Report on
The Goulburn Broken Catchment Workshop on Adaptation to Climate Change

August 2022

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Melbourne Climate Futures, The University of Melbourne and Monash Business School, Monash University in collaboration with the Australia/China/US Adaptation Project

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Summary

This report and the workshop that is central to it responds to the observation of the Intergovernmental Panel on Climate Change and others that, despite growing knowledge of the need for adaptation, implementation is at best incremental and inadequate.

Countries are good at generating information on the need for adaptation and many, such as Australia, are relatively good at developing plans but these plans are not implemented or implemented too slowly. At best, adaptation is reactive to catastrophic events.

This project pursues the hypothesis, that this is a failure of governance. In other words, institutions and how they operate (the rules of the game) are poorly adapted to problems that emerge over a longer-term yet result in sudden or gradual catastrophic events, and fail to enable stakeholders to effectively analyse risks, or to plan, implement, and monitor adaptation actions.

This report documents a first effort to test this hypothesis in the field with people involved in local governance, charged with developing, implementing, or monitoring adaptation initiatives or, who will be impacted by climate change (most of the participants were both).

The project team, who are working as part of a three country (Australia, China and the United States) international project, was already aware that governance shortfalls had been identified by Australian inquiries into recent catastrophic flood events and fires.

The Euroa workshop reinforced the view that institutions responsible for adaptation, particularly state and Commonwealth, were poorly equipped for implementation and monitoring, and for collaborative governance. They also failed to provide adequate resources for implementation and monitoring.

It found local stakeholders had existing relationships that could potentially be assembled under an appropriate governance structure to meet the adaptation challenges but presently had low capacity for planning, implementation, or monitoring, and had insufficient support by state and federal governments, as well as communities.

These governance structures would ideally be participative (engaging presently inactive stakeholders from business, civil society and communities), collaborative (changing distributions of power and authority between different levels of government and different actors), and adaptive (building capacity for iterative governance changes).

Creating new governance will require long-term commitment, programmatic funding and changed culture or ways of doing things to prioritise prevention and preparation (risk management), empower communities and make difficult planning decisions.

The next stage of this project will build on this vision for more adaptive and dynamic governance by more clearly defining its characteristics, ways of operating and role in direction-setting, implementation, and monitoring of climate change adaptation.

It will test views expressed at the workshop to understand if they are widely held, are reflected in existing local collaboration, understand how state and Commonwealth support could improve implementation and monitoring and explore specific interventions.

After setting out the context for this report and defining some of the concepts used, this document reports on the workshop held in Euroa on 30 June 2022, draws some conclusions and ideas for moving forward, and sets out anticipated next steps.


Photos from the workshop

Introduction

Of the 21 findings from a recent NSW Parliamentary Inquiry into the 2022 catastrophic floods in that state[1], most relate to institutional and governance failure. The Inquiry:

> heard that the management of the response and recovery phases of the February-March 2022 floods were hindered by a lack of preparedness, coordination, and leadership by the leading government agencies, particularly the NSW State Emergency Service (SES) and Resilience NSW[2].

In brief, lead agencies failed to provide leadership, lacked coordination, created confusion, responded poorly, lacked integration, were not prepared, failed to communicate, failed to provide emergency communication capability, failed to leverage support of local veterinarians, failed to engage and coordinate with local community groups, failed to prepare, and failed to engage First Nations people.

A subsequent report by a government-appointed inquiry found NSW needed improved governance arrangements "to drive a cohesive, whole of government approach to disaster preparedness, planning and emergency management"[3]. The report highlighted "governance structures" in its summary of 28 recommendations for change.[4]

These issues are not confined to floods. The *Royal Commission into National Natural Disaster Arrangements,* established following the devastating 2019-20 bushfire season, also drew attention to governance arrangements for disaster coordination, planning, response, and recovery.[5] Additionally, the *National Disaster Risk Reduction Framework, produced with representatives from all levels of government, business and the community sector,* stated that all sectors of society must work together to reduce risks through governance, ownership, and responsibility.[6]

Both the scale and frequency of catastrophic events – and slow-moving changes such as droughts and sea level rise - are challenging existing governance and institutional arrangements. Too often, these arrangements are found to be inadequate.

The Australian findings are not surprising. The International Panel on Climate Change (IPCC) identified *governance, institutions and policy* as high-level constraints on human adaptation to climate change

[1] New South Wales Parliament, Legislative Council 2022, *Select Committee on the Response to Major Flooding across New South Wales in 2022*, Report no. 1, August.
[2] Ibid p13
[3] Fuller, M. and O'Kane, M. 2022*, Report of the 2022 NSW Flood Inquiry: Summary Report*, 29 July, p. 21
[4] Ibid, Letter of transmittal to the NSW Premier
[5] Binskin, M., Bennett, A. and Macintosh, 2020, *Royal Commission into National Natural Disaster Arrangements*, 28 October, https://naturaldisaster.royalcommission.gov.au/system/files/2020-11/Royal%20Commission%20into%20National%20Natural%20Disaster%20Arrangements%20-%20Report%20%20%5Baccessible%5D.pdf
[6] Commonwealth of Australia, 2018, *National Disaster Risk Reduction Framework*, Department of Home Affairs, Commonwealth Government, https://www.homeaffairs.gov.au/emergency/files/national-disaster-risk-reduction-framework.pdf

in all areas of the world[7]. It noted that while there is growing knowledge of the need for adaptation as well as an increasing number of legal frameworks and dedicated spending on adaptation:

> … observed adaptation in human systems across all sectors and regions is dominated by small incremental, reactive changes to usual practices often after extreme weather events, whilst evidence of transformative adaptation in human systems is limited[8].

Context of this report

This report is part of a larger project examining governance of climate adaptation in three countries US, China and Australia. This project is interested in what is working, what may not be working and what can be learnt from different approaches. This international project is supported by the National Academy of Public Administration in the United States and the Institute for Global Public Policy at Fudan University in China. It is one of very few international collaborations comparing and learning from adaptation approaches and strategies in different countries.

The Australian component of this international collaboration sought to explore what was happening at the local level by bringing together people responsible for, or working on, climate adaptation in a defined region. This first report from the local project provides initial reflections based on a workshop of stakeholders held in Euroa on the 30th of June 2022. The workshop received support from the Goulburn Broken Catchment Management Authority, the Strathbogie Ranges Conservation Management Network, the Shire of Strathbogie and staff from the University of Melbourne and Monash University.

This report documents a gathering of adaptation leaders in the Goulburn Broken Catchment, in rural Victoria, Australia, to discuss how to better progress adaptation through improved governance arrangements; a key challenge for climate change adaptation[9]. Despite the many, high quality adaptation documents and plans that relate to the Catchment area[10] progress on implementation has not automatically followed, and there is little evidence of systematic monitoring efforts.

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[7] Intergovernmental Panel on Climate Change (IPCC) 2022, *Climate Change 2022, Impacts, Adaptation and Vulnerability, Technical Summary*, February, https://www.ipcc.ch/report/sixth-assessment-report-working-group-ii/

[8] Ibid pTS-55

[9] Waters et al. 2014, Contrasting perspectives on barriers to adaptation in Australian climate change policy, *Climatic Change*, 124, 691-702.

[10] See, for example: AECOM Australia Ltd. 2016, *Climate Adaptation Plan*, Greater Shepparton City Council; Shepparton Council 2022, *Climate Emergency Action Plan 2022 to 2030 Draft*; Department of Land, Water, Environment and Planning 2021, *Hume Regional Climate Adaptation Strategy*, November, Victorian Government; Department of Land, Water, Environment and Planning 2018, *Pilot Water Sector Climate Change Adaptation Action Plan*, Victorian Government; Strathbogie Shire 2017, *Sustainable Strathbogie 2030: Strategy and Action Plan 2018-2022*; Strathbogie Shire Council undated, 2021-25 Council Plan, https://www.strathbogie.vic.gov.au/images/Plans_policies_Strategies_reports/Strathbogie_Shire_Council_202 12025_Council_Plan.pdf; Goulburn Broken Catchment Authority 2016, *Climate Change Adaptation Plan for Natural Resource Management in the Goulburn Broken Catchment*, Victoria; Bosomworth, K. et al. 2018, *Exploring 'Adaptation Pathways' Planning Through an NRM Lense: Insights from Two Exploratory Case Studies*, RMIT University.

Governance

Governance is a widely used but vaguely defined term. Often the definition may be context specific, for example, corporate governance in a business context, or good governance in a public administration context.

The IPCC defines **governance** as:

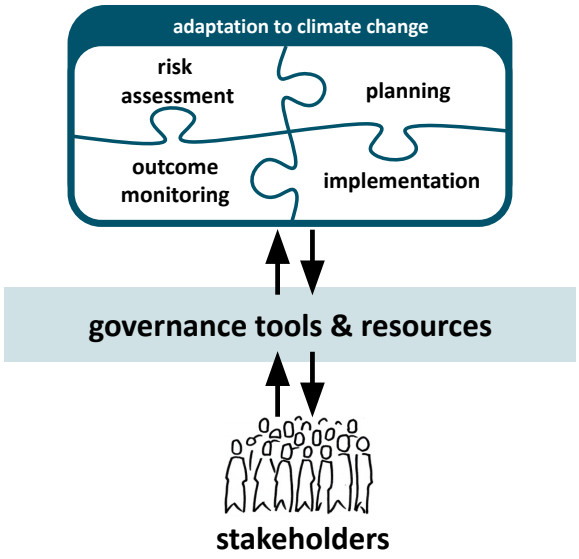
> *"structures, processes and actions through which private and public actors interact to address societal goals. This includes formal and informal institutions and the associated norms, rules, laws and procedures for deciding, managing, implementing and monitoring policies and measures at any geographic or political scale, from global to local."*[11]

Accordingly, this project is interested in how governance shapes (and is shaped by) the interactions of multiple actors at many levels as these actors aim to resolve different priorities and organize collective action. Governance is seen as having two elements: (1) *rules of the game* and, (2) *institutions*[12]. In this context, the *rules of the game* may be laws and regulations, private regulations such as standards, operating policies, and norms as well as culture; the unwritten rules of how things are done. Institutions or *mechanisms of governance* can include federal, state, and local government, their various agencies and semi-government authorities, non-government organisations including community groups and informal but identifiable networks. This definition accepts that governance occurs at all levels of society to manage relationships, resolve differences and establish priorities for adaptation to climate change (see Figure 1).

[11] IPCC (2022), Summary for Policymakers In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge UK and New York, NT, USA note 31, p. 14

[12] This discussion draws on the work of Leach, M., Bloom, G., Ely, A., Nightingale, P., Scoones, I., Shah, E., and Smith, A. 2007, *Understanding Governance: Pathways to Sustainability*, Brighton, UK; Williamson, O. 1996, *The Mechanisms of Governance*, Oxford University Press, New York

Figure 1: Relationship between stakeholders, governance, and adaptation activities



If institutions are the structures around which governance mechanisms exist, it is important to understand that they can both contribute to, and undermine, the success of achieving shared goals. German sociologist Max Weber first drew attention to the *iron cage* of bureaucracy that developed momentum and direction in the 19th century. In the second half of the 20th century, it was argued that bureaucratization had engulfed the public sector in a way that drove homogenization of structure, culture, and output[13]. Others have highlighted *path dependence* where institutions become locked-in to ways of being; mutually reinforcing because the benefits of remaining the same are greater than the benefits of change or adaptation[14].

The importance for this discussion is that if institutions are to adapt to a new and unprecedented (in the modern era) set of climate changes and consequences, they are poorly equipped for that change. By analogy, it is akin to asking the driver of a north-bound train to turn east. That will not happen until the tracks and infrastructure are created for an eastbound train. Creating that infrastructure requires a higher level of commitment, leadership, and investment than the mere issuing of an instruction to head east.

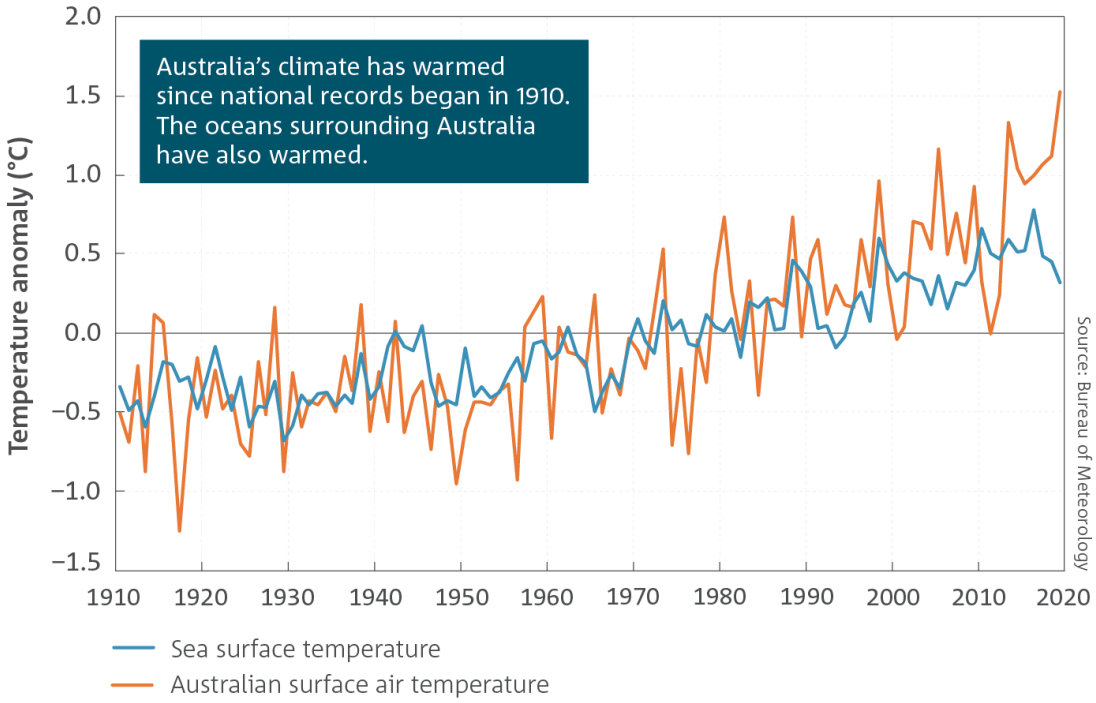
The hypothesis here is that effective engagement of institutions in adaptation is akin to asking the train to turn east. Implementation and monitoring requires consideration of a much broader range of enabling institutions and investments as well as leadership within our communities and political systems.

[13] DiMaggio, P. and Powell, W. 1983, The Iron Cage Revisited: Institutional Isomorphism And Collective Rationality In Organisational Fields, *American Sociological Review*, 48, April, 147-160.
[14] See for example, Pierson, P. 2000, Increasing returns, path dependence, and the study of politics, *American Political Science Review*, 94, 2, 251-267; Hall, P. and Taylor, R. 1996, Political science and the three new institutionalisms, *Political Studies*, 44, 5, 936-957.

Climate Change

Australia's average temperature has increased by 1.44 ± 0.24 °C since national records began in 1910 (Figure 2) a greater rise than the global average of 1.1°C above the pre-industrial (1850-1900) levels[15]. Both day and night-time temperatures have increased, as well as an increase in extreme heat events across all months. Rainfall patterns have changed with decreases in some areas and increases in others as well as change in the spread of rain over the course of a year.

Figure 2: Average rise in air and sea surface temperature



Source: Bureau of Meteorology and CSIRO 2020, State of the Climate 2020

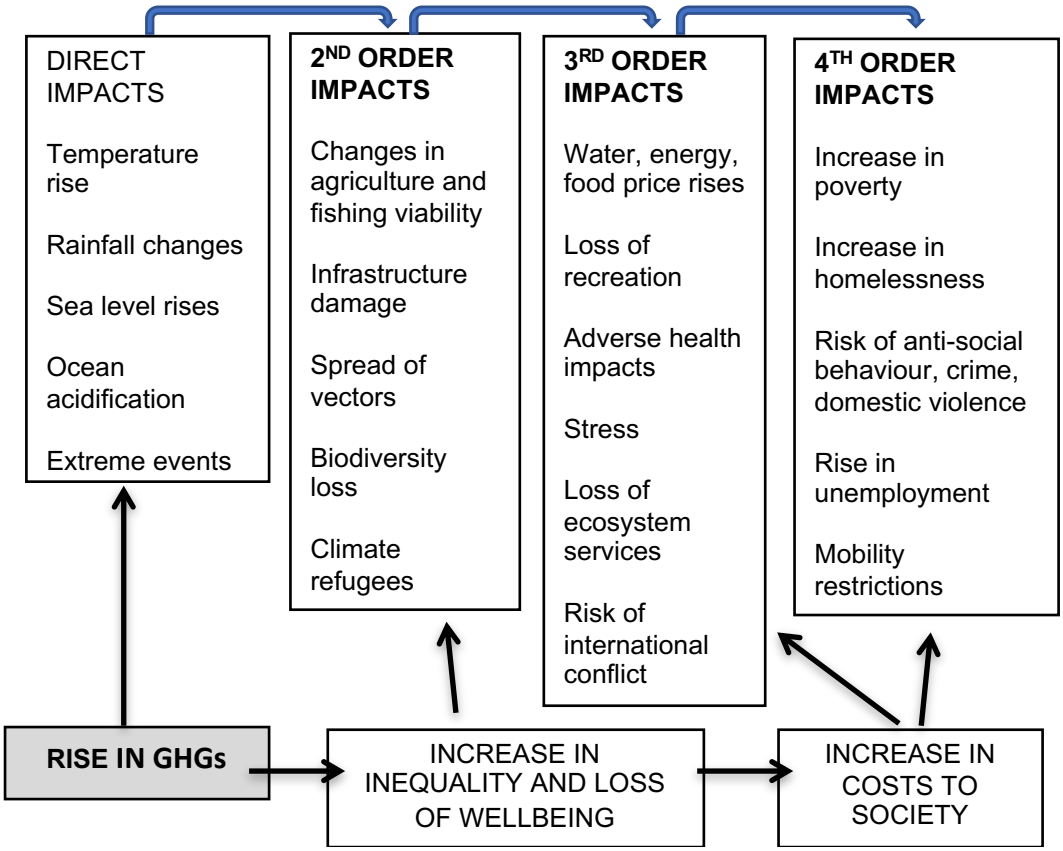
The 'apparently' small rise in the average temperature is resulting in a range of adverse events. In addition to the direct events such as severe storms, sea level rises, droughts, and bushfires, other follow-on consequences may include loss of livelihood, damaged housing, rising insurance costs, disrupted education, higher food price, environmental losses, major transport disruptions, psychological trauma etc. Particularly relevant to the Goulburn Broken is the decline of about 12% in the April to October rainfall since the late 1990s, and a decrease in streamflow across southern Australia since 1975, thus adversely impacting local agriculture.

The *1st-to-4th order impact framework* (below) helps to examine the flow-through from climate effects to ecosystem and livelihood impacts[16]. The framework shows the linkages between climate impacts (1st order), and examples of potential evolving impacts, such as food production viability, the rise in food prices and a consequent increase in poverty. Feedbacks exist between the four orders.

[15] Bureau of Meteorology and CSIRO 2020, *State of the Climate 2020*,

[16] Stanley, J. et al. 2013, *What would a Climate-Adapted Settlement Look Like in 2030?* National Climate Adaptation Research Facility, Gold Coast, Australia

Figure 3: The compounding impacts of climate change that require adaptation



Source: Stanley, J. et al. (2013).

Under the current international policy commitments to reduce GHGs, the predicted temperature could rise to 3°C and thus create the potential for many more disastrous events of greater severity. The requirement to adapt society, the economy, and the environment to prevent or reduce these serious impacts is increasingly being recognised in Australia and internationally.

Authors of the Australia and New Zealand chapter in the IPCC 6th Assessment Report draw attention to the slow speed at which governments and institutions are moving to deal with these changing risks.[17] It is argued that the speed is so slow that it risks overwhelming the capacity in Australia to respond to the impacts. Australia would benefit from a national risk assessment and a national climate adaptation implementation plan[18]. The *National Climate Resilience and Adaptation Strategy*, 2021-2025[19] is a high-level document that provides little guidance on systematic climate adaptation. Almost all government activity and resources are currently given over to emergency responses and rehabilitation, rather than to prevention and adaptation.

[17] Mackey et al. 2022, New IPCC report shows Australia is at real risk from climate change, with impacts worsening, future risks high, and wide-ranging adaptation needed, *The Conversation*, February.
[18] Ibid
[19] Dawe 2021, National Climate Resilience and Adaptation Strategy 2021-2025, Department of Agriculture, Water and the Environment, Canberra, October.

The prospect of more severe and more prolonged climate influenced changes and events adds importance and urgency to accelerating efforts on climate change adaptation.

Adaptation

Action on climate change is generally categorised under two headings: mitigation and adaptation. Mitigation refers to measures taken to reduce greenhouse gas emissions that are responsible for climate change, and adaptation refers to measures to deal with a changing climate. The Victorian Government defines adaptation as follows:

> Adaptation is action taken to prepare for actual or expected changes in the climate, in order to minimise harm, act on opportunities or cope with the consequences.[20]

The IPCC's definition is similar although slightly more expansive:

> Adaptation is defined, in human systems, as the process of adjustment to actual or expected climate and its effects in order to moderate harm or take advantage of beneficial opportunities. In natural systems, adaptation is the process of adjustment to actual climate and its effects; human intervention may facilitate this.[21]

The IPCC's Sixth Assessment Report argues adaptation plays a key role in reducing exposure and vulnerability to climate change:

> Adaptation in ecological systems includes autonomous adjustments through ecological and evolutionary processes. In human systems, adaptation can be anticipatory or reactive, as well as incremental and/or transformational. The latter changes the fundamental attributes of a social-ecological system in anticipation of climate change and its limits[22].

In practice, adaptation often encompasses activities associated with prevention, preparation or planning, emergency response, rehabilitation, and longer-term human and animal needs, within environmental, social and economic sectors of communities.

However, the report warns that adaptation has limits, both hard and soft. It recognises there is a point at which objectives or system needs cannot be secured from intolerable risk through adaptive systems. A *hard limit* is reached when no adaptive actions are possible to avoid intolerable risks and a *soft limit* is reached where options may exist but are not currently available – due to financial, governance, institutional and policy constraints - to avoid intolerable risk through adaptive action.[23]

[20] DELWP 2017, *Climate Change Risks to Local Government*, https://www.climatechange.vic.gov.au/__data/assets/pdf_file/0023/73049/Climate-Change-Risks-to-Local-Government_FINAL.pdf

[21] IPCC (2022), Summary for Policymakers, note 10, p. 5

[22] Ibid p. 5-7

[23] Ibid note 11, p. 7, p. 28

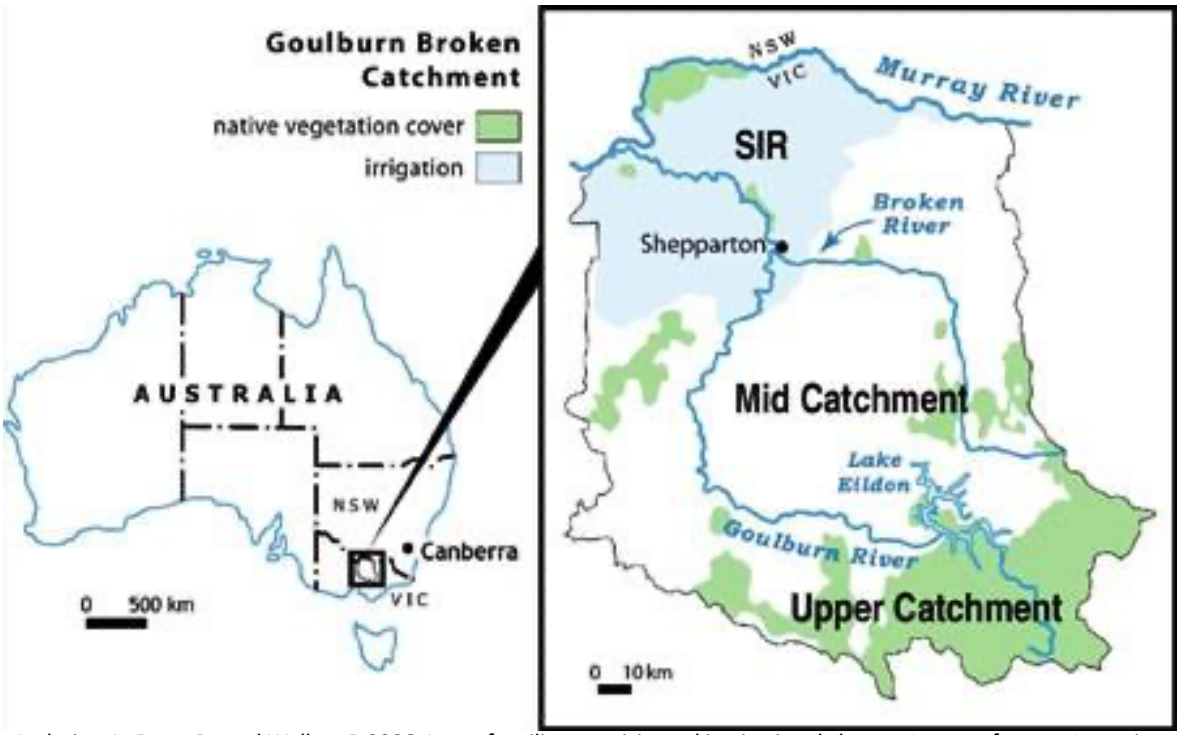
There is broad scientific consensus that transformational adaptation is necessary to make possible actions required for high levels of human health and well-being, economic and social resilience, ecosystem health, and planetary health.[24] Transformational adaptation aims to *initiate* change to fundamental attributes of a social-ecological system to expand soft limits to adaptation. This includes initiating change to:

- values, norms, assumptions, and perspectives of social actors;
- social and economic systems and institutions;
- power structures; governance frameworks, tools and practices; and
- social networks and interactions.[25]

The Goulburn Broken Catchment

The Goulburn Broken Catchment (Figure 3) is part of the Murray Darling Basin system stretching from the Murray River in the north to the upper reaches of the Goulburn catchment in the south. Although only a relatively small part of the Murray Darling system in area, it provides 11% of the system water. It is characterised by intensive irrigated agriculture (horticulture, dairy) in the Shepparton Irrigation Region (SIR), dryland farming (mainly cattle and sheep) in the middle and crown land in the south used as park and recreation areas, timber harvesting and protection of water catchment and biological diversity.

Figure 4: Goulburn Broken Catchment



Anderies, J., Ryan, P., and Walker, B 2006, Loss of resilience, crisis, and institutional change: Lessons from an Intensive Agricultural System in South-eastern Australia, *Ecosystems*, 9, 6, 865-878.

[24] Ibid, p. 9

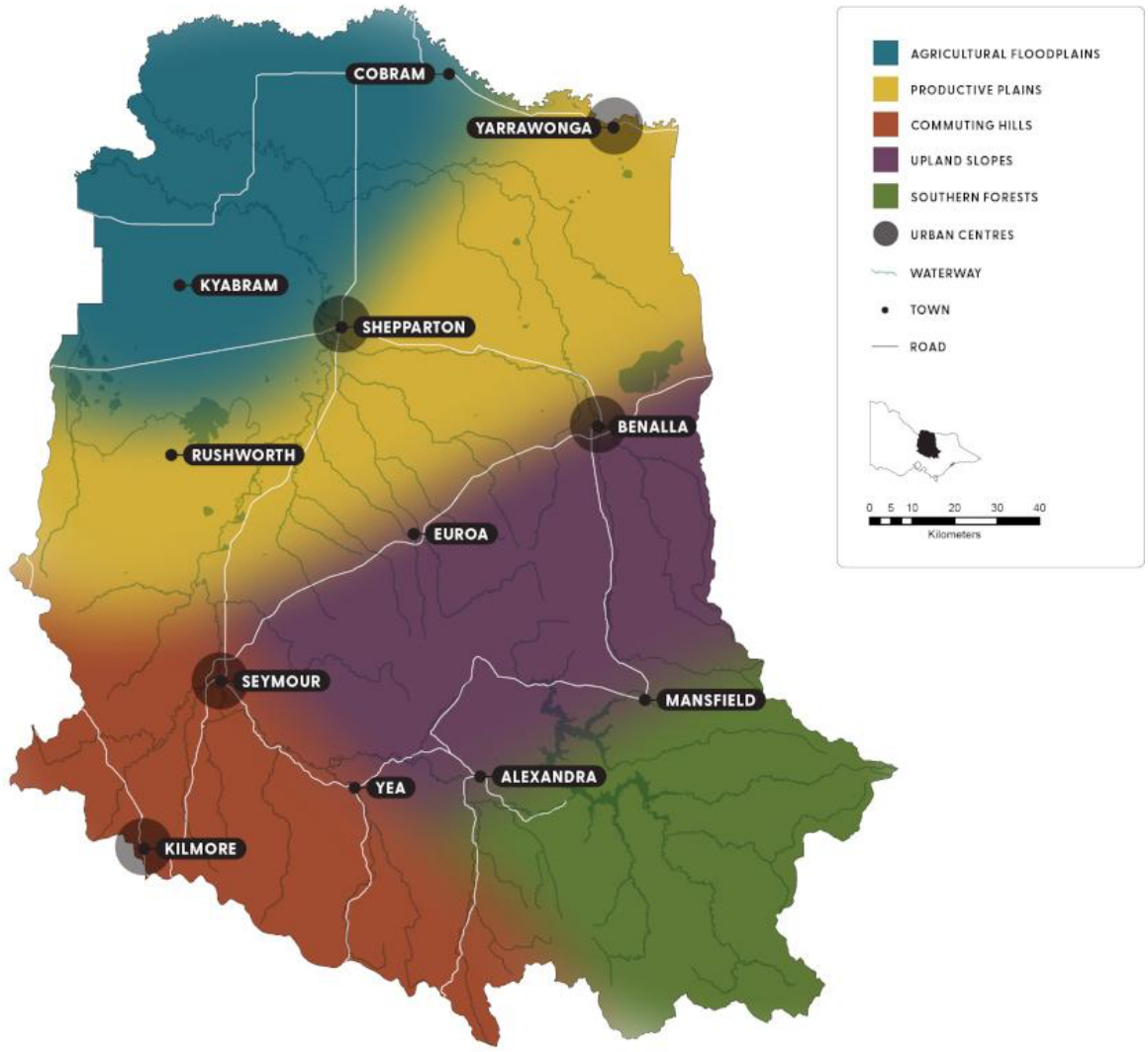
[25] Fook, T. 2017. "Transformational Processes for Community-Focused Adaptation and Social Change: A Synthesis". Climate and Development 9 (1): 5–21.

The map in Figure 5 shows major urban areas and their relative size. Shepparton is the major town. This project focused on the upstream areas initially; mainly the productive plains, upland slopes, commuting hills and urban social-ecological systems.

Traditional owners

The catchment includes two Registered Aboriginal Parties representing the interests of Traditional Owners: Yorta Yorta Nation Aboriginal Corporation (YYNAC) and Taungurung Land and Waters Council (TLaWC). The area where this study was primarily focused is Taungurung Country and a representative of the TLaWC took part in the workshop. The study team pays their respect to the Traditional Owners, their elders past and present.

Figure 5: Map of social-ecological systems identified in the Goulburn Broken Regional Catchment Strategy (2022)



(https://goulburnbroken.rcs.vic.gov.au/local-areas/

Social-ecological systems and catchment goals

The Goulburn Broken Catchment Management Authority Regional Catchment Strategy (Figure 5) divides the catchment into six social-ecological systems. These zones are designed to illustrate areas with common social, economic, and ecological characteristics. Boundaries between these areas are shown as fuzzy lines rather than hard borders, reflecting that borders are approximations rather than rigid boundaries. They are used for developing and identifying priority actions that match local drivers of change, land use and community interests.

The Regional Catchment Strategy[26] sets the following 2040 goals for the four social-ecological systems that are the target of this study:

- **Productive Plains**. Through strong and supportive community networks, the Productive Plains balances land productivity, quality water access and native vegetation quality and condition in a changing climate.
- **Upland Slopes**. The Upland Slopes is a climate resilient socio-ecological system, supported by a strong sense of place and pride in our engaged, knowledgeable, and adaptive community.
- **Commuting Hills**. The Commuting Hills has a safe, sustainable future and a great quality of life, while protecting and enhancing the wonderful natural environment.
- **Urban Centres**. Urban Centres offer employment, facilities and services for residents while valuing the natural environment.

For at least two of these socio-ecological systems, that envelop or border most of the major urban centres, managing climate change is a part of their local vision for what success would look like in 2040.

Anticipated catchment climate impacts

Goulburn Climate Projections 2019[27] summarises climate expectations for the region in the following points.

- Maximum and minimum daily temperatures will continue to increase over this century (very high confidence)
- By 2030s, increases in daily maximum temperature of 0.9 to 1.8 degrees (since the 1990s) are expected
- Rainfall will continue to be very variable over time, but over the long term it is expected to continue to decline in winter and spring (medium to high confidence), and autumn (low to medium confidence), but with some chance of little change.
- Extreme rainfall events are expected to become more intense on average through the century (high confidence) but remain very variable in space and time.
- By the 2050s, the climate of Shepparton could be more like the current climate of the town of Griffith, which is inland NSW, 270 kilometres north of Shepparton.

As well as higher average temperatures, of particular interest in these forecasts are changing rainfall patterns, more extreme weather, longer fire seasons and more intense wildfires. For example, while

[26] Goulburn Broken Regional Catchment Strategy. See: https://goulburnbroken.rcs.vic.gov.au

[27] Department of Environment, Land, Water and Planning and CSIRO, 2019, *Goulburn Climate Projections*, https://www.climatechangeinaustralia.gov.au/media/ccia/2.2/cms_page_media/508/Vic%20Climate%20Projections%202019%20Regional%20Report%20-%20Goulburn_20200219.pdf

annual rainfall will decline over time, “the greatest drying in spring” will have particular impact on dryland farmers. Fewer frosts will test horticulture growers. Greater temperature extremes could mean (under a higher emissions scenario), the number of days when temperature exceeds 35°C double (up to 40 days on a high emissions scenario) and the number of nights where the minimum temperature exceeds 22°C triple (to more than 14 days). Longer fire season with more extreme fire days will test the capacities of the predominantly volunteer brigades in the region. A range of social, economic and environmental impacts flow from changing weather patterns.

The following example of compounding impacts was provided to the workshop:

> Reduced rainfall and higher temperatures may lead to local **agricultural changes** that may impact on **food and price changes** for local consumers and export goods, which may lead to changes in the **local economic base**. New sources of **seed and breeding stock** will need to be found, **farming methods** may need to be adjusted, perhaps with **different machinery**. Farmers may need financial resources and agricultural advisers to assist in these adjustments. Changes in climate will lead to uncertainty and risk with consequential **psychological impacts**, such as anxiety. Rising temperatures and more extreme heat days will impact **outdoor work**. Longer, more **intense fire seasons** will require more time from the farm, stretching the capacity of volunteer firefighters, as well the psychological impacts of witnessing catastrophic events. These farm impacts will, in turn, have economic, social and environmental **impacts on local settlements and regional towns**.

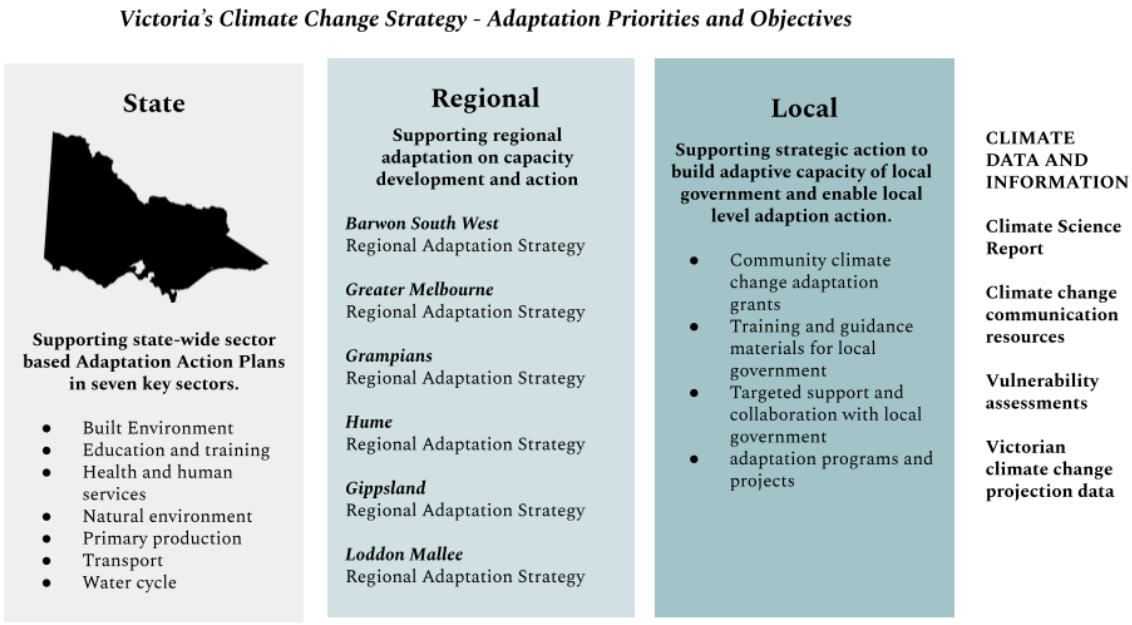
Adaptation in the catchment

As noted earlier, a range of adaption reports have been prepared that relate to this region. Generally, these reports cascade through different levels of government. For example, the Australian Government has a *National Climate Resilience and Adaptation Strategy* implemented by the National Adaptation Policy Office.[28] However, the Federal Government defines a limited role for itself in terms of implementation. It sees its role confined to national leadership on adaptation, providing national science and information and managing its own, Australian Government, assets and programs. The main avenue it identifies for its role in implementation is through partnerships with state governments, businesses, and communities.[29]

The Victorian Government has a tiered approach to adaptation with state-wide action plans focused on seven key sectors complemented by regional plans and support for local government and community action. This approach is illustrated in Figure 6. The Government says these plans will guide government action and help institutions, businesses, and individuals to respond to changing climate.[30] While there is a considerable body of work on adaptation plans, there is little evidence of if, and how, these plans are being implemented and less data on their success.

[28] https://www.dcceew.gov.au/climate-change/policy/adaptation
[29] https://www.dcceew.gov.au/climate-change/policy/adaptation/strategy
[30] https://www.climatechange.vic.gov.au/victorian-government-action-on-climate-change

Figure 6: Victorian Government approach to adaptation



Individual agencies and local government are also developing action plans. For example, the host for this workshop, the Shire of Strathbogie, has developed a draft *Climate Action Plan*[31] that was released for comment in May 2022[32]. The Goulburn Broken Catchment Management Authority developed a *Climate Change Integration Strategy* for 2012-2015 and an Adaptation Plan in 2016.[33] While the Adaptation Plan identified several areas for action it is unclear whether the Australian Government, who funded the plan, supported follow-up action. At this point, there is little information on follow-up action.

The Murray Darling Basin Authority identified, in its 2020 *Basin Plan Evaluation*, the need for greater collaboration and knowledge sharing to allow Basin communities "to be more prepared for future climates". In 2021, the Authority held a Basin Climate Resilience Summit to which it invited a number of government agencies and national organisations. While the summit is outlined as an achievement by the MDBA, there is little reference to outcomes and no reference to actions on the Authority's web site.[34]

The next section discusses the workshop, the participants and structure. This is followed by a summary of the workshop content and outcomes and discussion of potential next steps. Further details are given in Appendix to this report.

[31] https://www.strathbogie.vic.gov.au/2022/05/04/have-your-say-on-councils-climate-change-action-plan

[32] The period for comment has since closed although a final plan is not yet available. https://www.strathbogie.vic.gov.au/environment/climate-action/

[33] https://www.gbcma.vic.gov.au/publications/published_documents/climate-change

[34] https://www.mdba.gov.au/basin-plan/climate-variability-change/adapting-changing-climate

The Workshop

The workshop was held on 30 June 2022 in the Strathbogie Council Chambers, Euroa, and attended by 30 people with an interest in climate adaptation. They included Mayors of Strathbogie and Mitchell shires, sustainability managers from five municipalities, state government staff from the Department of Environment, Land, Water and Planning, State Emergency Service and Infrastructure Victoria, a CFA brigade representative, Taungurung Land & Waters Council, leaders from business and environment organisations, a secondary school student and academics. A full list is included in an Appendix.

The purpose of the workshop was to establish an understanding as to why the tasks of adapting to climate change impacts was demonstrating few accomplishments on the ground. This is despite the planning documents available, the increasing knowledge about the need for adaptation and the potential social, ecological and economic costs of not adapting. What is working and what is not working with a particular focus on governance, that is, institutions and *rules of the game*.

Numerous events over recent years have highlighted the potential community impact of extreme events that are becoming more extreme, in terms of extent and impact, and, more frequent. Adaptation strategies are intended to manage and reduce the impacts of events such as bushfires, droughts, and floods, and the consequences that flow from these events. There is increasing recognition that the sooner adaptation actions are put in place, the lower the size and cost of adaptation needing to be undertaken at a later date.

Format of the workshop

As mentioned earlier, the workshop is affiliated with a project undertaking an inter-country comparison of approaches to adaptation in Australia, China and the US. This international project involves about 25 participants from universities, government and non-government organisations. The workshop will also link with a proposed project on Australian land use strategy and adaptation to climate change, with partners, Australian Davos Connection Forum, The University of Melbourne, and National Economics.

Three speakers opened the workshop with short presentations on international adaptation challenges: Professor Dan Guttman from Tianjin University, Fudan University, New York University, and NAPA; Dr Rebecca Kihslinger from the Environmental Law Institute in the United States; and Dr. Xiaofan Zhao from the Hong Kong University of Science and Technology. These presentations set the scene for discussion that followed by outlining issues already raised by the international program and practical problems being faced in jurisdictions such as China. For example, Dr Zhao's observed a tendency in China to bundle adaptation with other policies and initiatives but noted:

> "As future climate risks escalate, it is insufficient to carry out adaptation actions in a "policy bundling" manner only. The mainstreamed adaptation policies should be supplemented by more systematic, targeted policies/actions for adaptation."[35]

In other words, Dr Zhao had found in her work that adding an adaptation element to other policy initiatives, or bundling as she calls it, did not result in effective climate action. The discussion that followed sought to explore these themes in the context of the Goulburn Broken Catchment.

[35] Xiaofam Zhao 2022, A Mainstreaming Approach to Climate Change Adaptation: Bittersweet Experiences in China, The Hong Kong University of Science and Technology, presentation 30 June 2022

Workshop discussion

Discussion centred around four connected domains for coordinated climate adaptation derived from the Australian Government *National Climate Resilience and Adaptation Strategy*[36]: *Nature* including landscapes and ecosystems; *Social* including people and communities; *Economic* including production and consumption; and *Built* including structures and infrastructure. Participants were divided into six small groups with each allocated one of the four domains. Each group discussed the following three topics:

- Collaboration – who are the key players on adaptation in the catchment (for the domain to which your group has been allocated)? Which relationships work well? Which relationships have barriers or constraints? Participants were offered the following initial list of actors although they were free to add additional actors; Commonwealth, State, Municipal, Qangos, Business and Civil Society.
- Current forces for and against change – what are the highest priority issues for your allocated domain within the catchment? What factors are assisting adaptation change on those issues? What are the factors working against change (barriers, constraints) and preventing adaptation initiatives happening?
- Strengthening forces for and weakening forces against change – what steps could be taken to strengthen positive forces for adaptation? Are there steps that could reduce resistance to adaptation action?

In considering these questions, groups were asked to consider these questions across five areas of adaptation action: prevention, preparation, emergency response, rehabilitation, and on-going human and animal needs.

Groups exchanged ideas at the conclusion of these discussions and then discussed the overall outcome of the workshop. The project team agreed to analyse the results and prepare a report on the workshop as a basis for further discussion. The team also pointed out that this was a first workshop, and it hoped to further develop the knowledge base and strengthen the value of its conclusions with subsequent workshops.

Topic 1 - Collaboration

The first session mapped actors and potential actors (left-hand column in Table 1) against the five areas of intervention to address or adapt to the impacts of climate change (top row). Table 1 illustrates frequency of mention as being of importance, by each of the six sub-groups, for each actor in each area of activity (maximum score for each box in the table is six).

[36] See note 25

Table 1: Areas and frequency of involvement in adaptation, as defined by the six workshop sub-groups

	Prevention	Preparation	Emergency Response	Rehabili-tation	On-going human & animal needs	Sector total
Commonwealth	5	3	3	2	4	17:30 57%
States	6	4	3	3	4	20:30 67%
Municipal	6	4	3	3	5	21:30 70%
Qangos/NGOs	5	1	2	1	3	12:30 40%
Business	5	2	1	1	2	11:30 37%
Civil society	4	3	2	2	3	14:30 47%
Action total	31:36 86%	17:36 42%	14:36 39%	12:36 33%	21:36 58%	

It is clear from both this summary and from the detailed responses, that participants were particularly focused on interventions before and after an event. Prevention and ongoing support for people and animals received the highest recognition[37].

Groups were asked to consider these interventions from the perspective of nature, social well-being, economic and built environment. Responsibility for prevention of an adverse event was spread across all actors with state and local government receiving maximum nominations and Commonwealth, QANGOs and business not far behind. Participants highlighted the need for all levels of government to collaborate on prevention measures including population, planning and zoning, building standards, vegetation, health, resilience and adaptation, risk and emergency management.

In terms of on-going human and animal needs after an event, participants highlighted the importance of local government and the need to provide infrastructure for the care of people and animals (shelters, accommodation) as well as health, well-being and social planning services. State and Commonwealth governments were also important, and participants highlighted the need for these levels of government to provide funding, collaborative leadership, and the integration of climate considerations into a raft of policy areas including biodiversity protection, human services, health care and families.

For preparation, local and state governments received the highest number of nominations followed by Commonwealth government and civil society. Again, the Commonwealth and states were expected to provide coordination, common language, education, health, planning, information sharing, specialist services such as meteorological services and support for plans, strategies, and implementation. They saw local government as delivering many of these services at a community level.

Taken together, the least resourced area of government, local government, received the highest number of nominations in the important areas of prevention and ongoing needs. The most mentioned

[37] Highest recognition in this context means they were listed most frequently as being stakeholders in different aspects of adaptation response (prevention, preparation (including forecasts, risks and engagement), emergency response, rehabilitation, repair and restoration, and ongoing human and animal needs.)

areas of adaptation (prevention, ongoing support) are also the least resourced suggesting there may be a misalignment between need and resources. The role of the Commonwealth was generally associated with high level policies, planning and long-term consistent funding, states were seen as having more applied management roles while local government appeared to be central to successful implementation.

When participants were asked what was working well and what was not working well in adaptation planning, the list was reasonably concise. They felt local collaboration seemed to be working well: between councils, between the catchment management authority and councils, and within the network of climate alliance groups. This may reflect the roles of many participants. Nevertheless, there was a sense that these groups all knew each other, and collaboration was supported by an ability to interact easily.

Relationships working less well were: relationships between different levels of government, funding hierarchies and roles in the implementation of climate adaptation plans. For example, participants mentioned that there did not seem to be a clear view on how regional action plans would be implemented locally. They noted there was misalignment between capacity to fund adaptation work and ability to implement adaptation strategies and, they noted the ability of property developers to influence planning laws that were not consistent with climate adaptation.

Business was seen as having a role in prevention, preparation and ongoing recovery in several ways: as economic units, providers of important equipment, employers of people (including volunteers) and providers of important services such as insurance. They were seen as having a role in engaging with adaptation, providing services and community leadership. Similarly, civil society was seen as having responsibility for volunteering and support for emergency response, rehabilitation and ongoing human needs.

Topic 2 – Current forces for and against change

The second exercise sought to winnow thoughts collected in exercise one to a set of priority adaptation issues and identify factors providing a positive force for change for these priorities and, on the other side, barriers and constraints to change.[38] Again, priorities were identified from the perspective of the four domains: environment, social, economic, and built. Results are summarized in Figure 7.

Workshop participants chose a diverse set of adaptation priorities, related to governance and leadership, and funding, capacity and resourcing. Governance and leadership priorities included: coordination, collaboration, empowering people to act, addressing existing governance structures not fit for purpose, connecting collaborators with knowledge to support action, and linking adaptation with social issues. Political will (or a lack of) can also be linked to governance and here participants mentioned a general lack of political will as well as, more specifically, a lack of will to capture opportunities for transformational change and demonstrate leadership through actions. It was noted that a lack of leadership risks losing staff through disillusion.

[38] Based on the broadly used diagnostic and planning intervention informed by Kurt Lewin's Field Theory; see: Argyris, C. (1997). Kurt Lewin award lecture: Field Theory as a basis for scholarly consulting. Journal of Social Issues, 53(4), 811–827; Swanson, D. C. & Creed, A. S. (2014) Sharpening the Focus of Force Field Analysis, Journal of Change Management, 14:1, 28-47.

Funding and resourcing climate adaptation action at a local and municipal level was a priority issue for participants. Other issues raised were the viability of existing businesses in a changing climate, the ability to deal with more frequent emergency events, provisions for increased use of electric vehicles and solar PV, and laws and regulations particularly in relation to buildings and infrastructure.

Asked to list forces that were currently helping to create positive change around these priorities, participants listed: scientific evidence, lived experience in the community and evidence collected through citizen science as well as collaboration in the community and with the private sector and universities. They also mentioned the sense of urgency generated by repeated crises. Forces currently working against those priorities were elements of leadership and resourcing: lack of will, short-termism, agency and discipline silos, inertia, a culture of fearing failure, buck-passing between agencies and levels of government, lack of climate appropriate Key Performance Indicators for leaders, and the politics of climate change. As well as lack of funding, there was also a sense that funding and distribution models were not appropriate to the adaptation agenda.

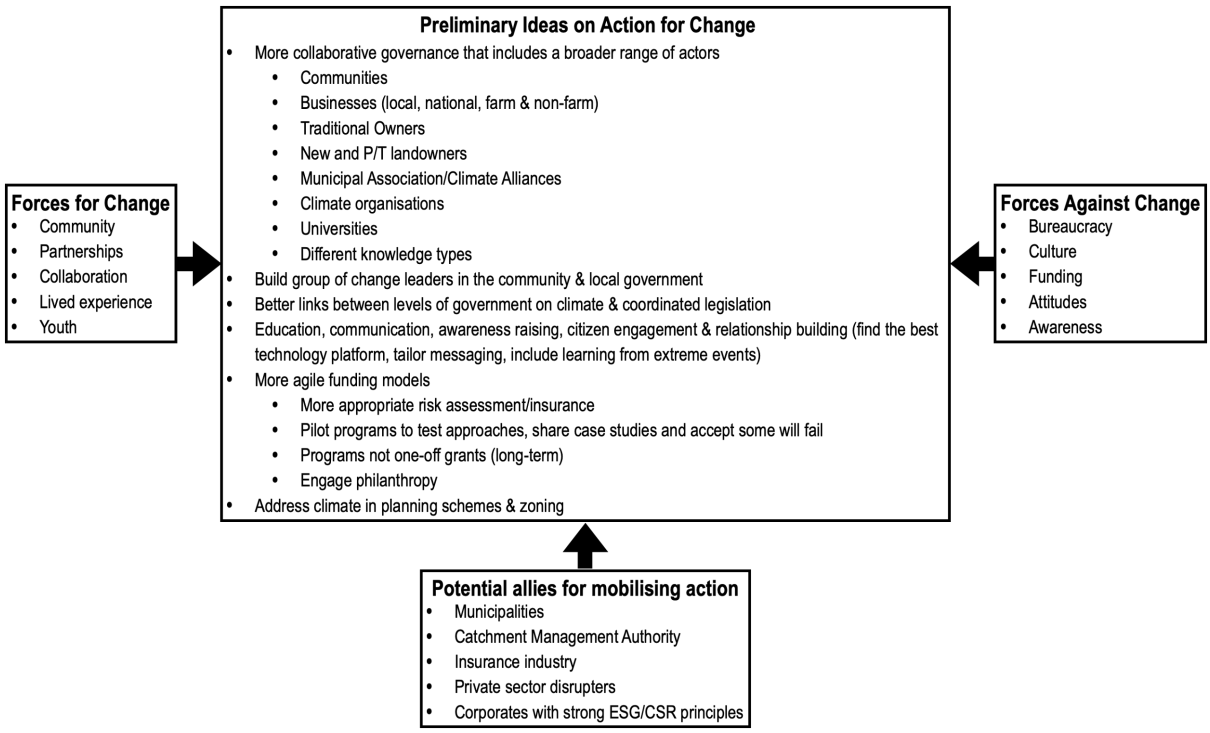
Figure 7: Exercise 2 outcomes - priorities for change, and forces enabling or constraining this change

Costs relating to adaptation were seen as a barrier to change by four of the six groups as were resources being squandered, poor funding models, and weak funding distribution. Organisational matters, such as bureaucratic cultures and loss of key staff, were mentioned. Finally, the groups expressed a need for climate change to be included in a wider range of policies at a Commonwealth, state, and local government level.

Topic 3 - Strengthening forces for and weakening forces against change

In the third and final exercise, participants focused on two of their identified *Forces Enabling Change* and two *Forces Constraining Change* and considered actions or steps that could be taken to strengthen forces *for* change and weaken forces *against* change. Results are summarised in Figure 8. The figure also lists those actors who were highlighted by the participants as potential allies for strengthening enabling forces or for weakening constraining forces.

Figure 8: Possible action to support forces for change and address forces against change



Participants chose to strengthen: existing partnerships and collaborative governance channels, cross-sector partnerships, youth and grassroots initiatives, momentum from natural disasters. They chose to address the following constraints: rigid structures and culture in the public sector, ineffective funding models, low governance capacity for leading and implementing change, low awareness or acceptance of climate change impact

The suggested actions for mobilizing change relate to multiple domains of transformational adaptation (see page 12):

- **values, norms, assumptions, and perspectives of social actors.** Improve awareness and acceptance of climate change impact by tailored messaging, explaining the systemic nature of the adaptation problem; include First Nations knowledge and experiences; document and share lived experiences.
- **social and economic systems and institutions.** Accelerating introduction of circular economy initiatives; change public sector risk-avoidance tendencies, build
- **power structures; governance frameworks, tools and practices.** More autonomy and responsibility for land management for local communities; more coordination between levels of government; more collaborative and flexible/agile approaches to adaptation; consider triple bottom line (people, planet, profits) in collaborative governance decisions.
- **social networks and interactions.** Broadening engagement in adaptation by reaching out beyond 'the usual suspects'; cultivating cross-sector relationships, especially with 'disruptive', 'good' corporate partners.

Conclusions

During the Strathbogie workshop, many themes emerged that were similar to those raised by the NSW Parliamentary Inquiry into the 2022 NSW catastrophic floods.[39] Fortunately for the Goulburn Broken, this workshop can draw attention to major adaptation governance challenges in the absence of an immediate catastrophic event. However, the workshop has also shown there is no simple, easy, quick solution. To continue the railway line analogy used in the introduction, new governance infrastructure will be required and that will only happen with strong leadership, wide participation, and a preparedness to invest in new platforms and new ways of doing things. Essentially, addressing climate change adaptation will require new *institutions* and new *rules of the game*.

The workshops supported the hypothesis that current governance arrangements represent a blockage for climate adaptation. There was a strong belief that more participative, collaborative, adaptive governance could enable more transformative adaptation efforts and better adaptation outcomes. However, this required substantive change in intergovernmental collaboration and funding. While local communities were willing to take a lead, they did not have the financial resources or capacity to manage, implement, and monitor adaptation measures on their own.

Governance changes can empower communities to work more collaboratively with state and federal agencies and take on greater responsibility for local leadership. Participants suggested communities could take on additional responsibilities such as managing public land, linking city and country populations, holding forums to spread climate knowledge, share experiences, identify issues and opportunities, engage new residents and build new partnerships and coalitions. Stable funding, citizen empowerment, behaviour change within communities and institutions, and acceptance that the changes required for adaptation involve greater risks would be required (although it was felt these risks could be managed through the use of pilot programs to test new ways of working).

Funds, financial resources were mentioned on multiple occasions. Commonwealth and state governments, philanthropy and business were seen as partners in overcoming this issue. The issue was not just insufficient funding for adaptation but the need for longer term programmatic funding rather than grants. This would allow for continuity, to enable paid workers to facilitate adaptation projects. It would increase capacity for collaborative planning, implementation and monitoring. Too often, lack of resources meant adaptation became an add-on task for municipal staff already fully engaged on other tasks. Local government has local connections but insufficient resources to undertake adaptation. Nor do they necessarily have connections to state and national institutions (including universities) that generate and develop the science and technology to support adaptation strategies.

The lack of knowledge about climate change was viewed as a barrier to action being taken. The need for knowledge growth in civil society, communities, and business was mentioned. This is not merely a question of the quantum of knowledge but how it is localised, made relevant, assembled, tailored and communicated (both messaging and the types of communication platforms) was seen as important to embedding knowledge in communities. What is needed locally is not just information but useful knowledge that could form the basis for action and implementation. It was felt universities and other knowledge generators could act as knowledge brokers and capacity builders.

It was felt existing governance structures were not well suited to the adaptation challenge that required greater agility yet longer time horizons. Governments (state and Commonwealth) had shown

[39] New South Wales Parliament 2022

little ability to coordinate legislation, improve planning schemes and introduce greater accountability and transparency into their systems. In this regard, proposals to mandate the Taskforce on Climate Related Disclosure (TCFD) guidelines and framework for corporate reporting[40] are inconsistent with government's own practices in evaluating and reporting risk, developing appropriate governance and strategies and setting targets and metrics.

It remained unclear however, how a changed governance arrangement – one that strengthens local capacity and responsibility on the one hand, and state and federal leadership on the other hand – should look like. Workshop participants repeatedly emphasized the human dimension of the changes required in organisations and institutions. Ultimately, adaptation will require changes by a host of individuals acting in their personal as well as work personas to make the changes required and demonstrate leadership on adaptation. What interventions and governance contexts might facilitate these individual-level changes remains an open and important question.

Overall, the workshop discussion tended toward calls for more awareness, more collaboration, more engagement, more leadership, more funding, and more capacity development. Issues not raised but perhaps still to be discussed could include:

- limiting effects of high-level policy frameworks (e.g. relatively low tax base to support public programs; primacy of economic growth for evaluation of policy options, the role of 'polluter pays' principle in addressing carbon pollution and implementation mechanisms such as cap-and-trade or taxes, charges and subsidies) and social norms and values (e.g. disinclination to interfere in individuals' lifestyle and consumption choices) for adaptation options;
- readiness to confront the possibility of difficult trade-offs and hard choices in adaption initiatives (confronting lose-lose issues);
- consideration of issues of equity and climate justice; or
- motivation to establish monitoring metrics and mechanisms for accountability and social learning.

Given the limitations of existing local governance and its ability to influence state and Commonwealth policies (raised at the workshop), these discussions may require a group that includes policy-makers from higher levels of government

Moving forward with adaptation

None of this is a great surprise based on the experience our colleagues have begun to assemble from the broader international project. In Australia we may be slightly more advanced in terms of adaptation plans and related policy documents but like in other parts of the world, and as noted elsewhere by the IPCC[41], the plans do not automatically lead to action. The concern is that this inaction is increasing risk and threat to people, property, and nature. Furthermore, it is felt that the longer action is delayed the more costly adaptation and remediation will become. As with many things, these costs will not be borne equally with the greatest burden falling to those who are in the most vulnerable positions. Again, the NSW floods are illustrative of this.

If the overarching message from this Australian project so far is that successful adaptation requires more bottom-up, collaborative forms of governance based on local communities of interest. And that this form of governance requires strong support from higher levels of government through devolved responsibility and authority, financial support, longer term programmatic funding and, a greater

[40] See https://www.tcfdhub.org

[41] See note 7 and note 20

appetite for risk through pilot projects that may not succeed. Then, governance barriers should not be underestimated. They will not only face the institutional lock-in or path dependence mentioned earlier[42], but in the *rules of the game*; both laws and regulations designed for top-down bureaucratic decision-making and hierarchies as well as institutional cultures based on centralisation of expertise, primacy of professions, organisational norms and silos.

Adaptation will need to be seen as more than emergency management and restoration. In fact, adaptation will need to be seen as a legitimate and important policy domain beyond emergency management and response. This involves more than just saying prevention, preparation and ongoing support is important and preparing adaptation plans. In a government sector focused on performance metrics for the past 30 years (and without commenting on whether these have been good or bad metrics), some form of benchmarking and measurement of adaptation progress will need to be developed. Our sense is that only when adaptation is part of the performance management matrix in government at all levels will bureaucracies and their component parts engage.

Beyond this, and perhaps somewhat contradictorily, government (state, Commonwealth and local) will need to become comfortable with the uncertainty of trial-and-error policy development. From our international experience, there is no readily available roadmap for effective adaptation governance. Climate change does not, and will not, fit the incrementalism of public sector management that has prevailed in Australia since the 1980s. Resilience theory informs us that change in social-ecological systems, as a result of climate change, will not be linear or incremental. We are more likely to see step-change as climate change progresses. That will require adaptive systems that can best be developed through pilot projects that test new approaches and methods. Some will succeed and some will fail. However, it is vital that the successful pilots be used as adaptation actions (with localised modifications as needed) in other locations.

Certainly, the experience of our international collaborators is that pilot adaptation projects have shown more potential in China than incremental or bundled policy approaches. In other words, trial and test specific approaches rather than add a climate change element to other policies. The approach of adding climate to other policy initiatives may well be a necessary step for dealing with climate change, but it would appear from limited experience so far that this is not a sufficient step for adaptation.

Equally, as this workshop has demonstrated, how the private sector is engaged will be significant both in creating a critical mass of resources and in developing adapted technology, equipment, products and services (Including insurance services). Workplaces, schools and other institutions can also be important for communicating, engaging and motivating action on climate. If climate adaptation is part of work or school life, as well as home life, the potential for creating momentum shifts is greater. However, we suspect that to fully engage the private sector, they will also need a seat at the table. Which brings the discussion back to governance.

[42] See discussion on governance pages 7 & 8

Next steps for the research project

As well as continuing to contribute to international dialogue on these matters, the project team intends, in the next phase of this Australian project, to start to build a more structured conversation about forms of governance that could better achieve the goals of climate adapted communities. This will develop a more detailed concept for climate adaptation governance that could be useful, not only in the Goulburn Broken but in other communities elsewhere in Australia and internationally.

Next steps for this project will also need to: (1) Challenge the findings of this project to test whether the views expressed are more commonly held; (2) Test whether views of what happens (and what doesn't happen) in existing local collaborations reflects the beliefs expressed (and uncover any areas of discrepancy and the reason these arise); (3) Understand where local tensions and disfunctions exist, the degree to which these may be affected if state and Commonwealth actors (and other lateral actors) played a more supportive role; and, (5) Explore potential opportunities for concrete interventions (including specific initial steps) toward more constructive governance of adaptation.

Appendix: Participants

Sim	Ayres	CFA volunteer firefighter, Strathbogie
Laura	Binks	Strathbogie Shire
Keith	Borschmann	DEWLP
Karen	Brisbane-Bullock	Goulburn Broken Catchment Management Authority
Kate	Brunt	Goulburn Broken Catchment Management Authority
Rachael	Buerckner	Euroa Secondary College
Iain	Butterworth	Liveability consultant
Laura	Campbell	Murrinindi Shire Council
Bronwyn	Chapman	Benalla Council
Chelsea	Cherry	DEWLP
Bill	Chisholm	Mitchell Shire Council
Daniel	Cocking	DEWLP
Leah	Cornell-Morrissey	DEWLP
Reg	Dickinson	Strathbogie Shire
Janet	Hagen	Strathbogie Ranges Conservation Management Network & Landcare
Carole	Hammond	Goulburn Climate Alliance
Sally	Hayes-Burke	Strathbogie Shire
Steve	McCoach	Go Nagambie
Helen	Mckernan	Strathbogie Ranges Conservation Management Network
John	Newlands	State Emergency Service
Mike	Nurse	Taungurung Lands and Water Council
Marisa	O'Halloran	Greater Shepparton Council
Molly	Odgers	Strathbogie Shire
Melani	Samaraweera	Greater Shepparton Council
Dwight	Sanders	Federal Reserve Board (USA)
John	Stanley	University of Sydney
Fei	Wang	Infrastructure Victoria
Speakers/Facilitators		
Dan	Guttman	Global Public Policy Institute, Fudan University & NAPA, Washington
Rebecca	Kihslinger	Environmental Law Institute, San Francisco,
Michael	Spencer	Monash University
Janet	Stanley	University of Melbourne
Xiaofan	Zhao	University of Science & Technology, Hong Kong
Isabelle	Zhu-Maguire	Monash University