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Governing Community-Based Natural Resource Management in Australia: International Implications

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Abstract: Community-based natural resource management (CBNRM) has grown in stature as a key component of many national natural resource and rural development governance systems. Despite their growth, the integrity of CBNRM governance systems has rarely been analysed in a national context. To enhance dialogue about how best to design and deploy such systems nationally, this paper analyses the Australian system in detail. The Australian system was selected because the nation has a globally recognised and strong history of CBNRM approaches. We first contextualise the international emergence of national CBNRM governance systems before analysing the Australian system. We find that a theoretically informed approach recognising regions as the anchors in brokering multi-scale CBNRM was applied between 2000 and 2007. Subsequent policy, while strengthening indigenous roles, has tended to weaken regional brokering, Commonwealth–state cooperation and research collaboration. Our findings and consequent emerging lessons can inform Australian policy makers and other nations looking to establish (or to reform existing) CBNRM governance systems. Equally, the research approach taken represents the application of an emerging new theoretical framework for analysing complex governance systems.

Keywords: governance systems; natural resource management; governance reform

1. Introduction

Community-based natural resource management (CBNRM) can be described as “shorthand for governance that starts from the ground up but deals with cross-scale interactions [1] (p. 41)”. CBNRM originated from various land management and conservation institutions in places like Africa, India, Australia, the United States and Europe [2,3]. The approach gained traction internationally over 30 years as a result of increasing disillusionment with centrally planned, state-controlled conservation and natural resource management (NRM) projects [4,5]. These approaches were buoyed by success stories about projects based on more participatory, deliberative and subsidiarity-based governance principles [6,7]. Consequently, CBNRM was embraced by various nations from the 1980s onwards, particularly in agricultural landscapes, water catchments and forestry and small-scale fisheries. There are now cases describing CBNRM experiences in many contexts [3,8–12]. Indeed, while CBNRM

has been variously expressed (e.g., as co-management, community forestry, participatory conservation, etc.), there are several common governance traits, including the following:

- Integration of the interests, perspectives and institutions of various stakeholders with resource use rights at regional or local governance levels [3,6,8,13]
- The devolution of decision-making from national or state, territory or provincial governments to regional and/or local actors and the development of existing or new institutions to enhance decision-making [5,13]
- The emergence of deliberative decision-making and action by stakeholders on issues at various geographic scales [3,6,8,13]
- Institutional and knowledge brokering and research integration to address cross-scale interactions, mobilising integrated NRM efforts [14–16]
- The linking of (geographic) scale-based environmental and socio-economic objectives in policy decision-making and implementation activities [3].

A primary assumption underlying CBNRM is that, within a wider policy context, local communities have the greatest interest in and are best placed to respond to local environmental and socio-economic issues [6]. However, despite the rise of CBNRM, there have been few analyses of the concomitant national governance systems which formalise them. If nations are to keep using CBNRM policy systems to drive the achievement of environmental management and rural development outcomes, some reflection on known experiences is necessary. Traditionally, CBNRM approaches have posited that rural development and good environmental governance are intricately linked.

Several authors outline the challenges ahead requiring strong national CBNRM governance across the globe. Anderson and Mehta (2013) [17] see food scarcity and globalisation as driving demand for CBNRM. Furthermore, Gomera et al. (2010) [18] see climate adaptation and emerging carbon markets as needing enhanced CBNRM governance. Both consider that insecure and contested land/resource tenures prevent local groups from developing their economies as well as undermining incentives for local conservation. Consequently, Gomera et al. (2010) [18] consider that, without strong national CBNRM frameworks, governments and private companies will increasingly lay claim to natural resources on which the rural poor depend. These increasing demands lead Eliasch (2008) [19] to highlight the role of national governments in building governance systems that support CBNRM. Indeed, they see the key policy roles of nation-states as necessarily including (i) international policy and market negotiations; (ii) national brokerage between external interests and communities; (iii) attracting appropriate finance into regional and localised natural resource ventures. Along with other authors, Nelson (2010) [20] identifies several challenges to nation-states building appropriate governance systems and policy frameworks to strengthen CBNRM. These include a general trend towards the consolidation of central authority over natural resources rights. This issue is important as, in CBNRM, there needs to be sufficient devolution to allow communities to negotiate their roles and relationships with the private sector and the nation-state. Anderson and Mehta (2013) [17] report that successful CBNRM requires all three parties to work together in complementary roles.

Here, we add to discussions on the role of CBNRM in securing environmental and rural development outcomes by contributing to the limited literature on national CBRM governance systems. Specifically, with little recent innovation in policy development in this space in Australia, we review various developmental phases of Australian policy and analyse this nation's contemporary CBNRM governance arrangements until the end of 2014. Emerging national reform lessons are outlined in order to assist national policy makers as well as state and non-state actors in CBNRM decision-making at regional and local levels across the globe.

2. Methods

To elucidate lessons from the Australian CBNRM experiment, we applied Governance Systems Analysis (GSA), a framework that explores the risks and consequences of institutional and

decision-making failure within complex governance systems. GSA draws on both the mainstream and NRM governance literature. To explore the impact of governance on decision-making outcomes, the approach uses normative criteria about desirable governance characteristics, drawing together experience from UNDP (1997) [21], OECD (2004) [22] and Lockwood et al. (2010) [23], among others. In effect, GSA explores (across geography and time) various governance systems by considering the integrity of the system's key structural elements as well as its functional aspects. Structural aspects of GSA address key components of typical decision-making processes (from goal-setting, strategy development and implementation to monitoring and evaluation). Functional aspects addressed include (i) the decision-making capacities of all actors with a stake in the system; (ii) the strength of connectivity among actors; (iii) the ways in which various types of knowledge are applied within the system. Evaluative criteria used to describe the integrity of the system (i.e., its likelihood of delivering intended outcomes) include consideration of key operational principles central to building strong governance systems, including subsidiarity within the system, sustainability, equity, accountability, adequacy, effectiveness, efficiency and adaptability. Crucially, GSA (originally detailed in Dale et al., 2013b) [24] also recognises the polycentric nature of governance systems, collectively exploring structural and functional aspects of the system across all scales. The evaluative criteria applied in the GSA approach are described in detail in Dale et al. (2013b). In effect, the over-arching research question underpinning this application of GSA is "how healthy is the governance system being analysed, and how might that system be improved to deliver better outcomes?" In this case, we apply GSA to analyse Australia's CBNRM governance system and the outcomes arising.

Our application of GSA was deliberative, bringing together an evaluative dialogue among researchers and practitioners with skills of relevance to Australian CBNRM. We undertook our analysis through two structured focus group workshops (with 15 people each) during 2013/2014, followed by targeted written feedback from various CBNRM participants (10 people) and other NRM practitioners over six months when engagement gaps were identified. Broadly, focus group participants were asked to describe their role in the CBNRM system, to outline what they considered was working well within the system, what they considered was not working so well and which system improvements were needed. The focus groups and written feedback involved a mix of NRM practitioners and policy makers. Limitations associated with the research approach relate to the limited resources available to conduct more extensive surveys, interviews and structured workshops with system stakeholders to help identify system issues and key solutions. To address these limitations, we targeted a relatively simple but robust 3-step process.

2.1. Step 1: Reviewing Emergence of Australia's CBNRM Governance System

Based on our extensive endnote library in this research field (available on author request), and through additional web-searches and literature sharing across our diverse team, we conducted a literature review of the establishment and development of Australia's CBNRM governance system to describe it and to help explore its structural and functional aspects. We particularly sought out documents and reports that illustrated these aspects of the system, including multiple information sources in the grey and published literature (e.g., program evaluations, policy statements and published literature on Australian CBNRM, etc.). Drawing on this literature, we also identified the specific CBNRM governance theories applied in different developmental phases.

2.2. Step 2: Describing the System's Structural and Functional Characteristics

Based on information gained through the Step 1 literature review, we drew upon the wide experience of our research team members (listed as authors) in CBNRM governance to further populate and refine a draft matrix describing structural and functional aspects of Australia's CBNRM governance system. In guiding our description of the system, we applied eight evaluative criteria (consolidated from Ryan et al. (2010) [25], Dale and Bellamy (1998) [26], United Nations Development Program (1997) [21] and OECD (2004) [22]). These evaluative criteria included considering the

subsidiarity, sustainability, equity, accountability, adequacy, effectiveness, efficiency and adaptability of key structural and functional aspects of the system. These evaluative principles were used to guide our description of the structural and function characteristics of the system (as outlined in Tables 2–6). Several research methods were applied to facilitate analysis, including (i) detailed team meetings to support the analysis and consequent collaborative writing; (ii) two participant workshops, each involving a minimum of 15 regional planners, program specialists and government employees from across Australia’s and Queensland’s NRM sector (based on an invited workshop of regional NRM planners in Queensland and an open invite to participants in an annual Australian regional NRM conference); (iii) feedback and analytical review from specialists in the indigenous, agriculture and conservation sectors where engagement gaps were identified; (iv) the integration of previous evaluations of regional NRM bodies across the nation [25,27].

2.3. Step 3: Elucidating Lessons for CBNRM Policy Makers

With the original higher level research question in mind and through the application of the GSA framework, Steps 1–2 enabled us to apply the 8 evaluative criteria to describe the national CBNRM governance system (via the development of Tables 2–6). From these table-based descriptions, and from our shared understanding of the current state of the nation’s CBNRM governance system, the research team was able to craft theoretically-informed reform lessons that would be applicable to Australian (Commonwealth and state) policy makers (or indeed other nations) seeking to transform or refine their national CBNRM governance system. This process was also assisted through discussion with (Step 2) workshop participants, via research team meetings and by referring back to wider literature on CBNRM governance reform and participant knowledge within this system.

3. Results

3.1. Emergence of Australia’s CBNRM Governance System

Under Australia’s constitution, responsibility for NRM is a state (not national) government responsibility. Australia has a secure property rights system, and many natural resource rights and responsibilities sit with landholders. Van Oosterzee et al. (2012) [28] illustrate how early regulatory NRM approaches (from the 1940s) were not well-suited to rural landscapes as they sought to address more point-source rather than diffuse-landscape scale problems. Though new CBNRM approaches increasingly included agricultural extension services focused on production, several authors [3,29,30] consider that, from around the 1970s on, however, broad policy developments underpinning the nation’s CBNRM system have included the following:

- Landholders increasingly adopting local resource stewardship or “landcare” style approaches to NRM [31–33].
- The state/territory level emergence of regional/catchment scale coordination of regulatory and voluntary NRM activities from the 1980s via community based Integrated Catchment Management (ICM) groups [34].
- Recognition by the High Court in 1992 that native title rights intersected with state/territory property rights systems, recognising indigenous rights and interests in NRM to varying extents across more than half the continent [15].
- Establishment of a program called the Natural Heritage Trust Mark I (NHT I) in 1996 as a major, nationally competitive grants program. While NHT I under-developed multi-level aspects of natural resource governance, it raised the national profile of CBNRM [35].
- Moves from 2000 to 2007 that included new programs such as the National Action Plan for Salinity and Water Quality (NAPSWQ) and the NHT Mark II (NHT II) and formally negotiated bilateral arrangements between Australia’s national and state/territory governments that recognised the multi-level realities of NRM [34]. Community-based regional NRM bodies were formalised to develop regional NRM plans to guide more local action. Variations in this approach emerged

in different states and territories, with NSW, Victoria and South Australia establishing statutory authorities while other states and territories established more community-based structures. Within these modified or new structures, consequent projects (devised at cross-regional, regional, catchment and local levels) were delivered through local CBNRM groups and other capable parties [36].

- From 2007 to 2013, new reforms shifted the policy-centricity of CBNRM governance from multi-scalar regionalism to more fragmented and centrally decided national investments. A consequent new national program (the Caring for Our Country (CfoC) Program) shifted away from supporting a regional framework as the anchor capable of tackling complex cross-sectoral and multi-level problems to an approach focused on the distribution of nationally competitive grants [37,38]. The framing and delivery of CfoC re-centralised control, reducing its focus to investment in short-term, measurable outputs [39].

While the CfoC framework diminished devolved and polycentric approaches, some CfoC sub-programs did adopt centrally managed but devolved effort. The Indigenous Protected Areas sub-program, for example, funded traditional owner groups to plan the declaration and management of new Indigenous Protected Areas (IPAs). This funding was followed up with long-term delivery contracts. Consequently, indigenous groups across Northern Australia made gains in capacity and delivery [40]. Similarly, the Reef Rescue sub-program, a high profile CfoC success [41], was also negotiated by regional NRM, industry and conservation bodies ahead of CfoC. Both of these CfoC sub-programs were managed by a dedicated team of centrally based sub-program specialists with some operational flexibility. Older governance approaches established under NAPSWQ/NHT II, however, had helped to drive the evolution of these more successful CfoC sub-programs.

3.2. Governance Theory in National CBNRM System Establishment and Reform (Step 1)

A strong thread of CBNRM governance theory that recognises the regional scale as the anchor for brokering multi-scale governance was applied to the design and implementation of the NAPSWQ and NHT II from 2000 to 2007 [42,43]. Key policy phases before and after this, however, while informed by multi-scalar governance theories, failed to recognise the anchor role of regions. Table 1 outlines where, across this history, contemporary governance and CBNRM-related theories and approaches were applied in order to inform major national reforms underpinning the evolution of Australia’s CBNRM governance system.

Table 1. The role of governance theories in different national community-based natural resource management (CBNRM) reforms.

Key Phase	Informing Concepts	Role of CBNRM Governance Theories or Conceptual Approaches	Key Documents
Decade of Landcare (1980s)	Community participation Integrated catchment management Land stewardship	Reforms were based on a national sentiment of land stewardship, backed by the Australian Conservation Foundation (ACF) and the National Farmers Federation (NFF). These sentiments were also backed by an emerging governance literature on land stewardship, CBNRM and integrated catchment management (ICM). There was, however, a limited clear theoretical focus underpinning the design of national policy solutions to CBNRM problems.	[23,44,45]
Natural Heritage Trust (late 1990s)	Instrumental devolution Nationally supported land stewardship	Popular political support for federal program investment in land stewardship informed the emergence of the NHT agenda, rather than structured governance theory. There was limited global theoretical analysis of policy solutions to resolve national-scale CBNRM problems. The reform agenda was, however, based on the idea that devolution to local-scale led to improved CBNRM outcomes, rather than a subsidiarity-based approach focused on building appropriate decision-making at national, state/territory, regional and local scales.	<i>Natural Heritage Trust of Australia Act 1997 (Cth)</i> . [46,47]

Table 1. Cont.

Key Phase	Informing Concepts	Role of CBNRM Governance Theories or Conceptual Approaches	Key Documents
NAPSWQ and NHTII (2000–2007)	Bilateralism in administrative governance Instrumental devolution and integrated adaptive governance	The NHT Mid-Term Program Review documented the wider CBNRM issues facing the nation and outlined the limited outcomes achieved through centrally managed small grants. This led to recognition that purely local-scale devolution was insufficient and that a cohesive and set of national policy reforms was required. This work drew upon emerging theories about using the regional scale as the anchor for multi-level governance.	[42,48,49]
CfoC and Beyond (2007–2020)	Public sector centralisation Program Reporting and Program Logic Sector specific instrumental devolution	In 2007, a new national government responded to advice from the National Audit Office that outcomes against government purchased inputs had not been well measured in NHT II and NAPSWQ. The multi-level governance system was reformed, retreating to national targets and multi-scalar competition for grants. With the basic framework continued ever since, this period has seen more centrally managed programs focused on departmental priorities.	[38,50,51]

Table 1 recognises that the NAPSWQ/NHT II era was based on theories that multi-scalar CBNRM governance required regional anchors, most strongly argued by the Wentworth Group [52]. Van Oosterzee et al. [34] (p. 309) consider that “the fragmented foundations of strong regulatory and weak grant-based approaches in the 1980s and 1990s failed to stem the inevitable public exposure of several latent natural resource crises”. Consequently, a shift towards strengthening regional governance emerged [39,53] and the national government became more involved in multi-level CBNRM. This reduced geographic (e.g., province by province) and tackled sectoral (e.g., water versus biodiversity) effort fragmentation, establishing an integrated national framework [54].

While a substantive governance innovation, these efforts, however, were not always delivered evenly across different sectors and geographic scales [15]. Slower progress was made in engaging indigenous and conservation interests due to a policy bias and differing regional capacities. At the same time, blunt bilateral negotiations tended to see some parts of the national landscape under-resourced (e.g., central Australia). On the whole, however, between 2000 and 2007, as new regional arrangements unfolded, continuing national improvements in the capacity of land holders and delivery sectors emerged [34,55]. A number of authors report that regional NRM bodies increasingly became a key source of advice and support for landholders [56] while reporting in a nationally consistent way on target achievement [36]. Indeed, the theory-based governance innovation applied from 2000 to 2007 recognised that regional CBNRM approaches require a longer-term, target-focused, landscape-scale perspective, in contrast to and complementary of past regulatory and grants-based regimes.

The national shift in 2007 away from these theoretically informed reforms was driven by the National Audit Office finding that there was little recorded evidence that the nation’s natural resource condition had improved through multi-billion dollar investment [50]. Politically, it was also perceived that the NAPSWQ/NHT II arrangements had excluded indigenous and environmental groups while privileging the agricultural sector. The CfoC reforms from 2007 introduced opportunities for other organisations to participate in national funding, but the resulting competition for mandate and funds undermined the devolved model, which had seen regions operating as an anchor for cross-scale effort alignment [39]. The previous multi-scale target setting framework was replaced with a centralised return to national target setting to guide the development of more project-driven approaches. National-state/territory bilateral agreements, which had levered greater investment and coordinated effort, were also discontinued, reducing cross-governmental effort alignment.

As of 2014, a new national government prepared to exert another phase of reform in Australia’s national CBRM governance system, perhaps the fifth in its short history. Early indications suggest a governmental intent to enhance devolved regionalism, to continue to drive a link between landscape-scale greenhouse gas abatement and regional landscape priorities and to refocus effort at regional and local levels [57]. With this in mind, we now apply GSA to analyse the nation’s CBNRM

governance system as at the end of 2014. Our analysis focuses on the wider CBNRM governance system rather than a narrow evaluation of the CfoC Program.

In relation to our analysis, we note a concurrent and continuing national decline in resource condition and trend identified via the nation's State of the Environment reporting [58–60], Australia's pre-eminent framework for measuring national environmental progress.

3.3. Outcomes of Structural and Functional Analysis (Step 2)

We present our analysis of the structural/functional strengths and weaknesses of the nation's CBNRM governance system at the end of 2014 in Tables 2–6. We also set the scene for linking this analysis to potential lessons for reform in the following section (i.e., in the tables, L1 refers to Lesson 1 in that section, etc.). Table 2 summarises our key findings with respect to the integrity of vision and objective setting activities and explores potential system reforms. We found that, overall, the Australian system has shifted away from a broader CBNRM policy and program (funding) agenda with a focus on devolution and the achievement of nested natural resource targets at national, state/territory and regional levels. This approach was replaced with a national funding program focused on achieving national environmental targets via centrally decided and fragmented project-based funding. This represented a shift away from a system of nested vision and objective setting and may see a decrease in the national capacity to meet national resource condition outcomes.

Table 3 summarises findings with respect to the integrity of research and analysis activities and explores potential system reforms. Not long after 2007, the nation's leading R&D institution with a focus on CBNRM, along with an integrative focus on the long-term monitoring of resource condition and trend across the nation, was closed. These developments also indicate that, by late 2014, the Australian system had shifted from a broader policy focus on multiple strategies to achieve natural resource outcomes to a more politically oriented focus on program spending.

Table 4 summarises findings with respect to the integrity of strategy development activities and explores potential system reforms. Our main concern identified was that declining connectivity between the nation's CBNRM program and other areas of government and the research and development sector had led to the development and "single strategy" approach to the delivery of the nation's CBNRM policy framework (i.e., a centrally decided grants program). This less diversified approach reduced the number of strategy options available for the national government to achieve improved national NRM outcomes.

Table 5 summarises findings with respect to the integrity of implementation activities in the system and explores potential reforms. The shift from strategic and integrative regionalism and back to centralised grant funding from 2007 (with shorter term funding horizons) had weakened the capacity of localised delivery systems, creating a less predictable set of capacities across the Australian landscape. Some improvements in the Indigenous sector and the Great Barrier Reef were achieved under CfoC, however, in part because the special subprogram approaches applied were consistent with theoretically sound CBNRM principles.

Table 6 summarises findings with respect to the integrity of monitoring, evaluation and review activities and explores potential system reforms. With the demise a wider, policy-oriented approach to CBNRM, monitoring and evaluation effort across the nation shifted from a national focus on monitoring resource condition outcomes to a focus on CfoC program (output-based) reporting. This indicates that by late 2013, the Australian CBNRM governance system had shifted from a broader policy focus on NRM outcomes to a more politically-oriented focus on program (funding).

Table 2. A synthesis of findings regarding national aspects of vision and objective setting in Australia’s CBNRM governance system.

Structure: Vision and Objective Setting			
Functions			Suggested Reform Priorities and Links to Associated Lessons
Decision-Making Capacity	Connectivity	Knowledge Use	
<ul style="list-style-type: none"> A legislative architecture exists but does not establish a clear policy vision. The vision for the overall CBNRM agenda appears focused on program (funding) vs. policy targets. Public sector (Commonwealth/state) capacity for informed/independent national policy development appears to be declining, including a loss of corporate knowledge. Sectoral institutions have capacity to influence policy. 	<ul style="list-style-type: none"> No framework exists for bilateral policy agreement with state/territory/local governments. Little structured engagement with other national government policies and programs. No framework for structured agreement among key sectors regarding CBNRM policy vision and objectives. Program visioning has been reduced to developing an annual (outputs-based) business plan (CfoC). 	<ul style="list-style-type: none"> Vision and objective setting is poorly connected with any national integrated knowledge base. No cohesive R&D strategy is in place to inform policy vision and objective setting. No independent institution with research and knowledge capacities exists to advocate for cohesive and ongoing systemic reform within the overall CBNRM governance system. 	<ul style="list-style-type: none"> Clearer national, state/territory and local government agreement about CBNRM policy and delivery frameworks (L1; L2). CBNRM policy design needs explicit linkage back to long-term resource condition monitoring (L4; L5). Clearer policy-oriented engagement frameworks need to be established with key sectoral groups at the national level (L1). An independent national institution is required to monitor the governance system and agitate for continuous improvement (L1; L5).

Table 3. A synthesis of findings regarding national aspects of research and analysis in Australia’s CBNRM governance system.

Structure: Research and Assessment			
Functions			Suggested Reform Priorities and Links to Associated Lessons
Decision-Making Capacity	Connectivity	Knowledge Use	
<ul style="list-style-type: none"> CBNRM knowledge broker institutions had been dismantled. Foundations for integrated national land/water audit dismantled. Less capacity in national system for research synthesis, scoping and knowledge retention. Few cohesive state or regional systems for NRM research synthesis. 	<ul style="list-style-type: none"> Key land and water audit functions fragmented across various government agencies. Poor connectivity among various national, state/territory/regional R&D frameworks for CBNRM. Some attempt to rebuild regional knowledge linkages to regional NRM plans and regional bodies. 	<ul style="list-style-type: none"> Nation has strong biophysical knowledge sets for CBNRM decision-making. Limited use of social sciences and condition and trend data. Cultural and historical knowledge often poorly integrated. Shift to outputs-based reporting had reduced outcomes monitoring. 	<ul style="list-style-type: none"> Explore re-establishing integrated NRM knowledge brokerage and audit institutions at national/regional scales (L3; L4). Enhance place-based approaches to knowledge brokerage and research delivery across Australia (L3). Ensure governance-based research components are partnered with any major biophysical, social and economic research programs and projects (L3; L4; L5).

Table 4. A synthesis of findings regarding national aspects of strategy development in Australia’s CBNRM governance system.

Structure: Strategy Development			
Functions			Suggested Reform Priorities and Links to Associated Lessons
Decision-Making Capacity	Connectivity	Knowledge Use	
<ul style="list-style-type: none"> System largely operates on one central national strategy: the delivery of competitive grants. Diminished and unclear investment in regional NRM bodies as the anchor of multi-scale brokering diminished regional and local strategic NRM capacity. 	<ul style="list-style-type: none"> Singularised (grants) strategy developed in isolation from other national NRM and rural development activities. Limited connectivity between national strategy with state, regional or local strategic planning. Land use planning and NRM links diminished. 	<ul style="list-style-type: none"> Little governance and social research in strategy development. Strong practical knowledge applied in design of some more devolved sub-programs (e.g., with respect to Indigenous Protected Areas/Reef Rescue). 	<ul style="list-style-type: none"> Government agencies could explore a wider range of strategy options to achieve goals (L1; L2). Increase support for regional NRM plans and institutional capacity of regional NRM bodies (L5). Continue governance reforms in regions to ensure engagement/continuous improvement for regional NRM planning/review (L3; L5).

Table 5. A synthesis of findings regarding national aspects of implementation in Australia’s CBNRM governance system.

Structure: Implementation			
Functions			Suggested Reform Priorities and Links to Associated Lessons
Decision-Making Capacity	Connectivity	Knowledge Use	
<ul style="list-style-type: none"> Annual program cycle diminishes the capacity of on-ground CBNRM. Capacity for deciding grants is centralised, with limited regional context. Regional NRM body performance enhanced via self-benchmarking. Delivery capacities exist in councils, landcare, farming, indigenous and other organisations. Complexity of monitoring, evaluation and review frameworks reduce delivery agent capacity. 	<ul style="list-style-type: none"> Annual competitive grants rounds fracture long-term partnerships required. Regional NRM body role in brokering alliances had become marginalised. Few effective place-based research brokerage arrangements support implementation actions. Some strong implementation frameworks under special CfoC sub-programs. New connectivity between government, conservation and indigenous sectors. 	<ul style="list-style-type: none"> The foundations for research partnerships for implementation exist in some regions but no cohesive policy supporting place-based science. Little impact analysis and governance/social research underpinned review of CfoC implementation. 	<ul style="list-style-type: none"> Retain capacity to fund explicit, long-term and strategic national, state or cross-regional priorities (L1). Build stronger multi-level policy framework versus simple program delivered against national priorities (L1; L2; L5). Continue support for performance benchmarking and continuous improvement in regional NRMs and other implementation-focused clients of CBNRM funds (L4). Enhance national/state policy/investment in place-brokered science (L3).

Table 6. A synthesis of findings regarding national aspects of monitoring and evaluation of Australia’s CBNRM governance system.

Structure: Monitoring and Evaluation			
Functions			Suggested Reform Priorities and Links to Associated Lessons
Decision-Making Capacity	Connectivity	Knowledge Use	
<ul style="list-style-type: none"> Fragmented but strong monitoring and evaluation at national/ state/ territory scales. No empowered institution to effect independent review of system governance at national scale. National M&E framework focused solely on project scale monitoring and only delivers on national output reporting. 	<ul style="list-style-type: none"> Evaluation and review mechanisms not linked to long-term resource condition monitoring. National resource condition monitoring systems do not influence strategy development/resource allocation. Program monitoring is output-focused to inform marketing, with limited influence on policy/program review. 	<ul style="list-style-type: none"> Wider social, economic and environmental outcomes are not being monitored against policy objectives. Limited monitoring and evaluation data available or being retained on any systematic basis. Strong program/project delivery monitoring information sets in place. 	<ul style="list-style-type: none"> Nation’s environmental accounting could link to the policy frame and budget process at the regional, state/territory and national level (L4). Explore an independent system to monitor/review integrity of the nation’s (and state/territory) CBNRM governance system (L4). Reconsider a national CBNRM knowledge broker (L5).

4. Discussion

In seeking to address our broader research question, the above analysis of Australia’s CBNRM governance system has identified some of the key themes of potential importance in strengthening the nation’s approach to CBNRM. Through thematic interpretation of the results outlined in Tables 2–6, we determined that there could be at least five key design lessons that have implications for policy makers and influencers seeking to reform or to refine Australia’s CBNRM governance system.

4.1. Lesson 1: A More Enduring and Polycentric National NRM Infrastructure

This lesson particularly draws upon findings in Tables 2, 4 and 5. Policy instability is a major problem facing the maturation of CBNRM [61]. To avoid a CBNRM system vacillating from one national government to the next, both the Commonwealth and state/territory governments need to commit to shared, durable, multi-level CBNRM governance arrangements that define the roles, responsibilities and expectations of all governments and recognise the regional anchor role for cross-scale brokering in CBNRM. The Commonwealth in particular needs to establish a strong, continuously improving architecture for policy and investment priority setting and program delivery, monitoring and evaluation. Such approaches would need to be backed by long-term, stable and aligned policy and investment across lower levels of governance, though care needs to be taken to avoid key sectors, landscapes and natural resource assets being marginalised.

A national CBNRM policy architecture could be enhanced via the creation of some form of national institution to ensure leadership and continuous improvement in the CBNRM governance system and provide a focus on securing outcomes via evidence building and engagement. Such an institution could harness cross-sectoral and academic expertise to provide advice to state/non-state stakeholders on matters of national CBNRM interest. It could also take responsibility for monitoring the collection and interpretation of national environmental accounts, support capacity improvements across CBNRM service providers, develop national CBNRM knowledge strategies, commission strategic research and provide national governments with advice on CBNRM policies, plans and strategies.

4.2. Lesson 2: National Policy, Planning and Effort Mobilisation across Scales

This lesson particularly draws upon findings in Tables 2, 4 and 5. Capacity weaknesses in national governments and increasing governmental centrism are consistent themes in the international CBNRM literature [20]. To achieve cohesive national development outcomes (for the environment and rural development), the building of a strong policy agenda aimed at mobilising and aligning national, state/territory, regional and local efforts is preferable to only institutionalising a more circumscribed and centrist national program effort. While better engaging some key sectors/landscapes, Australia's post-2007 reforms generally diminished collaborative effort and weakened multi-level priority setting and capacity building systems. National NRM targets were retained and adjusted, but only to demonstrate outputs from the delivery of centrally prioritised and administered funding. The influence of regional NRM plans and stable delivery systems was diminished. The implications of such an approach have included the following:

- Less alignment between national, state/territory and local government efforts and diminished alignment of market, industry and community efforts against agreed national targets;
- Increased competition and conflict among local groups involved in CBNRM, with consequent transaction costs faced in securing investment and preserving rights; and
- Less stable delivery capability within many sectors involved in CBNRM and among players involved in regional and local planning and delivery.

A retreat from target-driven cross-governmental efforts and coordinated regionalism, while intended to reduce transaction costs for the Commonwealth, increased transaction costs within regional communities. Multiple parties/sectors were left to inefficiently compete for limited resources. Increased transaction costs for communities developing multiple and poorly coordinated proposals and operating in a policy vacuum can also reduce the cost effectiveness of national CBNRM investment efforts. Centralising decision-making about CBNRM support/funding can result in less efficient/informed decision-making and poorer scale-based effort alignment.

4.3. Lesson 3: Collaborative Frameworks for Research and Knowledge Management

This lesson particularly draws upon findings in Tables 3–5. The building of long-term, durable and multi-level research partnerships is increasingly recognised as being vital in creating the preconditions for adaptive NRM [62]. Without systemic knowledge brokerage and collaborative regional research frameworks at different levels, national government investment in CBNRM research and development can become researcher-driven. This has the potential to reduce the regional impact of research and its ability to be strategically applied to the benefit of long-term CBNRM decision-making within nations, provinces and regions.

The importance of regionalised/localised knowledge brokerage arrangements in CBNRM are also recognised by [62]. Despite this, since 2007, the Australian government has tended to centralise the control and management of natural resource research programs affecting regions [63]. Consequently, there has been a shift from more regionalised research partnerships to more fragmented, centralised and project-based relationships. This has created higher transaction costs for regional and local communities, and Australia's regional NRM bodies became less able to flexibly inform the development

and monitoring of their internal programs with well-engaged science management arrangements. Such governance approaches can reduce the capacity of regional communities to influence policy and investment decisions affecting outcomes.

4.4. Lesson 4: Environmental Accounts, Reporting and Adaptive Management

This lesson particularly draws upon findings in Tables 2, 3, 5 and 6. A lack of outcome monitoring has been identified as a major problem facing any sustained focus on national CBNRM efforts [53,64]. Consequently, we see the establishment of clear national frameworks for measuring (and adaptively responding to) regional (resource condition and rural development) outcomes as important. A national monitoring and evaluation framework could easily be informed, in a consistent way, by aligned approaches across provinces and, in turn, across regions. Such a framework could enable the building of consistent and adaptive regional delivery systems and ensure the existence of a high-quality information base for national decision-making.

From a regional perspective, developing a cohesive evidence-based argument about the condition and trend of CBNRM outcomes can empower regions to devise solutions that enable a policy change or investment response from governments. This helps to mobilise the efforts of any region's key natural resource managers. Since 2007 in Australia, there has been a shift away from building a nationally integrated resource condition monitoring framework. National monitoring frameworks for key assets have been progressing (e.g., water, vegetation, etc.), but this increasingly occurs via fragmented effort, weakening the capacity of regions to influence national policies.

4.5. Lesson 5: Integrated Program Delivery Frameworks

This lesson particularly draws upon findings in Tables 2–6. Implementation failure is a major problem for national environmental programs [65]. Regional NRM bodies were emerging as a key integrative component in the Australian CBNRM system at a more localised scale, with their focus on regional planning and strengthening the capacity of delivery agents (e.g., landcare, indigenous and industry groups, local government, etc.). In Australia, regional NRM plans (led and facilitated by regional NRM groups) represent a form of regional-scale strategic environmental assessment. Australian, state and territory governments could benefit from jointly building more regionally based planning and the capacity of key institutions needed to deliver effective natural resource and rural development outcomes. Whether at regional or more localised levels, such bodies can be explicitly contracted and monitored to enhance their capacity to effectively plan and mobilise effort. We consider that regional or localised NRM planning/delivery systems can set the foundation for adaptive management based on effort alignment to secure agreed national targets, as long as there is a consistent effort to maintain plan currency and a focus on monitoring implementation. Annual regional progress reports could be compiled to keep a focus on target achievement. Regional natural resource accounts could then cascade up into higher level accounting systems now being established at the national levels to influence national policy and investment settings. Importantly, a United Nations-backed System of Environmental-Economic Accounting was endorsed by the Australian government in 2016 to help build a national system of environmental account building. This emerging approach should influence standardised regional condition reporting approaches.

5. Conclusions

The coherence of major reforms in Australia's CBNRM governance system have fluctuated over time. Less policy and operational certainty and more instability in this system have the potential to reduce external and aligned investment into CBNRM activities that deliver shared regional development and environmental outcomes. It also leaves natural resource managers more open to becoming marginalised in achieving their aspirations for deriving benefit from natural resource use. The presence or absence of policy processes that are well informed by CBNRM governance theories and principles has been pivotal in driving these frequent policy fluctuations. More theoretically informed

periods of governance and policy effort have tended to build the cohesive regional and local foundations required for CBNRM, while more centralised and less robust periods of policy development have diminished these foundations. While the original Australian Decade of Landcare and the NHT I programs were informed by a narrower (largely community-based) governance literature, wider and more robust CBNRM policy coherence and problem tractability emerged under the NAPSQW and NHT II reforms, which recognised the anchor role of regions in multi-level governance. These programs were informed by a more cohesive bureaucratic understanding of systemic CBNRM governance theories and practices.

5.1. Implications for Regional Development in the Global Context

Positive regional development generally relies on the existence of local self-reliance across multiple sectors. A recent global conference in Japan in 2017 explored the increasing need to build stronger national systems of governance that increase self-reliance in local communities and to apply the principle of subsidiarity in their design and operation [66]. Speakers from a diversity of fields and nations stressed that local self-reliance is indeed critical to the achievement of key social, economic and environmental outcomes in fields as diverse as natural resource management, disaster response, community health, climate transition, peace keeping and local economic development. As the analysis in this paper suggests, however, strong community-based management policies and programs are often under threat in many governance systems. Dale and Dale (forthcoming) suggest that there are several key reasons as to why this is the case. These at least include (i) the strong influence of quite rationalistic or managerial policy making theories or cultures at play in many nation-states; (ii) a tendency towards quite centrist, less value-rich governing cultures; (iii) an over-reliance within democratic systems (or even less democratic ones) on vote-buying, engendering a cargo-cult approach to government funding; and (iv) the existence of strong departmental silos [67].

5.2. Summary and Research Implications

Having analysed the key governance weaknesses experienced in an Australian case study up to 2014, we hope to spark a more theoretically informed discussion about what constitutes a strong national CBNRM governance system. The application of the GSA methodological framework provides the theoretical strength behind this analysis. As a research team, however, to support nations looking to strengthen their CBNRM governance system, we strongly advise the application of GSA in a highly deliberative way. Our use of focus groups in this study helped us to ground our data gathering and analysis in the real-world experience of a wide diversity of key stakeholders operating within Australia's CBNRM governance system. In more advanced applications of this method, however, GSA can be used to help structure and inform highly deliberative approaches to governance system codesign, performance monitoring and continuous improvement. Such an application would represent a significant system innovation in any nation.

As a result of this paper, we would like to see more international dialogue on the sort of targeted national reforms that might help improve the structural and functional integrity of national CBNRM governance systems. We argue that by paying attention to at least five generalisable lessons emerging from our review of the Australian CBNRM system, this next phase of governance reform in Australia has an opportunity to embrace more theoretically informed approaches to CBNRM governance. Long-term national approaches to monitoring and continuously improving the integrity of CBNRM governance in all nations can address landscape-scale natural resource problems, making them more tractable. We would also suggest that the GSA approach to the review of complex governance systems underpinning CBNRM, if applied as a deliberative tool for debate, presents a robust, theory-based analytical framework. Applied consistently across different nations, the approach could inform the revival of CBNRM approaches. Consequently, more research is required on the potential application of GSA approaches in supporting nations across the globe to strengthen their policy and delivery settings for CBNRM.

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