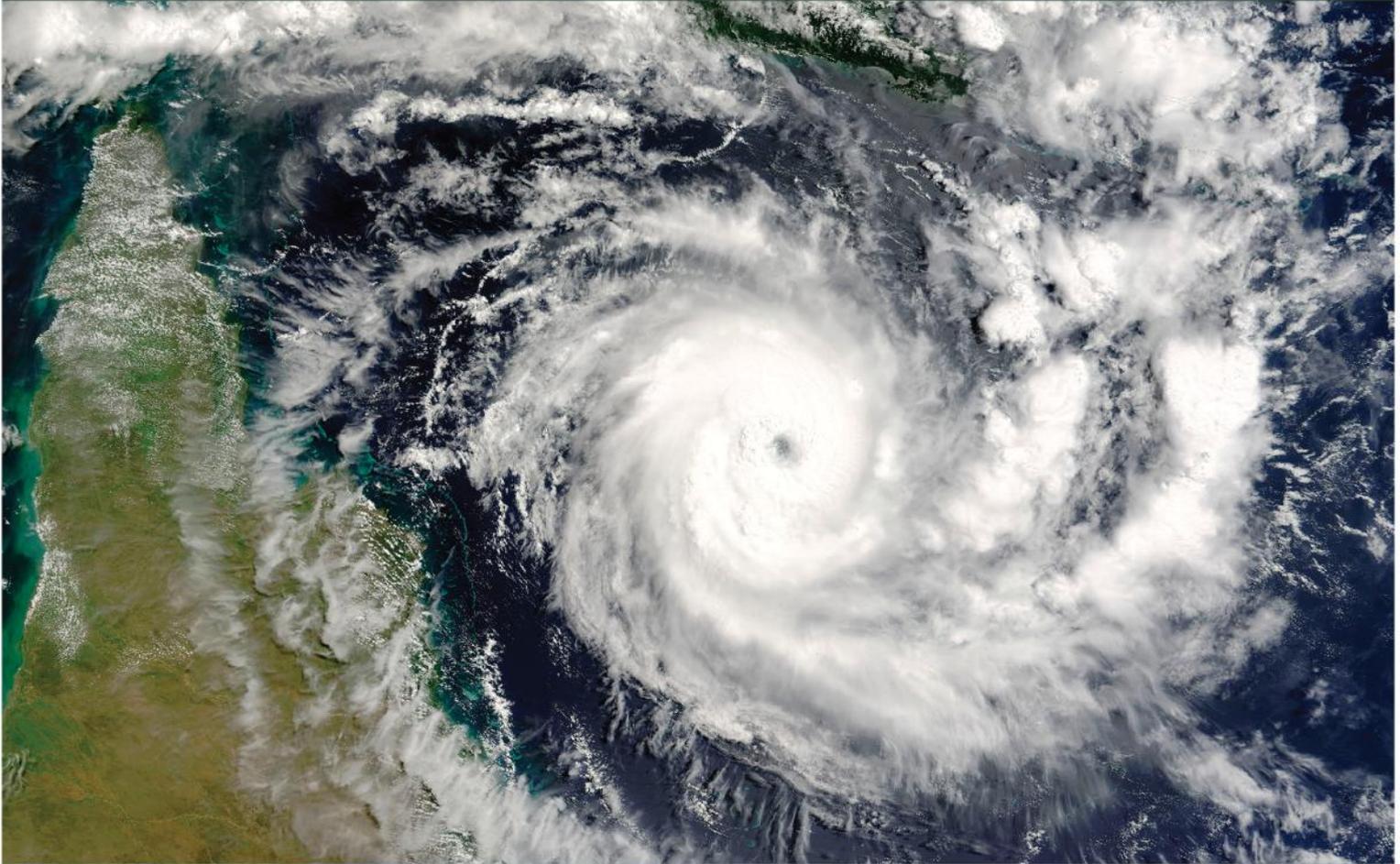




WET TROPICS
NRM CLUSTER

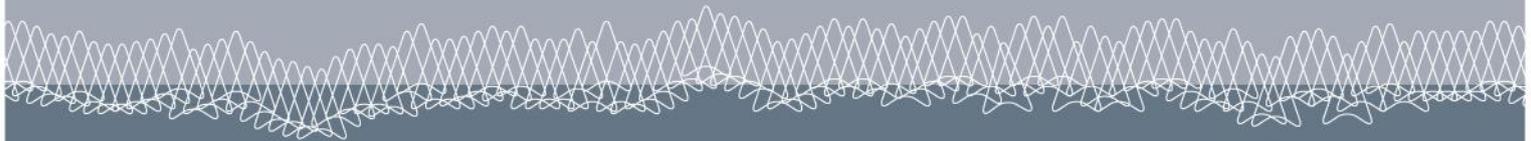


IMPACTS & ADAPTATION
I N F O R M A T I O N
FOR AUSTRALIA'S NRM REGIONS



Adaptation Pathways and Opportunities for the Wet Tropics NRM Cluster region

Volume 2. Infrastructure, Industry, Indigenous peoples, Social
adaptation, Emerging planning frameworks, Evolving
methodologies and Climate adaptation planning in practice.



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8. Emerging planning frameworks for climate adaptation

Allan Dale, Karen Vella and Ruth Potts

IN A NUTSHELL

- To achieve adaptation at larger scales, individual local adaptation actions will need to be guided by strategic planning at higher scales that includes vision-setting, strategy development and the monitoring of outcomes. Commitment to cohesive implementation of agreed adaptation priorities from all institutions involved in planning will be critical.
- The current system of adaptation planning in the WTC has some healthy and some less healthy aspects, although the overall likelihood of success in adaptation to climate change is currently precarious. International, national and state planning frameworks are in relatively poorer health, with a limited strategic focus on supporting adaptation.
- Community ownership of strategic adaptation planning and the implementation priorities at the regional scale is essential and the process must be adaptive.

Precis

This chapter focuses on the more strategic activities that lead people in the regional community to decide how they want to respond to climate change. Such strategic activities include analysing, prioritising and deciding upon the best course of action. *Planning for climate adaptation* (usually seen to include the setting of visions and objectives, the determination of key strategies and the monitoring of broad outcomes) encompasses the strategic activities involved in the system of governance for climate adaptation. Planning occurs at all scales from global to the business, property, family and even individual scales. Applying a rapid appraisal technique, this chapter analyses the system of planning for climate adaptation as it relates to the achievement of adaptation outcomes within the Wet Tropics Cluster. It finds that some aspects of the system are healthier than others, and identifies several actions that regional NRM bodies may consider (either collectively or individually) to enhance adaptation outcomes by improving the planning system within the cluster.

TOPIC	KEY MESSAGES
Effective Planning Systems For Climate Adaptation	139. Within climate adaptation systems, there needs to be a focus on improving strategic (planning-oriented) practices such a vision and objective setting, strategy development and outcomes monitoring at various scales.
Opportunities for the Next Generation of Climate Adaptation at the Cluster and Regional Scales	140. As a whole, the practice of planning for climate adaptation within regions, including within the Wet Tropics Cluster, can benefit from several new opportunities in, and approaches to, planning practice. Their adoption will be critical in mobilising climate adaptation efforts within regions.

TOPIC	KEY MESSAGES
Key Adaptation Planning Components Within the Wet Tropics Cluster	141. Strategic aspects of adaptation planning are happening through diverse and separate planning activities at the international, national, state, cluster, regional, local and business scales. The relative health of all of these planning activities needs to be considered in strengthening the governance system for adaptation.
How Healthy is the Adaptation Planning System?	142. There are several key areas of adaptation planning reform that may be within the realm of reasonable influence for regional NRM bodies in the Wet Tropics.

Introduction

In climate adaptation work, much attention is often paid to local practice-based actions that can, if individually accumulated, lead to climate adaptation at landscape scale. These local efforts represent the implementation and delivery end of the governance system for climate adaptation. Equal attention also needs to be applied to thinking about best practice approaches and the design of the more strategic components of the system; that part where future visions and objectives for climate adaptation are set, where the key strategies for delivery are determined and where the overall achievement of these objectives are monitored. In effect, this part of the system is what we may refer to as the *planning system for climate adaptation*. This system involves multiple institutions and players, has complex legislative foundations and operates differently at different scales.

A new Australian innovation in climate adaptation is joined-up planning among clusters of natural resource management (NRM) regions likely to experience similar climate-related changes. There are 8 different clusters across the Australian landscape, each consisting of several NRM groups. Hence, the Wet Tropics Cluster (one of these 8 national clusters) represents an important scale for strategic thinking and action associated with climate adaptation. In addition to being likely to experience similar climate change impacts, the Wet Tropics Cluster also has many related biophysical and social characteristics (e.g. cyclone exposure). Consequently, the Cluster has several consistent governance arrangements for planning which operate at a range of scales. Together, these elements make it

worth considering common approaches to mobilising Cluster-level efforts to enhance adaptation.

This paper aims to explore the key principles that need to be operating for an effective planning system for climate adaptation to function at any scale and the challenges for this current generation of planning as it relates to climate adaptation. It then goes on to explore the current nature of this system within the Wet Tropics Cluster and makes some key recommendations about the actions that regional NRM bodies and other key players can take in enhancing the functionality of the system.

Effective planning systems for climate adaptation

Within climate adaptation systems, there needs to be a focus on improving strategic (planning-oriented) practices such as vision and objective setting, strategy development and outcomes monitoring at various scales.

If we view societal governance as the “intentional shaping of the flow of events so as to realise desired public good” (Parker and Braithwaite 2003, p. 119), then it becomes clear that governance is not a hierarchical concept, or one driven by some form of authoritative leadership (Thomas and Grindle 1990). Instead, it needs to be viewed as a wider set of processes of bargaining and negotiation among differing interests in society, leading to particular system outcomes; often with a mix of public and private good implications (Dovers 2000, Emerson *et al.* 2011). With this understanding, we can identify and analyse

those parts of the system focused on or delivering climate adaptation outcomes, or the *governance system for climate adaptation*.

The globe's wider governance system for climate adaptation (and significant sub-systems within it) is poly-centric and multi-themed. This system is not orchestrated by any one player, and no one individual or institution is in charge per se, rather it is the impact of a vast array of interactions among many independent decisions that determine system outcomes (i.e. measurable progress towards climate adaptation within society) (Kemp and Parto 2005, Lockwood *et al.* 2010). To analyse complex governance systems (such as the climate adaptation system) and its consequence for outcomes, Dale *et al.* (2013b) developed an analytical framework that can be used to explore the health of the overall system *or* to enable a focus on key system components. Their approach aimed to enable analysts to more powerfully contextualise their work and improve key components at different scales within any governance system that might be at risk of failing. This means effective planning efforts for climate adaptation, no matter how small or at what scale, could be reformed to benefit the wider system for climate adaptation.

This thinking makes it clear that the failure of a particular institutional arrangement (e.g. involved in climate adaptation) to deliver its outcomes needs to be understood in the context of a fuller understanding of the wider governance regime (Paavola *et al.* 2009). Indeed, Dale *et al.* (2013b) suggest the need to be explicit about four key things in any systemic governance analysis:

- **Thematic aspects of governance:** Understanding that key governance themes (e.g. environment, social and economic) can't be separated, and comprise various domains (e.g. climate, water, biodiversity) and subdomains (e.g. climate mitigation vs. climate adaptation)
- **Polycentric aspects of governance:** Understanding that within any theme, domain or sub-domain of governance, different governance activities tend to play out at different spatial scales, and these scales operate in a polycentric (not hierarchical) fashion (Ostrom 2010)

- **Structural aspects of governance:** The concept of structure offers an account of the parts a system comprises. Generally, well defined structural components with a particular role in the system may be considered to be inter-related via an inter-connected hierarchy. Different structures may indeed be represented as a network; with outcomes from one structural component continually informing outcomes from the others. Often, the social sciences refer to structures within society as being represented by or manifested through institutions (e.g. governments, corporations, families, etc.) or alliances of institutions with particular roles
- **Functional components of governance:** Apart from ensuring the key structural elements of our governance systems are in place (i.e. the things that need to be done and by whom), it is equally important to consider how well things are working within and across these structural elements within the system (or how functionally sound they are).

Based on the above, and drawing on the policy/planning literature (e.g. Althaus 2008), the following describes the standard structural components of governance systems:

- *Vision and objective setting:* Setting higher level visions/objectives
- *Analysis (research and assessment):* Research and assessment to underpin decision-making
- *Strategy development:* Determining the best, most well informed strategies for securing visions and strategic objectives. This requires the application of an appropriate solutions mix (i.e. balancing market-based, suasive, regulatory, collaborative and capacity building approaches) within strategy development
- *Implementation:* Implementation and delivery of broader visions, objectives and strategies
- *Monitoring, evaluation and review:* Monitoring, reviewing and evaluating implementation.

Such structural considerations can be applied to evaluation of any theme, domain and sub-domain of a governance system or to a system as an integrated whole. At the local level, for example, many different

institutions are involved in *implementing* climate adaptation, including family farms, corporations, local government, voluntary groups, Indigenous communities, etc. Hence at a particular local scale, whether they are operating as a weak network or strong alliance, they can all be considered as a part of the overall structural arrangements for the *implementation* of different aspects of climate adaptation at the local scale and hence, they collectively and actively contribute to the success or failure of this agenda.

Alternatively, in functional terms, *great integration of effort in vision and objective setting* structures in relations to climate adaptation, for example, can be undone by poor integration of effort within strategy development and implementation structures. Considering this provides a focus for analysing how the system works (i.e. its functionality), against all the key structural elements of the system. Dale and Bellamy (1998) suggest there are three cornerstone functional elements of healthy governance systems within our globe's over-arching governance system. These are:

- *Knowledge application to improve governance systems*: Improving the functionality of any particular governance system requires coordinated and integrated use of knowledge derived from multiple epistemologies and approaches (Pahl-Wostl *et al.* 2007, Emerson *et al.* 2011, Leys and Vanclay 2011)
- *Securing connected effort within governance systems*: Power relationships primarily drive connections within and between structural components of any governance system. Indeed, many governance systems often consist of many highly isolated activities (or silos) within and between different structural components of the system (Margerum 1995). In respect to climate adaptation at the national scale, for example, several institutions in a particular nation may be actively setting national visions and targets without ever connecting; at best duplicating effort and at worst working at cross-purposes
- *Improving the decision-making capacity of system participants*: Anything that develops the decision-making capacity of institutions (e.g. agencies,

communities, corporations, families, etc.) and individuals operating within a governance system will improve the system's vitality (Dorcey 1986). Consequently, attention to improving the capacity of all system participants is needed to understand and to have access to information, to raise motivations to engage well, to secure access to the appropriate technical and financial resources needed, to secure a clear mandate and to raise the capacity needed to negotiate well within that mandate.

The above considerations underpin the analytical tools that we use in this chapter to unpack the climate adaptation governance system as it relates to the Wet Tropics Cluster. Importantly, however, we are particularly focused on the strategic end of the climate adaptation system's structural picture; more strategic level planning activities at a range of scales that involve *vision and objective setting, analysis, strategy development* and the high end *monitoring of outcomes*.

Opportunities for the next generation of climate adaptation at the cluster and regional scales

As a whole, the practice of planning for climate adaptation within regions, including within the Wet Tropics Cluster, can benefit from several new opportunities in, and approaches to, planning practice. Adoption of these sorts of opportunities and approaches will be critical in mobilising climate adaptation efforts within regions.

In this chapter section, we explore new opportunities for the meaningful application of improved strategic planning within clusters and regions for securing climate adaptation. These are intended to help inform new planning directions that the Commonwealth, state and territory governments, other sectors and regional NRM bodies may consider over the coming years. We also consider possible new directions in light of emerging Australian Government and regional NRM body needs, current planning developments at the

State level and the emerging planning practice literature. The findings have been drawn from and adapted from implications specifically considered for regional NRM bodies in Dale *et al.* (2013a) and are consistent with Commonwealth guidelines for this current generation of regional NRM planning being conducted across the nation.

A focus on landscape resilience

The need to prepare for emerging new global pressures requires a higher order focus on building landscape resilience, particularly in the face of climate change (Gunderson *et al.* 2010). The focus of regional planning practice over the last decade, however, has been based on more linear/rational target setting approaches with several limitations. More resilience-based thinking is required as:

- Climate change pressures facing our natural resources are so global and intense, that transformational change, rather than incremental thinking, is required (Ostrom 1999)
- The dynamic interplay between natural assets (e.g. between water, biodiversity, carbon stocks/flows and productive capacity) needs to be made more explicit if we are to secure greater resilience in our landscapes (Plummer and Armitage 2007)
- A focus on understanding “thresholds of concern” in natural systems will be required, whereas a more linear approach might result in managers fiddling around the edges of potentially devastating changes in the health of our landscapes.

A strong impetus is emerging to move away from rational models of planning and move towards more adaptive approaches better informed by resilience thinking. Importing resilience thinking as a foundation for adaptation planning enables a robust, systems-based and scientifically informed debate about ecological thresholds and the transformational changes required to avoid them or to adapt to them if they occur (Cash and Moser 2000, Vogel *et al.* 2007). The implications for planners working within regions include a shift to building collaborative planning alliances focused on jointly determining priorities, mobilising implementation and reviewing progress. The first

generation of Australian NRM plans, for example, tended to focus more on the production of a static strategic document rather than on creating the social foundation for ongoing collective regional action.

Adaptive planning: collaborative, evidence-based continuous improvement

One of the greatest promises of Australia’s regional NRM planning system was that it was established through a bilaterally agreed planning framework; it seemed that a genuine, continuously improving and adaptive planning effort could begin with almost indefinite time horizons (Dale *et al.* 2008, Lockwood and Davidson 2010). This promise was curtailed when the Australian Government retreated from initial commitments to progressive regional NRM planning from 2008 onwards (Robins and Kanowski 2011). While regional NRM planning effort may have floundered in the intervening years, most states and regional NRM bodies themselves continued progressing improved planning, but on a more ad hoc basis. Importantly, in part through an emerging new approach to regional NRM planning and through the introduction of the Carbon Farming Initiative (CFI), the Australian Government is now re-embracing genuinely long term continual-learning approach to regional NRM planning (Dent *et al.* 2012, Clayton 2013). This is an important opportunity, but one still yet to be fully scoped, agreed and collaboratively resourced across Australian state, territory, local governments and regional NRM body spheres of influence. Other forms of adaptation planning occurring within regions (e.g. strategic land use planning) also tend to be less focused on continuous improvement. Further, the opportunity to progress learning-based planning approaches can and should be married with more resilience and transformation-based approaches to planning (Brunner 2010).

Overtly collaborative decision-making and monitoring

Early regional NRM plans did have strong community ownership and buy-in, including formal accreditation by

two levels of government (Farrelly 2005). At the time of their development, however, the approach focused on temporal sign-off rather than explicit and durable institutional commitment to ongoing collective action. Ongoing community and government legitimacy behind regional NRM plans has consequently declined in many regions (Robins and Kanowski 2011). Adaptation planning within regions needs to revisit collaborative decision-making about thresholds, transformative changes, management and implementation priorities and become more focused on securing ongoing commitment from all parties to the integrated alignment of effort, informed by resource condition monitoring against thresholds and targets (Healy 1995, Pahl-Wostl 2009, Pahl-Wostl *et al.* 2010). In particular, this also refers to the need for strong community ownership of regional land use planning and the integral link between this and regional NRM planning.

A strong evidence base and community/science partnerships

Adaptation planning within regions can benefit from stronger and more durable science/community partnerships. This means building a more integrated synthesis of scientific input (e.g. between social and biophysical sciences), best managed through well structured, durable relationships between the science community, regional NRM bodies, land use planners, stakeholders and governments at regional scale (Ozawa 1991). The climate sciences, however, also need to be better integrated into the wider range of adaptation planning activities within regions at various scales. Community acceptance of the emerging science is critical and new science developments need to be able to be easily adapted into decision making as it unfolds (Ozawa 1991). The Australian Government's Stream investments under the Regional NRM Planning for Climate Change Fund, for example, aim to achieve this science-planning integration outcome and have wider application. In the Wet Tropics cluster, this can integrate well with planning for the setting of science priorities (see Crowley *et al.* 2014).

Monitoring and evaluation to review thresholds

Adaptation planning within regions is generally under-resourced with regard to monitoring, though many regional NRM bodies have tried within these limitations to establish robust monitoring frameworks to support learning-based approaches (Eberhard *et al.* 2009, Lane *et al.* 2009, Robinson *et al.* 2009). A stronger focus on establishing simple but collaborative and durable monitoring frameworks in regions is required, avoiding key thresholds (Robinson *et al.* 2009). Real consistency and connectivity needs to emerge, however, between accounting approaches at the national, State and regional scales (e.g. see Wentworth Group 2008).

Improved spatial analysis to guide the carbon market

Not all first generation regional land use and regional NRM plans were able to progress strong spatial analysis to identify particular parts of the landscape where:

- High value assets and or spatial threats associated with the way that climate change affects those assets (e.g. high risks of salinity rising in water tables)
- Government, community and market-driven investments might deliver the most strategic and effective land use outcomes for the least cost
- Particular land uses/management practices need to be avoided/supported.

This problem was not fatal to planning within regions, but was a feature of the embryonic status of the process. Some regions had much more historical spatial data and scientific analysis to draw upon than others (Robins and Dovers 2007). Indeed, regional NRM planning sparked an increase in cross-regional and cross-State data enhancement and sharing of knowledge (Robinson *et al.* 2009). Improved spatial analysis is reliant on maturation of the planning process, the emergence of collaborative alliances, progressive development of the science and community engagement to enable further analysis and enhanced spatial prioritisation. In particular, the link between the

emerging CFI and guidance offered by next generation plans presents an opportunity in this regard.

Better contextualising targets through improved spatial analysis would be beneficial first start in areas such as improving biodiversity and landscape connectivity (Bryan and Crossman 2008). In the future, at the very least, this would allow those developing CFI methodologies and projects based on particular NRM practices to target their efforts in those parts of the landscape that will deliver the best outcomes for improved landscape scale resilience in the face of climate change.

Defining regional practices frameworks

Regional NRM plans tend to be the planning activity within regions most likely to identify and classify management practices in particular industries and land uses that lead to enhanced climate adaptation, including target setting for practice improvement (Vella *et al.* 2011). There are, however, often poorly contextualised and insufficiently standardised approaches across the nation. This can change, for example, with the CFI concept enabling a renewed national focus on a wide range of land management practices that deliver positive Greenhouse Gas Abatement (GGA) outcomes and that avoid perverse landscape outcomes across the nation. Revised legislation related to the CFI will encourage a relationship to regional NRM plans.

Challenges associated with market-based GGA approaches are connected with regionally differentiated landscape management approaches across Australia, and different regions have their own needs, opportunities and constraints when it comes to practice improvements. Responses to climate change also require regionally or even site-specific technical solutions and management approaches (van Oosterzee 2012). Turning these diverse management conditions into a standardised approach, based around national GGA targets and delivered through regional CFI projects provides a governance challenge. In this space, NRM plans, with their capacity to unify stakeholder and scientific knowledge around practice improvement,

provide a particularly important opportunity to address local and national needs. Other practices, such as decreasing property risk to cyclone damage, equally need to be benchmarked into planning activities within regions.

Connectivity with broader regional and regulatory planning instruments

Working with relevant regulatory processes such as State or Local Government land use, water resource or vegetation management planning is an important factor in enhancing the ability for regional NRM plans to fulfil their potential in the delivery of good NRM outcomes, particularly for carbon sequestration and biodiversity management (Pannell 2004). While this is a longer-term desired outcome, this new generation of NRM planning presents a renewed opportunity to better align Australian Government policy, regional NRM plans and better-informed regulatory processes. This would enhance and clarify the regulatory NRM responsibilities of state and territory governments, but enable voluntary regional NRM plans to maintain their wide community support.

The current Green Paper on the development of northern Australia envisages a new focus on regional approaches to landscape scale planning (Department of Prime Minister and Cabinet 2014). Additionally, there is an opportunity to ensure regional NRM planning effectively interfaces with Regional Roadmaps that are developed by Regional Development Australia (RDA) Boards (e.g. see Regional Development Australia 2014). These are important developments in the better integration of social, economic and environmental issues at regional scale that may be supported to some degree by the Queensland government. Many regional NRM bodies have already actively integrated their planning and operational efforts with those of RDA Boards and their emerging Roadmap development processes. In the FNQ&TS Region, for example, the strategic priorities of the region's four NRM Bodies directly informed the development of that region's Roadmap (Regional Development Australia 2014). The RDA Board itself sees the strengthening of the regional NRM model and planning approach as being a key strategy in the region's overall development, and

particularly important for climate change adaptation processes. A clearer and consistent framework for the integration of next generation NRM plans, Regional Roadmaps and other (particularly local government planning activities) is a logical process improvement, consistent with broader adaptive planning principles, bringing a combined NRM and regional economic and social development perspective to the issue of resource management, land use and climate change adaptation.

Social and community development and building regional GGA literacy

First generation regional NRM plans focused on improving the condition and trend of a region's natural assets but weakly referred to the region's social and community assets (Robinson *et al.* 2009). This was largely driven by a biophysical sciences bias in funding provided for regional NRM planning. Many regions sought to more fundamentally integrate social and environmental issues in their planning processes, rather than just exploring the social and economic impacts of their proposed targets and actions. Next generation NRM plans have the opportunity be more actively focused on viewing social and community resilience alongside ecological resilience concepts. They can also view their regional communities and institutions as important assets requiring integrated effort and investment (Bohnet 2010). This will be a significant challenge as clearer concepts of community resilience to climate change are only just emerging in the literature (see Chapters 6 & 7 of this report), and effective integration between the biophysical and social planning domains remains limited in practice.

Key adaptation planning components within the Wet Tropics Cluster

Strategic aspects of adaptation planning are happening through diverse and separate planning activities at the international, national, state, cluster, regional, local and business scales. The relative health of all of these planning activities needs to be

considered in strengthening the governance system for adaptation.

This chapter section outlines the key components of the climate adaptation planning system as it currently operates at various scales. While this section considers a broad range of planning activities from global to property scales, it is aimed to view this through the lens of more regional-scale adaptation planning activities within the context of the Wet Tropics cluster and NRM regions.

International and national scale

At the international scale, a clear governance framework for strategically progressing global climate adaptation has not yet emerged. In terms of cross-governmental international action, climate adaptation tends to be being progressed as a bundle of secondary bargaining issues in the over-all *UN Framework Convention For Climate Change* negotiations (Pielke *et al.* 2007). Because the significant need to focus on reducing greenhouse gas emissions is all-important, to date, these negotiations tend to be focussed on setting climate mitigation targets and strategies (Pielke *et al.* 2007; United Nations 2014). Climate adaptation issues, however, have tended to be raised by less developed nations in an attempt to ensure equity between those nations that have previously experienced the benefit of carbon-intensive development (Stern 2006, Heyward 2007, Jakob and Steckel 2014). Many of these nations are near Pacific neighbours to northern Queensland.

Adaptation governance systems, however, have benefited from the science integration mechanisms that have emerged internationally to inform global discussions. Keogh (n.d.) shows that significant international investment has been directed at research agencies investigating the changing global atmosphere, the causes of those changes, and the likely climatic implications. Keogh (n.d.) suggests that much of this science has been assimilated into publications produced by the Inter-governmental Panel on Climate Change (IPCC), first established by the United Nations in 1988. Since that time, the IPCC has produced several integrative reports that have identified a growing scientific consensus that human activities are resulting in increased concentrations of greenhouse gases more

than they would otherwise (IPCC 2013, IPCC 2014). This scientific work has been complemented by international exploration of the impacts of climate change (Parmesan and Yohe 2002, Beyene *et al.* 2010). While conservative at the time, Stern (2006), for example concluded that the potential future economic impact of global warming may be in the order of 5–20% of global Gross Domestic Product (GDP) annually by the latter half of the twenty-first century.

The international community's focus on mitigation compared to adaptation, however, does not mean that global institutions of other kinds are not progressing climate adaptation planning and implementation activities. Few of these activities, however, have had much impact on Australia's interests and obligations with respect to climate adaptation.

At the national scale, some significant approaches to strategically progressing climate adaptation issues were emerging prior to December 2013. In particular, these included:

- Encouragement of adaptation planning and implementation activities at various scales within the context of the National Greenhouse Gas Abatement Strategy and later, the Australian Government's Clean Energy Package (CEP). These frameworks indirectly (e.g. improving the energy resilience of communities) or directly (e.g. supporting the next generation of regional NRM plans) support climate adaptation (see Clayton 2013)
- Via funding and support of strategic knowledge building activities with respect to climate adaptation via the National Climate Change Adaptation Research Facility (NCCARF) and National Environment Research Program (NERP) programs
- Some strategic approaches to climate change adaptation thinking within various Australian Government portfolios (e.g. within the design of drought relief arrangements, etc.)
- Funded support for government aligned think-tanks aiming to raise awareness of climate change and need for proactive adaptation (e.g. the Climate Commission)

- Emerging climate adaptation advocacy within independent national think-tanks (e.g. The Climate Institute) or peak bodies.

Following the change of Government in late 2013, there has been a significant reworking of these key adaptation planning structures at the national scale, with significant implications for climate adaptation in states and regions. Consequently, key developments of national significance include:

- The shift to a direct action approach to dealing with regard to mitigation. Like the CEP, the Direct Action approach can have some significant indirect climate adaptation benefits, but it is more important to note the retained interest in the role of regional NRM planning, the continuation of the CFI and the emergence of new direct action strategies
- A current review and likely rebuild of knowledge building activities with respect to climate adaptation via the NCCARF and NERP research hub processes
- Some continuation of strategic approaches to climate change adaptation thinking within a limited number Australian Government portfolios (e.g. drought relief)
- The shift from government to more civil-society based investment in policy think-tanks (such as the crowd-funding of a revamped Climate Commission) with civil society itself seeking to raise awareness of climate change and the need for proactive adaptation
- Continuing climate adaptation advocacy within national think-tanks (e.g. The Climate Institute) or peak bodies.

The above processes, it should be noted, have tended to have quite limited impacts on state level planning activities with respect to climate adaptation. There is no bilateral framework for taking forward either a climate mitigation or adaptation agenda. There is, however, slightly more impact on regional adaptation planning through the now direct (non-bilaterally negotiated) Australian Government influence over the regional NRM planning and delivery system. Similarly, and consequently, there has been a significant shift in Queensland's state level approaches to climate

adaptation planning since the change of government in early 2013. Key changes have included:

- The abolition of the Queensland Office of Climate Change and a greater shift to disaster preparedness and response via the Queensland Reconstruction Authority. More strategic climate adaptation planning that was occurring under the Office of Climate Change has tended to transition towards making contributions to disaster preparedness arrangements
- Before 2013, Queensland's planning system was increasingly being called upon to progress climate adaptation issues (e.g. via Regional Land Use Planning and Coastal Plans). Significant reforms in these areas are likely to see more focus on disaster preparedness, and a streamlining of the system via State Planning Policy and Local Planning Scheme levels
- The Local Government Association of Queensland (LGAQ) remains strongly committed to encouraging and supporting councils across the State to consider climate adaptation issues within their corporate plans, community plans and planning schemes
- Peak bodies and think tanks in Queensland generally do not have a cohesive policy agenda with respect to progressing climate adaptation thinking, but are contributing some effort.

Cluster and regional scale

At the cross-regional scale, it is important to note that an alliance of Regional Development Australia (RDA) Boards across Northern Queensland have identified climate change and the need for adaptation as a significant strategic issues facing the future development of Northern Queensland (Regional Development Australia Fitzroy and Central West, Mackay Whitsunday, Townsville and Central West and Far North Queensland and Torres Strait 2013). The LGAQ is also an important player within this alliance. With limited resources, this alliance is initially focused on major infrastructure issues associated with development (e.g. the Bruce Highway), but the alliance is quite clear that even such infrastructure-focused activities have major climate adaptation benefits.

Within the far northern component of the wider north Queensland region, RDA FNQ&TS has a Roadmap process and plan that identifies climate adaptation as very significant strategic issues for the region. Informed by social resilience benchmarking (see Dale *et al.* 2011), this approach is progressing towards some consensus about high level adaptation priorities for the region, and during 2014/15, it is intended that this strategy will under-pin structured negotiation regarding climate adaptation and disaster preparedness across governments and within state and federal budget cycles. Critical issues being raised and addressed in this context include, for example:

- Reducing infrastructure vulnerability
- Insurance reform
- Natural Disaster Relief and Recovery Arrangements reform
- Improved disaster preparedness systems
- Building business and property-level resilience
- Protection of key natural assets (Wet Tropics and Great Barrier Reef (GBR)).

With respect to the state's statutory planning responsibilities and the link that should be made to climate adaptation, it is worth noting that consideration of climate adaptation strategies was emerging within Strategic Regional Land Use Plans being developed by the state (e.g. Mackay, Isaac and Whitsunday and the Far North Queensland Regional Plans (Queensland Department of Local Government and Planning 2009, 2012). The plans, however, tended to focus solely on the development of a fixed urban footprint, and their continued use and status is likely to be reviewed and reconsidered. Similar current regional statutory planning efforts in Cape York are also focused on strategic land use planning versus climate adaptation.

In terms of landscape scale adaptation, this current revamped generation of regional NRM planning represents the most cohesive approach to climate adaptation planning within the Wet Tropics Cluster. The link to strategic climate science within the Wet Tropics Cluster is also clear, though most planning activities are likely to be completed before the middle of 2015. Specific attention to climate adaptation planning within the economic development and human services sectors

are very limited. Some consideration to climate adaptation planning within the tourism and agriculture sectors is emerging, though not yet in a cohesive fashion. Additional regional scale research related to climate change is also occurring through NERP funding via the auspices of the Reef and Rainforest Research Corporation (RRRC). These efforts are closely connected to the Wet Tropics Cluster, and it is likely that this work will strongly influence the next generation of NERP funding (due mid 2015).

At the sub-regional effort, specific attention needs to be paid to the climate adaptation planning efforts emerging in the Torres Strait. This work has been broadly underpinned by a NERP-funded project being delivered by CSIRO (Project 11.1 - Building resilient communities for Torres Strait futures). As a consequence, during July 2014, the Torres Strait Regional Authority undertook a major workshop that will see this roll into a long term adaptation planning process.

Local government scale

There has been much realignment in local government opportunities to progress climate adaptation planning in the last two years:

- Both the Whitsunday and Far North Queensland Regional Organisations of Councils are aware of climate change risks, but have not been yet able to progress cohesive strategy development to support local government-led adaptation planning. The Cape York and Torres Regional Organisation of Councils is only just emerging at this stage
- Corporate Plans are high level strategic direction setting documents for councils that have the capacity to be used to help position and mobilise climate adaptation issues, but few Council Corporate Plans within the region identify climate adaptation as a significant challenge. In short, the culture of corporate planning activity tends to be focused on the strategic business of councils and to have a broader focus on service delivery issues, but there is nothing to stop them being used effectively to drive major adaptation efforts

- Until recently, Community Plans were a legislative requirement for councils, and over the last five years, there has been significant council-scale activity on this front. Community-scale planning activities were regularly identifying the need for climate adaptation and disaster preparedness as a significant community priority. The state government, however, no longer requires the development of Community Plans
- Council planning schemes (including specific recognition of State Planning Policies and Regional Land Use Plans) remain the key vehicle through which strategic climate adaptation effort is progressed within councils within the Wet Tropics Cluster. More often than not, this effort is generally restricted to a broad spatial recognition of the potential disaster-related risks, and these are subsequently factored into future land use planning considerations.

Local area and catchment scale

While there are few statutory or other programmatic obligations requiring climate adaptation planning at the catchment or local scale in the Wet Tropics Cluster, there are a number of initiatives at those scales that can potentially be used to great effect for such purposes. Currently at the Wet Tropics Cluster level, such planning related activities include:

- *Water Resource Plans (WRPs)*: WRPs developed under Queensland's *Water Act 2000* do need to (and often do) consider the implications of climate change when deciding how to allocate water for environmental and consumptive purposes. This is relevant to the Gulf, Wet Tropics, Mackay Whitsunday and Cape York water resource planning processes
- *Catchment Plans*: Several community groups have taken a leadership role, often with support from Regional NRM Bodies, in catchment scale planning that has the capacity to address climate adaptation issues. Water Quality Improvement Planning being carried out across the Great Barrier Reef (GBR) catchments represents one such planning effort

- *River Planning*, often undertaken by River Improvement Trusts, is often specifically focused on reducing the flooding impact of various river systems within the Cluster Area, and hence explicitly needs to consider climate change predictions within the region. Such planning, however, is not cohesively undertaken across the Wet Tropics Cluster
- In biodiversity terms, experiments in local area planning have been strategically applied in biodiversity hot spot (e.g. Terrain’s Mission Beach Habitat Network Action Planning) within the Cluster area, enabling another form of local-scale adaptation planning (see Hill *et al.* 2010).

Business and property scale

There is an increasing literature on understanding the resilience of companies, families, and individuals to climate change (e.g. effort at the business and property scale). Strategic planning effort (e.g. vision and objective setting and strategy development) is just as crucial at business and property scale as it is at the regional, state and national scales. Indeed, there is some anecdotal evidence that many businesses and properties are not well prepared for risks associated with climate change-related events. Despite this, wider policy and programmatic efforts to increase support for building resilience and enabling people to plan to undertake adaptation actions are quite fragmented, but still need to be considered. Within the Wet Tropics Cluster, some include:

- programs, often run through regional economic development organisations and state agencies aimed, in a general way, at increasing business resilience
- programs, often run through not-for-profit human service providers, local councils and state agencies aimed, in a general way, at increasing family and individual resilience
- a fragmented offering of support (combined with some regulatory obligations) for the development of property management plans at property scale
- some emerging consideration among insurance providers that strategic risk assessments might

enable or facilitate cheaper insurance premiums within northern Queensland.

How healthy is the adaptation planning system?

There are several key areas of adaptation planning reform that may be within the realm of reasonable influence for regional NRM bodies in the Wet Tropics.

While the above section outlines the current arrangements for adaptation planning as they relate to the Wet Tropics Cluster, this section applies a rapid appraisal technique adapted from Dale *et al.* (2013b). Dale *et al.* (2013b) aim to analyse the combined impact of both structural and functional aspects of governance systems on overall system outcomes. This technique is particularly useful in undertaking rapid appraisal of governance systems, and it can enable a focus in on either the more strategic (planning) or implementation (delivery) aspects of governance. The technique also enables an integrated assessment of governance in terms of how it operates across various scales. In this instance, we are specifically exploring the governance domain of climate adaptation and within that context, we focus on strategic planning aspects of this system related to the Wet Tropics Cluster. Doing so, however, requires us to contextualise climate adaptation planning activities at scales above and below the Wet Tropics Cluster, inclusive of state, national and international scales.

The technique enables the rapid appraisal and description of both structural and functional aspects of the climate adaptation planning system, and then by considering a simple rating of risk, it enables an informed discussion about the health or otherwise of the system. This is useful, as it helps discussion about whether the system is likely to deliver genuine adaptation outcomes. While Table 8.1 outlines the guiding analytical prompts used to describe the system, Table 8.2 outlines the very specific criteria used to assess the risk of the system failing to deliver the required climate adaptation outcomes. The results are not intended to deliver definitive measures, but provide

a simple basis for an informed discussion about the health (or otherwise) of the system.

Table 8.1 Typical analytical points of inquiry applied in describing the system of planning for climate adaptation as it relates to the Wet Tropics Cluster.

FUNCTION/STRUCTURE	DECISION-MAKING CAPACITY	CONNECTIVITY	KNOWLEDGE USE
Visioning and Objective Setting	<ul style="list-style-type: none"> Do capacities exist to set higher aspirational or condition targets? Do the relevant stakeholders have the knowledge, financial, human and infrastructure resources required? Do key institutions involved have strong corporate governance/ continuous improvement systems? 	<ul style="list-style-type: none"> Are relevant stakeholders actively connected to decision-making? Are visions and objectives aligned to higher and lower scale visions and objectives? Are collaborative frameworks for setting visions and objectives well designed? Are there frameworks for bargaining and negotiation over setting visions and objectives? 	<ul style="list-style-type: none"> Are all forms of information available for vision and objective setting? Are traditional and historical knowledge sets being applied? Are appropriate decision support tools in place to support scenario analysis?
Research and Assessment	<ul style="list-style-type: none"> Are there strong research and analysis capacities in place to inform other structural components of the system? Are there strong environmental, economic and social research and analysis capacities in the system? 	<ul style="list-style-type: none"> Are there strong collaborative linkages between research institutions? Are there effective research brokerage and communication arrangements between research provider and end user stakeholders? Are collaborative arrangements in place to integrate social, economic and physical research? 	<ul style="list-style-type: none"> Are there systems in place for long term research synthesis and knowledge retention? Are there broad research priority setting exercises that need to be refined? Are all forms of information available for system decision making?

FUNCTION/STRUCTURE	DECISION-MAKING CAPACITY	CONNECTIVITY	KNOWLEDGE USE
Strategy Development	<ul style="list-style-type: none"> Do capacities exist in the system to set clear strategic targets? Do relevant stakeholders have the knowledge, financial, human and infrastructure resources available to make the decisions required? Do the key institutions involved have strong corporate governance and improvement systems? 	<ul style="list-style-type: none"> Are all relevant stakeholders connected to strategy decision-making? Are strategies aligned to visions and objectives? Are strategies aligned to higher/lower scale strategy development? Are collaborative frameworks for setting strategies well designed? Do strategies integrate an appropriate solutions mix? 	<ul style="list-style-type: none"> Is there social, economic and environmental knowledge relating to the assessment of the efficacy of key strategies? Are decision support tools available to scenario test alternative strategies?
Implementation	<ul style="list-style-type: none"> Are there capacities to implement a broad mix of strategic solutions? Do the implementation players have the financial, human and infrastructure resources to implement plans? Do the key institutions involved have strong corporate governance and improvement systems? 	<ul style="list-style-type: none"> Are there effective partnership and integration arrangements between policy and delivery systems? Do different components of the solution mix collaborate? Are there effective research brokerage arrangements to support implementation? 	<ul style="list-style-type: none"> Are there research efforts to inform continuous improvement in implementation? Are local and traditional knowledge sets informing implementation? Are effective data sets concerning implementation being managed and retained?
Monitoring, Evaluation and Review	<ul style="list-style-type: none"> Are there effective monitoring and evaluation capacities in the system? Are there collective monitoring alliances in place? Are there defined and independent evaluation capacities in the system? Are there reporting capacities to enable high levels of accountability? 	<ul style="list-style-type: none"> Are there integration arrangements between objective setting and monitoring systems? Are evaluative and review mechanisms linked to long term monitoring? Are monitoring and reporting systems able to influence strategic processes and the allocation of resources? 	<ul style="list-style-type: none"> Are social, economic and environmental outcomes from the system being monitored? Are monitoring and evaluation data being retained into the long term?

Once characterised in structural/ function terms (using Table 8.1), the climate adaptation system can then be

assessed in terms of its health, determining how likely it would be that the system would deliver climate

adaptation outcomes enabling communities to adapt in the face of climate change. The rating rules applied in determining system health at various scales are outlined in Table 8.2.

Table 8.2 The rating scale applied in determining the health of the climate adaptation planning system

HEALTH RATING	DECISION RULE
5	The planning system is in excellent overall health and will not fail to deliver its intended system outcomes.
4	The planning system is in good overall health and is not likely to fail to deliver its intended system outcomes.
3	The planning system's health is on a knife's edge and could fail or succeed in delivering its intended system outcomes.
2	The planning system is in poor overall health and likely to fail to deliver its intended system outcomes.
1	The planning system is dysfunctional and will fail to deliver its intended system outcomes.

Assuming that the intent of the climate adaptation planning system is to support nations, states, regions,

councils, communities and businesses to adapt, based on the application of the guides in Table 8.1 and Table 8.2, our broad first cut assessment of the system is outlined below in Table 8.3.

In summarising the key results emerging from this analysis, it is worth noting that while there are some parts of the system that are in relatively good health (e.g. at the catchment scale), while overall, most parts of the system remain at the suggested ratings, they are not likely to deliver the climate adaptation responses needed at different scales that would enable communities to prosper under the climate change projections currently expected for the Wet Tropics (e.g. increased frequency of intense cyclones, deeper wet and dry cycles, increased sea level rise, etc.). In particular, insufficient leadership and action at the international, national and state levels are delivering ineffective outcomes at regional and local scales, particularly in the important fields of land use planning. Some real steps in adaptation at the business and property scale are tending to emerge where major climate-related disasters have already sparked adaptation actions at that scale. While positive, these efforts represent responsive rather than proactive approaches to climate adaptation.

Table 8.3 A summary of structural/functional analysis of planning systems for climate adaptation at various scales with an influence in the Wet Tropics Cluster

ADAPTATION PLANNING SCALE	STRUCTURAL CONSIDERATIONS	FUNCTIONAL CONSIDERATIONS	OVERALL HEALTH RATING
International Scale	<ul style="list-style-type: none"> • Overall international strategic framework for climate change management remains focused on mitigation versus adaptation, though adaptation issues have increasingly emerged in international negotiations. • No clear global climate change adaptation framework, plan and associated strategies. • Some key strategic areas of global policy and strategy reform exist. • No clear international global frameworks for monitoring national improvements in climate resilience at all scales. 	<ul style="list-style-type: none"> • International capacity for strategic approaches to climate adaptation are fragmented and generally too centralised for effective engagement. • Some research and development funding arrangements support climate adaptation exist, particularly in developing countries. • Some strong areas of cross-national cooperation exist that are focused on supporting climate adaptation among near neighbouring countries. 	2.5
National Scale	<ul style="list-style-type: none"> • Overall national strategic framework for climate change management remains focused on mitigation versus adaptation. • No clear national climate change adaptation plan and associated strategies. • Some key strategic areas of significant policy and strategy reform exist (e.g. emerging new support for regional NRM planning effort, drought relief reform, etc.). • No national frameworks for monitoring improvements in climate resilience at all scales. 	<ul style="list-style-type: none"> • National capacity for strategic approaches to climate adaptation are fragmented and generally too centralised for effective engagement. • Decline of NCCARF arrangements and centralisation of NERP structural arrangement have potentially weakened national policy effectiveness. • Some Australian capacity is focused on supporting climate adaptation among near neighbouring countries. • Systems for national management of key data sets (climate, water, biodiversity, etc.) have improved, but are tend to be fragmented by sector. 	2

ADAPTATION PLANNING SCALE	STRUCTURAL CONSIDERATIONS	FUNCTIONAL CONSIDERATIONS	OVERALL HEALTH RATING
State Scale (Queensland)	<ul style="list-style-type: none"> • State strategic approach and activities in disaster preparedness and response has dramatically improved following several disastrous climate events since 2006. • Strategic effort on broader scale adaptation has not yet fully emerged and is represented by a fragmented set of strategic efforts (e.g. insurance reform). • State has no strong strategic policy focus on landscape-scale climate adaptation. • No framework for state level monitoring of moves towards improved resilience to climate change or climate disasters. 	<ul style="list-style-type: none"> • Capacity in some aspects of climate adaptation have improved (e.g. disaster response systems) while others have fragmented and declined (e.g. landscape scale NRM and land use planning policy frameworks). • Low levels of connectivity between disparate climate adaptation efforts (e.g. disaster response, insurance reform, business resilience building). • Data and information systems for flood, cyclonic and storm surge events have dramatically improved, while state investment in social adaptation has declined in recent years. Knowledge building effort is focused in disaster preparedness versus adaptation. 	2
Cluster Scale	<ul style="list-style-type: none"> • Coordinated strategic approach to regional NRM planning is emerging, as one fully integrated Wet Tropics Cluster planning effort not necessary at this level. • Emerging monitoring and evaluation of impact of regional scale adaptation planning in improving climate adaptation outcomes, including social resilience benchmarks emerging within FNQ&TS region. 	<ul style="list-style-type: none"> • Strong interconnectivity between FNQ and Mackay Whitsunday regions at strategic level through northern Queensland strategy approach. • Coordinated and combined approach to regional NRM planning well connected across the Cluster through collaborative effort among regional NRM bodies. • Much increased science-knowledge base through Wet Tropics Cluster and ongoing NERP investments. • Some stronger Cluster scale planning in context of Wet Tropics and GBR World Heritage Planning. 	3

ADAPTATION PLANNING SCALE	STRUCTURAL CONSIDERATIONS	FUNCTIONAL CONSIDERATIONS	OVERALL HEALTH RATING
Regional Scale	<ul style="list-style-type: none"> Higher level strategic and effort alignment approach to regional scale adaptation via RDA framework in FNQ&TS and linked to Mackay Whitsunday region. Revitalised strategic approaches to landscape scale adaptation planning in NRM field, but decline in such activity from a regional land use planning viewpoint. Limited monitoring and evaluation of impact of regional scale adaptation planning in improving climate adaptation outcomes, though social resilience benchmarks are emerging within FNQ&TS region. 	<ul style="list-style-type: none"> Improved strategic capacity in regional NRM planning has been undermined by a weaker state/federal mandate concerning role of regional NRM plans. Potential to better integrate regional NRM adaptation with regional land use planning has declined. Knowledge base for regional NRM and land use planning has dramatically improved through Wet Tropics Cluster grouping, NERP-funded Reef and Rainforest Research Centre RRRC efforts and improved spatial information layers. 	3
Local Government Planning	<ul style="list-style-type: none"> Limited local government strategic focus on climate adaptation in corporate plans/ planning schemes. With limited higher level policy vision for climate adaptation, adaptation strategies generally limited to infrastructure and high risk land uses. Implementation limited to high risk infrastructure and land use regulation delivery mechanisms. No clear framework for monitoring increased resilience to climate change. 	<ul style="list-style-type: none"> Community and corporate plans and planning schemes now disconnected. Regional NRM plans now have more limited on planning scheme influence. Regional Land Use Plans increasingly influence planning schemes, but less focused on climate adaptation. Local government planning still poorly linked to regional climate science. 	2

ADAPTATION PLANNING SCALE	STRUCTURAL CONSIDERATIONS	FUNCTIONAL CONSIDERATIONS	OVERALL HEALTH RATING
Catchment River and Local Area Planning	<ul style="list-style-type: none"> • Water Quality Improvement Planning and Water Resource Planning set a strong strategic framework for quality and quantity issues associated with climate change. • Strong delivery mechanisms exist through Resource Operating Plan and Reef Rescue/ Reef Plan implementation models. • More effective monitoring arrangements regarding quantity and quality issues have emerged in recent years, • Strategic and delivery framework for systemic improvements in rivers to minimise disaster risk and maintain river health remain limited. • Strategic approaches to Local Area Planning in biodiversity hotspots show great potential, but implementation and monitoring may be limited by more centralised governance models on NRM programs and R&D frameworks. 	<ul style="list-style-type: none"> • Strong research and development frameworks for water quality and quantity issues have emerged throughout the cluster area. • Similar capacities exist with respect to Local Area Planning and biodiversity. • Capacities for integrated social and development planning at catchment/ mill scale are improving, but suffer from lack of dedicated support frameworks. • Connectivity between Water Resource Planning, Water Quality Improvement Planning, Catchment Planning and River Improvement Planning and local Land Use Planning remains fragmented. • Capacity of regional NRM bodies and local councils to undertake such planning over longer timeframes has diminished recently due to centralisation of NRM programs. 	3
Business and Property Scale	<ul style="list-style-type: none"> • Some major cyclonic events in the Wet Tropics have forced significantly improved strategic approaches to business and property-scale adaptations. • Overall, key strategic planning and subsequent implementation for supporting business and property-scale adaptation remains under-developed. • Very limited monitoring of business and property-scale strategic approaches to climate adaptation in Wet Tropics Cluster. 	<ul style="list-style-type: none"> • Capacity for business and property-scale adaptation planning has improved in some key parts of the Wet Tropics Cluster, but overall strategic capacity at that scale remains low. • While there is much greater integration of effort and connectivity in disaster recovery arrangements, proactive support-based approaches are weak. • Information systems associated with support for business and property scale resilience planning are improving, particularly through regional development programs, RRRC efforts, spatial information hubs and the Wet Tropics science engagement cluster. 	2.5

Recommendations

The following core recommendations are based on some of the opportunities and challenges raised previously and the structural/ functional health analysis outlined above. These recommendations are focused on what regional NRM bodies (given their current fractured mandates and limited resources) can do to progress the system of climate adaptation planning within the Wet Tropics.

- Encourage state and federal bilateralism for new approaches to regional land use planning and regional NRM planning focused on climate adaptation (e.g. via combined NRM body responses to the current Green Paper process on the development of northern Australia)
- Encourage the state to reinvigorate regional land use planning in the Wet Tropics and Mackay Whitsunday regions to focus on climate change responses/disaster preparedness
- Build alliances with northern Queensland RDAs in working towards a strong “whole of north Queensland” and an FNQ&TS approach to progressing climate adaptation
- Seek to sure up the best possible regional spatial priorities for adaptation over the current phase of next generation development of regional NRM plans
- Build alliances with the FNQ and Whitsunday Regional Organisation of Councils (ROCs) to build council capacity to integrate climate adaptation into corporate and community plans and planning schemes
- Continue to build upon current strengths in the current system of adaptation planning related to catchment management, but better integrate water resource, river improvement and water quality improvement planning
- Continue to trial and evaluate Local Area Planning Approaches to managing biodiversity hotspots facing significant climate change risks
- Take a combined and strategic lead regionally in building a range of long term, targeted and measurable delivery programs aimed at increasing

business and property scale resilience in the face of climate change in the Wet Tropics Cluster

- Secure programmatic investment in business resilience planning for climate adaptation; and
- Trial the development of an agreement with the state government aimed at working together towards more integrated property planning.

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