Means to ends: success attributes of regional NRM

J. A. Williams¹, R. J. S. Beeton¹ & G. T. McDonald²
¹School of Natural and Rural Systems Management, University of Queensland, Australia
²CSIRO Sustainable Ecosystems, Australia

Abstract

Whilst the investment in natural resource management in Australia both in financial and regulatory terms is at its highest point, Australia’s natural systems are in decline. This trend in degradation of the resource base is seen worldwide with studies indicating that humanity’s collective demands on natural resources first surpassed the earth’s regenerative capacity around 1980. The complexity of natural resource management, which is socially an evolving ‘discipline of disciplines’, creates challenges for society. With the continual degradation of the natural resource base, the past and present approaches to natural resource management in Australia could be assumed to be failing. NRM is recognized in the 21st century as having an assumed importance as a development strategy, because of the claims that it can contribute towards sustainable livelihoods, thus NRM has two facets: the natural resource base and the institutional arrangements to maintain these. Australia is presently going through a transformation with the evolution of a regional NRM systems approach. The paper reports a hypothesized model of a sustainable regional NRM system for Australia that will be tested by a subsequent study.

Keywords: sustainable, regionalism, trans-disciplinary, success attributes, regional NRM system, literature model, means, ends, organisations and their governance, people and their attitudes, decentralised democracy.

1 Introduction

Natural Resource Management (NRM) in Australia has the explicit objective of achieving sustainable utilisation of major resources, such as land, water, air,
minerals, forests, fisheries and wild flora and fauna [3]. Together, these resources provide the ecosystem services that underpin human life [4]. Lawrence et al [5] found that NRM has until relatively recently had its main focus on soils, hydrology, agronomy, biology, ecology and a host of other ‘natural’ dimensions. Rasmussen and Meinzen-Dick [6] portray concepts of sustainable NRM as a technical-ecological matter on the one hand, or an economic issue on the other. This dichotomy is too simplistic and if either approach were sufficient natural resource degradation problems would be easily resolved.

In practice NRM is an evolving field with varying paradigms. New paradigms for NRM have been proposed by academics, planning theorists and practitioners [7]. Farrington and Baumann [8] claim that NRM is recognised as having an assumed importance as a development strategy because of the claims that it can contribute towards sustainable livelihoods. In this context NRM has two facets: the natural resource base and the institutional arrangements to maintain these and the wide acceptance that social, ecological and economic factors are inextricably linked; to address one is to necessarily intervene in another.

1.1 Trans-disciplinary nature of NRM

The World Bank [4] recognises the trans-disciplinary nature of NRM. This study focuses on the integration of planning/geography, political science, sociology, economics, psychology, ecology and agri-environmental systems to explore and identify the complexities and success attributes of NRM, fig.1 [9].

1.2 Sustainable regional NRM defined

A sustainable regional NRM system’s ability to achieve its objectives requires essential components, characteristics and relationships. Superficially the NRM literature suggests [3] that NRM is being driven towards a regional approach in Australia, however many more factors are influencing this approach. Privatisation trends, growing fiscal constraints at state levels, globalisation, neo-liberalism, reorganization of the roles of the state and the market, reorganization of society around a different vision of development and democratic decentralization of natural resources are proposed as the main drivers for a regional approach [10]. Natural resources and the environment are identified as one of the six key global drivers and trends for the globe over the next twelve years [11].

If sustainable regional NRM is a response to these drivers, how best can sustainable regional NRM be defined? For the purposes of this paper Regional NRM is defined as the institutional intermediary between the economy and the formal institutions of the state to deliver ecologically sustainable development, hence sustainable regional NRM has a responsibility to the sustainable management of natural resources and the building of civil society. This could be proposed as a new democratic form, with the role of the state being to make self-regulation possible and effective and the role of civil society being to democratise the state and the market to deliver sustainable NRM.
2 Overview of regional NRM approaches in Australia

In Australia since European settlement new and old disciplines have been integrated and melded with the emerging NRM approaches, fig. 2[10]. The history of NRM in Australia presents itself in a dissected form, with the literature tending to divide NRM in time and history into a number of approaches. The process has been accretive with agricultural aspects of soil conservation [12,13]; conservation and environment movements [14]; resource degradation [15,16]; ecological thought and action [17]; environmental history and policy [18,19], the social sciences and the many versions of landcare and catchment management approach [12,13,20,21,22] all joining an ever widening field of study and action.

Often each discipline failed to acknowledge other players’ aspirations and attempts at NRM. Much of the literature focuses on the natural resource management occurring since European settlement in the late 1700’s. This epistemological and ontological chaos highlights the need for greater
understanding of what NRM is and how it is evolving. In particular this chaos highlights the failure to recognise that Australia was in essence an aboriginal farm with empirically derived management systems prior to European settlement [23].

Figure 2: Integration of new disciplines over time.

In the late 1980’s the Australian Landcare movement emerged and was coupled with a catchment management approach and public participation with significant government and community investment through programmatic approaches such as the National Soil Conservation Program (NSCP), the National Landcare Program (NLP) and the Natural Heritage Trust Phase 1 (NHT1). This period is often posited as the most significant approach to natural resource management in Australia since European settlement [24]. Also since 1980 there has been an increase of National and State NRM legislation in response to community, national and international expectations.

From the early 1990’s till 2002 there was significant investment in evaluation of the effectiveness and efficiency of these various NRM programmatic approaches with sixty-five completed evaluations of NHT1 alone [25]. There is a divergence of views about the effectiveness and efficiency of the NRM experiment. While there are demonstrated outcomes in awareness raising of NRM issues the continued degradation of the natural resource base in Australia would indicate that the objectives were not achieved. The Australian National Audit Office (ANAO) in 2001 asserts ‘the ANAO notes that there has still been little progress in relation to finalising the design of an overall performance information framework. Consequently there has been limited capacity to measure the results in concrete terms – that is, terms of what impact the NHT has had overall and what progress has been made towards the program goals such as conservation, repair and sustainable use of Australia’s natural environment’ [26]. McDonald and Morrison [27] also identify that severe problems of fragmented policies and uncoordinated implementation undermine NRM in Australia. Results from the various reviews of NRM approaches such as the NHT1 and the NLP have generated a plethora of national discussion papers, reports and proposed models [1,3,28,29,30,31,32,33,34,35,36].

This process contributed to the development of a new approach towards NRM in the form of the Australian Government’s 2001 investment regimes namely the National Action Plan for Salinity and Water Quality (NAP) and the
Natural Heritage Trust Phase 2 (NHT2). This change required a new delivery mechanism over six years from 2002 to 2008 where investments are delivered at national, regional and local levels. Regional investments are the principal delivery mechanism and require investment to be made on the basis of an accredited, integrated NRM Plan developed by the regions. This approach has led to the formation of 56 Regional NRM bodies across Australia.

3 What are the success attributes of a regional NRM system?

The success attributes of each of the disciplines in Figure 1 were initially identified randomly to create starting points. As these were investigated the cross-disciplinary complexities became obvious and to further progress the discussion, an ordered system was required to analyse the attributes of NRM and progress model development. This required consideration of key elements of the nature of the system and the grouping of cross-disciplinary factors. Ascher [37] suggests that identifying the key elements creates a means to better cope with complexity and the effects of organisational interests. The key elements were sequenced for progression in the development of a sustainable regional NRM model. This sequence was based on the hypothesis that people and their attitudes drive sustainable NRM outcomes. The key elements hypothesised as facilitating an analysis of sustainable NRM are:

1. People and their attitudes;
2. Organisations and their governance;
3. The third way: regionalism the new panacea;
4. Building societies capacity for sustainable NRM: means to ends.

3.1 Learning from international and national experiences

To better inform these key elements a literature review was undertaken. Common themes identified in the international experiences indicated that major factors in the success of a regional NRM system [10] were

- the stakeholders and their communities,
- organisations and their governance,
- power relations,
- conflicts of interest,
- negotiation processes between actors,
- participatory processes,
- collective action,
- relationships, devolution and
- stakeholder selection.

Adger et al [38] indicates that NRM decisions made by individuals, civil society and the state often involves questions of economic efficiency, environmental effectiveness, equity and political legitimacy with a multi-disciplinary approach required to understand NRM decisions that seek to identify
legitimate and context-sensitive institutional solutions that produce equitable, effective, efficient and enduring NRM outcomes.

Common themes emerging from the literature review of NRM experiences in Australia [10] identified necessary success attributes as:

- clarification of property rights and duty of care;
- clarifications of roles and responsibilities,
- change management methods for groups and individuals,
- credible and legitimate institutions, information sharing,
- performance criteria indicators and targets,
- participative approach, adequate investments,
- incentives and concessions for public good conservation and
- coordination and integration.

Australia demonstrates much in common with the international experience: people and their interactions, power relations and legitimate organisations are key issues if a sustainable regional NRM approach is to succeed. Sustainable NRM is to do with people and their organisations and the attitudes they adopt which profoundly affect their behaviour. This confirms Doran’s [39] characterisation of NRM as a ‘people problem’ requiring intervention strategies that have emphasis on communication and persuasion to reconcile conflicting interests and to facilitate cooperation.

3.2 People and their attitudes

The literature review of people and their attitudes highlighted the need to define and scope what constitutes a society or ‘community of interest’ in a sustainable regional NRM context the possible intervention method to be identified. Historical and cultural factors need to be considered and scoping of how that community of interest ‘undertakes their business’ needs to be understood prior to intervention. Successfully intervention requires:

- the identification of the players of sustainable NRM;
- the agents required to bring about positive change;
- the personality traits required of those agents;
- scoping of the contextual environment (rules) the players and agents are working in and
- scoping of the relations of power that exist.

It is crucial to have all the players of NRM included in the conflict resolution process. The success attributes for people and attitudes demonstrates that for efficient, effective and enduring sustainable NRM requires: an understanding of the players in the conflict; an understanding of the agents and their motivations, interactions and psychological contracts; the relations of power that exist; the contextual environment of the conflict; an adaptive management approach and long time frames [10].

3.3 Organisations and their governance

Barzilai [40] describes organisations as structured social systems consisting of groups of individuals working together to meet agreed objectives. Governance,
which generally refers to the ‘rules of the game’ of organisations, was used to better understand the contextual environment that the players and agents of a sustainable NRM are imbedded in. For the purposes of this discussion the organisational players in sustainable NRM have been identified as three distinct groups: government, the corporate sector and civil society or the not-for-profit sector. Within each of these organisational players are a variety of interest groups and agents, however the common thread to each of these players is that their own particular governance actually frames their existence, evolution and progress. Importantly analysis of each player’s governance provides a clear picture of roles and responsibilities. The analysis of the different levels of governance that exists in society provides more insight into what types of institutions are required to enable sustainable NRM.

The review of organisations and their governance demonstrates that there are key criteria to determine good governance of any organisation. An effective, efficient and enduring approach to sustainable NRM organisations requires the following attributes of good governance [10]:

- participation;
- transparency;
- responsiveness;
- consensus orientation;
- equity; effectiveness and efficiency;
- legitimate institutions;
- accountability; strategic vision;
- an adaptive management approach and
- independent evaluation and auditing

### 3.4 Regionalism

Giddens [41] characterises regionalism as the renewal of social democracy. This approach has arisen as a response to the reform driven by globalisation and its effects on the world socially and economically. This third way approach is often referred to as ‘new regionalism’ as it represents an alternative to two failed models of regional development: top down, state led and directed approaches on the one hand and free market dominated approaches on the other. Regionalism would focus on governance rather than government with a focus on partnerships between government, the private sector and not for profit organisations [42]. Regionalism in this discussion refers to sub-national areas known as regions that may be defined in different ways depending on the spatial scope and objectives of the intervention policy [43].

Regions are regarded as significant in that it is the level where social organisation, institutional interaction and coordination can be more adaptive. The main benefits identified of a regional approach are the opportunity for meshing processes of community participation with the broader scales of government. In Australia regionalism is seen as a strategic approach to facilitate sustainable NRM at a local level. The literature to date identifies that effective, efficient and enduring sustainable NRM requires the following attributes:
• successful decentralisation strategies,
• all forms of decentralisation to be present and
• clear unambiguous objectives of the intervention strategy to facilitate regionalism.

Monitoring and evaluation of intervention strategies that include before and after evaluations and the anticipated performance in the absence of the intervention are key requirements to enable measurement of the success of the intervention strategy whilst including a flexible and adaptive management approach [10].

3.5 ‘Means’ and ‘ends’ in a sustainable NRM system

There are many references [1,3,26,27,28,30,31,32,34] to the need to build the capacity of governmental, corporate and civil society sectors to enable sustainable regional NRM however there is a divergence of assumptions of what are the ‘means’ and what are the ‘ends’. Assumptions about people and their attitudes, organisations and their governance and regional decentralisation can produce a variety of regimes where tools themselves are often confused with ‘ends’. ‘Means’ refers to the methods, processes and instruments that are required to achieve an outcome (ends) and for sustainable regional NRM ‘means’ come in many forms including management systems and tools. Australia’s past attempts at sustainable NRM show that awareness and activity does not necessarily equate to outcomes. McDonald [44] warns of the concerns that the present evolving regional NRM arrangements in Australia appear to be focussed again on outputs rather than outcomes.

4 The hypothesised model

This dilemma demonstrates the need for determining the difference between ‘means’ and ‘ends’ in a sustainable regional NRM system and assists in the identification of essential foundation attributes required as the first stage of progress in the building of an appropriate system. We propose a model to progress a sustainable regional NRM system approach. This model presents a process that is based on foundation attributes, agent based interactions and ‘means’ to affect the ‘ends’ of regional sustainable NRM being resilient sustainable ecosystems, sustainable communities, decentralised democracy, changing social behaviours and changing landscape scenarios. Figure 3 provides a first rendition of the model.

Subsequent testing of the model is presently underway in Australia to evaluate the current regional NRM system approaches using the massive national experiment where a diversity of approaches is evident. This study is using both qualitative and quantitative data to determine whether the current regional NRM systems in Australia are effective, efficient and enduring and if not why not. It is anticipated that this subsequent study will test and improve our hypothesised model.
Figure 3: Success attributes of a regional NRM system.
5 Conclusion

For a sustainable regional NRM system to achieve its objectives requires essential components, characteristics and relationships. The many success attributes identified and their disciplinary sources demonstrate the potential systems complexity in sustainable NRM approaches. Recent initiatives to improve resource management indicate vulnerability to inappropriate interest-driven actions, which can result in patterns of perverse outcomes. Common criticisms of the Australian NRM approaches to date are the short programmatic nature of investments and the lack of long term, legitimate arrangements for a collaborative regional approach. The development and testing of this model is anticipated to assist the progression of sustainable regional NRM in Australia.

References

[1] Prime Minister’s Science, Engineering and Innovation Council (PMSEIC), Sustaining our Natural Systems and Biodiversity Australia, 2002.
[21] Blake, J; Landcare, where has it come from and where to now National Landcare Conference Proceedings Darwin, 2003
[28] Prime Minister’s Science, Engineering and Innovation Council (PMSEIC) Moving Forward in Natural Resource Management Report Australia, 1999


[38] Adger, N; Brown, K; Fairbrass, J; Jordan, A; Paavola, J; Rosend, S; Seyfang, G; Governance for sustainability www.uea.ac.uk/env/cserge/pub/wp/edm/edm_2002_04.htm


[40] Barzilai, K; Organizational theory Case Western Reserve University Cleveland, 2003.


