
Institutional networks for inclusive coastal management in Trinidad and Tobago

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Abstract. The authors consider the role of institutional networks in integrated and inclusive coastal-zone management in Trinidad and Tobago. Drawing on theories of social institutions, a framework for understanding the institutional prerequisites for participatory management is developed. In this framework, distinction is made between institutions at the community, formal-organisational, and national regulatory levels and the means by which institutions adapt to and learn about new issues in terms of networks of dependence and exchange are characterised. The immediate networks between actors (their spaces of dependence) are augmented by wider networks between institutions at various scales (their spaces of exchange). This framework is applied to a case study of resource management in Trinidad and Tobago. Semistructured interviews with key government urban and economic planners, fisheries regulators, and other agents in Trinidad and Tobago, and a participatory workshop for resource managers, are used to identify the perceived opportunities and constraints relating to integrated and inclusive resource management within the social institutions. The findings are analysed through an exploration of the spaces of dependence and exchange that exist in the various social networks at the different institutional scales. The prescriptive relevance of this approach is in the demonstration of the nature of change required in social institutions at all scales to facilitate integrated and inclusive resource management.

Introduction

The two-island state of Trinidad and Tobago in the eastern Caribbean exhibits the classic dilemmas of managing environmental change in the coastal margins, typically the most important resources for small islands. The coastal zone around Trinidad and Tobago is the focus of much of the islands' development, but it is also the home of much of the islands' rich marine and terrestrial biodiversity (see, for example, Laydoo, 1991; Richardson, 1975; Rooks, 2001). Fish-processing plants, infrastructural development such as ports, roads, and airports, and residential and tourism developments compete for coastal space with rare bird species, leatherback turtles, and other forms of aquatic life. Rice farmers in need of agricultural land are encroaching on the ecologically important Nariva mangrove swamps in eastern Trinidad. Coastal lands are being cleared in Tobago for tourism development and more planning permission is being sought for development in the coastal zone. Thus the economy and its development in Trinidad and Tobago are ultimately dependent on the sustainable utilisation of these coastal resources. At the same time, the country has a complicated array of legislation, international designation of important sites under international conventions (such as the Ramsar Convention), and yet has only one legislated marine park—the Buccoo Reef Restricted Area, in Tobago. The Government of the Republic of Trinidad and Tobago has been considering designating up to six new national parks

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and protected areas, mainly in coastal Trinidad and Tobago, through the National Parks and Wildlife Bill (1998), but these have yet to be enacted.

In all these efforts to coordinate planning for sustainable development in Trinidad and Tobago, stakeholder participation is increasingly seen as a central strategy. In this paper we argue, however, that participatory and inclusive coastal management cannot in itself produce sustainable utilisation of resources. This desirable outcome requires a set of circumstances in which deliberative planning and comanagement are part of appropriate and resilient institutional and governance structures. We explore the nature of the institutions involved in the management both of state-owned and of collectively managed coastal resources in Trinidad and Tobago. Resource-management institutions in Trinidad and Tobago are examined at the three scales of constitutional order: the written and unwritten rules, organisational structure, and operational arrangements and processes. We argue that, given these three scales, the networks within and between institutions in Trinidad and Tobago, and more widely, determine whether deliberative and participatory planning can be institutionalised.

Recent coastal zone management research has concerned the development of vertically and horizontally integrated approaches (see, for example, Burbridge, 1997; Cicin-Sain, 1993; Hale and Lemay, 1994). Vertical integration in this case refers to integrated management and policy at different spatial scales; and horizontal integration refers to management across various sectors such as tourism, agriculture, and urban planning. Much of the research undertaken to date considers the process of delivering horizontally integrated management including learning-based approaches (Olsen et al, 1998), decision-support tools (Fabbri, 1998), and ecological assessments of the interactions between land and sea resources—as in ecosystem-based approaches (see for example, Grumbine, 1994). Most proposals for integration acknowledge the need for some degree of stakeholder participation in resource management. But this emphasis on horizontal and vertical linkages fails to capture the reality of the social construction of networks and spaces in which coastal management takes place. In this paper we therefore propose an analysis of institutional networks in terms of localised spaces of dependence between stakeholder groups and nonlocalised spaces of engagement between local stakeholders and external, sometimes globalised, interests. This follows discussions and debates on the social construction of scale, institutions at different scales, and social learning (for example, Bebbington and Batterbury, 2001; Bunnell and Coe, 2001; Cox, 1998; Mansfield, 2001; Solecki, 2001).

We suggest that there are no generalised preconditions for community-based coastal-resource management, and that the routes by which institutions can engage in community-based management or comanagement are likely to be context specific. Inclusionary coastal management may empower individuals and groups through the process of devolving power, but if the institutional structures are not in place to fulfil raised aspirations, then participatory management cannot follow through towards sustainable management. Hence the need for a wider focus on the institutions, their networks, and scales.

Much of the discussion on coastal resources and the social institutions that manage them, largely ignores the issue of different institutional scales (see Brown, 2001). We argue that there are limits to integrated and inclusive coastal-zone management in terms of the complexity of the resource, the size of the user pool, and the geographical area. Theoretical research in this area suggests that the factors determining whether integrated and inclusive management can exist and flourish are scale dependent, where scale refers to different spatial layers within the political economy. In this context, 'scale dependence' suggests that the interaction between and engagement of different institutions at different scales determine success. Theories of networks suggest

that the density of networks and the ability of social actors to combine information and resources outside the local sphere of institutions are important means by which integrated and inclusive processes are maintained.

In the next section of this paper we review the theoretical perspectives underlying participation and deliberation in coastal-zone management. Institutional-networks approaches are explored, and the concepts of spaces of dependence and exchange introduced. In the third section we describe the case-study site in Trinidad and Tobago in terms of the approach taken to collect and analyse the data. Networks are identified through individuals' perceptions of participatory resource-management approaches (on perceptions see Feeny, 1988; Uphoff, 1986). Participatory and inclusive management refers both to 'interactive' and to 'active' participation, as used by Pimbert and Pretty (1994). These terms reveal the role of community self-mobilisation and the importance of communities being able to take control of decisions. The data collected, through semistructured interviews and a participatory workshop, are described in terms of the regulatory and legislative framework, organisational structure, and power relations of institutions, leading to a discussion of prerequisites for successful integrated and inclusive management of coastal resources in Trinidad and Tobago and the level of readiness of Trinidad and Tobago to adopt an integrated and inclusive approach. In the concluding section of the paper we explore what new or improved institutional mechanisms might be necessary in order to implement integrated and inclusive management approaches.

2 Institutions for coastal-resource management

2.1 Experience of inclusive coastal management

Institutions for coastal-zone management are a combination of formal and informal arrangements layered through the users and regulators of coastal resources. Whereas the fundamental concepts remain contested, institutions have been defined as: "a multitude of means for holding society together, for giving it a sense of purpose, and for enabling it to adapt" (O'Riordan and Jordan, 1999, page 81) and as "sets of formal and informal rules and norms that shape interactions of humans with others and nature" (Agrawal and Gibson, 1999, page 637). North (1990) delineates institutions into three categories: constitutional rules, operating rules, and normative behavioural codes. Similarly, Firmin-Sellers (1995) notes that institutions operate at three levels: constitutional, institutional arrangement, and operational. Based on these considerations it is clear that, within the coastal zone, there are a wide range of different institutions involved at various scales including local, provincial, national, and international (Cicin-Sain, 1993).

Recent research suggests that understanding the institutional arrangements surrounding the utilisation of natural resources is central to designing better management strategies (Berkes and Folke, 1998; Gezon, 1997; Imperial, 1999). As Firmin-Sellers (1995) notes:

"The question of institutional design is of profound importance. Institutional design determines whether institutions function to promote socially productive ends, benefiting all members of society; or whether they function to promote re-distributive ends; benefiting a narrow segment of society, often at the expense of all others" (page 204).

If the institutions which support decisionmaking and management in the coastal zone do not exist, or are weak, then, it is argued, management is likely to be ineffective (Noble, 2000). In small islands where there are limited government resources and generally high ratios of coastal-zone area to these limited resources, it is unlikely that top-down government enforcement of legislation would be an effective means of

management (Griffith and Ashe, 1993; Turner et al, 1996). Moe (1990, page 213) argues that such top-down management approaches make institutions “weapons of coercion and redistribution”, and result in political losers absorbing the costs of conservation. Top-down management strategies exclude and ignore the alternative institutional arrangements that could be created to facilitate management (Berkes, 2002; Berkes et al, 1989), such as traditional or new forms of collective action and community-based resource-management arrangements.

In principle, the concept of collective action seems to offer an inclusive solution to coastal-zone management. Empirical evidence suggesting that collective action has a role to play in natural-resource management has contributed to the development of a set of general preconditions for successful collective action (see, for example, Agrawal, 2001; Brown et al, 2002; Steins and Edwards, 1999). Three main principles are broadly agreed upon. First, group size can influence the success of collective action (smaller groups tend to be more successful). Second, groups with an unequal distribution of endowments among members can lead to failure of collective action. Third, failures of collective action can be overcome by the introduction of selective benefits, and alternative institutional design. Further evidence on these design principles for coastal resources is found in the work of Baland and Platteau (1999), who demonstrate that higher levels of inequality in the distribution of benefits from collective resources undermine successful management, through the creation of conflictual relationships between users.

A central feature of the literature on institutions engaged in resource management is the importance of social discourse and the need for integration of diverse stakeholders' interests into collective decisions (Davos, 1998). Such institutions, it is argued should draw maximum stakeholder support and encourage stakeholders to participate voluntarily in resource management. Such institutions thereby overcome pervasive uncertainty, consistency, and enforcement of property rights (Hanna et al, 1995). If property rights are poorly defined, confused, or overlapping, management of the resource in question may be difficult (Buck, 1989). Such circumstances may occur where *de jure* and *de facto* rights differ. Management therefore requires the identification of the type of property rights that exist, if any. Tacconi (1997) recommends that the identification or establishment of property rights is best achieved through a participatory planning process. If property rights are established, then supportive legislation and institutions are required to enforce them (Gezon, 1997). However, enforcement of rights can only be achieved if the various institutions involved in management of the resource have the power to enforce those rights. Power and responsibility for decisionmaking and enforcing rights do not have to be vested in government, but may be shared by the government and the private sector (or nongovernmental organisations), or power may be completely devolved from government to local institutions (Lim et al, 1995).

Participation in decisionmaking is clearly not a single panacea for coastal-zone management, as the global experiences of participatory approaches reveal (Brown et al, 2002; Few, 2001; Holmes and Scoones, 2000). Participation can contribute to empowerment and self-reliance, but these are not necessarily criteria for maintaining ecosystem resilience and integrity. Yet it has been long recognised that the primary benefits of participation may not be instrumental in terms of outcome, but rather in the building of social capital through the processes of empowerment. But even if empowerment is a centrally intended or unintended outcome of participatory decisionmaking, the structures of governance and delivery for sustainable management need to be in place (Hayward, 1995; Healey, 1997). Thus there is a need to

understand the institutional form and networks that facilitate inclusive decisionmaking at various scales.

In summary, the results of examples of community participation in resource management and decisionmaking suggest that participatory approaches to resource management are constrained or promoted by three main factors: the institutional arrangements, the legislative framework, and the organisational and technical skills of the communities (Alcala, 1998). Social or cultural factors, such as social class structures, clearly play a central role in determining the scope of participatory or community-based coastal-zone management (Forest, 1998). In addition, community participation in coastal-zone management may not by itself generate sustainable management. Nonetheless, community participation in decisionmaking appears to highlight local understanding of the resource-use issues, empowers local groups, lessens conflicts, and potentially musters support for various management alternatives.

2.2 Institutional spaces of dependence and engagement

Groups and organisations utilise networks to promote the interests of their institutions. But these networks are scale dependent (Cox, 1998). Social relations and interactions that can only be undertaken locally, and which are “relied on for the realisation of essential interests” (page 2) are defined by Cox as spaces of dependence. Institutions organise themselves to secure their own existence, and in doing so create networks at different levels—in the media, in other areas of political life, even internationally. These wider networks are, in effect, spaces of engagement. The greater the depth of networks of engagement, the greater the opportunities for social learning and the potential for widespread adoption of new institutional forms. Spaces of dependence are equally important in defining the winners and losers in any resource allocation (see also Murdoch and Marsden, 1995). Thus institutions at various scales, from legal–constitutional to informal institutions of habituated rules, utilise formal and informal networks to evolve and maintain themselves.

In the case of coastal management, these networks and spaces are played on in various ways. Communities directly dependent on the ecosystem services of coastal areas create and defend their spaces of dependence. Fishing communities, for example, traditionally organise self-regulating mechanisms for sharing gear, catches, and access to fishing grounds. But the use of coastal spaces by competing users means that other networks are required—hence, coalitions of coastal stakeholders have evolved to defend coastal space from pollution, economic development, and other threats. These are manifest in a myriad of campaigns against coastal degradation, such as consumer boycotts and campaigns in Europe against unsustainable fisheries exploitation in the fishing grounds of poor and fisheries-dependent countries, and social movements protesting against mangrove destruction in many coastal states in India. New spaces of engagement are being created within the new global political economy by social movements and institutions outside the immediate locality of coastal zones.

Examples of the localised spaces of dependence and spaces of exchange for the institutions surrounding integrated and inclusive coastal-zone management are suggested in table 1 (see over). This table outlines the features of networks as they pertain to the scale of institutions, from constitutional order through to localised norms and operational arrangements. It is assumed that operational arrangements generally exist at smaller spatial scales, whereas constitutional arrangements are often observed primarily at the national level. For all groups, the utilisation of spaces of exchange can expand the spatial scale of their networks—sometimes up to international and global levels.

Table 1. Potential networks of resources and information for institutions engaged in integrated and inclusive coastal-zone management.

Institutional scale	Spaces of dependence	Spaces of engagement
Constitutional order	National laws and socially sanctioned norms.	International treaties; pressure from international aid or lending organisations.
Organisational structures	Budget allocation, other regulatory functions.	Cross-departmental initiatives in government; use of media; and co-opting of associations and interest groups.
Operational arrangements and power relations	Local organisations such as village councils and local government, as well as interest groups, trade associations, and other fora.	Contacts with national and international media, campaigning groups, and information networks.

To develop more ‘appropriate’ institutional arrangements, the existence and functioning of the networks at different scales need to be understood and the gaps in those networks at the different scales need to be considered. These gaps might reveal the need for an improved institutional design, such that new institutions are needed or existing ones need to be adapted. At the simplest level, ‘appropriate’ institutional arrangements require certain physical and structural conditions to be in place to facilitate the development of networks. Most importantly, there needs to be a governance structure that is inclusive and permits public participation in decisionmaking concerning natural-resource management, and which enables the creation and support of non-market-based institutions (such as cooperatives or collectives) for management of natural resources.

The nonlocal nature of networks of engagement is a key facet of the cross-scale characteristics of the institutional architecture of coastal management. The institutions are cross-scale in the sense that they involve comanagement arrangements linking local stakeholder groups directly to government; but also in the sense that coastal management involves multiple stakeholders who are often linked to globalised networks of citizen science and activism (Berkes, 2002). Berkes (2002) points out that the cross-scale nature of institutions can have detrimental impacts on the autonomy and resilience of local stakeholders. Indeed, many livelihoods are trapped into new and evolving dependencies through globalised systems of production (Bebbington and Batterbury, 2001). But on the positive side, interactions between local and nonlocal groups can be critical both in the development but also in the resolution of conflicts (Solecki, 2001). The level of interaction of cross-scale institutions is not prescribed for any situation—institutions generate and construct their own scales and spaces of engagement to optimise their particular strategic interests.

Networks of constructive engagement require trust. The goal of integrated and inclusive management, at least from an instrumentalist perspective, may, in effect, be characterised as the building of trust in order to create the opportunity for the resolution of conflicts. Evidence from the USA suggests that the greatest benefit of participatory processes in resource management is the increase of trust in the public roles of the government agencies (Beierle and Konisky, 2000). The citizens who are affected by resource-management changes need to feel that their views have

been respected. This can be achieved through their being given the ability to modify the rules for management (Ostrom, 1990), or through active and direct lines of communication within and among agencies and individuals. There also needs to be respect for those who develop and implement the laws and regulations while understanding the implicit power relations between actors. Few (2001) and Brown and Rosendo (2000) have demonstrated, in diverse contexts in Belize and Brazil, that regulatory authorities constantly struggle to retain power and legitimacy because they perceive that the wider networks encouraged by participatory planning processes undermine their authority. There are, therefore, winners and losers in any strengthening of networks for comanagement of resources. The engagement of groups with external agents can undermine established authorities and hierarchies; this perceived threat is often a major barrier to participatory management being implemented by government agencies.

To understand the structure and behaviour of coastal zone management institutions in Trinidad and Tobago, the institutions are considered in the next section at three scales: the policy, legal, and regulatory setting, and external factors (constitutional order); the institutional and structural factors (organisational structure); and operational arrangements and power relations. Within each of the three scales we consider the type and strength of networks of dependence and exchange, and their role in facilitating integrated and inclusive approaches to natural-resource management. This framework enables us to assess the opportunities and constraints to public resource management within relevant institutions.

3 Institutional networks for coastal-zone management in Trinidad and Tobago

3.1 Characterising and observing management institutions

In this section we derive insights into the processes described above by examining integrated and inclusive coastal-zone management in the context of the institutional setting of Trinidad and Tobago. Trinidad and Tobago is a two-island state in the southeast Caribbean. The islands have a relatively large coastal zone with economic, social, cultural, and ecological importance. There are multiple uses of the coastal zone, a diverse set of stakeholders, and an increasing incidence of conflicts over resource use (see, for example, Brown et al, 2002; THA, 1995; 1997a; 1999). The coastal zone is managed by several different agencies at different scales, and a host of property rights exist. To explore the formal institutions for management, information was collected both through a series of individual semistructured interviews with sixteen natural-resource managers in Trinidad and Tobago in October and November 1999, and through a workshop in November 1999 for twenty of the major stakeholders involved in resource management in Trinidad and Tobago.

The semistructured interviews were conducted with individuals within the Tobago House of Assembly (THA) and the Government of the Republic of Trinidad and Tobago (GOTT). 'Elite' interviews were used, in which the directors or managers of departments were asked questions about their perceptions of the opportunities and constraints relating to integrated and inclusive approaches to resource management in Trinidad and Tobago. Interviews involved an open discussion of a number of issues, including the regulatory and legal framework; the individual's perception of public participation as a tool; their ability to implement integrated and inclusive approaches; specific constraints to implementation of integrated and inclusive resource management; and the mechanisms by which institutions determine best practice for participation, when it is applied.

Participants in the interviews and the workshop discussed opportunities and constraints as they related to constitutional and legal frameworks, institutional arrangements, and cultural and community endowments. The objective both of the

Table 2. Stakeholders' perceptions of constraints on the development of integrated and inclusive coastal-zone management in Trinidad and Tobago (source: interviews with government, nongovernment, and other stakeholders, Trinidad and Tobago, October–November 1999).

Institutional scale	Perceptions of constraints on the development of integrated and inclusive management
Constitutional order	Existing legislation External policy influences Unclear roles of government departments and ministries Legal liability of resource managers Level of law enforcement Legal support for managers Lack of comanagement legislation Unclear property rights Legal protection for volunteers
Organisational structure	Level of staff skill Number of trained staff Lack of previous successful examples Credibility of the implementing agency Hidden political agendas Possible power loss by government agencies Empowered staff Local versus central government Information hoarding Project timetabling and project cycle
Operational arrangements	Representativeness Level of communication Potential downsides to participation Resource-intensive process Stakeholder engagement guidelines Intracommunity relations

interviews and of the workshop was to illuminate the networks of and constraints on the institutions in implementing integrated and inclusive approaches to natural-resource management, both for coastal and for other resources. Table 2 reports the main issues identified by participants and respondents as affecting the development of an integrated and inclusive approach to natural-resource management in Trinidad and Tobago. The three groups of issues are discussed in detail below.

3.2 Constitutional order

In Trinidad and Tobago, external factors, national legislation, and local legislation determine the constitutional order. External factors are those influences originating from outside Trinidad and Tobago, such as treaties the GOTT has signed (for example, the Vienna Convention, and the Convention on Biological Diversity), or conditions attached to loan agreements from external sources. Increasingly, external lending agencies are applying conditionality both to loans and to grants, requiring host countries to pass certain environmental legislation prior to drawing down loan funds. For example, Trinidad and Tobago has had to develop a National Environmental Policy and establish an implementation agency before it can access World Bank funds. Such conditionality causes agencies to become more top-down in their operations as they strive to achieve objectives set for them by external players, rather than by internal needs (Rich, 1994). This system blocks downward integration by severing the possible space of dependence in agencies below, reduces the potential for inclusion of other groups in decisionmaking, and, again, contracts the space of exchange.

Table 3. Proposed reforms to the evolving environmental legislation in Trinidad and Tobago (source: interviews and stakeholder workshop, October and November, 1999).

Proposed reform of the legislative framework	Agency voicing concern	Implication of reform	Scale of impact
Resources allocated to improve enforcement of existing laws	Consensus among multiple stakeholders	Expands spaces of dependence	Constitutional order
Clarification of property rights	Department of Marine Resources and Fisheries, THA ^a	Expands spaces of dependence	Constitutional order
New laws which demand public input into the development of new laws	National Parks Office, GOTT ^b	Expands spaces of engagement	Operational arrangements
Means of offering legal support and protection for managers of natural resources	Environmental NGO ^c	Expands spaces of engagement	Organisational structures
Means of legally protecting volunteer wardens, who could be activated through a comanagement arrangement	Environmental NGO	Expands spaces of engagement	Organisational structures

^a THA—Tobago House of Assembly

^b GOTT—Government of the Republic of Trinidad and Tobago

^c NGO—nongovernmental organisation

If inclusion and participation in public decisionmaking were enshrined in legislation, established networks might prevent such departmental isolation. Many of the laws currently in place in Trinidad and Tobago have not been updated since their creation under the British colonial system. Most of these existing laws, such as the Town and Country Planning Act (1947), do not require public participation in decisionmaking for resource use or management. Despite some revisions to some standard practices, there is still no explicit legislation which mandates stakeholder participation in decisionmaking about the environment, or in the development of new laws for the environment. Respondents and participants identified several important gaps in the areas being tackled by new legislation (table 3).

In Trinidad and Tobago existing legislation constrains the development of horizontal networks which promote spaces of engagement in several ways. First, existing legislation poorly defines the roles and responsibilities for managers of natural resources. In many cases, different ministries have responsibility for the same natural resource, with some agencies in local government (THA)⁽¹⁾ and some at national level (GOTT). Within the coastal zone in Trinidad and Tobago, there is only one protected marine area—the Buccoo Reef Restricted Area. Yet three formal government agencies are responsible for its management and planning: the Department of Fisheries and Marine Resources, Tobago House of Assembly—empowered by the Minister responsible for Tobago Affairs (GOTT, 1996); the Department of Fisheries, Ministry of Agriculture, Lands and Marine Resources, Government of

(1) The THA is the local government body for Tobago which was given the authority, through the GOTT, in the 1980 Tobago House of Assembly Act to implement policy relating to “the conservation and improvement of the environment” (GOTT, 1980a).

Trinidad and Tobago (GOTT, 1970); and Town and Country Planning, Ministry of Planning and Development, Government of Trinidad and Tobago—responsible for coastal development on the landward side of the coastal zone (GOTT, 1947).

The conflicts between these agencies over management responsibility means that it is difficult to allocate either human or financial resources to the responsible agency, and it is difficult to assign management, monitoring, or enforcement responsibility to a single agency. As a result, there is no single agency responsible for the management of the protected marine area in Trinidad and Tobago, and there is perceived and apparent duplication of work—such as the drawing up of two alternative management plans in 1999 for a new Speyside Marine Protected Area in Tobago. There is also a perception of inadequate legal protection for managers of coastal resources, inadequate enforcement of existing laws, and a lack of legal support for the agency enforcing the legislation or regulations.

The second constraining factor within the legal framework relates to poorly defined property rights. The lands adjacent to the Buccoo Reef Restricted Area are privately owned, and are managed under the Town and Country Planning Act (GOTT, 1980b). The land up to the high-tide mark is also owned by the state but is left as open access (GOTT, 1885). The marine part of the Buccoo Reef site, including the reefs, the fish, and other benthic life forms, is the property of the state (GOTT, 1970). Access permits are granted to fishermen to pass through it, although not to extract within the marine park (GOTT, 1974). Reef-tour operators and other boat-tour or jet-ski operators also require licences to operate within the marine park (see Adger et al, 2000), although many have *de facto* access rights and operate without licences. The diversity of functions, and the range of property rights, within the coastal zone in southwest Tobago highlight the complexity of coastal-zone management. In Trinidad and Tobago this complexity is exacerbated by the array of formal institutions engaged in managing coastal resources.

The legal changes necessary for successful integrated and inclusive coastal-zone management in Trinidad and Tobago (perceived by many government agencies—see table 3) are substantial, and may require more than just the drafting of additional regulations. For example, as one individual noted, the problem of poor enforcement of laws is not just a problem for environmental management; it is a social problem that affects all areas of governance in Trinidad and Tobago.

3.3 Organisational structure

One of the main constraints to integrated and inclusive management in small-island states can be the poor system of formal horizontal networks both within the operations and within the structure of government. Operationally, it is widely recognised that governments of small-island states often suffer from a lack of specialist staff skills to implement integrated and inclusive approaches (see, for example, Streeten, 1993). Government staff inexperienced in developing integrated and inclusive approaches to projects may be unwilling to include unfamiliar integrated and inclusive techniques in project design. Insufficient full-time public outreach staff, or community workers, to engage stakeholders can be a major constraint. Government employees may hide behind old legislation to avoid working with stakeholders, as they are not trained in the newer, more inclusionary, methods. This lack of training and field experience may both deter and disempower staff. There may be limited information available to government staff on how to engage stakeholders, and there are likely to be few examples within government detailing successful inclusion of stakeholders. The cumulative effect of these operational issues in that project-management staff may not consider the inclusion of stakeholders as practical in resource management.

The problems that can arise from inappropriate or unresponsive government structures are well known in Trinidad and Tobago. During a prioritisation of major issues facing the tourism sector for the National Tourism Stakeholder Consultation in 1998, a weak institutional framework was singled out as the biggest problem facing tourist-sector planning in Tobago. Specifically, the issues of confusion over the roles and responsibilities of the different government agencies, lack of communication between institutions, lack of harmonisation of laws, lack of clear guidelines for management, and no assignment of authority or responsibility were highlighted as the most important issues (THA, 1997b).

The inflexible structure of the formal institutions in Trinidad and Tobago imposes constraints on all arms of government. Interviewees argued that the constraints on the introduction of integrated and inclusive approaches are just part of the wider problems which affect all areas of government (see table 4). This suggests that the structure of the government, notably, the lack of space for any expansion of existing networks or the possibility for new networks to develop, could be the bottleneck constraining the development of more integrated and inclusive approaches.

Table 4. Perceived organisational-structure problems affecting the development of integrated and inclusive approaches (source: interviews and stakeholder workshop, October and November, 1999).

Organisational areas	Perceived problems in implementing integrated and inclusive approaches for natural resource management
Operational	Inadequate number of staff trained in inclusive or participatory approaches Inadequate number of full-time outreach staff Few examples of integrated and inclusive approaches in Trinidad and Tobago Overuse of external consultants
Structural	Information hoarding Inadequate public access to information: need for 'open government' regulations Project-driven government—problem of project cycle and timetabling Government workers slow to adapt methods used by external groups and communities

In some cases, the constraints on the expansion of networks are self-imposed by the government agencies themselves. For example, one government stakeholder suggested that, if the government were to engage in inclusive or shared-responsibility approaches to resource management, individual agencies might fear public criticism for appearing unable to manage. New government agencies, especially, may perceive the need to develop public credibility in order to achieve 'success'. Consequently, they may avoid untested methods or approaches. The problems of perceived power loss may diminish as more government agencies utilise inclusive approaches, and the potential benefits from engaging communities in making decisions about, and managing, natural resources may become evident.

In other cases, there is no possibility of expanding institutional networks because of the institutional structure and the operational arrangements. For example, many government agencies use a project-cycle approach to allocate financial resources. As a result, government work is often dominated by 'project proposal' preparation, assessment, and appraisal. Projects are assessed on the basis of achievement of objectives in given time frames, and it is on this basis that projects are compared and prioritised.

The project-cycle approach is fully entrenched in the government system, yet, if inadequate time is initially allocated to inclusionary processes, this might be a stumbling block to the achievement of project deadlines as inclusionary processes can be time consuming and unpredictable in terms of the length of time they take to complete. It is therefore difficult to assess at the outset of a project how much time should be allowed for participation. Even if a period of time is allocated for the engagement of stakeholders, it may not be adequate; and if a project leader is determined to meet project deadlines, it might not be possible to engage stakeholders fully.

3.4 Inclusive processes and power relations

In implementing inclusive coastal management in Trinidad and Tobago, a major obstacle perceived by the major stakeholders at all levels of government and civil society is the prior existence of networks and experience of these processes. Although civil society is familiar with parish council democratic structures, and with forms of comanagement of protected areas such as voluntary wardens, there is less experience of direct comanagement or of the processes leading to this. In effect, there is limited access in civil society to the networks and spaces of external engagement. These perceptions are articulated in table 5, which classifies the perceptions of stakeholders in Trinidad and Tobago regarding constraints to their becoming directly involved in integrated and inclusive processes. This shows that the constraints, such as high opportunity cost of time, and underdeveloped communication, are perceived only negatively in terms of the impacts both on internal and on external networks.

Table 5. Constraints on integrated and inclusive approaches imposed by limited spaces of dependence and limited access to spaces of engagement (source: derived from interviews and stakeholder workshop, October and November, 1999).

Consideration	Effect on spaces of dependence	Effect on spaces of engagement
High financial cost of participation	negative	no significant effect
High time costs of participation	negative	no significant effect
Poor skill development of leaders	negative	negative
Poor communication within group	negative	negative
Poor communication between groups	no significant effect	negative
Existence of widespread personalised conflict	no significant effect	negative
No formal channels of communication between groups	no significant effect	negative

Spaces of dependence are most actively constrained by poor interpersonal communication skills, aggressive behaviour among group members, or strained intracommunity relations. Hence the issue of skill development, in terms of leadership qualities and relationship management, both within and among communities, is important. Poor communication within groups or between stakeholder groups can cause isolation among stakeholders which can generate conflict (Brown et al, 1995). In those stakeholder groups that are poorly organised, the inability to develop a coherent message and deliver it to the appropriate agency is in effect exclusion. There might be historical reasons why some groups do not work well together, although the reasons for this are not known. However, the outcome is often isolation, limited power, and a restricted space of dependence.

Where conflicts exist among the stakeholder groups, knowledge about the existence of these conflicts may deter some stakeholders from engaging in an integrated

and inclusive approach. Those stakeholders, particularly the disenfranchised and disempowered, may feel that their participation in an inclusionary forum may in fact constrain their real participation in the bigger process (Few, 2001). In addition, community-level stakeholders reported that there is no mechanism for them to engage formally with decisionmakers. The absence of an open channel of communication, together with the perception by some local communities that their opinion, once elicited, may be ignored, deters them from trying to expand their space of engagement to include decisionmakers.

For the one protected marine area, Buccoo Reef Restricted Area in Tobago, action-research identified trade-offs between expansive tourism development, which threatens the integrity in particular of the coral reef through eutrophication, and more limited tourism development, which maintains the fringing mangrove and seagrass areas (Brown et al, 2001). Engagement with stakeholder groups provides information on their explicit priorities and allows these groups to move beyond short-term conflicts. The initial part of the process of building social capital involved building trust between elements of civil society and the state regulatory authorities. By informing all stakeholders about the implications of resource use and the acceptability of changing practices, directly resolving conflicts between users of the resource, and building trust between the stakeholders, it was possible for the stakeholders themselves to have an input into the management of the protected marine area. By working closely throughout with the regulatory agency and the decisionmakers within the responsible government agencies, not only were the stakeholders using their collective voice to urge action, but also regulators were engaged and willing to respond.

One outcome of this action-research process was that the stakeholders (village councils, dive operators, government regulators, local tourism interests, and others) formed themselves into the Buccoo Reef Action Group and, through negotiation with government, began to discuss the possibilities for comanagement arrangements such as voluntary wardens, lobbying for sewage waste disposal improvements, and other regulatory tasks, utilising networks built up specifically for the purpose of effecting change.

In summary, the research on perceptions of institutional frameworks for inclusive coastal management in Trinidad and Tobago reveals that there are a range of regulatory, structural, and behavioural gaps which constrain more integrated and inclusive resource management. These gaps have been highlighted and articulated by those directly engaged in integrated and inclusive resource management. A clear conclusion from the empirical analysis of Trinidad and Tobago institutions involved in coastal-zone management is that at each institutional scale there must be careful consideration of the nature of existing spaces of engagement and spaces of dependence. Where there is no potential to modify or adapt these spaces to include other stakeholders, vertically or horizontally, it seems unlikely that there can be successful integrated and inclusive resource management. The provision of enabling legislation is without doubt an important prerequisite, but it is not sufficient. The fieldwork in Trinidad and Tobago highlights the importance of social and organisational networks in decisionmaking concerning resource management.

4 Conclusions: implications for institutional design and participation

Development and conservation practitioners have already embraced the notion and rhetoric of participatory approaches to resource management where local livelihoods are affected (Margoluis and Salafsky, 1998; Western et al, 1994; White et al, 1994). Yet implementing agencies within government and nongovernmental organisations in

many countries and contexts have not yet had the opportunity to see the potential of these approaches, or perceive them to be an undesirable shift in power relations. The research reported here suggests that, although a dialogue of integrated and inclusive approaches often exists, actual implementation can lag behind. Our research in Trinidad and Tobago suggests that agencies managing natural resources here are unfamiliar with integrated and inclusive approaches, and this acts as a brake on institutional change. We suggest that, if legislation and regulations are in place and the organisational arrangements are resolved, the spaces of engagement and cross-scale networks inherent in multiple-stakeholder situations may permit an institutional shift towards more integrated and inclusive approaches.

Delineation of the social and organisational networks by the scale at which they operate provides a framework within which to examine the potential for integrated and inclusive resource management. The framework for Trinidad and Tobago suggests that there are many areas within existing institutions, structurally, organisationally, and in terms of the power relations, that limit the emergence of external and internal networks for inclusive management.

Analysis of institutional networks may only be relevant in circumstances where formal management structures already exist. For example, in situations where the social institutions for resource management are less formalised, or where informal institutions have been marginalised by formal institutions (Brosius et al, 1998), networks seeking to promote spaces of exchange are not open to individuals and groups. In the case of Buccoo Reef Restricted Area in Tobago, for example, local business vendors dependent on access to beaches for their livelihoods have not formed trade alliances—in contrast with dive operators and reef-tour operators. This lack of representation forms an impediment to participation and engagement in integrated and inclusive spaces, particularly when other stakeholders such as government agencies can be oblivious to their needs.

Increased community participation in resource management has brought into question issues of governance, and the roles and responsibilities of resource managers. The drive for more integrated and inclusive resource management will necessitate a change in management styles, and in the existing power structures of the institutions which have traditionally been responsible for resource management. Cultural perceptions of participation may need to change, and constitutional change may be required (Hayward, 1995). The ability and desire of institutions to adjust to their new roles and to facilitate the new methods of management are critical to the success of the community-focused initiatives. Given the range of changes often necessary at the different institutional scales, a significant paradigm shift within social institutions is required to enable them to engage in different forms of management of resources. Such a paradigm shift may enable the institutions to make use of networks at various scales. This is particularly the case, we would argue, in small islands where local networks and opportunities for social learning are limited.

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References

- Adger W N, Brown K, Tompkins E, Bacon P, Shim D, Young K, 2000, "Evaluating trade-offs between uses of marine protected areas in the Caribbean", in *Integrated Appraisal and Sustainable Development in a Developing World* Eds N Lee, C Kirkpatrick (Edward Elgar, Cheltenham, Glos) pp 159–179
- Agrawal A, 2001, "Common property institutions and sustainable governance of resources" *World Development* **29** 1649–1672
- Agrawal A, Gibson C C, 1999, "Enchantment and disenchantment: the role of community in natural resource conservation" *World Development* **27** 629–649
- Alcala A C, 1998, "Community-based coastal resource management in the Philippines: a case study" *Ocean and Coastal Management* **38** 179–186
- Baland J M, Platteau J P, 1999, "The ambiguous impact of inequality on local resource management" *World Development* **27** 773–788
- Bebbington A J, Batterbury S P J, 2001, "Transnational livelihoods and landscapes: political ecologies of globalization" *Ecumene* **8** 370–380
- Beierle T C, Konisky D M, 2000, "Values, conflict and trust in participatory environmental planning" *Journal of Policy Analysis and Management* **19** 587–602
- Berkes F, 2002, "Cross-scale institutional linkages for commons management: perspectives from the bottom up", in *The Drama of the Commons* Eds E Ostrom, T Dietz, N Dolsak, P C Stern, S Stonich, E U Weber (National Academy Press, Washington, DC) pp 293–321
- Berkes F, Folke C, 1998, "Linking social and ecological systems for resilience and sustainability", in *Linking Social and Ecological Systems* Eds F Berkes, C Folke (Cambridge University Press, Cambridge) pp 1–25
- Berkes F, Feeny D, McCay B J, Acheson J M, 1989, "The benefits of the commons" *Nature* **340** 91–93
- Brosius J P, Tsing A L, Zerner C, 1998, "Representing communities: histories and politics of community-based natural resource management" *Society and Natural Resources* **11** 157–168
- Brown K, 2001, "Institutional fit and integrated conservation and development projects", presented at Workshop on Integrated Conservation and Development Projects, WWF International, Gland, Switzerland, October 2001; copy available from the author at School of Development Studies, University of East Anglia, Norwich, England
- Brown K, Rosendo S, 2000, "The institutional architecture of extractive reserves in Rondônia, Brazil" *Geographical Journal* **166** 35–48
- Brown V, Smith D I, Wiseman R, Handmer J, 1995 *Risks and Opportunities: Managing Environmental Conflict and Change* (Earthscan Publications, London)
- Brown K, Adger W N, Tompkins E, Bacon P, Shim D, Young K, 2001, "Trade-off analysis for marine protected area management" *Ecological Economics* **37** 417–434
- Brown K, Tompkins E L, Adger W N, 2002 *Making Waves: Integrating Coastal Conservation and Development* (Earthscan Publications, London)
- Buck S J, 1989, "Multi-jurisdictional resources; testing a typology for problem structuring", in *Common Property Resources; Ecology and Community-based Sustainable Development* Ed. F Berkes (Belhaven Press, London) pp 127–147
- Bunnell T G, Coe N M, 2001, "Spaces and scales of innovation" *Progress in Human Geography* **25** 569–589
- Burbridge P R, 1997, "A generic framework for measuring success in integrated coastal management" *Ocean and Coastal Management* **37** 175–189
- Cicin-Sain B, 1993, "Sustainable development and integrated coastal management" *Ocean and Coastal Management* **21** 11–43
- Cox K R, 1998, "Spaces of dependence, spaces of engagement and the politics of scale, or: looking for local politics" *Political Geography* **17** 1–23
- Davos C A, 1998, "Sustaining co-operation for coastal sustainability" *Journal of Environmental Management* **52** 379–387
- Fabbri K P, 1998, "A methodology for supporting decision-making in integrated coastal zone management" *Ocean and Coastal Management* **39** 51–62
- Feeny D, 1988, "The demand for and supply of institutional arrangements", in *Rethinking Institutional Analysis and Development* Eds V Ostrom, D Feeny, H Picht (Institute for Contemporary Studies Press, San Francisco, CA) pp 159–209
- Few R, 2001, "Containment and counter-containment: planner/community relations in conservation planning" *Geographical Journal* **167** 111–124

- Firmin-Sellers K, 1995, "The concentration of authority: constitutional creation in the Gold Coast, 1950" *Journal of Theoretical Politics* 7 201–222
- Forest N B, 1998, "Assessment of coastal regulations and implementation: case study of Roatan, Bay Islands, Honduras" *Coastal Management* 26 125–155
- Gezon L, 1997, "Institutional structure and the effectiveness of integrated conservation and development projects: case study from Madagascar" *Human Organization* 56 462–470
- GOTT, Government of Trinidad and Tobago, Port of Spain
1885 *Three Chains Act*
1947 *Town and Country Planning Act, 1947* Laws of the Government of the Republic of Trinidad and Tobago
1970 *Marine Areas (Preservation and Enhancement) Act*
1974 *Marine Areas (Preservation and Enhancement) Regulations*
1980a *Tobago House of Assembly Act*
1980b *Town and Country Planning Act*
1996 *Tobago House of Assembly Act, 1996*
- Griffith M D, Ashe J, 1993, "Sustainable development of coastal and marine areas in small islands developing states: a basis for integrated coastal management" *Ocean and Coastal Management* 21 269–284
- Grumbine R E, 1994, "What is ecosystem management?" *Conservation Biology* 8 27–38
- Hale L Z, Lemay M H, 1994, "Coral reef protection in Phuket, Thailand: a step toward integrated coastal management", in *Collaborative and Community-based Management of Coral Reefs. Lessons from Experience* Eds A T White, L Z Hale, Y Renard, L Cortesi (Kumarian Press, West Hartford, CT) pp 68–79
- Hanna S, Folke C, Mäler K G, 1995, "Property rights and environmental resources", in *Property Rights and the Environment: Social and Ecological Issues* Eds S Hanna, M Munasinghe (World Bank, Washington, DC) pp 15–29
- Hayward B M, 1995, "The greening of participatory democracy: reconsideration of theory" *Environmental Politics* 4 215–236
- Healey P, 1997 *Collaborative Planning: Shaping Plans in Fragmented Societies* (Macmillan, London)
- Holmes T, Scoones I, 2000, "Participatory environmental policy processes: experiences from North and South", WP 113, Institute of Development Studies, University of Sussex, Brighton, Sussex
- Imperial M, 1999, "Institutional analysis and ecosystem-based management: the institutional analysis and development framework" *Environmental Management* 24 449–465
- Laydoo R S, 1991 *A Guide to the Coral Reefs of Tobago* (Institute of Marine Affairs and Asa Wright Nature Centre, Carenage, Trinidad)
- Lim C P, Matsuda Y, Shigemi Y, 1995, "Co-management in marine fisheries: the Japanese experience" *Coastal Management* 23 195–221
- Mansfield B, 2001, "Thinking through scale: the role of state governance in globalizing North Pacific fisheries" *Environment and Planning A* 33 1807–1827
- Margoluis R, Salafsky N, 1998 *Measure of Success: Designing, Managing, and Monitoring Conservation and Development Programmes* (Island Press, Washington, DC)
- Moe T, 1990, "Political institutions: the neglected side of the story" *Journal of Law, Economics and Organisation* 6 213–253
- Murdoch J, Marsden T, 1995, "The spatialisation of politics: local and national actor spaces in environmental conflict" *Transactions of the Institute of British Geographers: New Series* 20 368–380
- Noble B F, 2000, "Institutional criteria for co-management" *Marine Policy* 24 69–77
- North D, 1990 *Institutions, Institutional Change and Economic Performance* (Cambridge University Press, Cambridge)
- Olsen S B, Tobey J, Hale L Z, 1998, "A learning-based approach to coastal management" *Ambio* 27 611–619
- O'Riordan T, Jordan A, 1999, "Institutions, climate change and cultural theory: towards a common analytical framework" *Global Environmental Change* 9 81–93
- Ostrom E, 1990 *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge University Press, Cambridge)
- Pimbert M P, Pretty J N, 1994 *Participation, People and the Management of National Parks and Protected Areas: Past Failures and Future Promise* (United Nations Research Institute for Social Development, Geneva)
- Rich B, 1994 *Mortgaging the Earth: The World Bank, Environmental Impoverishment and the Crisis of Development* (Earthscan Publications, London)

-
- Richardson W D, 1975, "The marine algae of Trinidad, West Indies" *Bulletin of The British Museum (Natural History)* **5** 73 – 143
- Rooks D, 2001 *Natural History of Tobago* (Environment Tobago, Scarborough, Tobago)
- Solecki W D, 2001, "The role of global-to-local linkages in land use/land cover change in South Florida" *Ecological Economics* **37** 339 – 356
- Steins N A, Edwards V M, 1999, "Collective action in common-pool resource management: the contribution of a social constructivist perspective to existing theory" *Society and Natural Resources* **12** 539 – 557
- Streeten P, 1993, "The special problems of small countries" *World Development* **21** 197 – 202
- Tacconi L, 1997, "Property rights and participatory biodiversity conservation: lessons from Malekula Island, Vanuata" *Land Use Policy* **14** 151 – 161
- THA, Tobago House of Assembly, Scarborough, Tobago
- 1995 *A Critical Review of Yachting Activity in Tobago* Planning Division
- 1997a *Report on the Status of the Sewage Treatment Plants in South West Tobago* Public Health
- 1997b *Tourism Industry Review* Caribbean Futures and THA
- 1999 *The Integrated Plan for the Development of the People of Tobago in the 21st Century* Policy Research and Development Institute
- Turner R K, Subak S, Adger W N, 1996, "Pressures, trends and impacts in coastal zones: interactions between socio-economic and natural systems" *Environmental Management* **20** 159 – 173
- Uphoff N, 1986 *Local Institutional Development: An Analytical Sourcebook With Cases* (Kumarian Press, West Hartford, CT)
- Western D, Wright R M, Strum S C (Eds), 1994 *Natural Connections: Perspectives in Community-based Conservation* (Island Press, Washington, DC)
- White A T, Hale L Z, Renard Y, Cortesi L, 1994 *Collaborative and Community-based Management of Coral Reefs: Lessons from Experience* (Kumarian Press, Hartford, CT)

