To be sure, this section develops only a preliminary and high level sketch of the potential for reform of Australian adaptation laws to enhance just resilience. Further research that tailors these findings to the context-specific requirements of particular climate impacts and discrete socio-ecological settings will be vital to enhancing just resilience in climate adaptation in the short to medium terms. As research in this area progresses, new and important insights – including learnings from the development and implementation of new approaches to adaptation laws – will facilitate further insights on how laws can most helpfully support just resilience in adaptation to climate change.

## **7.5 Conclusion**

This chapter has taken a step back from the three detailed case studies to explore some of the larger implications of this research for the understanding and implementation of just resilience through law. Section 7.1 highlighted common themes for each of the principles

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<sup>2</sup> *Constitution* s 51(xxxi).

of just resilience that emerged across the various case studies. The following section 7.2 then addressed a number of cross-cutting issues that emerged across each of the case studies. It explained how information sharing, other feedbacks, resourcing and leadership are relevant to the pursuit of each of the principles of just resilience in varying ways. Section 7.3 then pointed to commonalities and tensions between the principles, and explained how the principles can be both mutually enhancing and in tension in any given set of circumstances. Although only a relatively small number of synergies and tensions emerged from the empirical data collected in this case study, the section also maps the array of interactions that might require attention in future research.

Finally, section 7.4 elaborated some potential legal reforms that might enhance just resilience in adaptation to climate impacts. Returning to the general overview of the legal framework in Chapter 1, the section pointed to opportunities to develop incrementally the capacity of Australian adaptation laws to facilitate just resilience in addressing climate impacts. It also identified sticking points at which transformative change might be required to unlock the full potential of law to enhance just resilience in climate adaptation. While a number of these potential reforms have their genesis in the experiences of expert practitioners, others involve a more ambitious push to address difficulties in the existing law with reference to the theories of resilience thinking and environmental justice. The section demonstrates that a dual approach of incremental development alongside transformative change is most likely to facilitate the pursuit of just resilience in climate adaptation. The progressive development and implementation of these reforms must be a priority in each of the short-, medium- and longer-terms.

## Chapter Eight: Conclusion

This thesis explored how Australia's climate adaptation laws influence just resilience in addressing climate impacts. Resilience and environmental justice considerations shape the development of Australia's climate adaptation laws and policies. Resilience approaches increasingly inform adaptation efforts in the various Australian jurisdictions. The justice implications of adaptation are also receiving greater attention as the actual and likely extent of climate impacts – and their disproportionate impacts on already vulnerable groups – comes more sharply into focus. However, there has been limited exploration of the synergies and tensions between those two concepts. And there has been no systematic examination of the role laws play in shaping just resilience to date.

This thesis therefore set out to answer four research questions:

- 1) Are the concepts of resilience and environmental justice interrelated? If so, how?
- 2) To what extent are 'just resilience' principles reflected in Australia's current climate adaptation laws as written?
- 3) To what extent are 'just resilience' principles reflected in the implementation of Australia's current climate adaptation laws in practice?
- 4) What reforms might allow Australian climate adaptation laws to better promote 'just resilience' in addressing climate impacts?

Building on the existing literature, this thesis has shown that the concepts of resilience and environmental justice are significantly interrelated. The literature review in Chapter Two examined the foundational principles of both resilience and environmental justice. It also explained that law is seen as both a driver of, and a barrier to, resilience and justice in earlier studies. The literature review also showed that resilience and environmental justice considerations are central to contemporary approaches to climate adaptation.

Although several scholars have pointed to the synergies and tensions between resilience and environmental justice, few have explored the intersection of those concepts in detail. A very small number of studies have pointed to law's role in shaping just resilience. As a result, analysis of laws' influence on just resilience remains underdeveloped. To address this knowledge gap, the thesis drew on the existing literature to develop a conceptual framework for enhancing just resilience in law. This conceptual framework suggests that to achieve just resilience objectives, laws should:

- 1) address change;

- 2) account for the distributive effects of climate change and adaptation;
- 3) enhance participatory processes; and
- 4) facilitate multi-scalar, cross-sectoral legal and governance arrangements.

In addition to these four objectives, this thesis identifies *information sharing* and *leadership* as ‘cross-cutting’ principles that would facilitate the pursuit of each these just resilience objectives.

This conceptual framework was then empirically tested in three case studies of select aspects of Australian climate adaptation laws. Those three case studies – of laws relating to fire in the Tasmanian Wilderness World Heritage Area (TWWHA), heatwaves in urban Melbourne and changing water levels in Lake Macquarie, New South Wales – each offered important insights on the barriers to, and drivers of, just resilience in Australian climate adaptation laws. In each case study, the principles were used to shape both a desktop investigation of the law ‘on the books’ and a series of interviews with expert practitioners. Those interviews were used to explore how the implementation of Australian adaptation laws influences ‘just resilience’ in climate adaptation practices.

In combination, the three case studies showed that Australia’s current climate adaptation laws reflect some aspects of the just resilience principles. The incorporation of just resilience principles in Australia’s climate adaptation laws ‘on the books’ varied between case studies and is context specific. That context includes the jurisdiction of interest and relevant climate impact. Some more recently enacted legislation in New South Wales and Victoria uses the language of resilience and justice directly. However, many existing laws also cover a range of the just resilience principles using other labels. This was most clearly demonstrated in the extensive public participation procedures across the three case studies. Other aspects of the principles, such as the distributive implications of climate change, were rarely addressed in detail in the ‘law on the books’. In any event, the thesis shows that just resilience principles are addressed in Australia’s climate adaptation laws as currently written.

Just resilience principles were also reflected when Australia’s climate adaptation laws are put into action. Each of the case studies illustrated how the existing laws can be implemented in ways that shape the pursuit of the just resilience principles. Participatory processes were used expansively in some instances, and on a much more restricted basis in others. Different factors – including local politics and resourcing issues – often shaped the

use of those processes by decision-makers. Interview data also emphasised the importance of interpersonal connections, leadership and information sharing for facilitating cross-scalar and multi-level interactions, especially between the local and State levels. Better understanding how and why practitioners use laws – and the support they require – to develop and support adaptation actions is thus essential for tapping the potential of Australian climate adaptation laws to enhance just resilience into the future.

The three case studies also present insights on how just resilience might be pursued through adaptation laws into the future. On the one hand, the case studies demonstrate that incremental development of existing laws – including through their operationalisation, as well as formal reform – is a useful pathway for enhancing just resilience. Both the TWWHA bushfire and Lake Macquarie case studies show how existing laws can be used to this end. The case studies also point to the importance of formal reforms for enhancing just resilience in Australia's climate adaptation laws. The Melbourne heatwaves case study is the strongest example in this respect. An initial round of reforms – initiated swiftly after the devastating 2009 heatwave – helped to mitigate the impacts of subsequent heatwaves. Further iterative reforms have enhanced the just resilience principles in both the 'law on the books' and 'in action'. Victoria has also developed a framework for forward-looking development of climate adaptation action plans. Although the success of this approach remains to be seen, it will prove an important vehicle for learning across the various Australian jurisdictions.

There are multiple opportunities to extend this course of research and build upon its key findings. First, this thesis by no means exhausts the possibilities for research on the intersection between resilience, environmental justice and law. The thesis has focused largely on the influence of law on resilience, and has not analysed the resilience of law.<sup>1</sup> Yet this project has clearly pointed to the importance of that related but distinct line of inquiry for the development of climate adaptation laws. Similarly, the thesis also shows that the relationship between environmental justice and law is complex. There must surely be opportunities to investigate further – both empirically, and on an exclusively theoretical basis – the influence of law across the various dimensions of environmental justice scholarship.

Further, this research has taken only the first steps in unpacking the complex relationship between resilience theory, environmental justice and law. An array of significant questions

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<sup>1</sup> See Chapter 2.5.

are yet to be asked, let alone answered. There is room to test the principles of just resilience in a context involving extensive judicial decision-making, which may offer important insights on the mechanisms through which law reform is implemented. The principles may also benefit from testing outside the climate adaptation context. This might include application to climate intervention technologies, for example, which may require laws that balance the need for innovation with the transparency, accountability and distributive concerns emphasised by justice theories. The principles might also usefully be tested across a much wider range of subject matters.<sup>2</sup> They might be applied, for example, to advances in biotechnology or automated processes.<sup>3</sup> Thus, while the thesis has demonstrated the significance of the interrelationship of resilience theory, environmental justice and adaptation law, significant opportunities remain to interrogate other aspects of the relationship between the three bodies of thinking and theory.

Thirdly, the thesis addresses a limited range of climate adaptation laws connected to a narrow selection of climate impacts. To be sure, that approach supported the development of a tractable project that has offered important insights on the development and implementation of adaptation laws. The three impacts examined in this case study are already major public policy issues in Australia, and will only increase in importance over time. Yet they clearly do not exhaust the range of climate impacts that present major challenges for Australian law and society in the early 21<sup>st</sup> century. Food security, biodiversity conservation and the broader area of public health all offer interesting possibilities for the testing and further development of the four principles of just resilience. Other impacts will likely pose different challenges for the development of adaptation laws.

Finally, there is significant scope to apply the principles of just resilience in analysing adaptation laws in a much wider range of legal contexts. This thesis focused on Australian climate adaptation laws as they currently stand. There is likely significant utility in applying the framework to international laws; the global climate regime, which received little attention in this thesis, would be an obvious starting point for analysis at the international scale. Transnational legal arrangements also warrant attention given their significance for resilience and environmental justice in other geographic locations. There are also

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<sup>2</sup> While the label environmental justice sits awkwardly with these concepts, the approaches to justice that inform 'environmental' justice scholarship are capable of application across a much wider range of subject matters. Distributive, procedural, recognition and capabilities issues attend many difficult policy problems beyond the environmental context.

<sup>3</sup> See, eg, 'Governance and Adaptive Regulation of Transformational Technologies in Transportation (2017-2018)' (Web Page) <<https://bassconnections.duke.edu/project-teams/governance-and-adaptive-regulation-transformational-technologies-transportation-2017>>.



opportunities for comparative work focusing on domestic laws. Important insights would likely arise from the empirical testing of the principles in other developed common law jurisdictions. Civil law systems may return markedly different insights on the type of legal mechanism likely to enhance just resilience in climate adaptation. Developing legal systems – and the legal systems of developing countries – would also likely emphasise different aspects of the four principles. Other more dynamic multi-level legal systems might also offer an interesting comparison with the relatively staid vertical legal arrangements in the Australian context. Comparative analyses of this nature would add breadth and depth that was simply unattainable within the practical confines of this project.

However, these opportunities for further research ought not detract from the important contribution that this project has made to research on Australia's climate adaptation laws. The project has taken the first steps in exploring the interaction of resilience, environmental justice approaches and adaptation laws. This thesis thus builds on the emerging interest in the intersection of resilience and environmental justice approaches in the broader scholarly literature. It makes a unique contribution by focusing specifically on the role that law plays at the intersection of resilience and environmental justice. Further, the thesis has empirically tested those principles of just resilience through their application to three case studies of Australian climate adaptation laws. Although resilience and environmental justice considerations are rarely addressed by name in Australian adaptation laws, they increasingly shape policy and inform the implementation of the law. The case studies show that the implementation of law can significantly influence just resilience, even where those labels are absent. There are nevertheless opportunities to incorporate just resilience objectives and approaches directly into laws that will guide adaptation policy and practice into the future.

Despite the warnings of the scientific community, greenhouse gas emissions continue to rise. Climate impacts are intensifying in Australia, and predictions for the future are increasingly bleak. Devastating climate extremes – and acceleration of slow onset impacts – will have significant impacts on Australia's ecosystems. They will simultaneously reshape and alter social dynamics. Adaptation laws will play a vital role in ensuring that law- and policy-makers develop approaches that address the social and ecological implications of climate change. While laws alone can no longer prevent climate impacts, Australia's existing adaptation laws already show pathways to developing adaptation laws that simultaneously enhance just and resilience to climate impacts. Building on those approaches may allow us

to alleviate the most devastating social-ecological impacts of climate change in a fair and equitable manner.

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