

## Chapter 3

### **COLLABORATIVE PLANNING & SUSTAINABILITY: EXPLORING ECOSYSTEMS AS COMMON-POOL RESOURCES IN THE LOCKYER CATCHMENT**

*Krishna K. Shrestha and Ashutosh Sarker*

Conventional approaches to planning and management of natural resources based on rational, top-down thinking remains dominant, despite a large body of empirical evidence suggesting that such an approach has compromised sustainability, often delivering outcomes that are ecologically damaging and socially inappropriate. This chapter examines the current planning and management of natural resources in the Lockyer Catchment in Queensland, Australia, and explores potentials for planning and management informed by the concept of ‘commons’ or ‘common-pool resources’ (CPR), which emphasise bottom-up, collaborative planning and management by community groups.

It is found that the making and implementation of plans by the government agencies have simplified the complex interdependence between natural and social systems. The implementation of the current management plans has led to deterioration of ecological health and integrity. Despite an enormous interest in collaborative action by stakeholders, the planning and management of ecosystems is inherently a political process where government line agencies control the processes while other stakeholders are effectively excluded. The CPR approach offers theoretical and practical insights to inform collaborative planning and management of ecosystems where stakeholders could work together as equal partners to identify issues, negotiate solutions, devise plans and implement agreed institutional arrangements to enhance sustainability.

#### **Introduction**

Sustainable planning and management of natural resources has become one of the key goals for many government agencies, non-government organisations and community groups around the world today. However, conventional approaches for planning and management of natural

resources, either based on a rational, top-down system or market-based privatised approach remains largely dominant in many contemporary government policies and practices. A large body of empirical evidence, however, suggests that conventional planning and management by government agencies or private organisations has often delivered unsustainable management outcomes that are ecologically damaging and socially inappropriate (Blaikie and Brookfield, 1987; Ostrom, 1990; Sarin et al., 2003; Turner, 2004). Frequent calls for rethinking government-controlled or privatised planning and management are not new, but their persistence in policy and practices demonstrates a great deal of defiance. A critical analysis of the centralised and privatised natural resource planning and management is therefore required.

A growing body of literature on collaborative planning has heavily criticised the top-down, rational comprehensive planning model. Advocates of collaborative planning emphasise that two or more stakeholders can communicate and learn from each other, and negotiate and build consensus to solve problems neither of them can do individually (e.g., Forester, 1989; Healey, 2003; Innes, 2004). Collaborative planning is increasingly popular in contemporary planning theory and practice mainly because of its appeal to enhance democratic decision-making and to bring together a range of stakeholders fragmented by varying degrees of power and responsibility to solve critical problems. Yet, a collaborative approach to decision-making has been questioned for its ability to engage with a range of issues relating to unequal power relations, and to sufficiently account for a wide range of social, economic and political contexts in which planning decisions are made (Flyvbjerg, 2002; Hiller, 2003).

Literature on collaborative planning is surprisingly silent on the linkage between collaborative planning and its allied concept of commons or common-pool resources (CPR). Moreover, this approach is yet to be explored for its relevance and possibility for ecosystem planning and management. It is therefore useful to examine the planning and management of ecosystems, and explore the potential for sustainable planning and management of such ecosystems informed by the concept of commons or CPR.

Ecosystems have become one of the core elements in the shifting debates in natural resource planning and management. An ecosystem is

usually defined as a natural system consisting of biotic factors (all plants, animals and microorganisms) and abiotic factors (all non-living components of the environment) which function together in area(s) of the physical world. The concept has evolved from referring to a relatively simple, closed and static system involving linear relationships between biotic and abiotic factors, to sets of complex, open and dynamic systems (Nantel et al., 2003). In debates over how to plan and manage ecosystems, two common themes emerge – a) that planning and management should maintain or improve ecosystems, and b) that ecosystems should provide a range of goods and services to a variety of stakeholders (Christensen et al., 1996).

The ecosystem services, which are generated through the complex interaction between the environment and living organisms, include a range of goods and services that are useful for humans such as purification of air, reduction of sediment flow and maintenance of water quality (Daily, 1997; MEA, 2005). In the past, understanding of the complex and dynamic nature of relationships between biotic and abiotic factors was limited, leading to decisions that resulted in unregulated access and use of ecosystem services almost as abundant free gifts of nature. Over time, this led to a systematic degrading of the quality and quantity of ecosystems (such as in the Himalayas, see Ives 1987) due to intense population growth (Ehrlich, 1968) and lack of a sustainable management approach (Hardin, 1968).

Three broad approaches have been recommended for the planning and management of natural resources. Some scholars argue that the market-based approach (i.e., privatisation) is the most efficient form of ownership, planning and management (e.g., Demsetz, 1967), while others argue for a centralised approach (i.e., government ownership and control) (e.g., Ophuls, 1973). Yet many other scholars cite examples of failed state-planning and management of natural resources to call for a return to local, collectively organised planning and management approaches (Berkes, 1989; Ostrom, 1990; Li, 1996; Ostrom, 2003). Their research indicates that centralised or privatised systems fail to account for factors which encourage collective action and self-regulating capabilities of user groups (Runge, 1986), and that centralised and privatised systems often confuse common property with open access,

failing to distinguish between common property and no property (Ciriacy-Wantrup and Bishop, 1975; McKean, 2000).

Hence the tragedy of the planning and management of resources results not from the sharing of the rights, but the absence of rights. Many geographers, political scientists and anthropologists argue that societies have devised, maintained or adapted collective arrangements to manage CPRs, and therefore, planning and management of natural resources by their users can be an appropriate system (Blaikie and Brookfield, 1987; Ostrom, 1990; Baland and Platteau, 1996; Gibson, et al., 2000; Menzies, 2003; Ostrom et al., 2007). However, the planning and management of ecosystems has yet to be considered through the lens of CPRs. Our aim, therefore, is to explore potentials for CPR as an alternative approach for planning and management of ecosystems to address issues related to market failure arising from externalities by examining the centralised and privatised planning and management of natural resources. This chapter raises three interrelated questions – a) What is the ecosystem health in the case study catchment? b) How are ecosystems being planned and managed, and why has the centralised system persisted? and c) How do stakeholders view collaborative ecosystem planning and management of natural resources?

The chapter is structured as follows. Firstly, an overview of the concepts of CPR and externality will be provided, followed by a description of qualitative and quantitative methods that we have employed to collect and analyse direct and indirect data and briefly outline the background for the case study – the Lockyer Catchment in Southeast Queensland, Australia. The third section presents the findings, focusing on the three questions set out above, followed by a critical discussion on why centralised planning and management has persisted, and how a collaborative approach informed by the concept of CPR could be applied to planning and management of natural resources to internalise externalities and improve social and ecological outcomes. Finally, we conclude by highlighting the potential for the CPR approach to establish and foster collaborative planning and management.

### **Common-pool resources (CPR) and externality**

A CPR is defined as a natural resource system, often characterised by two attributes: a) excludability – it is very difficult to exclude a

beneficiary from deriving a benefit from the resource, and b) subtractability – once the beneficiary derives the benefit, it becomes unavailable to other potential beneficiaries (Ostrom, 1990; Ostrom et al., 1999; Ostrom, 2005). The attributes of CPRs are summarised in Figure 13, which shows the attributes of CPRs such as irrigation and fisheries that generate water and fish as resource units respectively. Once a certain amount of the resource unit is subtracted, it is no longer available to others (i.e., subtractability). It is also difficult to exclude the potential users from appropriating the resource units (i.e., excludability).

Figure 13: Key attributes of common-pool resources

Attributes of a resource	Low subtractability of benefits	High subtractability of benefits
<b>Difficult to exclude beneficiaries</b>	Public goods (e.g. defence, national radio)	Common-pool resources (CPR) (e.g. irrigation systems, forests)
<b>Easy to exclude the beneficiaries</b>	Toll goods (e.g. swimming pool)	Private goods (e.g. private farming land)

Source: Ostrom et al. (1994) p. 7

In a similar way, an ecosystem used by many users tends to share these two attributes. The resource unit of an ecosystem is an ecosystem service which can be subtracted by the activities that users undertake. One example is land clearing by a landholder who subtracts the level of ecosystem services (as a result, soil erosion and salinity problems occur) for the other landholders. Ecosystem services such as improved water quality are utilised by one individual leading to low level of water quality available to other users. It is also difficult for some individuals to exclude others to restrict access of water quality, since the nature of water quality, particularly rivers, creeks or ocean cannot be trapped or fenced within a fixed boundary.

Ecosystem services are unique because the nature of services is complex and the services can generate far reaching cross-boundary consequences in both temporal and spatial terms. These two characteristics are also the

source of problems for the planning and management of ecosystems as CPRs. For instance, the difficulty of exclusion can result in over-exploitation of resources, while the subtractability of resources can lead to the degradation or destruction of ecosystems. Two assumptions underlie the solutions proposed by CPR theorists. First, societies have devised, maintained or adapted collective arrangements to manage CPRs (e.g., Gibson et al., 2000). Second, local users are interdependent, and are willing and capable of communication, collective action and institutional development to solve CPR problems. Yet, CPR solutions tend to focus on a group of people who manage natural resources on-site and fail to attend to the indirect and off-site effects.

Such failure may be overcome by employing the concept of externality in ecosystem planning and management as CPR. An externality issue arises, for instance, when an individual or group undertakes an activity that creates costs or benefits for others, but the sufferers are compensated and the beneficiaries are not required to pay any extra for the increased benefits (Samuelson and Nordhaus, 1998; Pindyck and Rubinfeld, 2001). This means a market may not necessarily take the externalities into account. In neoclassical economics, failure to internalise such external benefits (or losses) is believed to create 'market failure'. Such failures are inherent in ecosystem planning and management. In any typical CPR situation, for instance, individuals, groups and societies are interdependent, and actions by an individual or group to access, use and benefit from ecosystem services affect one another, both in temporal and spatial terms. Similarly, physical resources such as land, vegetation and water are interdependent: the loss of biodiversity in certain parts of ecosystems, for example, will adversely affect not only the particular ecosystem and where the loss occurs, but also the other parts of the ecosystem. Issues of direct and indirect as well as on-site and off-site effects are often termed by economists as 'externality issues'.

Externalities can be classified into two types: within-boundary and cross-boundary externalities (cf. Quiggin, 2001). A within-boundary externality occurs within the periphery of a particular CPR. In the case of the groundwater CPR, for example, one user's water appropriation affects the level of appropriation for other users within the specific CPR boundary. On the other hand, an externality can be cross-boundary

when users of one CPR can impose externalities on another CPR. In other words, the effects can cross CPR boundaries. For instance, when a large amount of water is withdrawn from a river (surface water CPR) or intercepted in the landscape by farm dams, this affects the amount of water draining underground to replenish a groundwater CPR, creating a cross-boundary externality. The surface water CPR imposes cross-boundary externalities on the groundwater CPR.

In the case of a within-boundary externality, however, the action of individuals (or groups) affects the other, but it does not always happen in a cross-boundary externality. For example, when trees, which have some CPR attributes through the ecological benefits they confer to other natural resources, are cleared away from hill slopes or river banks, soil erosion and unwanted nutrient flow occur and deteriorate the water quality of streams and rivers. This type of cross-boundary externality is uni-directional in that the decreasing water quality does not in turn enhance soil erosion and nutrient flows. The uni-directional, cross-boundary externality within one catchment may even cross the catchment boundary to impose further externalities downstream. It is therefore important to carefully account for externalities as well as relationships between different externalities so as to understand the effects on planning and management of ecosystems as CPR.

## **Research method**

This study employs a mixed method using an in-depth case study as a research strategy. The case study offers a method of learning about a complex instance through extensive description and contextual analysis (Yin, 2002). It is a valuable method for identifying, linking and comparing issues of resource management (Howitt, 2001). Primary data were collected by combining qualitative and quantitative methods. Qualitative methods include field visits and observation of various sites, as well as interviews, discussions and participant observation involving government officials (state and local council levels), landholders, community groups and researchers from universities and Healthy Waterways. Quantitative method involves the analysis of survey data collected from published materials. Qualitative and quantitative methods and analysis were employed in such a way that they complemented each other in that the data collected from one method were checked and

verified by the data collected from another method so as to increase research validity and rigour. Secondary data were collected from various publications, and were also checked with research participants. In the Brisbane River and Moreton Bay area, participation focused on the activities of the Healthy Waterways Partnership because of its long-term involvement in previous studies in environmental management.

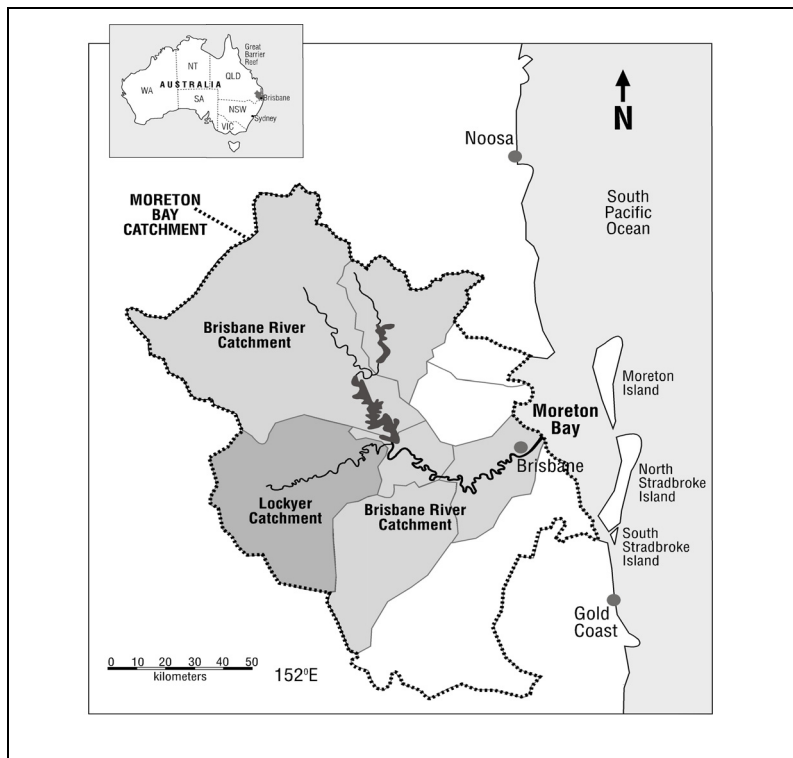
## **The Lockyer Catchment**

The case study area is the Lockyer Catchment in South East Queensland (SEQ) Australia. The catchment is characterised by extensive historical land clearing which has significantly affected the capacity of ecosystems to provide important ecosystem services such as the prevention of soil erosion and maintenance of water quality in the creeks and rivers. The Lockyer Catchment is located 90 km west of Brisbane, Queensland's capital, and comprises an area of 2,954 square kilometres, an average annual rainfall of 700–1200 mm and population of around 33,000. The Lockyer Catchment has a total length of streams of 2,062 kilometres and population of 33,331 (SEQRWQMST, 2001). It has a dry tropical climate with an average annual rainfall of 800 millimetres recorded between 1895 and 1995 (Rajbhandari, 2003). The catchment is composed of fertile farming land and is often referred to as the 'salad bowl of South-East Queensland'. It is the key supplier of vegetables in Queensland and vegetable-growing contributes significantly to the economic base of the catchment (Boyes, 2001).

The study area is a nested set of catchments which includes the Lockyer Catchment, Brisbane River and Moreton Bay Marine Area in South Eastern Queensland (Figure 14). The Lockyer Creek drains into the Brisbane River, and is thus part of the much larger Brisbane River Catchment. This in turn drains to Moreton Bay, a marine area semi-enclosed by islands, which has other contributing rivers besides the Brisbane. This nested set of catchments is of interest because of the significance of on-site and off-site externality issues associated with ecosystem services, the ecological significance of the Moreton Bay and the Brisbane residents' high value of environmental quality.



Figure 14: Lockyer, Brisbane River and Moreton Bay catchments



Source: Sarker et al. (2008)

## Results

### *Ecosystem health of the Lockyer Catchment*

The ecosystem health of the Lockyer Catchment is poor. It exhibits a low vegetation cover particularly along the riparian zone in combination with heavy soil erosion. Apan et al. (2002) describe the low vegetation cover in the Lockyer Catchment and demonstrate that within the period from 1973 to 1997, about 16,470 hectares of riparian woody vegetation was converted to pasture and the catchment currently has disconnected patches of vegetation. Before settlers came in the early to mid 1800s, the

catchment was rich with native vegetation and the riparian vegetation played an important role in trapping sediments during floods and rains (SEQRWQMST, 2001; Apan et al., 2002; Abal et al., 2005). At present, land clearing and land use practices have allowed sediments and nutrients to flow from the catchment into its creeks and adjacent water resources such as Brisbane River and Moreton Bay. Consequently, this has reduced biodiversity in the catchment and the health of aquatic ecosystems in the water resources.

The water quality of the Brisbane River was viewed by many respondents as very low and the water quality of Moreton Bay unsatisfactory. One respondent said, ‘... water [in Brisbane River] is extremely polluted, nowhere can we see anything under the surface, it’s worrying’. The Ecosystem Health Report Cards released by Healthy Waterways (a collaborative organisation between the Queensland government, industry, researchers and the community) confirms the poor health of the ecosystem in the catchment, highlighting that the streams are in very poor condition, channel and gully erosion is widespread and sediment loads are significant during flood times in the catchment (MBWCP, 2006; 2005; 2004; 2003; 2001). The Report Cards also indicate that the catchment received extremely poor evaluations – ranging from F in 2001–2003 and D or D- in 2004–2006 (where D refers to ‘poor’ and F refers to ‘fail’). These findings suggest that regulations and control mechanisms employed by government agencies have had little success in preventing or solving the ecological problems in the catchment.

#### *The planning and management of ecosystems in the Lockyer Catchment*

The planning and management of ecosystems in the Lockyer Catchment is largely a political process, controlled by the Queensland Government and the Brisbane City Council, with issues entrenched within their bureaucratic structures and functions. One respondent said: ‘environmental planning decisions are controlled by the Queensland Government and Brisbane council, with minimal consultation with community’. Another respondent added that ‘[community] consultations are fake, decisions are pre-determined ... they only come to get support [of communities] for their decisions’. A number of discussions revealed that most government staff members are not interested in listening to

community voices, as they need to work according to the bureaucratic policy and targets set at higher levels. The diverse and often conflicting community voices are likely to delay their delivery of required performance according to their job description. One respondent said: 'it is the system of bureaucracy where decisions are made by senior officials and politicians usually informed by science'. Another respondent added: 'if there is a problem, it is the problem of the system of bureaucracy'.

The current approach to planning and management is simplistic. The complex interdependent relationships within and between different ecological and social systems have been simplified for technical and administrative convenience. Many respondents shared a belief that the planning and management approach of the government has overlooked the connections between a set of CPRs (such as groundwater and vegetation) that constitute the ecological richness of the catchment. The decisions that are made by the government experts are, as one respondent asserted, 'driven by fixed resources, targets and predetermined policies, not according to the severity of the problems and the concerns of stakeholders'.

Respondents from landholders, Healthy Waterways, officials of the Brisbane River and Moreton Bay, and private organisations are concerned about soil erosion, salinity and water quality issues perceived to have emerged from the damaging activities as mentioned above in the surrounding Lockyer Catchment. The approach adopted by the government is seen to be focussing on a single resource system in order to address on-site issues, ignoring the connection between different resources. Government interventions have mainly focussed on on-site problems identified by their staff, and if there are resources, they implement specific plans to solve them. One respondent claimed: 'resource management is much more complex as ecological and social processes overlap, but government approach has consistently failed to recognise this connection'. The simplified government approach has failed to tackle the issues of externalities of social and ecological interdependence.

The current planning and management of resources has significantly damaged the environment and disengaged most community groups. For example, as one landholder said: 'initially governments encouraged people to clear land and convert lands into agricultural fields, now we

face unsustainable situations'. The government has granted individual property rights to landholders as an approach to maximise the use of lands, with few restrictions on use. Although the land was cleared many years ago, one respondent said, 'the current generation is suffering, most likely the future generation will suffer'. A common theme to emerge from the discussions and interviews was that land clearing has considerably worsened the problem not only in the area where the land was cleared but also in areas far from the cleared land. This is perhaps 'one of the most damaging policy interventions that the government has ever made', one respondent highlighted. Soil erosion problems have reduced the level of ecosystem services and reduced the water quality for downstream users. Many respondents said that government has now started to restore ecosystems but the landholders are required to pay for correcting past government mistakes. The government is trying to manage the riparian buffer zone, but with limited consultation with the community groups. Many respondents remain discontented with the government's exclusionary approach to the planning and management of the restored riparian zone.

Regulating authorities have also employed market-based approaches to creating a market for ecosystem services. They attempted to divert payments for ecosystem services (PES) to the landholders so as to induce them to set aside productive farming lands to build up riparian buffer strips for producing the ecosystem services to improve water quality. While landholders are positive about this initiative, they doubt that the regulating authorities will be able to successfully execute the PES scheme because of the lack of collaboration among landholders and between landholders and other stakeholders to forego the lands to create a facilitating market framework where transactions for the payment for ecosystem services will occur.

#### *Stakeholders' interests in collaborative planning and management*

All respondents shared a similar view that they are interested in collaborative work. As one respondent said: 'natural resource planning and management is not possible by the governments or communities alone'. This was also the common answer to the question of why the government and stakeholders need to work together. Many respondent landholders, particularly from downstream Brisbane, had keen interests

in the management of resources in the upstream because they saw resource exploitation and agriculture activities in the catchment as the main sources of the downstream problems. Most respondents, including members from government agencies, private organisations and landholders, are now aware of the problems as well as the collaborative approach that could potentially solve them. International examples of success in collaborative resource management have also set examples for Lockyer stakeholders; as one respondent pointed out: 'we have international examples of success in collaborative natural resource management, we can minimise mistakes and maximise success by learning from others'. International agreements that Australia has signed have also required collaborative approaches to natural resource governance, reflected in one respondent's claim that 'it is not the matter of choice, it is the requirement as Australia has already signed various agreements'. A common theme to emerge was that collaborative planning and management is not only possible, but is essential to improve social and ecological outcomes.

A well-defined common space or a 'collaborative platform' is lacking. As one respondent said: 'we are keen to work together, the difficulty is that there is no suitable platform to work together'. Another respondent highlighted the issues of equality, saying that 'any collaborative decisions must be based on equality principles, everyone's needs and voices are equally important'. Issues of power and resources vested in government officials were frequently raised by many stakeholders and as one respondent maintained: 'the government agencies are current managers, they have the power and resources, they are well-situated to initiate collaborative work'. However, another respondent questioned such a critical role for the government: 'the power and resources held with government agencies is also a risk for collaborative work, their role must change from decision makers to supporters for collaborative work'. Many respondents drew attention to the need for change in the expert attitude of the government agencies, and emphasised the need for a new participatory, flexible and inclusive culture to make collaborative planning a reality. A respondent also highlighted a critical need for community groups and businesses to prioritise the communal needs and problems, rather than individual benefits and losses in the process of consensus building through collaborative engagement. In general,

respondents were keen to become part of a collaborative process in ecosystem planning and management.

## **Discussion**

The government has adopted an exclusionary, top-down and centralised approach together with some elements of a privatised/market-based approach in ecosystem planning and management practices which has had little success in delivering ecologically sustainable and socially desired outcomes. As demonstrated by the above findings, the ecosystem health has degraded due mostly to simplified, rational and exclusionary policy prescriptions that have led to adverse impacts on ecological processes and systems in the Lockyer Catchment. The regulating authorities have also neglected the complex interdependence between social and ecological processes. Despite enormous interest from all stakeholders to work towards the collaborative planning and management of natural resources, it has yet to be considered in the policy and practices. The questions to emerge then are: Why has the centralised approach persisted, despite delivering such negative ecological and social outcomes? And, how could collaborative planning and management be initiated and fostered?

### *Why has centralised planning and management persisted?*

The finding from the case study demonstrates that there is little change in the way government agencies have conventionally planned and managed natural resources. Downs (1967) argues that the bureaucracy generally encourages bureaucrats to behave as avoiders of change. The centralised bureaucratic system of planning and management has avoided change and persisted over time due to its political, financial, technical and other backings. The centralised approach ensures that it is easy for the government agencies to make decisions unilaterally. The institutional efficiency of the government agencies is still being judged in terms of rational decision-making and protection of natural resources, rather than the management of collaborative actions. After the endorsement of various international agreements, however, the bureaucracy is now obliged to meet a range of social, economic and environmental objectives. For this, the agencies need to retain some key authority in which there is flexibility for community consultation and

some inclusions of community views, while more important decisions are made by the politicians and bureaucrats at the higher levels. This practice is also reflected in the maintenance of a culture supported by a controlling bureaucratic structure. As Ribot (2004) argues, the bureaucracy fears losing economic benefit from the control over natural resources and the power that defines and supports its political and administrative role. Institutional reform of the state agencies is often called institutional strengthening when much of the problem is that the institutions are already too strong (Fisher, 1994). The possibility of collaborative approaches does not appeal to the agencies because its assumptions for inclusive decision-making require the shift in functional assumptions underlying the government and bureaucracy as controller. Instead, custodial ideas about the government and bureaucracy making decisions for the people (often covertly) is a simple model for delivering quick results according to preset targets.

The underlying reasons for the persistence of a centralised approach may also be due to bureaucratic norms and ideology. Weber (1958) argues that in a modern bureaucracy, the relationship between bureaucrats and clients are supposed to be functionally specific and impersonal. There is an existence of a *bossy* tradition in state bureaucracy in which subordinate staff must follow their boss' order and the orders are hierarchically transmitted from top to the bottom. The order at the top is informed by an ideology for the maintenance of the bureaucracy to impose standards of social and environmental wellbeing. These vague concerns are often misguided from knowledge of orthodox science that identifies problems and devises solutions based on scientific methods which ignore social, economic, political and ecological contexts. Therefore, the problem is essentially ideological about how the bureaucracy is organised and operated.

The analysis of findings from the Lockyer Catchment suggests that the decision-making is driven by the restricted thinking about resource planning and management that focuses on a single resource and the simple definition of relationships. This restricted thinking is linked to orthodox science which provides knowledge and skills to facilitate narrow understanding of problems and solutions. The knowledge produced by science has traditionally focussed on collecting politically neutral and accurate facts through quantitative and economic analyses of

problems. This knowledge informs policies because they are widely accepted in the policy circle. The historic practices of sampling and inference do not fully account for the social, political and ecological connections in which socio-ecological problems are experienced. The planning and policies were poorly informed; they could not address the issues situated in wider social, economic and political processes. And even when the policy has attempted to solve problems, it has been implemented through a universal and target-oriented model of the agencies which practically neglects the complex interdependence. The conventional power relations remain unchanged and the traditional bureaucratic planning and management maintains the status quo.

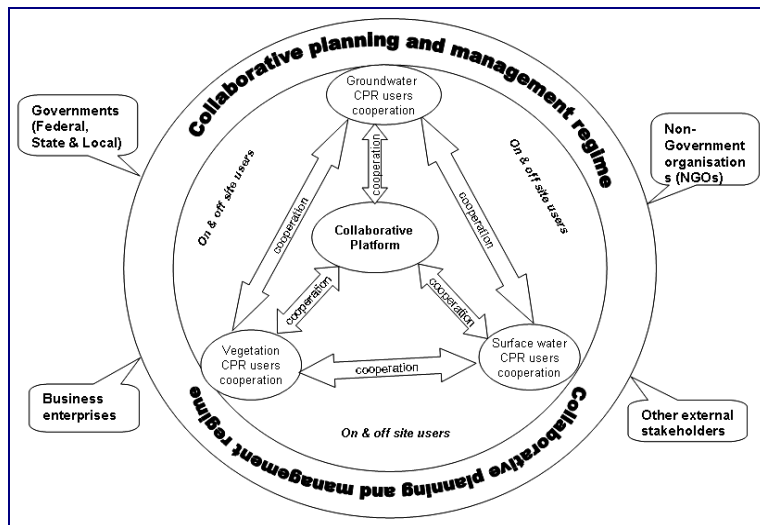
*Towards sustainability: collaborative planning and management of ecosystems*

Our findings suggest that stakeholders are keen to work together. This can be taken as a foundation for a collaborative approach to the planning and management of natural resources. Herein, we propose a relatively new CPR approach in establishing and fostering collaborative planning and management of ecosystems as CPR which, we believe, can enhance sustainability. Collaboration between various stakeholders for the Lockyer Catchment, Brisbane River and Moreton Bay can resolve various externality issues that arise in the catchment and marine areas. This is consistent with the vision of the Healthy Waterways Partnership, which notes: 'By 2020, our waterways and catchments will be healthy ecosystems supporting the livelihoods and lifestyles of people in South East Queensland, and will be managed through collaboration between community, government and industry' (Healthy Waterways, 2007: p. 13). This is also reflected in the view of integrated catchment management in Australia. As Syme et al. (1994) recommend, collaboration involving both the government and the community is crucial to develop and implement catchment planning and management. The importance of collaborative management is also supported by international experiences (e.g., Wittmer, 2005; Swallow et al., 2005; Kandel and Rosa, 2005). In addition, legal frameworks are vital for regulating and institutionalising the planning and management approach, and in Queensland a strong legal framework for catchment management needs to be established (Ewing, 2003).



The idea of collaborative management among users, which is also consistent with the literature on nested multiple use CPRs (e.g., Steins and Edwards, 1999), integrated catchment management (Syme et al., 1994), and with the vision of the Healthy Waterways Partnership (Healthy Waterways 2007), is useful for understanding the issues of the wider socio-ecological interdependencies in which CPRs are embedded. A huge body of empirical literature on collaborative action provides examples for effective collaborative approaches that have addressed the issues emerging from social and ecological research to improve planning and management of CPRs (Cleaver, 2000; Ostrom, 2004; Shrestha, 2005). The idea of collaborative planning and management is also useful for addressing management issues of natural systems, including catchments (German et al., 2006; Kerr, 2007). Other studies demonstrate that a collaborative management and planning approach is critically important in enhancing the collective action among different groups of stakeholders, especially for complex landscapes (Selin and Chavez, 1995; Lubell et al., 2002; Marshall, 2005).

Figure 15: Collaborative planning and management of ecosystems



Source: Authors

We propose a framework for planning and management of ecosystems in a catchment, as shown in Figure 15. It is proposed that both on-site and off-site users from the Lockyer Catchment, Brisbane and Moreton Bay can work together within an open and equal platform – i.e., a ‘collaborative platform’ – coordinated by relevant government line agencies with non-government organisations, environmental groups, businesses enterprises and other stakeholders such as universities. Stakeholders could work together to identify issues, negotiate solutions, devise plans, and implement agreed-upon institutional arrangements to improve social and ecological outcomes and to internalise externalities rooted in socio-ecological interdependence. It is a multi-layered, multi-stakeholder framework, adaptable to the needs of stakeholders and based on open, respectful communication and negotiation.

In this framework, it is expected that stakeholders will be able to cooperate on multiple levels to correct issues of within-boundary and cross-boundary externalities and market failure. On-site users refer to those who are using groundwater and surface water in the catchment, while offsite users are downstream stakeholders including the authorities and managers of the Brisbane River and Moreton Bay, Healthy Waterways and private organisations. Cooperation among the on-site users of different CPRs addresses the externalities that occur within the catchment, while the cooperation between on-site and off-site users deals with the cross-boundary externalities that occur beyond the boundary of the catchment. In particular, cooperation between landholders and offsite beneficiaries can address cross-boundary externalities arising from land clearing and soil erosion in the Lockyer Catchment, affecting the water quality of the off-catchment water resources such as the Brisbane River and Moreton Bay.

The framework is for CPR-based collaborative planning and management of ecosystems which can capture the merits of government and market-based approaches, bringing the technical and professional experiences into practice with those of other stakeholders. The process enhances the participation of stakeholders to improve ecosystem health, institutional development, community revitalisation and capacity strengthening. For instance, one initiative that the government is attempting to implement through top-down regulation and a market-based instrument (PES scheme) for water quality improvement is the

construction of riparian buffer strips to prevent sediment flows from the catchment into the Brisbane River and Moreton Bay. The idea is useful, but since it requires landholders along the river to agree to forgo land and plant riparian vegetation, a high degree of collaboration among the stakeholders is essential. Furthermore, financing required for a PES scheme could also be arranged and structured through the collaboration between the buyers and sellers of ecosystem services. The beneficiaries would buy ecosystem services from the landholders, with the landholders acting as sellers.

Although collaborative planning and management approaches have become popular in many countries to address various natural resource problems, and as we have argued, have the potential to do well compared to centralised or privatised systems in the specific context of our case study, we do not claim that this is the best framework to guarantee success in all areas. We cannot emphasise enough the need to refine this framework. We also recognise that effective collaboration is not easy. The critical role that we have recommended for the government agencies, as agreeing with one of our research participants, does pose a degree of risk because letting their power go within the collaborative approach is not what they are accustomed to.

We are very much aware of the uncertainty involved in making decisions in a collaborative platform as we are still learning about how society and ecological systems work and interact. Therefore, our idea for a collaborative platform is that of a flexible, open and evolving forum for discussion and communication within the context of stakeholders' own perceptions of conditions, problems and possible solutions for the present and future. The platform is about understanding, reflecting and synthesising ideas, problems and experiences to bring about change – the change that can only be possible with genuine interest, commitment and passion by involving stakeholders towards a common, concerted action for a better future. We agree with Ostrom et al. (2007) who asserted in relation to the CPR analysis that collaborative approaches are not a panacea. The approaches may, however, be applied as diagnostic tools for exploring natural resource problems and solutions for a sustainable future.

## Conclusions

The centralised and privatised planning and management of natural resources, which is still dominant in the Lockyer Catchment, has failed to internalise externalities that are inherent in the complex social and ecological interdependence. The centralised approach has delivered outcomes that are ecologically damaging and socially inappropriate and thus unsustainable. In addition, while the current planning and management approach attempts to improve ecological and social outcomes, the actual practice fails to do so. This failure necessitates the exploration of an alternative approach that has a potential to do better than the current one. A collaborative planning and management approach does have potential in the Lockyer Catchment, given that all stakeholders are interested in and willing to work together to improve social and ecological outcomes. An open, inclusive and equal 'collaborative platform' has been proposed, with a critical role assigned to government agencies. It will be the task of these agencies to initiate, establish and foster an active and equitable collaborative platform where stakeholders can work together as equal partners – a major shift from what is currently happening.

The centralised approach of planning and management of natural resources has persisted for a long time. A real shift from the centralised approach towards the collaborative approach can therefore be a slow and challenging process. A degree of resistance from the government agencies may prevent the platform from working effectively. A collaborative approach may not appeal to the agencies because its assumptions for inclusive decision-making require a fundamental shift in functional assumptions underlying the government and bureaucracy as controller. The centralised approach is also deeply embedded within a long tradition of bureaucratic culture, norms and ideology supported by strong, established and well-resourced structures, which encourage bureaucrats to behave as avoiders of change. A dominant discourse is informed by an ideology of the bureaucracy that must maintain standard and social and environmental wellbeing. These vague concerns are often misguided from knowledge of orthodox science that identifies problems and devises solutions based on scientific methods which ignore complex social, economic, political and ecological interdependence.

The possibility of a collaborative approach to originate and advance practice therefore depends heavily on understanding and addressing issues entrenched in the bureaucracy and how it has been established, organised and operated, as well as how it makes rational decisions based on scientific knowledge. Major rethinking is needed on the ideological and functional underpinnings of bureaucracy, and on modifying the role of governments as rational decision makers to political facilitators in order to initiate, maintain and institutionalise an effective collaborative platform in the planning and management of natural resources, one that can improve social and ecological outcomes and enhance sustainability.

## **Notes**

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