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## **Evaluating the Efficiency of a Devolved Grants Program: A Central Queensland case study**

Shion Yee\* and John Rolfe\*

\* Central Queensland University,  
Rockhampton, Queensland, Australia

### **Abstract**

There have been trends for governments to adopt more 'bottom-up' approaches on a range of matters including environmental and natural resource management planning. An example is the devolution of public funds to regional natural resource management (NRM) bodies in many areas of Australia. However, there is little empirical evidence available to guide policymakers in determining best value arrangements and strategic investments for building a region's 'collaborative advantage'. An economic appraisal of engagement processes might focus on evaluating whether the benefits of particular governance arrangements outweigh the costs.

The identification and assessment of many of the costs and benefits associated with various engagement processes is not an easy task. Many of the costs can be classified as transaction costs, where the costs of collaboration and engagement in a process can be likened to the search, negotiation, monitoring, and enforcement costs familiar from market transactions. In a marginal analysis setting, the question is whether the costs incurred from an alternative governance arrangement are justified when the benefits are considered.

The benefits of a more participatory and inclusive governance arrangement might include improvements to resource allocation, achieving changes in attitudes to land management practices, reduction in conflict, and development of 'administrative capital'. These benefits are difficult to estimate, although non-market valuation techniques can offer some insights into the magnitude of such benefits. An outline of an approach to evaluate the benefits and costs of a Devolved Grants program administered by the Fitzroy Basin Association (FBA) regional natural resource management (NRM) body in Central Queensland is presented in this paper.

**Paper presented at the 50<sup>th</sup> Annual Conference of the Australian Agricultural and Resource Economics Society, Sydney, 7 – 10<sup>th</sup> of February, 2006.**

## **1. Introduction**

Since the publication of the seminal text on citizen participation by Sherry Arnstein over three decades ago (Arnstein 1969), there has been a considerable increase in the extent of community and stakeholder involvement in natural resource planning (Buchy and Hoverman 2000). Encouraged by considerations of social justice and ethical practice, a number of formal approaches have surfaced to support the engagement of communities in natural resources governance processes. These participatory approaches have been branded under a myriad of labels such as ‘community consultation’, ‘stakeholder engagement’, ‘participative planning’, and ‘community ownership’, to name but a few. The common objective, however, is to spread the consultative net to previously excluded groups.

There have been boundary changes occurring within the institution of government with increasing devolution of government business to regions, and enhanced opportunities for collaboration between all levels of government and the community (Wallis and Dollery 2002). Changes are also occurring in relationships between government and civil society as citizens are afforded a greater role in influencing policy, and are provided with an increased range of opportunities to engage with government decision-makers (Edwards 2001; Davis and Keating 2000). This shift in the mode of governing involves providing the broader community a greater opportunity to engage with government and influence policy decisions especially to matters pertaining natural resources planning and management.

Initially put forth as a response to failures in the implementation of aid programs to less developed countries, public participation is now accepted as a cornerstone of an emerging governance paradigm based on social responsibility (Hirschman 1982). However, although there is widespread belief that participation is intrinsically good as a process (motivated by normative considerations) and whilst there is some evidence that participation generates broadly ‘better’ outcomes (Isham et al. 1995), and that the additional costs of such processes are not inhibitory (Hentschel 1994), there have been few empirical studies which have actually attempted to identify the magnitude of (transaction) costs and benefits associated with natural resource and environmental policies (McCann et al. 2005). Those that are reported have emphasised the importance of engaging both stakeholders and public at an early stage (Grima 1983), and the need to include information sharing and education of the community as integral parts of the process (Pena and Cordova 2001). Perhaps more usefully from a practitioner perspective, other work has highlighted the ability of participation to ‘alleviate an initial uneasiness’ among the public about planners’ and politicians’ intentions (Moorhouse and Elliff 2002).

The promulgation of the bottom-up, participatory stance (World Bank 1996) offered by ‘informal institutions’ (Marshall 2000) to shift the load of governance away from the planned order sought by formal institutions is due to the realisation that relevant government agencies do not possess the necessary level of resources to properly

undertake natural resource governance (Batie 1986), and the increasing occurrence of natural resource conflicts associated with the 'insulative' properties of environmental goods relied upon by agriculture reaching full capacity (Reeve 1999).

Consistent with the participatory approach of regional NRM processes, governments in Australia and over 60 countries around the world (Ribot 2002) are promoting devolution of natural resources governance to regional community-based programs (Marshall 2004), and encouraging more collaborative processes in the development and implementation of regional NRM policy decisions.

In Australia, the two major national funding programs<sup>1</sup> require that regional bodies administer funds for regional on-ground projects to manage rivers, coastlines, biodiversity and vegetation. The devolution of authority and resources to these bodies is contingent on participatory, representative and transparent engagement processes. Supporters of the new regional arrangements anticipate that the heightened inclusion of community members in decision-making will contribute to a holistic and collaborative approach, in stark contrast to adversarial, 'decide and announce' approaches (Whelan and Oliver 2004).

Regional NRM arrangements are viewed as a more strategic investment in regional priorities, representing a shift away from inefficient project-based approaches of earlier NRM investment programs such as Landcare, which failed to deliver on expectations due to a lack of regard for systematically learning about what conditions need to be met for its success (Sturgess 1997). In Queensland, a number of initiatives promoting regional NRM planning and service delivery have been established. These include initiatives that are largely within government, initiatives that span both government and community functions, and initiatives that allocate funding and responsibility to independent regional NRM bodies. Unfortunately, they have not been informed by systemic research on the role and value of, or mechanisms for, participatory natural resources governance. This shift to a more community-based regional approach to NRM has been largely driven by government with little or no economic analysis undertaken to evaluate the regional arrangements to date. Hence, there is little empirical research to guide public managers in determining best value arrangements and strategic investments for building a region's 'collaborative advantage' (Huxham 1996; Huxham and Vangen 2000).

The key issue of concern is that significant levels of funds are being invested into regional NRM arrangements, which are a relatively new and untested mechanism, without a clear understanding of the social processes critical to developing self reliance of a local group (AACM 1995), and a sense of how the program might be properly evaluated. Rhoades (2000, p.333) observed from a review of participative watershed management programs that the basis for design of many such programs was largely 'anecdotal'.

Consequently, there is the question of whether this governance structure is appropriate for the longer term. In Queensland the current level of investment by the Australian

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<sup>1</sup> National Action Plan for Salinity and Water Quality (NAPSWQ) and Natural Heritage Trust (NHT)

Government in NRM that is channeled through regional bodies per annum is about \$50 million per year (for financial year 2003/4 to 2005/6), which is supplemented by an equivalent amount of in-kind support by the state government. This compares to an estimated \$1 billion per annum net expenditure on NRM and environmental management programs that are administered by the Queensland Government (DNRM, 2005a). Given the level of investment in this 'regional experiment', it is important to consider the institutional and economic efficiency and cost-effectiveness issues to determine whether the regional NRM arrangements are worthwhile, and whether they should be continued, scaled back, or expanded. A significant proportion of funds are to be spent on incentive payments to landholders (farmers) to encourage a long-term permanent change in land use practices for positive environmental outcomes.

This paper will be structured in the following manner: An outline of the case study of regional NRM in the Fitzroy Basin Association (FBA) in Central Queensland is presented in Section 2. Section 3 presents a conceptual framework for identifying the rationale for landowner involvement in FBA grant programs. Section 4 discusses key variables and likely relationships affecting the decision to participate, and outlines some of the costs and benefits of the regional NRM model. Finally, Section 5 contains some concluding comments.

## **2. Case Study: The Fitzroy Basin Association**

The FBA has developed into the peak community-based group involved with NRM planning in the Fitzroy region in Central Queensland (see Map 1), Australia. The FBA region is a large and diverse area with a population of about 200,000 and covering more than 156,000 km<sup>2</sup> of land area in Central Queensland, including catchments of the Fitzroy River, adjacent coastal waterways, and the Boyne and Calliope rivers (FBA 2004). It is involved in various NRM planning activities that include land and water resource management projects for the improvement of catchment health, monitoring and evaluation of catchment health, and the promotion of improved research extension and adoption strategies. The FBA's role is to coordinate projects that contribute to the on-ground implementation of the Central Queensland Strategy for Sustainability, which is the regional plan for sustainable natural resource development in the Fitzroy basin.

# Map 1



(Source: FBA 2004, p.4)

The FBA developed in the 1990s from the Fitzroy Catchment Coordinating Group which itself evolved mostly from sub-regional Landcare and Integrated Catchment Management groups. As a result of earlier emphasis placed on upper catchment issues through the development of Landcare, FBA's constituent agriculture-based groups are predominantly Landcare groups and other production groups such as AgForce.

It is a not-for-profit, incorporated organisation that involves the region's major NRM stakeholders (FBA 2004). The FBA was recognised in 2001 as a regional body for the purposes of implementing the NAP, and subsequently the NHT2. Under the Bilateral Agreement between State and Australian governments, investment funds will be devolved through regional bodies to natural resource managers for actions to improve management and more sustainable use of these resources. The State and Australian governments will invest these funds according to a regional NRM plan and investment strategy.

The FBA is directed by a Board of skills-based and community representatives responsible for developing a Regional NRM Plan addressing not only salinity and water quality issues, but also the wider range of NRM issues impacting on the region. Board members possess a range of natural resource, community engagement, academic, financial and business management skills. Members from specific sectors are appointed ensuring adequate representation of local government, indigenous, and conservation knowledge (FBA 2004).

The NRM Plan was developed as a partnership between the Board and agencies such as the Coastal Cooperative Research Centre, the Environmental Protection Agency, Department of Primary Industries, Department of Natural Resources and Mines, and Central Queensland University. It will identify priority actions to address the causes of land and water degradation which is likely to include unsustainable grazing practices, inappropriate clearing and/or irrigation practices, gully, sheet and riverbank erosion as well as changes to river flows due to impoundment, release and /or abstraction.

The draft plan for Central Queensland, the *Central Queensland Strategy for Sustainability – 2004 and Beyond* (CQSS) has been accredited and the FBA has prepared its first Regional Investment Strategy (RIS), which outlines the region's priority investments and proposed implementation mechanism for NRM in 2004-2005. Figure 1 outlines the proposed process for delivering the RIS.

The RIS provides a framework and direction for the implementation of the CQSS (FBA 2004). It is also designed to target funding from three key government programs: The NAP, NHT2, and National Landcare Program. Direct cash funding proposed for the FBA over the three years to 2006/07 is estimated at \$21 million. Table 2 outlines a summary of proposed funding for the FBA's NRM programs as part of the RIS for 2004-2005.

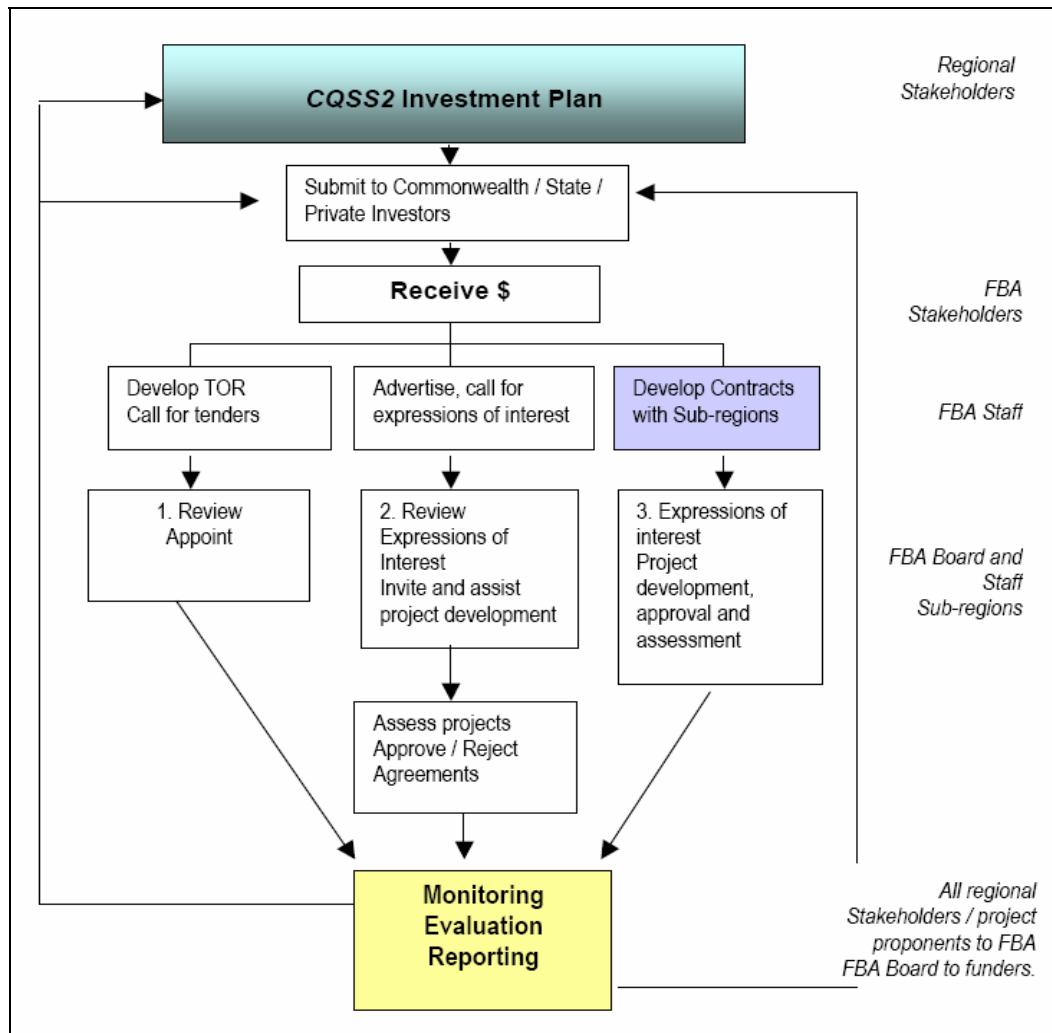


Figure 1 – FBA Delivery Mechanisms for the Regional Investment Strategy  
(Source: FBA 2004, p.21)

**Table 2 – FBA Regional Investment Strategy Proposed Program Funding**

	Program	Funding 2004/05		Funding 2005/06	Funding 2006/07	Funding 3 Years
		TOTAL	Expected additional contributions	TOTAL	TOTAL	TOTAL
1	<b>Sustainable Landscapes</b> - landholders adopting improved practices and implementing property management planning; neighbourhood catchment plans for high risk areas to maintain a minimum 30% ground cover, preventing soil erosion, and 100% of new weeds and pests controlled	\$1,876,397	\$2,227,990	\$2,708,843	\$2,638,819	\$7,224,059
2	<b>Salinity</b> - Risk maps for each 6 major catchments identifying areas at greatest risk from future salinity impacts; information packages, best practice guidelines and incentives enabling remediation and protection from future impacts	\$429,905	\$3,700,000	\$1,353,188	\$565,688	\$2,348,780
3	<b>Healthy Waterways, Rivers, &amp; Wetlands</b> - Regional water quality targets and a monitoring program to measure their achievement established; significant riparian and wetland area identified and protected; and critical barriers to aquatic passage overcome.	\$1,337,640	\$1,950,000	\$1,082,813	\$1,131,238	\$3,551,690
4	<b>Water Allocation and Management</b> - implementation and completion of the Fitzroy and Boyne Calliope water resource and resource operation plans; and development and implementation of Callide Valley sustainable water management plan	\$135,965	\$2,176,600	\$348,600	\$349,776	\$834,341
5	<b>Biodiversity and Vegetation</b> - biodiversity conservation agreements by voluntary and legal covenant over native vegetation and riparian zone, and strategic pest plant control	\$446,102	\$1,014,800	\$295,313	\$360,380	\$1,101,794
6	<b>Coral &amp; Coasts</b> - Plan completion for coastal sub-regions, inclusion of coastal and marine issues in the CQSS2, enhancement of regionally significant coastal wetlands, estuaries (and fringing riparian areas), State / Nationally significant ecosystems, foreshore, and monitoring programs established for migratory birds, turtles and sea-grass habitat for Dugongs and turtles	\$586,922	\$1,773,730	\$339,938	\$369,449	\$1,296,309
7	<b>Protecting Our Heritage</b> – Improve understanding of cultural values and indigenous capacity, and enhance intergenerational and cross cultural transfer of traditional ecological knowledge	\$67,628	\$43,000	\$198,188	\$211,372	\$477,187
8	<b>Healthy Region</b> - Core elements of a healthy planning system, and increase in capacity of the region to plan for and manage resources sustainably. Also provides for governance arrangements of subregional implementation	\$562,453	\$1,914,300	\$1,072,313	\$1,184,400	\$2,819,166
	<b>Core costs</b> - Governance and administrative costs of the regional body associated with implementation	\$269,845		\$559,690	\$579,279	\$1,408,814
	<b>TOTAL PROPOSAL</b>	<b>\$5,712,857</b>	<b>\$14,800,420</b>	<b>\$7,958,883</b>	<b>\$7,390,399</b>	<b>\$21,062,139</b>

(Source: Department of Natural Resources and Mines 2005)

### 3. Identifying the Rationale for Landholder Involvement

Section 2 introduced the FBA as the regional NRM body responsible for administering and coordinating on-ground projects with landholders in the Fitzroy basin catchment as part of the implementation of the CQSS NRM plan.

One of the main issues facing regional bodies such as the FBA is the voluntary nature of many incentive-based programs. At the end of the day, the decision to adopt conservation practices rests in landowners' hands. There is no obligation or regulation that governs their land management practices. Hence, regional bodies have the challenge of educating and raising environmental awareness of the need to improve land management practices to increase acceptance, and hence participation in grant programs. The focus of this section is to present a theoretical framework that can contribute towards explaining the attitudes behind the landholder decision of whether or not to participate in grants programs offered by the FBA.

#### 3.1 Theory of Reasoned Action and Planned Behaviour

It is proposed that the environmental attitudes of landholders can be explained by adopting social psychology literature using the theory of reasoned action outlined in Figure 2. Behavioural intention, the precursor of actual behaviour, is shown as a function of the individual's attitude towards the behaviour as well as the individual's subjective norm. In this case, the behaviour refers to participating in FBA incentive programs and ultimately, adopting improved land management practices.

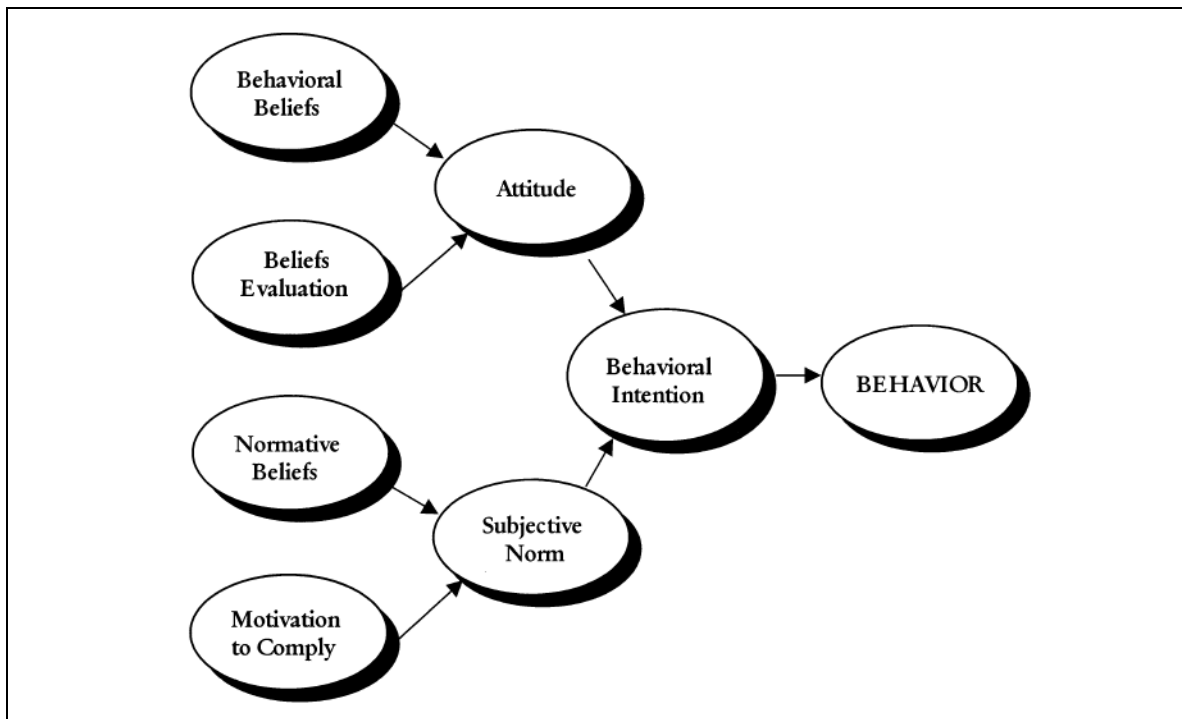


Figure 2 – Theory of Reasoned Action (Source: Madden, Hellen, and Ajzen, 1992)

One's attitude towards behaviour is determined by two components: salient behavioural beliefs and the subjective evaluation of those beliefs (Ajzen 1991). An individual's subjective norm is determined by one's normative beliefs and corresponding motivation to comply. One's subjective norm is determined by an individual's normative beliefs that significant others think he or she should or should not perform the behaviour, coupled with motivation to comply with its referents. Significant others are individuals whose preferences about a person's behaviour in this domain are important to him or her (Eagly and Chaiken 1993). Essentially the subjective norm component can be likened as the "peer pressure" factor.

The model can be expressed as (Upmeyer and Six, 1989):

$$B = w_1BI + (A_b)w_2 + (SN)w_3$$

where:

B	= Overt behaviour
BI	= Behavioural intention
w <sub>1</sub>	= Empirical weight attached to BI
w <sub>2</sub>	= Empirical weight attached to A <sub>b</sub>
w <sub>3</sub>	= Empirical weight attached to SN
(A <sub>b</sub> )	= Attitude towards a behaviour B, defined as $\sum B_iE_i$
where,	
B <sub>i</sub>	= Belief that a behaviour will lead to outcome I
E <sub>i</sub>	= Evaluation of expected outcome I
(SN)	= Subjective norm, defined as $\sum NB_i MC_i$ where,
NB <sub>i</sub>	= Perceived expectation of referent I
MC <sub>i</sub>	= Motivation to comply with referent I

This mathematical formulation of the theory of reasoned action expresses behaviour as a linear function of behavioural intention, attitudes towards the behaviour considered, and subjective norm. Each of the explanatory variables is weighted by an empirically determined coefficient (Luzar and Diagne 1999).

It is also possible to select alternative functional forms such as nonlinear relationships, to describe the elements of behaviour. Ajzen (1988) reviewed the theory of reasoned action and added the element of perceived behavioural control, to address the revelation that behaviour appeared to not be fully voluntary and under an individual's full control. This resulted in the theory of planned behaviour (Figure 3).

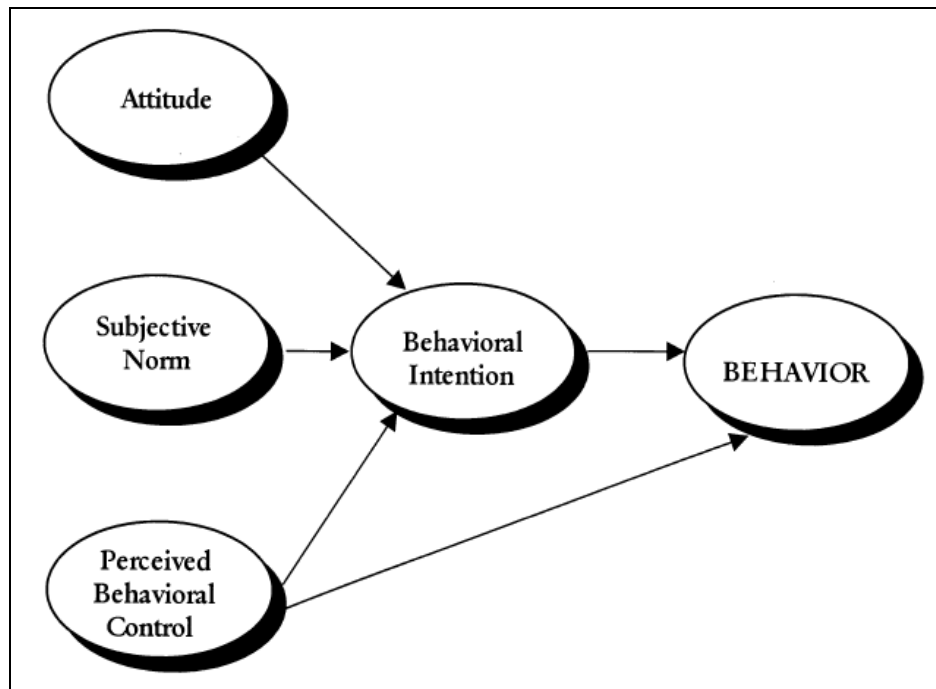


Figure 3 – Theory of Planned Behaviour (Source: Madden, Hellen, and Ajzen, 1992)

This theory builds on the theory of reasoned action and allowed for a better evaluation of human behaviour in cases when individual decisions are voluntary and completely under an individual's control (Luzar and Diagne 1999). Perceived behavioural control refers to “beliefs regarding the possession of requisite resources and opportunities for performing a given behaviour” (Madden, Ellen and Ajzen 1992, p.4). Luzar and Diagne (1999) note that because it allows the inclusion of additional explanatory variables, the theory of planned behaviour is more flexible.

The theory of reasoned action is not limited to a specific type of behaviour and has been applied to many different issues, including analysis of leisure participation (Ajzen and Driver 1991; 1992), dishonest behaviour (Beck and Ajzen 1991), job searching (van Ryn and Vinokur 1990), voting choices (Watters 1989), and class attendance (Ajzen and Madden 1986). In the field of agricultural and environmental applications, the theory has been used to evaluate adoption decisions by farmers of environmental conservation practices such as the adoption of soil conservation measures (Lynne and Rolla 1988), water conservation (Lynn, Casey, Hodges and Rahmani 1995), and wetland reserve program participation (Luzar and Diagne 1999).

In the behavioural model of landholders' voluntary decision to participate in grants programs offered by the FBA, offers of participation and non-participation are the two alternative choices. The evaluation and prediction of discrete choice behaviour can be expressed as a function of economic and socio-economic variables (Luzar and Diagne 1999). Modelling choice behaviour within the proposed expanded behavioural economic framework requires the inclusion of an additional class of independent variables: psychological constructs. This is possible by using the theory of planned behaviour

Within the framework proposed by Ajzen and Fishbein (1980), environmental attitudes towards participation in the program can be measured using survey methods consistent with the theory of reasoned action and theory of planned behaviour. Attitudinal factors can be revealed by asking a series of questions eliciting behavioural beliefs and the subjective evaluations of those beliefs. The subjective norm, normative beliefs, and the corresponding motivations to comply with these beliefs can also be elicited by using survey methods.

#### **4. Discussion**

An evaluation of the development of regional NRM models, and the efficiency of regional bodies such as the Fitzroy Basin Association requires some assessment of the different impacts, both positive and negative, that are generated. While it is relatively easy to assess direct financial costs, many other impacts, such as influences on adoption rates of best management practices, are much more difficult to ascertain. An understanding of what motivates landholder behaviour can be important in identifying the extent and linkages between impacts. In this section, some of the impacts on landholders of the regional NRM models are explored.

##### *4.1 Costs and benefits of the regional model*

Some costs of the regional NRM model include transaction costs (e.g. direct costs associated with meetings and engagement, travel costs, travel and meeting time, and preparation and administration costs), and opportunity costs. Marshall (2003) argues that the costs affected by institutional alternatives are unlikely to be limited to only transaction costs. He proposes that transformation costs (including production and abatement costs) can also be affected by institutional choice. McCann et al. (2005) also discuss the need to account for both transaction and transformation costs when evaluating institutional options. Challen (2000), in outlining his normative economic framework for analysing policy choices between alternative institutional options, argued that current institutional choices create future path dependencies and thereby affect future costs associated with changing to new institutional structures. Reference is made to what he terms 'transition costs', which is characterised as a type of transformation cost incurred by moving to a new institutional structure.

In comparing alternative institutional arrangements, the costs to be compared should therefore include both transaction costs and transformation costs. McCann et al. (2005, p.528) assert, that despite the importance of understanding the magnitude of transaction costs associated with environmental and natural resource policies, "few studies to date have attempted to actually quantify transaction costs". McCann et al. (2005), following Williamson (1996, p.5), add that this may be because "the measurement of transaction costs poses formidable difficulties". In the same respect, this evaluation framework will also need to identify and estimate the magnitude of benefits of the regional NRM model, which may include efficiency and cost-saving gains, reduced conflict, and improved long-term planning.

Challen (2000) and Marshall (2001) suggest the Institutional Analysis and Development (IAD) framework used by Ostrom (1990, 1998) for identifying 'design principles' for common property institutions be adapted to deal with a wider range of institutional forms. This can include helping to analyse current regional NRM arrangements for improving efficiency and cost-effectiveness to achieve environmental outcomes.

The current regional model reflects the focus in recent years on devolution to regional areas and greater community involvement in decision-making processes. This suggests that the key benefits of these programs should be an improvement in the efficiency and cost-effectiveness of NRM (because it is better tailored to local and regional circumstances), in the generation of more cooperative behaviour of landholders, and in changing attitudes and beliefs.

Another potential benefit of using regional NRM bodies is that it permits more innovation in the manner by which NRM issues can be tackled. This is possible by allowing variations in the running of NRM programs between different regions (in comparison to governments which tend to have uniform policies), and by trialling new approaches to NRM. To date, the evidence for these types of benefits being realised are limited, but differences may emerge between NRM groups, where different styles are already evident.

An additional benefit of the regional model is that it introduces some competition about managing NRM - both between the NRM groups, and between each group and the government. This does not really seem to be the driving rationale for the proposal though, and given the reliance of NRM groups on government funding, it is unclear how much real competition will emerge.

There is little evidence available to suggest that NRM models have generated increased efficiencies in resource management. While the NRM groups such as the FBA will deliver a number of outcomes, these are largely driven by the allocation of government funding, and it is unclear if the allocation of the same funds through different processes would deliver inferior outcomes. The key analytical issue is whether the regional NRM model can generate more benefits (e.g. efficiencies, cost-effectiveness) compared to other models. Here, six key elements of this process that may generate improved outcomes are reviewed in turn.

#### 1. Tailoring NRM plans to local and regional knowledge

There are often arguments advanced that engagement with stakeholders allows NRM management to be better integrated with local and regional knowledge. This notion builds on theory advocating the benefits of public participation on governance. Local knowledge provides valuable insight as local communities are seen as "being well-informed about local environmental, technical, economic and social conditions, and hence about the problems or constraints that characterise their micro-society and 'cultural patrimony' on which they can draw to meet new challenges" (Marshall 1999, p.3).

Baland and Platteau (1996) add that local knowledge is vital in formulating rules and monitoring mechanisms that take equity as well as efficiency considerations into account, and therefore are likely to receive wider support from local citizens or resource users. Involving the catchment community in resolving resource management problems also leads to better solutions due to local knowledge (Bennett 2003). Increased public participation also decentralises problem-solving and thereby allows many more institutional and technical ‘experiments’ to be carried out (Marshall 1999).

However, most NRM issues are complex and require specialised technical knowledge that is not always available at the local level. It is arguable therefore, that devolving decision-making to the regional level may not lead to optimal outcomes due to a lack of local technical capacity with respect to NRM.

## 2. Capacity building

Capacity building is often advanced as a key goal of regional engagement. As a primary goal, capacity building is unlikely to generate greater efficiencies, as it suggests that land managers need to become responsible for a wider range of outcomes rather than specialising in particular production outcomes. Instead, capacity building is more likely to have indirect benefits, as it may make landholders more receptive to new information and help them to become engaged in negotiation processes.

Following on from the foregoing discussion, public participation through the regional NRM model is viewed as a means to facilitate ‘community empowerment’ which results from the use of local knowledge, opportunities for this knowledge to be enhanced through learning-by-doing, and through establishing ‘community ownership’ of the opportunities or problems facing a group and of the strategies devised for addressing them” (Pretty and Shah 1997). Learning-by-doing in turn, provides citizen groups with the opportunities to develop ‘capacity’ in areas such as organising, accessing information, analysing problems, developing solutions, consulting, negotiating, resolving conflicts, monitoring, and sanctioning (World Bank 1996).

## 3. Improving cooperative behaviour

Community based programs are often encouraged as ways of increasing levels of cooperation between landholders. While there are some areas where cooperative behaviour is desirable, the key issue is that there are many management actions with joint production outcomes. Joint outcomes can be maximised through a number of mechanisms, and do not automatically require explicit cooperation. Cooperative actions may be more important as ways of changing attitudes, generating norming behaviour and encouraging compliance than as a mechanism to generate joint outcomes.

Meinzen-Dick and Knowx (2001) assert that the main justification for devolving NRM to community-based programs has been that it allows for closer matching of interventions with the norms of each community, thus reducing the need to enforce them coercively. Marshall (2004), in his review of implementing land and water management plans in a

region of the Murray-Darling Basin, states in relation to the perceived panacea of cooperation by individual irrigators, that farmers are more likely to cooperate in implementing a plan that they helped create; and secondly, they are more likely to cooperate with a community-based hierarchy in implementing a plan than they are with a government hierarchy. Hence, addressing the need for greater community involvement and perceptions of government may play a key role in achieving positive outcomes under the regional model.

#### 4. Changing behaviour through improved knowledge

A key argument for the use of regional processes is that it improves the process of knowledge diffusion to land managers. Better information is likely to improve sustainability (avoiding negative impacts on-farm) because it is in landholders' financial interests. The provision of better information about spillover effects (negative impacts off-farm) will not automatically lead to management changes, but may make landholders more receptive to suasive arguments, cooperative agreements or other mechanisms addressing the issues.

#### 5. Improved take-up and compliance

A major benefit of regional NRM arrangements is that higher levels of interface and suasion can improve take-up and compliance. The current focus of the NRM groups appears to be suasive methods, which are aimed at changing perceptions and priorities about the environment through information provision, education programs and social recognition and pressure schemes. Suasive measures have the benefit of better informing people about the implications of their actions (Comerford 2004). This method appears to be more efficient than government initiatives in this regard. It is likely that there are real benefits to engaging landholders at a group level – in terms of encouraging NRM practices and compliance. For example, landholders that have contributed to a NRM plan may be more likely to accept plan constraints. However, perhaps the NRM areas such as the Fitzroy basin are so large that it is difficult to get this group mentality. It is unclear what the level of recognition is and what proportion of landholders are being engaged.

#### 6. Reduced conflict over resource management

A key benefit of the regional NRM governance model is that it has the potential to reduce conflicts between landholders and government over resource management. This is because it provides both groups a third party to act as an intermediary negotiator, reduces the likelihood of political backlash (Bennett 2003), and provides a mechanism for negotiating changes in resource management. Increased public participation can also make it more likely that policy formulation and implementation can proceed without needing to resolve disputes in costly administrative or judicial forums (Shrybman 1986; Priscoli and Homenuck 1986).

#### *4.2 Other costs involved with the regional model*

A key criticism associated with the regional NRM model is that there are potentially higher governance and other transaction costs associated with maintaining a separate layer of administration. These costs will tend to increase with the number of organisations to support, which is one reason why there have been moves away from the atomistic Landcare model towards the regional model.

Other cost factors stem from the participatory and engagement processes associated with this model. Involvement of catchment communities in NRM planning rapidly increases the costs of the planning process, is likely to be a constraint on optimal catchment plans and may well retard catchment remediation measures and increase their cost (Bennett 2003). There have been general concerns raised that the costs of increased public participation are “prohibitively high” (Marshall 1999, p.12). Marsden, Oakley and Pratt (1994 p. 154) noted that participatory processes generally lead to slow, over-complicated decision processes which are “so extended and non-directional that nothing appears to happen”.

On the positive side, it has been argued that well designed participation processes can allow greater satisfaction of goals in less time and at lower cost than would otherwise be possible (Marshall 1999). The World Bank (1996) also observed that when the institutional setting is right, participatory community-based programs actually cost less and are quicker to implement.

There are also a number of governance issues to consider. The current NRM model appears to be a compromise between a Landcare model (which emphasised community engagement) and a regional governance body (which could be expected to have more discrete powers). The difficulties facing the NRM bodies is that they have no enforcement or price setting powers, so their actual management powers over NRM issues are quite limited. Other key deficiencies with the current model include:

- (a) NRM body Boards not elected, so unclear what is the real legitimacy and political power base;
- (b) Consensus type approaches often means that boards are susceptible to rent-seeking behaviour;
- (c) Skill base in regional areas can be very limited (raises the question of whether the NRM bodies are a key way of improving skills in a region).

A critical issue to note is whether or not the regional NRM arrangements are devolving genuine responsibility for NRM planning to the regions, or simply a response to a funding availability – a means to take advantage of government funding (Huxham and Vangen 2000). There are other NRM programs that are currently being run by the government, with only a small proportion of NRM funding being devolved to regional NRM bodies. If the regional model can generate significant efficiencies, a key question therefore is why it is not used for most NRM issues and funding. Following this point, why then is the model not applied in other fields such as transport, education and health?

Given that governments have a number of other NRM initiatives in place, it is clear that only a small proportion of NRM responsibilities are being handed across to the NRM bodies.

## **5. Conclusion**

While the rhetoric of regional NRM is that it is a fully participatory process driven from the grassroots community level, there still remains a significant level of formal government control by way of the NRM plan accreditation and funding approval process by which regional NRM bodies are bound. As the regional bodies are highly dependent on Australian Government funding for survival, there is also a question of what degree of Australian Government influence on state-based NRM planning processes is acceptable in the long term which may affect the ability of regions to meet NRM targets and outcomes. Furthermore, regional bodies have only been devolved a relatively small number of functions, with most responsibilities still held within government.

No doubt a key benefit of the regional NRM model is the collaborative, community-driven focus of NRM planning and implementation, but this may come at a significant price as it is likely to incur higher costs than other models. These costs include the transaction costs of community engagement and administering a separate organisation, and duplication costs associated with running parallel programs to those of similar government-run NRM initiatives.

The main concern is whether the benefits of engagement are lower than these expected additional costs. With no detailed economic evaluation of current regional arrangements conducted, coupled with the significant amount of resources being invested in this relatively new and untested system, it still remains to be seen whether the current arrangements are a genuine attempt to devolve NRM planning to the regional level or simply paying lip service – a ‘rhetoric of convenience’ – to secure Australian Government funding to assist with the implementation of routine NRM programs.

In addition the voluntary nature of many incentive-based programs run by regional bodies also place a large burden to step up awareness campaigns and other suasive measures to increase acceptance, and hence participation, in the adoption of improved land management practices. This is on top of the responsibilities that regional bodies such as the FBA already must shoulder in the form of financial administration of funds, and the management of a bureaucratic organisation with government agency “shareholders”. This underscores the importance of understanding the role that individual attitudes play in achieving on-ground change and ultimately, improved NRM at the regional level. The theory of reasoned action can provide additional insights into the attitudinal dimension governing the landholder decision to participate, and shed light on how landholders might choose to be involved with the FBA and their incentive programs.

## References

AACM and Centre for Water Policy Research (AACM). 1995. 'Enhancing the effectiveness of catchment management planning: Final report', April, Department of Primary Industries and Energy, Adelaide.

Ajzen, I. (1991). The theory of planned behaviour. *Organisational Behaviour and Human Decision Processes* 50, pp.170-211.

Ajzen, I. (1988). *Attitudes, personality, and behavior*. Dorsey Press, Chicago.

Ajzen, I., & Driver, B. L. (1991). 'Prediction of leisure participation from behavioral, normative, and control beliefs: an application of the theory of planned behavior'. *Leisure Sciences* 13, pp. 185-191.

Ajzen, I., & Driver, B. L. (1992). 'Application of the theory of planned behavior to leisure choice'. *J Leisure Res* 24, pp.207-213.

Ajzen, I. and Fishbein, M. (1980). *Understanding attitudes and Predicting Social Behavior*. Prentice Hall, Englewood Cliffs, New York.

Ajzen, I., & Madden, T. J. (1986). 'Prediction of goal directed behavior: attitudes, intentions, and perceived behavioral control'. *J Exp Social Psych* 22, pp. 453-474.

Arnstein, S.R. 1969. 'A ladder of citizen participation'. *Journal of the American Institute of Planners*, 35, pp.216-24.

Baland, J.-M., Platteau, J.-P., 1996. *Halting Degradation of Natural Resources: Is There a Role for Rural Communities?* Clarendon Press, Oxford.

Beck, L., & Ajzen, I. (1991). Predicting dishonest actions using the theory of planned behavior. *J Res Personality* 25(3), pp.285-301.

Bellamy, J., Ross, H., Ewing, S., Meppem, T. (2002). *Integrated Catchment Management: Learning from the Australian Experience for the Murray-Darling Basin*. Final Report. CSIRO Sustainable Ecosystems, Canberra.

Bennett, D. 2003. *Rethinking community-based integrated catchment management*. Paper presented to the 47<sup>th</sup> Annual Conference of the Australian Agricultural and Resource Economics Society, Fremantle, Western Australia, February 11-14, 2003.

Buchy, M. and Hoverman, S. 2000. Understanding public participation in forest planning: a review. *Forest Policy and Economics*, 1(1), pp.15-25.

Campbell, A. 1994. *Landcare – Communities Shaping the Land and the Future*. Allen and Unwin, Sydney.

Challen, R. 2000. *Institutions, Transaction Costs and Environmental Policy: Institutional Reform for Water Resources*. Cheltenham: Edward Elgar Publishing.

Comerford, E. 2004. *Choosing between incentive mechanisms for Natural Resource Management: A practical guide for regional NRM bodies in Queensland*. Department of Natural Resources and Mines, Brisbane.

Commonwealth of Australia. 1991. *Decade of Landcare Plan: Commonwealth Component*. AGPS, Canberra.

- Connor, R. and Dovers, S. 2004. *Institutional Change for Sustainable Development*.
- Dale, A. P. and Bellamy, J. A. 1998. *Regional Resource Use Planning in Rangelands: an Australian Review*. LWRRDC Occasional Paper Series, No. 6/98.
- Davis, G. and Keating, M. 2000. *The future of governance*. Australia: Allen & Unwin.
- Dillman, D.A. (1991). The design and administration of mail surveys. *Ann Rev Socio* 17, pp.225-249.
- Eagly, A. H., and Chaiken, S. (1993). *The Psychology of Attitudes*. Harcourt Brace, Orlando, FL.
- Edwards, M. 2001. 'Participatory Governance into the future: Roles of the Government and Community sectors'. *Australian Journal of Pubic Administration*. Vol. 60(3), pp.78-88.
- Farley, R., and P. Toyne. 1989. A National Land Management Program. *Australian Journal of Soil and Water Conservation* 2 (2):6-9.
- Fitzroy Basin Association (FBA). 2004. *Central Queensland Strategy for Sustainability – 2004 and Beyond Regional Investment Strategy I 2004-2005*.
- Fitzroy Basin Association (FBA). 2004a. *Draft Central Queensland Strategy for Sustainability*2.
- Gilbey, P. 2002. *Rights and Duty of Care, A Queensland Perspective*. Paper to the Australian National Commission on Irrigation Development. Queensland Department of Natural Resources and Mines.)
- Grima, A.P. 1983. 'Shaping water quality decisions: An evaluation of a public consultation program. *Water International*. Vol.8(3), pp.120-26
- Hentschel, J. 1994. 'Does Participation Cost the Bank More? Emerging Evidence, Human Resources Development and Operation Policy Working Papers 31, World Bank, Washington DC.
- Hirschman, A. 1982. *Shifting Involvements: Private Interest and Public Action*. Princeton University Press, Princeton.
- House of Representatives Standing Committee on Environment and Heritage (HRSCEH). 2000. *Coordinating Catchment Management: Report of the Inquiry into Catchment Management*. House of Representatives Standing Committee on Environment and Heritage, Canberra.
- Huxham, C. and Vangen, S. 2000. 'What makes partnerships work?' In Osbourne, S P (ed.) *Public-Private Partnerships*. London and New York, Routledge, pp.293-310.
- Huxham, C. 1996. *Creating Collaborative Advantage*. Sage, London.
- Isham, J., Deepa, N., and Pritchett, L. 1995. 'Does Participation Improve Performance?' World Bank Economic Review. Vol.9(2), pp.175-200.
- Leitch, A., Bellamy, J., Dale, A. and Pollock, L. 2001. The role of science communication in natural resource planning: A case study in the Central Highlands of Queensland. Australasia Pacific Extension Network.
- Luzar, E.J. and Diagne, A. (1999). Participation in the next generation of agricultural conservation programs: the role of environmental attitudes. *Journal of Socio-Economics* 28, pp.335-349.
- Lynne, G. D. and Rolla, L. R. (1988). Improving attitude-behavior prediction models with economic variables: farmers actions towards soil conservation. *J Social Psych* 128(2), pp.19–28.

Lynne, G.D., C.F. Casey, A. Hodges, and M. Rahmani (1995). Conservation technology adoption decisions and the theory of planned behavior. *J. Economic Psychology* 16 (4): 581-598.

Madden, T.J., Ellen, P.S., and Ajzen I. (1992). A comparison of the theory of planned behaviour and the theory of reasoned action. *Personality and Social Psychology Bulletin* 18(1), pp.3-9.

Maher, M. Cooper, S. Nichols, P. 2000. *Australian River Restoration and Management Criteria for the Legislative Framework for the Twenty-First Century, based on an Analysis of Australia and International Experience*. Report to the Land and Water Resources Research and Development Corporation: Brisbane (August), Occasional Paper 2/00.

Marsden, D., Oakley, P. and Pratt, B. 1994. *Measuring the Process: Guidelines for Evaluating Social Development*. Intrac, Oxford, UK.

Marshall, G.R. 2004. 'Farmers cooperating in the commons? A study of collective action in salinity management'. *Ecological Economics* 51, pp.271-86.

Marshall, G.R. 2003. 'Towards a resource economics for adaptive managers', paper presented at the 47<sup>th</sup> Annual Conference of the Australian Agricultural and Resource Economics Society, Fremantle, Western Australia, 12-14 February 2003.

Marshall, G.R. 2001. Crafting cooperation in the commons: An economic analysis of prospects for collaborative environmental governance, Unpublished PhD Thesis, School of Economics, University of New England, Armidale.

Marshall, G.R. 2000. 'Informal Cooperation in the Commons? Evidence from a Survey of Australian Farmers Facing Irrigation Salinity', paper presented at the 8<sup>th</sup> Biennial Conference of the International Association for the Study of Common Property, Bloomington Indiana, USA, May 31-June 4 2000.

Marshall, G.R. 1999. 'Economics of Incorporating Public Participation in Efforts to Redress Degradation of Agricultural Land', paper presented at the 43<sup>rd</sup> Annual Conference of the Australian Agricultural and Resource Economics Society and 6<sup>th</sup> Annual Conference of the New Zealand Agricultural and Resource Economics Society, Christchurch, New Zealand, 20-22 January 1999.

McCann, L., Colby, B., Easter, K.W., Kasterine, A., and Kuperan, K.V. 2005. 'Transaction cost measurement for evaluating environmental policies'. *Ecological Economics* Vol.52(4), pp527-542.

Meinzen-Dick, R., and Knox, A. 2001. 'Collective action, property rights, and devolution of natural resource management: a conceptual framework'. In *Collective Action, Property Rights and Devolution of Natural Resource Management*, edited by R. Meinzen-Dick, A. Knox and M. Di Gregorio. German Foundation for International Development, International Food Policy Research Institute, and International Centre for Living Aquatic Resource Management, Feldafing, Germany, pp.41-73.

Moorhouse, M., and Elliff, S. 2002. 'Planning process for public participation in regional water resource planning'. *Journal of the American Water Resources Association*. Vol.38(2), p.531.

Ostrom, E. 1998. 'The Institutional Analysis and Development Approach', in E.T. Loehman and D.M. Kilgour (eds), *Designing Institutions for Environmental and Resource Management*, Cheltenham: Edward Elgar, pp.68-90.

Ostrom, E. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press.

Pena, S., and Cordova, G. 2001. 'Public Participation and Water Supply: The Case of Two Communities on the USA-Mexico Border'. *Water International*. Vol.26(3), pp.390-99.

Pretty, J. and Shah, P. 1997. 'Making soil and water conservation sustainable: From coercion and control to partnerships and participation', *Land Degradation and Development* Vol.8(1), pp. 39-58.

Pretty, J. and Smith, D. 2003. 'Social Capital in Biodiversity Conservation and Management'. *Conservation Biology*. Vol.18(3). Pp.631-38

Priscoli, J. D. and Homenuck, P. 1986. 'Consulting the publics', ed. R. Lang, Integrated Approaches to Resource Planning and Management, Banff Centre School of Management, University of Calgary Press, Calgary, Canada, pp. 67-79.

Queensland Department of Natural Resources and Mines (DNRM). 2005. *Options for future community engagement in regional natural resource management*. Queensland Government, April 2005. Brisbane.

Queensland Department of Natural Resources and Mines (DNRM). 2005a. Personal Communication with Director, Sustainable Landscapes, Queensland Government. Brisbane.

Queensland Department of Natural Resources and Mines (DNRM). 2003. *Decision-making process for accreditation of regional NRM plans and investment strategies*. Queensland Government. Brisbane.

Queensland Department of Natural Resources and Mines (DNRM). 2002. *National Action Plan for Salinity and Water Quality Bilateral Agreement*. Australian Government. Canberra.

Reeve, I. 1999. 'Tiptoeing round the Slumbering Dragon: Property Rights and Environmental Discourse in Rural Australia'. The Rural Development Centre, University of New England.

Rhoades, R.E. 2000. 'The participatory multipurpose watershed project: Nature's salvation or Schumacher's nightmare?'. In: Lal, R. (Ed.), *Integrated Watershed Management in the Global Ecosystem*. CRC, Boca Raton, pp.327-43.

Rhodes, R.A.W. 2000. 'New Labour's Civil Service: Summing up joined up government. *The Political Quarterly*. Vol. 71 (2). Pp.151-66.

Ribot, J.C. 2002. *Democratic Decentralization of Natural Resources: Institutionalizing Popular Participation*. World Resources Institute, Washington DC.

Rolfe, J., Lockie, S., Windle, J., and Donaghy, P. 2004. *Social and Economic Impact Assessment of the Central Queensland Strategy for Sustainability*. Interim Report, Central Queensland University, Emerald.

Shrybman, S. 1986. 'Environmental mediation', ed. R. Lang, Integrated Approaches to Resource Planning and Management, Banff Centre School of Management, University of Calgary Press, Calgary, Canada, pp. 81-98.

Sturgess, G.L. 1997. 'Order for free: Communities as policy instruments'. Paper presented to 'There is no Such a Thing as Society': A Workshop on Civil Society and Social Capital, Sydney. Centre for Independent Studies, 29 January.

Upmeyer, A, and Six, B. (1989). Strategies for exploring attitudes and behaviour. In A. Upmeyer (Ed.) *Attitudes and Behavioural Decisions*. Springer-Verlag, New York.

Van Ryn, M., & Vinokur, A. D. (1990). *The Role of Experimentally Manipulated Self-Efficacy in Determining Job-Search Behavior among the Unemployed*. Unpublished manuscript, Institute for Social Research, University of Michigan at Ann Harbor.

Wallis, J. and Dollery, B. 2002. 'Social capital and local government capacity'. *Australian Journal of Public Administration*, Vol. 61(3), pp. 76-85.

Watters, A. E. (1989). *Reasoned/Intuitive Action: An Individual Difference Moderator of the Attitude-Behavior Relationship in the 1988 U.S. Presidential Election*. Department of Psychology, University of Massachusetts at Amherst. Master's Thesis.

Whelan, J. and Oliver, P. 2004. 'Regional Community-Based Planning: the Challenge of Participatory Environmental Governance', *International Sustainable Development Research Conference*, University of Manchester, UK.

Williamson, O.E. 1996. *The Mechanisms of Governance*. Oxford University Press, UK.

Woodhill, J., and Nabben, T. (2004). *Institutional Development and Landcare: Lessons from Australia, implications for South Africa*. Report of the South Africa – Australia Institutional Strengthening of the Department of Agriculture Project (ISDA). AusAid, Canberra.

World Bank. 1996. *The World Bank Participation Sourcebook*. World Bank, Washington DC, USA.