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Fisheries Co-Management in Inland Waters: A Review of International Experience

Edward H. Allison[1]

and

Marie-Caroline Badjeck[1],[2]

[1]School of Development Studies and Overseas Development Group Ltd
University of East Anglia,
Norwich NR4 7TJ, U.K.
E.Allison@uea.ac.uk

[2] Current address:
Zentrum für Marine Tropenökologie
University of Bremen,
Fahrenheitstr. 6
28359 Bremen, Deutschland
marie.badjeck@uni-bremen.de

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Purpose and Introduction

The aim of this paper is to conduct a critical review of international experiences in inland fisheries co-management, in order to inform the strategies and processes of the on-going Pilot Project on Inland Fisheries Co-Management in the FAO-implemented Sustainable Fisheries Livelihoods Programme, West Africa. This document is an output of a 23-day consultancy by Dr Eddie Allison, which also included participation in the Pilot Project launching workshop in Ougadougou, Burkina Faso (November 2003) and a seminar presentation in Rome (January 2004). This document is based on review of the literature conducted mainly during November-December 2003, but it has been modified in the light of comments and suggestions by participants at the workshop and seminar presentations. A separate report (Allison and Turay, 2004) summarises the workshop proceedings and recommendations.

The paper first reviews the origins of the current move towards co-management systems for fisheries, then presents frameworks for classifying and evaluating such systems. These co-management frameworks are set within the context of the sustainable livelihoods and institutional change literatures to allow ideas from these fields to inform a subsequent review of co-management experiences in tropical inland fisheries.

The literature on operational experiences of fisheries co-management has tended to emphasise organisational processes and technical aspects of co-management, such as the design and application of regulatory instruments and the creation of partnership organisations and management committees. It has less commonly addressed the political and cultural dimensions of institutional change. The review of background concepts aims to highlight the importance of understanding property rights regimes and 'rules in use' (whether formal or informal) that govern access to resources. Co-management is fundamentally a way of reassigning property rights. As such, it is also a highly political process and an understanding of the distribution and exercise of power is vital to designing co-management that will benefit the currently less powerful – i.e. the poor.

After the review of concepts and models in co-management, the paper uses a comparative analysis of co-management experiences, based on 19 case-studies obtained from both the academic and development-agency literature, to identify successful and unsuccessful co-

management initiatives. ‘Success’ is evaluated against an efficiency-equity-sustainability framework. The factors associated with success (or failure) are then discussed in the context of the issues confronted by the SFLP co-management pilot project.

Analysis of co-management case studies

Eight of the 19 case-studies examined were essentially government-led (Instructive or Consultative), four were largely community-led (Informative) and the remaining seven were more partnership-orientated (Co-operative or Advisory) and thus closer to the ideals of co-management. Arrangements where user-groups are equal or dominant partners in management-decision making seem more likely to achieve successful outcomes across the three success-criteria than examples where the state dominates decision-making.

The analysis appears to suggest that a very high proportion of co-management projects are successful. This is, however, likely to be influenced by the tendency to write more about successful cases than failures and to emphasise the positive experiences from a co-management project, particularly when the authors may have been involved in project design and implementation. These caveats aside, and allowing for our interpretation of success erring on the side of generosity, the existence of a significant number of successful, major co-management initiatives in tropical inland fisheries is highly encouraging and supports the contention of its advocates that there are few defensible institutional alternatives to co-management when it comes to improving the management of small-scale fisheries in the global South.

Aside from the nature of partnership, it is difficult to identify with certainty the factors associated with successful co-management outcomes. There is a lack of formal comparative analyses of the relative importance and degree of association between ‘design principles’ suggested in the common-property management literature and successful co-management outcomes. Such an analysis is hampered by the difficulty in identifying in the project and programme evaluation literature a common set of dependent and independent variables for the analysis. Standardised monitoring and evaluation tools can help to improve the lesson-learning benefits of PP1

Synthesis of lessons learned

Some of the key issues and challenges for co-management that emerge from these reviews are:

1. To effectively mobilise support for co-management and to ensure successful design and implementation of co-management programmes it is essential to develop a comprehensive understanding of four inter-related topics: **property rights**, **power relations**, the occupational, geographical and social structure of '**communities**' and issues around **trust** as an element of social capital.

2. Support from government is critical. Legislative and policy support is only the first step – if there is little political will and incentive for fisheries departments to relinquish control over resource management, then project interventions will not result in sustainable outcomes

3. Elite capture of community-based development initiatives is a widely-recognised problem and there are many cases where the poor have not benefited from a transition from state to community-based natural resource management. Mechanisms for ensuring equitable outcomes of co-management are critical to achieving PP1s pro-poor orientation.

4. Few West-African common-property systems are based on total exclusion of outsiders. Often, access regimes are filters rather than barriers, allowing partial access to outsiders on the basis of kinship, perceived need, or under historical reciprocal access or trading arrangements. Building co-management on these traditions may be more widely acceptable and enforceable than emphasising total exclusion of particular groups (e.g. migrant fisherfolk).

5. Financing co-management beyond donor or government-assisted transition periods can be difficult. Often, resource users are reluctant to commit funds to management until they can see returns from their investment. This has meant that successful donor-funded co-management projects have tended to require commitments of typically 6-12 years before they have been judged to be self-sustaining. Fortunately, PP1 does not start from

the beginning, as, for example, there has been a 10-year effort promoting co-management arrangements in Burkina Faso and similar efforts throughout the 1990s in other countries.

6. Building trust between stakeholders is a key issue for project success. Trust-building exercises between groups that may have had conflictual relationships in the past (e.g. government fishery enforcement agents and resource users, migrant and resident fisherfolk) is an essential activity before inclusive, multi-stakeholder management becomes a realistic option. Where there are known to be serious disputes over resource access that might overwhelm existing capacities for self-reorganisation, conflict management assessment (CMA) can help to determine what form of intervention is appropriate.

7. Co-management is a political project that involves the redistribution of power alongside the reallocation of use rights and control over resources. When the political dimension of co-management is not explicitly recognised then unexpected outcomes can occur, such as new conflicts or the exacerbation of existing ones. The rhetoric of co-management often refers to empowerment but seldom considers that one group gaining power often means that another group has their power and influence diminished.

8. Decentralisation initiatives should be politically supportive of co-management initiatives in theory, however, they often conceived in technocratic rather than political terms – as a means of improving efficiency of government service delivery and collecting tax revenues more efficiently rather than as a means of giving citizens a stronger voice in government and making government more accountable for their actions.

There are good examples of co-management systems that have succeeded in overcoming these challenges, but the extraction of design principles and ‘best practice’ from these examples is complicated by the pervading influence of historical, social, political and environmental context. In general, however, it can be said that careful adherence to participatory procedures, inclusion of all interest groups in management discussion and the existence of strong political, legal, technical and financial support, will lead to improved local-level governance of fishery resources.

Recommendations in support of PP1 Co-management projects

1. Ensure that the objectives of co-management are clearly defined and that the trade-offs between achieving equity, efficiency and sustainability are clearly understood by all participants. Trade-off analysis can be used if it seems necessary to reconcile conflicting objectives.

2. Defining objectives should be done by stakeholders, not imposed by others, but stakeholders' objectives should be compatible with government policy (national fisheries policy, PRSP etc). This should create enough space for local actors to define their own objectives for NRM while ensuring that national interests in poverty eradication and resource conservation prevail over local elite's personal interests, for example.

3. In building new management institutions, start with what resource-users know and do already ('building on strengths'). This will involve investigating and building upon local-level institutions rather than replacing them, while remaining aware that such institutions may need to change to accommodate changed objectives for resource management

4. Create opportunities for pluralistic decision-making by establishing platforms for discussion, debate and planning. Assist with conflict resolution.

5. Create fuller and clearer property rights at a local level, but, in granting rights to user-groups, promote flexible approaches rather than tightly worded contractual agreements. At the same time, it may be necessary to improve legal literacy so that local people can make informed responses to existing policy

6. SFLP can promote social inclusion and empowerment of marginalised groups in a number of ways. This might include: encouraging the formation of federations (e.g. Federation of canoe-fishermen, Federation of Women fish traders etc) to promote popular mobilisation around NR issues, assisting with conflict management, making livelihood enhancement central to local-level fisheries policy and supporting the use of

accountable management procedures in local organisations and addressing local inequalities and exploitative social relations.

7. Capacity building in both local government and community contexts could include the development of skills in technical areas, marketing, organisational development, communications, and political mobilisation.

8. Assist in promoting state and NGO interventions that address issues of political process rather than technical and managerial aspects of co-management. Support the building of democratic organisations that are representative, accountable and transparent. Technical choice in NR management should be left to users.

9. There is a need to build a set of clear indicators that address the efficiency-equity-sustainability framework and to develop a strategy for monitoring process issues as well as outcomes. This will strengthen the learning environment around the pilot projects and aid transferability of good practice.

This document has deliberately taken a critical stance on co-management and has challenged the simplifications of CBNRM. In doing so we are mindful that there is a strategic value in CBNRM's simplifications, since a bold and resolute insistence upon a few, clear axioms is crucial for making headway in the policy arena. The use of a loaded phrase such as CBNRM serves to capture the commitment to justice for rural people and, simultaneously, indicate the broader outline of a significant mechanism by which it can be achieved. To change commitment and broad policy goals into specific laws, programs and projects, however, requires more critical analysis. It has been our intention to foster this type of analysis among those currently designing co-management projects.

1. INTRODUCTION

Over the last fifteen years, fisheries development programmes have increasingly supported the principle that fisherfolk should be involved in decision-making over fishery resource management. A system of management that involves some form of shared responsibility between state and user-group or community organisations is known as co-management, recently defined as "*a collaborative and participatory process of regulatory decision-making between representatives of user-groups, government agencies, research institutions, and other stakeholders*" (Jentoft, 2003, p3). Co-management can also be regarded as a middle course between pure state property and pure communal property regimes (Pomeroy & Berkes, 1997), but should not be regarded only as a static legal structure of rights and rules, but also as a dynamic process of creating new institutional structures which can be based on already established ones. In some cases co-management may just entail the formal recognition of informal systems already in place (Raakjær Nielsen & Vedsmand, 1999).

This paper first reviews the origins of the current move towards co-management systems for fisheries, then presents frameworks for classifying and evaluating such systems. These co-management frameworks are set within the context of the sustainable livelihoods and institutional change literatures to allow ideas from these fields to inform a subsequent review of co-management experiences in tropical inland fisheries. This review is used to identify key lessons for application to on-going efforts of the Sustainable Fisheries Livelihoods Programme (SFLP) to promote co-management in West African inland fisheries.

1.1. Co-management in a development context

Co-management draws on a number of ideas in development studies and natural resource management, including the community development approach of the 1950s (reviewed in Wilson, 2003a); the concepts of participatory development and empowerment popularised by Robert Chambers in the 1970s and 1980s (Chambers, 1983) and the relevance and utility of local or indigenous knowledge in designing resource management systems (Sillitoe *et al*., 2002). These streams of thought combine with a set of ideas from institutional economics that challenge the 'Tragedy of the Commons' (Hardin, 1968) view of common pool resource systems and support collective action in natural resource management as an economically

viable alternative to privatisation or state regulation (Wade, 1987; Berkes *et al*., 1989; Ostrom, 1990). Support for these ideas also came from documentation of the many long-standing or 'traditional' common property resource systems around the world (e.g. Johannes, 1978; Berkes & Farvar, 1989, p4).

Often, the cultural values and functions of 'traditional' commons systems are said to have been undermined by the state-based management of commons resources that has been promoted in much of the developing world during the colonial and post-colonial periods. One of the most significant outcomes of the intervention of governments in fisheries management has been the alteration of property rights in fisheries – the organisation and distribution of rights of access, use and ownership of resources. As well as trying to involve fisherfolk in management decision-making, co-management thus often seeks to strengthen the definition of rights of access and use to fisheries and other common-pool resources and transfer them from the state to individuals or identified user-groups – an approach known as rights-based fisheries management (see reviews in, for example, Shotton, 2000a). In developed countries, there have been several attempts to grant rights of access and harvest to individuals or firms (e.g. in the form of individual transferable quotas), while in the small-scale fisheries of developing countries, access and harvest rates are typically devolved to groups (Allison, 2001), often labelled rather un-specifically as 'communities'. Territorial use rights in fisheries (TURFs) are a common example of allocation of property rights to a (more or less) defined group, rather than an individual (Christy, 1992). The allocation of property rights to groups has often attempted to support or restore 'traditional' *de facto* management arrangements and convert them into *de jure* rights. In doing so, they have sometimes inadvertently undermined the flexibility of these rights and altered the mechanisms by which they are allocated within communities (Allison & Ellis, 2001). Definition of group membership (who is the 'community'?) has also sometimes been contentious and the boundaries of resources and group membership are, in practice, often rather difficult to define. Despite these problems it is becoming clear that, if fisherfolk are to be involved in co-management arrangements, it is necessary to transfer at least some rights from the state to fisherfolk and to enshrine those rights in state law. The definition and transfer of access, use and property rights are discussed further in section 2.5 of this paper.

Finally, the move towards devolving rights and responsibility for management has been supported by a series of political agendas in development that may be grouped under the

headings of democratization and neo-liberal economic policy. These agendas are encapsulated in the Poverty Reduction Strategy Papers (PRSPs) prepared as a condition of debt-relief under the Highly Indebted Poor Countries (HIPC) initiative. PRSPs, ostensibly prepared by countries following wide consultations with their citizens, typically end up with a series of policy blue-prints that look remarkably similar (Craig & Porter, 2003), whether you are in Uganda or Cambodia. PRSPs support the withdrawal of the state from marketing and productive activities, typified by the closure of state marketing boards, withdrawal of subsidies from producers, and privatisation of support services such as harbour facilities, ice-plants, boat yards etc. At the same time that the state is being withdrawn to be replaced by the private sector, government is being brought 'closer to the people' through decentralisation programmes that aim to increase accountability at local level and to make government more responsive to local needs. The decentralisation model follows from previous 'good governance' reforms that, through donor-aid conditionality, speeded the transformation of many African post-independence one-party states to multi-party democracies in the late 1980s and early 1990s. Decentralisation, promoted under the concept of subsidiarity, is intended to provide more efficient and locally-responsive service delivery and improve government accountability and political representation.

These ideas, taken together, support what can be regarded as a new paradigm in natural resource management and development, usually termed 'community-based natural resource management' (CBNRM). Over the last decade, CBNRM systems have been promoted with evangelical fervour by development and conservation agencies alike, and a period of disenchantment has followed as the performance of these systems has often fallen short of expectations. This failure of the promise of CBNRM to live up to the rhetoric (Kellert *et al*, 2000) has led to a period of critical analysis of the factors that can support or undermine the functions and sustainability of CBNRM systems (e.g. Agrawal, 2001). Principal among these difficulties with CBNRM has been the functional definition of 'the community' (Agrawal & Gibson, 1999). Fishing 'communities' are no exception to this problem as they are often highly heterogeneous assemblages of people that defy categorisation on grounds of either territory, social structure or shared values and objectives (Allison & Ellis, 2001). With the concept of 'community' coming under increasing scrutiny, those promoting participatory fisheries management have begun to turn to institutional models of participatory management that do not rely so heavily on the community concept, instead focusing more on analysing

institutions for conflict resolution, consensus-building and allocation of rights and claims on entitlements (e.g. Leach *et al*., 1999; Agrawal & Gibson, 1999).

More recently, the rights of fisherfolk to decide on fisheries management have also been considered alongside the rights of other citizens (including future generations) to benefit from the environmental goods and services provided by aquatic production systems. As a result, the concept of co-management as a partnership between government and resource users has been broadened to include anyone who is affected by the consequences of fishery management decisions – including consumers of fish, and, for inland fisheries, the public interest in water resource use, water quality and conservation. Originating from business management studies (e.g. Freeman, 1984), the concept of 'stakeholders' has become prominent in discussions about natural resource and environmental management (e.g. Grimble & Chan, 1995) and has thus been proposed as a means of broadening the conception of co-management into a stakeholder-based management (Mikalsen & Jentoft, 2001).

1.2. Major policy directions in fisheries co-management

Fisheries policy tends to be characterised by multiple, often incompatible, policy goals. National fisheries policies frequently aim to simultaneously maximise sustainable yields and revenues or economic efficiency and employment (Allison, 2004a), thus evading 'hard choices' as to which goal should be prioritised (Bailey & Jentoft, 1990). To some extent, co-management programmes – and indeed any programme or policy that seeks to balance multiple objectives – have also suffered from either lack of clarity over policy objectives or unrealistic expectations on what can be achieved.

Significant influences on fisheries policy include the shift towards participatory decision-making that is manifest in the global wave of democratisation and decentralization programmes; the withdrawal of the state under neo-liberal economic policies; poverty reduction strategy papers that emphasise pro-poor growth; the support for small-scale fisheries, driven by the FAO Code of Conduct for Responsible Fisheries (CCRF); and recent analyses drawing attention to poverty and livelihoods issues in small-scale fisheries (e.g. Béné, 2003). These trends intersect in co-management to promote three major policy directions: improved efficiency of management (reduced government costs, improved yields,

improved incomes); a distribution of benefits that protects and enhances the livelihoods of the poorest; and improved control over access to resources by fisherfolk themselves (empowerment). The priority accorded to these three policy goals varies partly according to the balance of power between government and user groups. In situations where government dictates policy to users, improved efficiency through cost reduction usually prevails in practice, if not in the rhetoric of co-management. Where power is vested in local elites, then revenue generation may be a priory. Empowerment is usually only a concern of those who currently lack power (e.g. poor fisherfolk) and their advocates, which often include NGOs, donor agencies and other civil society groups. Governments and traditional authorities that are genuinely committed to poverty eradication and increasing citizen rights may also prioritise empowerment of fishing communities over other management goals. These multiple policy agendas underlying co-management are considered throughout this analysis.

It should be remembered that this 'reinvention' of fisheries governance systems is in response to a perceived crisis in world fisheries (Allison, 2001). The perception of resource over-exploitation and its negative consequences for the nutritional and income status of fisherfolk and rural populations in low-income countries motivates the search for more effective management. The links between poverty, population growth and resource exploitation are not as straightforward as has been implied in Pauly's (1997) 'Malthusian Overfishing' narrative[1], but nevertheless the tensions between strengthening livelihoods by improving access of the poor to natural resources and maintaining the productivity of those resources must be acknowledged. Co-management is thus fundamentally a regulatory mechanism that exists partly to prevent over-exploitation by excluding or regulating the activities of fisherfolk.

[1] See Allison & Ellis, 2001; Allison & Mvula, 2002; and Béné, 2003, among others, for recent critical discussions of the Malthusian overfishing narrative

1.3. Aims of the review

After a review of concepts and models in co-management, the paper uses a comparative analysis of co-management experiences, based on 19 case-studies obtained from both the academic and development-agency literature, to identify successful and unsuccessful co-management initiatives. 'Success' is evaluated against an efficiency-equity-sustainability framework. The factors associated with success (or failure) are then discussed in the context of the issues confronted by the SFLP co-management pilot project. More detailed narrative summaries of some of the case studies are included in Annex 1, while an overview of using stakeholder based consensus-building tools (e.g. multi-criteria and trade-off analysis) is given in Annex 2. The review of global inland fisheries co-management experiences are used to identify key lessons for the on-going SFLP Pilot Project (PP1) on co-management in inland fisheries (Allison & Turay, 2004).

2. CONCEPTUAL FRAMEWORKS AND ANALYTICAL METHODOLOGY

The Sustainable Fisheries Livelihoods Programme (SFLP), funded by DFID and implemented by FAO in partnership with relevant fisheries agencies in 25 West African countries, is one of the first fisheries-sector programmes to be designed and implemented within the framework of the sustainable livelihoods approach (SLA). SLA has recently become prominent among people-centered approaches to development in the field of natural resources management and is the framework adopted for project and programme design and management by several donor agencies and NGOs (reviewed in Solesbury, 2003). In the fisheries sector, the SLA has provided a set of organising principles that usefully accommodate both the shift towards a more people-centered fisheries management (Allison & Ellis, 2001) and recent efforts to better integrate fishery sector concerns with wider rural development policy and planning (Allison, 2004a). In the context of this paper, the livelihoods approach is used as a background conceptual framework against which to discuss the implications of a shift towards co-management in inland fisheries.

2.1. Pilot Project on inland fisheries co-management

The inland fisheries co-management project (PP1) is the first of three planned pilot projects within the 25-country SFLP project. The three pilot projects aim to test approaches to contributing to poverty reduction and livelihoods improvement for communities engaged in small-scale fisheries. Lessons learned from pilot projects will then be disseminated to support further initiatives elsewhere within the SFLP partnership. The other two pilot projects are concerned with developing co-management systems for coastal fisheries and with post-harvest issues. The goal, purpose and expected outputs of this Pilot Project (PP1) are:

Goal - To contribute to poverty reduction and livelihoods improvement through sustainable participatory management of water bodies and aquatic resources

Purpose - To improve fisheries livelihoods by establishment of co-management mechanisms and the integration of fisheries communities into local development processes

Expected outputs -

- Functional co-management plans for inland water bodies
- Improved policy and legislative framework for co-management
- Improved social and economic benefits to fisheries communities from increased participation in the sector and wider local development processes
- Enhanced capacity of stakeholders at all levels to contribute to co-management and local development
- Sources of finance to sustain co-management systems and community development programmes identified and secured
- Information networks and communications and monitoring systems established to support resource management and the improvement and diversification of livelihoods

A summary of the project's on-going and planned activities at regional and national level in support of these aims is given in Allison and Turay (2004). The projects' activities are focused on five waterbodies in four countries:

- Burkina Faso – Lakes Bagré and Kompienga
- Côte d'Ivoire – Lake Kossou
- Ghana – Lake Volta
- Mali – Lake Sélingué

The progress made so far in implementing co-management is detailed elsewhere (summarised in Allison and Turay, 2004) but in summary it can be said that all four countries have instituted policy and legislative reforms that support devolved fisheries management, and some have identified and consulted with many of the key stakeholders and are now beginning to engage in dialogue over how to implement co-management in the selected water bodies.

2.2. PP1 as an intervention for institutional and organisational reform

The Pilot Project on inland fisheries co-management (PP1) has chosen institutional and organisational reform[2] as its entry point to strengthen fishing-based livelihoods and to integrate fisheries development with other local development initiatives. A brief introduction to institutional analysis theory and practice is therefore important in locating this intervention in the wider experience of institutional change for development. This review draws on recent useful theoretical reviews of institutional change issues of relevance to poverty eradication efforts (Bastiaensen *et al*., 2002) and fisheries management (Jentoft, 2004), as well as the accessible guidelines on institutional change for development produced by Wilson and Gill (2003).

Institutions have many definitions but can most simply be thought of as "humanly devised constraints that shape human interaction" (North, 1990; p3) – they form the basic interpretative and regulatory framework for human action. The major types of institution are summarised in Table 1. Examples of institutions include common understandings (beliefs, norms) that facilitate cooperation, hierarchic bodies made up of, for example, judges, village chiefs or police officers who attempt to resolve disputes among people, money as a standardised unit of exchange, the family as a core arena for intense social interaction and mutual exchange, organisations such as banks and churches with standardised procedures for social interaction etc. Institutions are dynamic in nature, constantly evolving and are contested and adapted through social interactions.

[2] Institutions are the 'rules of the game', while organisations are how we structure ourselves to play (North, 1990; Wilson & Gill, 2003). The key distinction is between **rules** (formal, informal, traditional, customary, legal etc) and **players** (individuals, communities, user-groups, firms, companies, NGOs, government agencies etc).

Table 1 The institutional environment (adapted from North, 1990)

Social Structures	Organisations Networks Social Relationships
Rules	Formal rules Informal rules
Culture	Perceptions Identities

What we think of as 'society' is often regarded as being made up of three basic social institutions: the state, the market and civil society, and 'governance' refers to how these institutions function internally and interact with each other. Goals, functions and perceptions of these three different institutions differ and ideas for institutional change (such as co-management) are influenced by and embedded or 'nested' within these broader social institutions. Jentoft (2004) provides a stimulating and accessible discussion of the links between differing political ideologies and their visions on the relative roles of market, state and civil society in governing societies. These ideologies and roles are played out, at a micro-scale, in all local institutional development projects.

Organisations represent the formal structures through which actors or 'players' are organised to set, modify and enforce the institutional 'rules'. Some examples of types of organisations are given in Table 2.

Frameworks like these can be used to decide which institutional players can most effectively be made responsible for the provision of different types of good and services. The frameworks build on classical economists' arguments assigning the allocation or provision of different types of goods (private, public and common pool goods) to different types of institutions (Bator, 1958).

Table 2 Types of organisations by sector (modified from Uphoff, 1993 and Bastiaensen *et al*, 2002)

Public Sector		**Collective Action Sector**		**Private Sector**	
Local administration	Local government	Membership organisations	Cooperatives	Service organisations	Private businesses
Orientations of local initiatives					
Bureaucratic	Political	Self-help (common interests)	Self-help (resource pooling)	Charitable (non-profit enterprise)	Profit making (business enterprise)
Examples					
e.g. fisheries department office	e.g. village or district council	e.g. womens' savings group	e.g. fish marketing cooperative	e.g. external NGO (CARE, IUCN)	e.g micro-enterprises, boat owners
Roles of individuals in relation to different kinds of local institutions					
Citizens or subjects	Voters and constituents	Members	Members	Clients or beneficiaries	Customers, crew (wage labourers)

In diagrammatic representations of the SLA frameworks (reviewed in Carney *et al*., 1999), institutions and organisations are included in two ways:

- as a set of factors external to individuals or households that mediates their access to assets and activities and that increases or decreases their vulnerability to external shocks and trends: the 'Policies, Institutions and Processes' (or PIP) and 'Vulnerability Context' boxes, and;
- as 'social capital' in the classification of assets available to individuals or households (a slice of the 'asset pentagon').

The concept of social capital was first defined by Putnam (1993) as society's endowments of voluntary networks, norms of reciprocity and trust. In the development context, social capital enables:

- *Better information flows* – wider dissemination of innovations, knowledge, shared values
- *More effective and cheaper contract enforcement* – development of reputation mechanisms, greater security of economic exchanges, social pressures to reduce opportunism

- *A greater capacity for local collective action* is important for the production and maintenance of local public goods (e.g. wells, roads, fish landing sites) as well as for the management of common property resources (e.g. irrigation, fishing resources, forests).
- *Better prospects for the development of informal mutual insurance mechanisms.* People who know and trust each other and share the same social norms and values are more likely to help each other out.
- *Better synergy between different organisations of the state, market and collective action sector.* Effective and open relationships between the state (or other external organisations) and local communities is most easily established when social structures are less segmented and more egalitarian; this allows for easier and more inclusive organisational processes at community level and thus facilitates cooperation with external organisations.

(modified from Bastiaensen *et al.,* 2002)

At the individual or household level, social capital might include the position of household members in wider society, their membership of various community-level or formal organisations, their network of friends and relatives, their standing and reputation, their family lineages etc. There are different interpretations of social capital:

Communitarian – the quality and quantity of local associations (clubs, local civic groups). More associations mean more social capital. The downside is ignored. Dense networks can strain development prospects and pressure to distribute gains from economic activity can reduce personal incentives to improve business opportunities. Another example refers to the situation whereby dense networks may develop norms and rules that do not coincide with the collective good (e.g. criminal gangs).

Networks view – focuses on both the positive and negative sides of social networks. Strong inter-group ties (e.g. kinship, tribe) play important roles in giving meaning to people's lives and serve as the principal mechanism of social support. Weak ties that breach family, religious, ethnic and community borders are very important in connecting people into wider networks regarding exchange of information, resources and services. Moreover, without these extra-group ties, the strong inter-group ties can become too suffocating.

Institutional view – stresses the role of the political and legal environment as an important facilitator for local organisational processes. Also stresses that the performance of formal institutions such as states and private organisations (enterprises, NGOs) depends on their integrity, internal coherence, credibility and competence as well as on their external accountability to civil society.

Synergy view – brings together networks (micro-bottom up) and institutional (macro- top-down) perspectives. Differentiates **bonding** (strong ties) and **bridging** (weak ties) social capital referred to in the networks view and **linking** social capital that incorporates the way in which citizens are aligned to the state (from the institutional view).

(modified from Bastiaensen *et al.,* 2002)

There is a danger in the livelihoods perspective that strength of community and household social capital is seen as a substitute for weak, hostile or indifferent formal institutions, whereas an 'enabling environment' would need both strong community social capital (bonding and bridging) and strong linking social capital in the form of good relations with functioning, supportive and accountable formal institutions. Livelihoods analyses in four Eastern/Southern African countries (summarised in Ellis & Freeman, 2004) identify weaknesses of formal institutions, lack of trust between communities and government service providers and therefore weak linking social capital as a key constraint to strengthening rural livelihoods in that area of Africa. In the context of PP1, the co-management project will aim to harness existing bonding and bridging social capital, while it will need to actively support the building of linking social capital.

If social capital can be regarded as providing the bonds, bridges and links that connect social actors, then the rules, norms and knowledge that regulate their social interactions can be regarded as the 'three pillars' of institutions that regulate societies' interactions. Building on Scott's (1995) three "pillars" of institutions, Jentoft (2004) defines them thus:

The regulative pillar – Fisheries management institutions confer rules of conduct, for instance those pertaining to licences and gear. Because fisheries are diverse, complex and dynamic, rules tend to be numerous and unstable and users' rule compliance is a constant source of concern.

The normative pillar – when rules enjoy legitimacy, breaking them is considered unethical. Thus compliance is not only subject to the risk of getting caught, but is morally binding. Honesty is a cherished social value and to cheat is to disobey the "voice of the community" or some higher authority (such as a God or Gods). Fear of retribution from God or from being socially outcast can be a powerful incentive for fishers to comply with informal, locally-agreed rules and practices, such as 'taboos' (Colding & Folke, 2001). Understanding the motivations for rule compliance can help design interventions for institutional change. If one assumes that individuals have no moral ties and break rules only if because they rationally evaluate that it is worth the risk to do so, then institutions for enforcement targeted at the individual might include more surveillance and stricter penalties. If the problem, however, is that those who fish have lost the ability to feel morally committed to values such has honesty and respect for rules, the remedy may lie with more support for those institutions in which moral values such as honesty, trust, and respect are nurtured – these might be the family, community, church and school.

The cognitive pillar: Fisherfolk sometimes break the rules because they do not know them – rules are often complex, they often change, and they may be made by distant regulatory authorities with little day-to-day contact with fisherfolk. If the problem is that those who fish are not aware of the rules or do not understand them, the problem is basically a matter of communication – managers are not getting their message through – neither penalties nor moral condemnation will help. Rather, more effective communication is the answer.

The above definitions and discussion are intended to encourage critical thinking on how to identify institutional problems so that interventions are appropriate and locally relevant. All project and policy interventions occur in a social context characterized by a delicate mix of informal organisations, networks and institutions (e.g. Woolcock & Narayan, 2000, p242) and the better they are understood and monitored during interventions, the more likely that interventions will be successful and sustainable. Institutional change confronts existing relations of power, as well as habit ('we have always done it this way'), which is why institutional change may not occur, even though institutions are not functioning well (Jentoft, 2004). With this in mind, there are three main potential strategies and objectives for promoting local institutional change:

1. *Providing or targeting resources* – e.g. providing 'basic needs' – sustainability of the intervention is often a crucial design principle, as is sensitisation for institutional change in support of sustainability. Either provides private goods (e.g. improved nets, credit etc), or public goods (roads, landing stations) or toll goods (electricity, health care centres etc) – in principle to improve capabilities of communities, including those of the poor. To be effective, these need to be accompanied by institution-building to strengthen the maintenance of public goods.

2. *Empowerment* – strengthening the institutional capacity of vulnerable groups – either by organising the poor in new groups and organisations or supporting existing processes of organisation among the poor.

3. *Community building* – promotion and facilitation of co-operation and dialogue between different groups. Key actors in communities are often tied to each other in a situation of cooperative conflict (Dréze and Sen, 1989) – their interests will be partly convergent, partly divergent, rather than the idealistic concepts of community sometimes promoted in CBNRM projects. Community-building is not necessarily about getting the community to act as one body – instead, it might aim to connect or re-connect the various partial views which are represented and defended by different key players, or at least allow mutual understanding of different needs and aspirations (Wilson, 2003b).

At present the PP1 vision aligns most closely with the community-building strategy, but with an element of targeting the provision of benefits to the poor. Although the rhetoric of empowerment is present in most co-management plans, such plans are often instrumental in nature – in other words they are top-down in orientation and allow institutional change within tightly prescribed limits set by the state and its partners, which may include donor agencies and major NGOs. If community-level organisations are to work in partnership with government and other organisations in a new co-management organisation, then the nature of such partnerships must be considered in the light of what is desirable and achievable. It is to the nature of co-management partnerships that we turn to next.

2.3. Typologies of partnership arrangements in co-management

In building co-management institutions, it is an essential first step to understand and agree on a basic model for partnership between state and community interests. Sen and Raakjær Nielsen (1996) have described some of the most common arrangements for co-management based on the degree to which the resource users and the government share responsibility and authority in governing the resource. They classify co-management into five broad types: instructive, consultative, cooperative, advisory and informative, according to the balance between the roles that the two groups play (Table 3). This schema is based, in turn, on similar frameworks that classify the degree and quality of participation in 'participatory development' (reviewed in Pretty, 1995, p172-174)

The classification, as interpreted in this paper, is made on the basis of the relative power that government and other stakeholders have over longer-term decision-making on issues such as access rights, area and seasonal closures, technical measures (such as gear regulations) and on policy goals and distributional issues. This clarification may allay some of the criticism made by Kesteven (1997) that the Sen/Raakjær Nielsen framework doesn't make clear which decisions are taken by which party and how this might influence the classification.

Classification of co-management arrangements is a subjective process: it simplifies complex realities; it presents a continuum of management forms as a series of discrete categories; and it is heavily dependant on the subjective interpretation of information available in a wide variety of forms in the literature. It is acknowledged that the classifications made in our case-study analysis could be altered in light of additional evidence or could be evaluated differently by different people. Nevertheless, the classification provides a conceptual framework against which to discuss the experiences of a range of projects using different approaches to co-management.

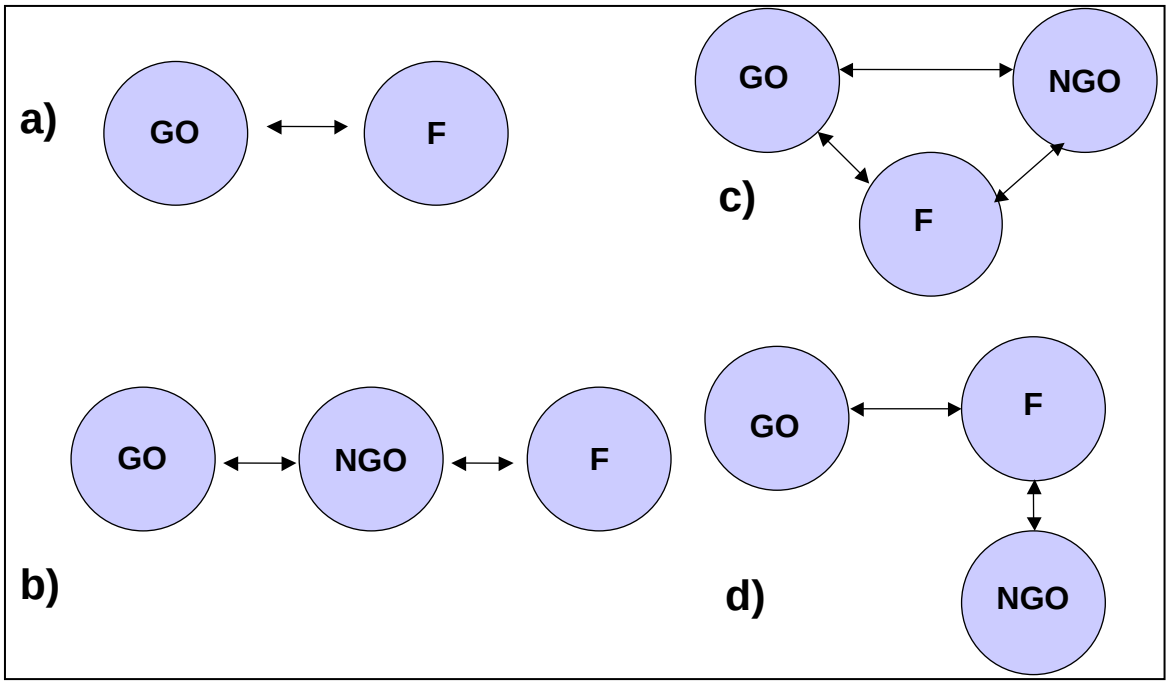
Table 3 Typology of co-management arrangement (adapted from Sen and Raakjær Nielsen, 1996)

Government Leads				
		User Groups Lead		
Instructive Management centralized in government.	**Consultative** Government consult users but solely responsible for decision-making; controls the process.	**Cooperative** Government and users cooperate as equal partners in decision-making.	**Advisory** Users make decisions, based on government advice where necessary; government has a role in endorsing user-group decisions.	**Informative** User-group based management; government delegates authority for decision making to users who are only responsible for informing government on these decisions.
	CO-MANAGEMENT			

2.4. Organisational models for co-management

Sen and Raakjær Nielsen's framework covers some of the institutional aspects of co-management (rules and norms for decision making), while not specifically addressing either property rights structures (discussed in a later section) nor organisational models. It is commonly assumed that co-management involves collaboration between appropriate state agencies and representatives of fishing groups, but a range of organisational models are possible. In Figure 1, overleaf, models of possible cooperative arrangements envisaged by a co-management project from Bangladesh (Ahmed *et al*., 1997) are presented.

Figure 1. Some possible organisational arrangements for co-management involving a government agency (GO), fishing communities (F) and a facilitating third party such as an NGO (adapted from Ahmed *et al*., 1997).



Co-management as it is conventionally thought of is as depicted in model '**a**'. It involves a direct two-way relationship between government and community (as envisaged in, for example, Pomeroy & Berkes, 1997). This can work where there is a relationship of trust between fisherfolk and government (e.g. at local level), where there are existing organisations representing fishing communities, and where resources are available for both parties to work jointly. These conditions are seldom met and in cases where they are violated, successful co-management may depend on involving other partners in a variety of roles.

Model '**b**' represents the case where an NGO acts as a link between government and fisherfolk, with the latter two not having direct contact. The NGO takes the lead and interacts with government and with fishing communities and transmits and acts upon the inputs of both groups in an even-handed manner. Model '**c**' depicts a three-way partnership where all three parties interact in an egalitarian manner with each other to implement co-management, with each partner's activities being complementary to the others, while Model '**d**' represents co-

management involving government, the users, and a third party, where groups of resource users interact directly with government departments and the NGO merely plays a supporting role, only coordinating with government when necessary and gradually withdrawing as communities become sufficiently well-organised not to require NGO support. Ahmed *et al* (1997) note that in Bangladesh this model is not yet present because fishing communities have not reached sufficient organisational strength and empowerment to deal directly with the government. The key question for the pilot project is to develop an understanding of whether the conditions for direct government-community management interaction exist or can be created within the lifetime of the project, or whether it might be better to use an NGO or other organisation as a mediator.

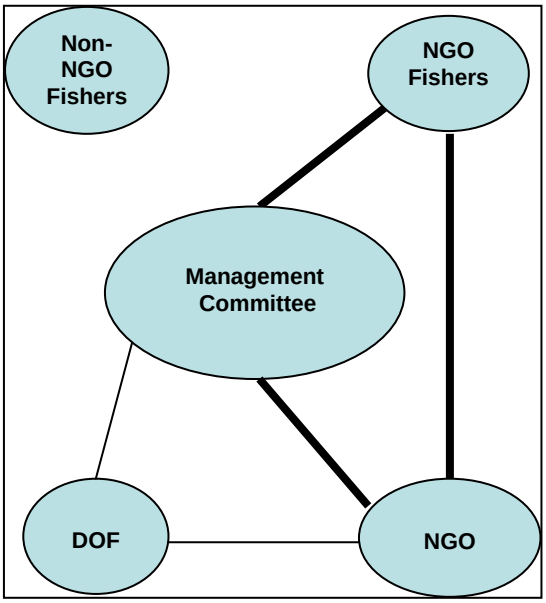
The real situation can be more organisationally complex than these models depict. In the ICLARM/CBFM Bangladesh case, what actually transpired looks much more like multi-stakeholder management, with complex interactions occurring where local fishery management committees played a central role (Figure 2). It was originally expected (Figure 1) that:

1) NGOs would act as intermediary between DOF and communities or
2) that DOF and NGO would give separate support to the communities or
3) that a three way co-management might be formed.

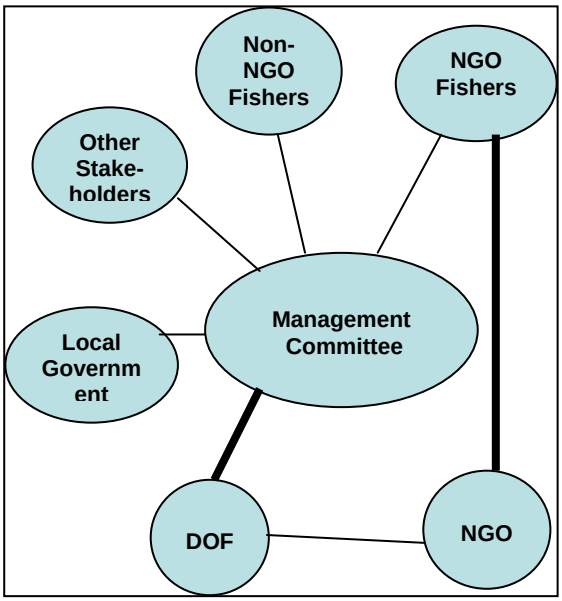
To some extent all of these interactions occurred, but the more important institutional developments were in the local fishery management committees, which were formed largely by NGO initiatives but also provided a forum that DOF staff could interact with. Two types of user committee developed, that reflected the nature of the resource and diversity in its use, communities and the nature of access to the resource, and the preferences of the NGO concerned (Figure 2). This led, in some cases, to exclusion from dialogue of those fishers not targeted by the NGO programme. Furthermore, the research centre promoting the programme (ICLARM) was not limited to an advisory role during the project, but playing an important role as intermediary/buffer between government and NGOs (Thompson *et al* 2003). This highlights the fact that projects should not define the boundaries of participation too narrowly.

Figure 2 Partnership and institutional arrangements for community based fishery management that actually transpired under the CBFM project in Bangladesh (Thompson *et al.*, 2003).

a)



b)



Lines in bold indicate strong interaction. In '**a**', a management committee composed of an NGO and fisherfolk within the NGOs area of operation were the most influential partners in management. Government involvement was weak and indirect, while non-NGO fishers were excluded from decision-making structures. In model '**b**' , the management committees were better linked with the variety of interest groups, including local government, fisherfolk and other stakeholders, and the strong guiding role of the NGO (not represented on the Management Committee, but still influential with its constituent fishers) was replaced by the Department of Fisheries.

2.5. Property rights and co-management

The fisheries co-management literature has tended to emphasise institutional and organisational arrangements for decision-making. An important dimension of involving communities in management is the question of changing property rights systems so that the greater sense of stewardship that comes from being involved in decision-making is backed by the control of benefits flowing from improved management.

If we disaggregate the regulative dimension of fisheries management institutions into form, content and process, rules allocating property rights set the form of regulations, while content refers to the principles set out by those rules and process rules are those that define the procedure for reaching decisions who participates, in what ways and capacities, when and

where (Jentoft, 2004). Thus, it can be said that co-management has typically highlighted process over form and content. This is now beginning to change, as the extensive discussion of rights-based fishing and the structure of property rights in fisheries merges with the co-management literature to create integrated analyses that highlight the critical need to transfer property rights along with decision-making responsibility in co-management arrangements (e.g. Toufique, 1997; Thompson *et al*., 2003; Jentoft, 2004).

The most comprehensive synthesis of current thinking and experience with property rights in fisheries is the edited volume of Shotton (2000a), which, although somewhat preoccupied with the controversies of individual transferable quotas in developed-country fisheries, also has useful papers on small-scale fisheries and community or group-based rights (Willman, 2000; Christy, 2000; McKay, 2000; Kurien, 2000; Viswanathan, 2000). The paper by McKay provides a valuable discussion of the concept of 'community' in the fisheries context, on which Kurien builds the concept of community property rights, supporting Viswanathan's contention that the introduction of private property rights into the small-scale fisheries of developing countries will increase conflict and inequality and decrease access for the poor.

A property right potentially confers the power to *i*) use or manage a resource or area, *ii*) the power to sell it or grant it, and *iii*) the power to take its yield as a harvest, rent or royalty (Scott, 2000). The owner of a fishing boat has all three powers over his/her boat: he can run it, sell it and make a profit from the fish landed by it. The same fisherman in his role as participant or occupier in the fishery may have only the third power[3]. The first and second powers may be vested in the State or simply poorly specified and thereby appropriated and controlled by the powerful (Béné, 2003). This, in theory, leaves the individual fisherman with no incentive to look after the fishery as individual restraint may increase the value of the fish stock, but the individual has no powers to capture this extra value. As Gordon (1954) and Hardin (1968) pointed out, this leads to an individually rational strategy of attempting to maximise individual harvest, leading to resource degradation of common pool resources. The reality is of course more complex, and informal or *de facto* property rights have often been claimed and defended by social actors (user groups, communities etc) to implicitly or explicitly prevent this 'tragedy of the commons' (Berkes *et al.*, 1989). Rights-based fishing

[3] the power to derive a yield from the fishery is known as a '**usufruct right**', defined as: "the right to use and derive profit from a piece of property belonging to another, provided the property itself remains undiminished and uninjured in any way" (Collins Dictionary, 2nd Edition, 1986, p1670).

(Shotton, 2000a; Allison, 2001) essentially aims to formalise and clarify property rights and extend them from the power to harvest (e.g. granted by licences) to cover the other two powers.

Property rights systems are often classified into four categories (e.g. Berkes and Farvar, 1989)

Open access *(Res nullius)* – where access is free and open to all (or there are no well defined use rights)
State Property *(Res publica)* – where rights to a resource are held in trust by governments for he benefits of citizens and certain rights (use rights) may be granted to citizens through state lisencing schemes
Common Property *(Res communes)* – rights are held by an identifiable community of users with rights to exclude others
Private Property *(Res privata)* where are individual or firm has the rights to exclude others from using the resource

Legally defined open-access regimes are rare – international waters used to be open-access but are now governed by various international conventions that specify sovereign states' international rights and responsibilities (Allison, 2001). It is argued that many fisheries fit the criteria of *de facto* open-access due to poorly defined property rights, but our own fieldwork and reading of the literature has found no instance of unconditional freedom of access for all, despite claims to the contrary[4]. Many fisheries are state property, but nested within the official rights of the state there are often communal rights, such as customary tenure systems for land in Africa and various marine and aquatic resource tenure systems originating in 'traditional' governance systems (e.g. *Sasi laut* in Indonesia). These may be partly recognised in law, but are often defined and defended outside the official legal system. Private property rights are comparatively rare in developing-country fisheries, but exist in the context of small-pond aquaculture or commercial fish-farming enterprises (e.g. prawn farming in many tropical coastal zones).

[4] It is common to be told that 'anyone can fish here with no restriction' only to find, on further investigation, that visiting fisherfolk require letters of permission from authorities in their place of origin, must pay a tithe or tax to village or landing-site authorities and are required to comply with local informal rules or norms. In most cases customary practice denies usufruct rights to half the potential entrants to the fishery on grounds of gender (women do not fish in many communities). This can hardly be described as 'open access'.

Property rights are in practice more complex than the above typology suggests. Osemeobo (1993) for example, identifies four types of communal land tenure in Nigeria - extended family land, group-family land, village land and clan land - each with different rules of access, different land use decision-makers and different relationships through which right of access is asserted. It is also possible that the three types of power conferred by rights to a resource are held under different systems, for example the power to extract a yield from a fishery resource may follow from a private right being granted (a fishing licence), while the power to manage the resource (e.g. for a choice between use for fisheries or aquaculture) may follow from rights held by a national government.

In order to understand how co-management might strengthen property rights systems, it is important to consider not only the 'outputs' of property rights (in terms of the powers they confer) but also the 'inputs' - the characteristics of a property right. Following Scott (2000: p5-6), these are:

Exlusivity – the freedom from interference by a rights-holder in the exercise of and benefit from their rights. The right of a fish-farmer over a bond may be exclusive, but in fisheries, rights usually have to take account of the actions and decisions of other fisherfolk, so the rights to fish in a large body of water are rarely exclusive. Exclusivity is promoted by reducing the number of rights-holders to a particular area or fish stock (e.g. through community membership, area restriction, licence etc).

Duration – the length of time the holder's powers may be enjoyed. A right may be exclusive, but of short duration. An example is the lease of a seasonal floodplain lake to an individual household by a landowner. In general, the more durable a right, the more incentive there is to maintain or enhance the value of the property – in this case the fish stock and its environment. Freehold rights are in perpetuity, while leasehold rights are time-bound. Freehold rights may also differ qualitatively from leasehold rights, allowing the rights-holder a greater range of powers than that granted by contract to leaseholders.

Security – refers to the quality of title over the property. Often, property rights in fisheries are informal and inherited from earlier generations of fisherfolk. They may lack legal legitimacy and this confers uncertainty over future rights. Insecure property rights are one of the key reasons for the wave of land-tenure reform sweeping through developing countries as part of

efforts to secure the asset basis for rural livelihoods as part of poverty eradication strategies (Toulmin & Quan, 2000). Enforceability of property rights (sometimes considered a separate characteristic) is an important component of security. The design of property rights in fisheries needs to take into account what is enforceable. Insecure and limited property rights over productive assets such as land, fish stocks, water resources and forests are strongly associated with poverty (Ellis & Allison, 2004). Insecurity of property rights also reduces the value of such rights, as buyers deduct a 'risk premium'. This affects the final characteristic:

Transferability – If property rights can be made exclusive and secure, then they become an asset that has a value. Transferability enables rights-holders to realise this value. They may vary in degree. For example it may not be possible to buy a licence separately from a vessel or there may be restrictions on the number of licences held by an individual or firm to prevent monopolies. Transferability thus refers to the ability to buy, sell or lease property rights. In a society where the market is an increasingly prominent institutional pillar (see Section 2.2) transferability is an important attribute of property rights. Complete transferability (which may also include the right to divide property) may not always be socially desirable – the privatisation of commons through increased rights of transferability and divisibility may exclude the poor, who have a higher dependence on common pool resources (Beck & Nesmith, 2001).

Recent community-based fisheries management initiatives in Africa have paid increasing attention to the legal dimensions of property rights issues in fisheries, which has led to legal reform that recognises, to a greater or lesser degree, community rights to manage their own fisheries (see Section 1.2). What has been missing, however, is careful analysis of existing *de facto* rights that might have enabled the legal recognition of locally adapted rights systems. Under decentralisation, the power to pass local bylaws may provide the opportunity to legislate and strengthen existing informal property rights systems, provided these rights are not over-specified at national level.

In the context of co-management, options for strengthening property rights include setting individual or community quotas, specifying territorial use rights for fishing (TURFS) or fishing inputs rights (Shotton, 2000b). Quotas rely on estimates of total allowable catch and are probably not appropriate in situations where quantitative target reference points for fisheries management (e.g. MSY, MEY) are not estimated due to lack of data, or where the

MSY concept is untenable due to the non-equilibrium nature of climate-driven fishery production systems (Sarch & Allison, 2000; Jul-Larsen *et al.*, 2003). One or other of these two characteristics are probably applicable to most inland water bodies in West Africa. TURFS are a possibility (particularly if associated with structures such as fish aggregating devices), but with many mobile fisherfolk and with wetlands that fluctuate extensively in their geographical extent, they may not be practicable for many of the major wetland systems, although access can be regulated flexibly or in terms of reciprocity as an alternative to total exclusion (Allison & Ellis, 2001). They may be suitable for relatively small, stable water bodies such as dams with carefully regulated water levels or volcanic crater lakes, or they may be associated with artificial structures such as fish aggregating devices and cage aquaculture facilities. Stock-based use-rights (SURF; Christy, 2000) may be an alternative to TURFS for mobile fish stocks – they grant a defined user-group the exclusive rights to a particular fish stock wherever it is located. These will work best where particular fish stocks can be defined and targeted with minimal technical interaction with other fisheries (e.g. spawning migrations of river fish). Fishing input rights, which specify the size and number of gear units that can be used, the number of days, or season that can be fished, the size and type of fish that can be caught etc., are the most common 'traditional' means of regulation (Wilson *et al*., 1994) and would seem to offer the best basis upon which to build in the PP1 locations.

Granting co-management bodies the rights to regulate access and other forms of input control and to collect revenues from licence fees is perhaps the most promising means of transferring rights along with management responsibilities. Rights previously held by central, state authority can be devolved to a variety of organisations – e.g. district government structures or multi-stakeholder groups, Village committees (e.g. beach village committees or village natural resource management committees), corporate or legal organisations composed of all rights-holders and/or residents (e.g. trusts, conservancies, communal property associations such as fisheries cooperatives, households or individuals, self-help organisations) or may be held outside government or community structures by NGOs.

Although legal reform to strengthen property rights is a good starting point for co-management, any new rights-based system must enjoy broad-based support or legitimacy among stakeholders if it is to function. Free-riding in group-based systems, domination by elites and short-term losses incurred by co-operation in management (e.g. through reduced fishing days or gear size) are real problems that need to be overcome. Weak internal

governance and rules that are unable to accommodate technological or social and economic change are frequent causes of failure of community-based rights (Willmann, 2000). It is not, therefore, a simple linear process, starting with improved property rights and progressing to other elements of co-management. Property rights need to be built iteratively within the context of consultation, trust- and institutional capacity-building and they must remain sufficiently flexible to respond to future change.

2.6. Analysis of case-studies using efficiency-equity-sustainability framework

With insufficient documented information on property rights arrangements and how they have changed under co-management and with limited information on the organisational structures of co-management projects, we return to the Sen and Raakjær Nielsen institutional framework to guide our comparative analysis of co-management success in inland fisheries.

Sen and Raakjær Nielsen's typology was used to classify nineteen case studies of inland fisheries co-management experiences, drawn from Asia, Africa and Latin America (Table 4). The case-studies were chosen based on the availability of documentation and on the basis of having been operational for sufficient time to have generated evaluations of their outcomes. Previous comparative reviews of co-management performance are also used to support this synthesis. There are many more case-studies available for analysis, but time constraints necessitated restriction to a sample of the total literature.

Co-management arrangements result in outcomes that can be evaluated in terms of management efficiency, equity, and sustainability (Box 1). This method of qualitative assessment, common in all policy analysis and monitoring and evaluation fields (Munger, 2001) was first applied to fisheries co-management evaluation by Sen and Raakjær Nielsen (1996) and has been widely used since by, for example, The World Fish Centre (formerly known as ICLARM).

Box 1: Evaluating fisheries co-management

Efficiency:

a) *MSY*: The arrangements have allowed fishers to achieve an optimal rate of use of the fishery, for instance they are not exceeding the maximum sustainable yield (MSY) of the fishery or related target reference points.
b) *Income and revenue*: Are fisherfolk generating more income? Is the fishery generating more revenue or sustaining a greater number of livelihoods?
c) *Management Costs*: Is the co-management system cheaper to maintain than the state-based system? Does the flow of benefits resulting from the co-management institutional arrangement make up for the costs of establishing and maintaining such arrangements (transaction costs met)?

Equity:

a) *Representation*: Does the management team include representation of the range of interest in the fishery?
b) *Expectations*: Are the expectations of different groups accommodated in the management process?
c) *Process clarity*: Is the management process transparent and does it have a clear purpose?
d) *Distributive effects*: Has the management process led to a more equitable distribution of benefits?

Sustainability:

a) *Resilience*: Is the management system able to absorb external shocks and adapt to changes?
b) *Stewardship*: Is there an ethical or social commitment by resource users to maintain productivity and ecological characteristics of the resource?
c) *Governance:* e.g. has compliance with rules increased and the number and severity of conflicts decreased? Is the scheme able to finance itself?

Source: adapted from ICLARM and IFM, 1998; Sen and Raakjær Nielsen, 1996.

This framework also draws on ideas from the extensive literature on sustainable development concepts, with its 'three pillars' of environmental (e.g. fishery resource sustainable yields), economic (e.g. fishing incomes and fishery markets) and social (e.g. empowerment of the poor, reduction of conflict) sustainability. Molsa *et al*. (1999) and Allison (2002) review and discuss sustainable development in the context of African inland fisheries.

It is important to note that it is difficult to assess the outcomes of co-management arrangements based on just a few years of experimentations, and furthermore that the definition of 'successful' is problematic because the establishment and maintenance of co-management is a continual process. For the purposes of this paper, we make a subjective assessment of 'success' against the criteria indicated in Box 1, often based on the case-study authors' own judgement against similar criteria. The information is not available to assess outcomes against indicators of each of the components making up the three main categories of outcome. Accordingly, we have to make a subjective judgement as to whether the key features of all or most of the sub-criteria have been successfully addressed. For example, where there is evidence from a case-study that resource users appreciate the need for management and have developed a self-financing system to support their management

scheme, we would judge their system to have been a success in terms of fostering sustainability, even if the study makes no mention of conflict reduction. Thus the presence of one of the indicators, not all of them, has been used as a criterion of evaluation of success. It will be difficult to evaluate such a heterogeneous dataset any more quantitatively, given that the data are reported and analysed in many different ways by the original authors.

Table 3 Inland fisheries co-management case studies included in this review

Country	Project and water body or fishery	Code	References
Bangladesh	ICLARM CBFM project - 19 rivers and beels	Bangla_1	Thompson and Hossain 1998; Thompson *et al* 1999; Thompson and Grover, 2000; Alam and Thomson, 2001.Thompson *et al*, 2003; Sultana *et al* 2000, Sultana *et al* 2002.
Bangladesh	Grameen Bank project - small public water bodies	Bangla_2	Ahmed *et al*, 1997
Bangladesh	Danida project - 15 oxbow lakes	Bangla_3	Murshed-e-Jahan *et al.*, 2000
Sri Lanka	Madaru Oya reservoir	Sri_1	Amarasinghe and De Silva, 1999
Sri Lanka	Muthukandyia reservoir	Sri_2	Amarasinghe and De Silva, 1999
Sri Lanka	Victoria reservoir	Sri_3	Nathanael and Edirinsinghe, 2002
Cambodia	Tonle Sap Great Lake	Cambod	Gum, 2000; Shams and Ahmed, 2000; Evans,2003*a*, 2003*b*; Nettleton and Baran, 2003;
Laos	Savannakhet Province	Laos	Lorenzen *et al*,1998; Garaway *et al*, 2000.
Indonesia	Lubuk Larangan system in Mandailing Natal District	Indo	Ferrari, 2002
Nigeria	Upper River Benue	Nigeria_1	Neiland *et al* 2000a, 2000b, 1996
Nigeria	Lake Chad	Nigeria_2	Neiland *et al* 2000a, 2000b, 1996
Nigeria	Ngururu-Gashua wetlands	Nigeria_3	Neiland *et al* 2000a, 2000b, 1996
Nigeria	Kainji Lakes	Nigeria_4	Ayeni and Mdhaili, 1998
Cameroon	Yaéré Floodplain	Camer	Béné *et al*, 2000; Béné *et al, 2003*
Chad	Chari Delta	Chad	Béné *et al*, 2000; Béné *et al*, 2003
Zambia	Lake Kariba	Zamb_1	Malasha, 2002; Jul-Larsen *et al*, 2003
Zambia	Bangweulu Fishery	Zamb_2	Til and Banda, 1998
Malawi	Lake Malombe	Malawi	Hara, 2002; Jul-Larsen *et al*, 2003
Brazil	Caeara Reservoirs	Brazil	Hartmann and Campelo, 1998

3. ANALYSIS OF INLAND FISHERIES CO-MANAGEMENT EXPERIENCES

3.1. Typology of Co-management systems

As mentioned above co-management systems can be classified into five types: instructive, consultative, cooperative, advisory and informative. Table 5 presents the typology of all the studies reviewed. A majority of co-management arrangements were found to be either consultative or cooperative. These two arrangements are sometimes difficult to dissociate in the literature reviewed as there is a tendency to present consultative arrangements as being cooperative, a problem that is common to all forms of so-called participatory development (e.g. Cooke & Kothari, 2001, p13-15). Eight of the 19 case-studies examined were essentially government-led (Instructive or Consultative), four were largely community-led (Informative) and the remaining seven were more partnership-orientated (Co-operative or Advisory) and thus closer to the ideals of co-management.

Often, national fisheries policies and legislation can frame the type of co-management that is introduced. This is a concern when donor and government-driven models for co-management develop their own vision and codify that vision in policy and law before exploring whether it fits with user-group and other primary stakeholder visions. In Eastern and Southern Africa, for example, although some donor and NGO projects have a vision of co-management that is more genuinely participatory and empowering, the message from central government policy is very much that communities will 'be participated' in management (Allison, 2004a). Policy documents clearly state the expected role of communities and would appear to form a non-negotiable contract between state and subject rather than the embodiment of citizens' rights that the rhetoric suggests. Where communities have difficulty complying with government directives, then NGOs and CBOs are supposed to help them (e.g. Uganda National Fisheries Policy: MAAF, 2002; p17 and p18). Malawi's fisheries policy devolves management planning to communities but states that all such plans must be approved by the Director of Fisheries (Allison *et al.*, 2002). The vision of CBFM or co-management at state level thus seems to see communities primarily as instruments for cost-effective implementation of the state's management

responsibilities. Although the organisational structures appear to sanction co-management, the processes reflect limited devolution of rights to community partners.

The transition to CBFM is challenging and if it is to succeed then it requires careful attention to its underlying assumptions and to issues of how such programmes are introduced at all levels. Lind & Cappon (2001, p60) criticise the model of decentralised natural resource management in Uganda as being driven by assumptions that "communities are willing and undivided wholes ready to assume a greater role in management of natural resources in accordance with policies and paradigms over which they have little influence or ownership".

Despite these concerns, there are many positive examples and many of the cases of cooperative or advisory management are likely to reflect real, rather than rhetorical, devolution of both rights and responsibilities for management. The two are likely to be connected; where only responsibilities are devolved communities may not be willing participants in, as fisherfolk have told us, 'doing the job the government should be doing'. Where property rights are also devolved from the State to some form of community or user-group ownership, then there is greater likelihood of community interest and successful institutional change.

3.2. Dimensions of success

As mentioned previously, evolving experience and the multiple dimensions of success make comparative evaluation difficult. Furthermore, the literature available often lacks adequate analysis of the success of co-management arrangements, mainly focusing on the description of the process rather than assessing its effectiveness in the long term. Nevertheless, preliminary judgements of success against the three main categories of efficiency, equity and sustainability are summarised in Table 4.

Table 4 Preliminary qualitative assessment of inland fisheries co-management case studies

Examples were evaluated in terms of presence (√) or absence (o) of success criteria. Interrogation mark (?) implies that information was too limited to make an assessment or that it was too early in the management process to identify success or failure (especially in terms of sustainability).

Code	Co-management typology	Equity	Efficiency	Sustainability	Key factors associated with success or failure
Bangla_1	Cooperative – Advisory	√	√	**?**	Powerful individuals and conflicting use of wetlands are threats. Success was more likely in homogenous communities.
Bangla_2	Informative	√	√	√	Credit without collateral created production and income-generating activities for the poor. The NGO, in this case Grameen Bank, plays the central role, securing leases from the government on behalf of targeted beneficiaries.
Bangla_3	Cooperative	√	√	**?**	Increased access to credit led to increased capital investment, resulting in increased fish production. Government and NGO worked together to ensure proper institutional, organizational and adequate technical and financial support to the fishers.
Sri_1	Consultative/ Cooperative	√	√	√	Cultural similarity and community driven initiative facilitated success. Site situated in a wildlife sanctuary, facilitating control of access. The system is sustainable at this scale but relies on the close involvement of fishery officers. Sri Lanka has over 10 000 reservoirs and it is unlikely this management would be cost effective when scaled up to national level. The same applies to Sri_2.
Sri_2	Consultative/ Cooperative	√	√	√	Cultural similarity and community driven initiative facilitated success of co-management.
Sri_3	Consultative	√	**?**	**?**	Absence of proper management plan and lack of information regarding fish stock and exploitation rates hinders success. Increased illegal fishing and conflicts due to open access.
Camb	Informative	√	**?**	**O**	Migrants, low entry barriers and landlessness increased the number of people entering the fishery. Growing competition for the resource led to conflict and the spread of illegal fishing.
Laos	Advisory	√	√	√	Small scale and homogeneity. Small size of water bodies are often under control of one community = easier to reach consensus.

Code	Co-management typology	Equity	Efficiency	Sustainability	Key factors associated with success or failure
Indo	Informative	√	√	√	Co-management arrangements based on traditional systems - easier acceptance by the community.
Nigeria_1	Cooperative	√	√	√	Successful integration of traditional and modern institutions. Traditional system was able to adapt to new rules and norms.
Nigeria_2	Instructive	**O**	**O**	**O**	Lack of compliance. Government more interested in generation of revenues than conservation and sustainability of the resource.
Nigeria_3	Informative	**O**	√	√	Enforcement of measures by community. But traditional management through the restriction of access has a tendency to enrich certain members of the community.
Nigeria_4	Consultative	√	√	**?**	Careful thought was put in what type of licensing should be enforced, taking into account the failures of past systems. A supportive legislative framework and recognition of the role (and limitations) of traditional authorities were key success factors.
Camer	Consultative	√	√	√	The Mousgoum society is highly egalitarian. Access to natural resources is not dependant on factors such as wealth, kin systems, and ethnic groups.
Chad	Consultative	**O**	**?**	**O**	Restricted access to fisheries generated marginalisation of poorest members of the community.
Zam_1	Cooperative	√	√	**O**	Management plan exposed conflicts between local Tonga people and immigrant fishers. Institutions are not functioning properly and there are conflicts between the Fishermen's Association, management committees and the local authorities.
Zam_2	Consultative	√	**?**	**?**	The fishermen did not see co-management as a high priority. Inappropriate legal framework - Fisheries Act of 1975 did not support the principle of co-management. Heterogeneous community and presence of migrant fishers leading to ethnic division and conflict.
Malawi	Consultative	**O**	√	**O**	Government and donor-led design of Beach Village Committees. Resource-users and other stakeholder had no input into goal-setting, so had divergent objectives for the management plan. No local ownership of the process.
Brazil	Advisory	√	√	**O**	Differential access to environmental goods determined the choice of resource use. Landless fishers used more damaging techniques that provided fast returns as opposed to 'peasant' fishers. This created conflicts.

The number of well-documented case-studies of co-management are rather small to undertake quantitative comparative analysis, nevertheless a summary of cases showing positive efficiency, equity or sustainability outcomes (Table 5) indicates that arrangements where user-groups are equal or dominant partners in management-decision making (Co-operative, Advisory) may be more likely to achieve successful outcomes across the three criteria than examples where the state dominates decision-making (Instructive, Consultative). Additionally it is observed that Informative arrangements, because they are often based on 'traditional' systems that have survived periods of state control, are more likely to be evaluated as successful in terms of sustainability.

Table 5 Summary (%) of case studies outcomes against the three dimensions of success

Co-management type	Number of cases	Efficiency	Equity	Sustainability
Instructive	1	0	0	0
Consultative	7	57	71	29
Cooperative	4	100	100	50
Advisory	3	100	100	33
Informative	4	75	75	75

Table 5 appears to suggest that a very high proportion of co-management projects are successful. It is unlikely, however, that our sample of case-studies from the literature is random and that the evaluations are unbiased. There is likely to be a tendency to write more about successful cases than failures, particularly when the authors are often people involved in the design and implementation of the projects they write about. There may also be a tendency to emphasise the positive experiences from a co-management project for a variety of reasons that may include the need to secure further donor funding or not to risk undermining the move towards greater community involvement in development initiatives. These caveats aside, and allowing for our interpretation of success erring on the side of generosity, the existence of a significant number of successful, major co-management initiatives in tropical inland fisheries is highly encouraging and supports the contention of its advocates (e.g. Wilson *et al.*, 2003) that there are few defensible institutional alternatives to co-management when it comes to improving the management of small-scale fisheries in the global South.

The comparative analysis is also hindered by cases where there is insufficient information available to make an evaluation against these criteria and it is therefore useful to look more closely at examples of success under each of the three major dimensions.

3.2.1 Efficiency

Production and income generation

Demonstrating positive impact of co-management in terms of improved production and impact can be difficult, especially as there is seldom the opportunity for controlled experiment – a co-management intervention that leads to a declining trend in production or income being slowed, stopped or reversed could be considered a success relative to the alternative 'business as usual' scenario, but this would be impossible to prove. Given the constraints of available baseline data and the number of external factors that might affect fisheries futures it has usually been easier for co-management projects working on small water bodies to demonstrate rapid success in variables related to production and income generation.

In some of the cases reviewed, co-management allowed fishers to achieve an efficient management of the fishery in terms of enhanced production and catch per unit effort (CPUE). In Sri Lanka, communities under co-management arrangements observed higher CPUE values than in those with no such arrangements in place (Amarasinghe and De Silva, 1999). In Laos, Lorenzen *et al* (1998) and Garaway *et al* (2000) concluded that the major benefit of community fisheries was found to be increased efficiency in harvesting (cost relative to yield), rather than substantial increase in overall yields: community fisheries had the highest CPUE values for indigenous and stocked fish combined, followed by rented fisheries, while open access fisheries had CPUE values of <25% of those in restricted access (co-managed) fisheries (Lorenzen *et al.*, 1998). In Dhum Nadi beel, Bangladesh, household members of management committees drawn from the poorest households had achieved higher incomes from fishing as a result of the 70% increase in production in the first 2 years of co-management (Thompson *et al.*, 2003).

Where CPUE increase and/or reduced input costs are observed as a result of co-management, these translate into higher net incomes for those fisherfolk with access rights. Increases in production and income, however, may be achieved at the cost of reduced employment. In Kainji Lakes, Nigeria, the co-management initiative ensured that the community respected a ban on beach seines that were seen as a threat to sustainable exploitation of the resource. It was calculated that banning beach seines incurred a reduction by 34% of the annual fish catch (worth Naira 272 million,) but that allowing the undersized fish that would have been caught in beach seines to grow for approximately one year would contribute an additional catch value of Naira 450 million (Ayeni and Mdhaili, 1998). Mediation between beach seine users and non-users through the Kainji Lake Fisheries Management and Conservation Unit (KLFMCU) facilitated the ban, allowing the recruitment of commercially important species not to be affected by by-catches of undersized, immature fish in beach seines nets, thus ensuring the continuity of the stock and expansion of the offshore seine fishery, to include some of the former beach-seiners. The co-management initiative made the beach seine users realise "that their fishing behaviour is detrimental not only to the economic well-being of their non-beach seining colleagues, but also to the future livelihoods of their own children" (Ayeni and Mdhaili, 1998, p.78).

Co-management can also increase productivity of fisheries based on artificial stocking. In Bangladesh, one of the critical factors influencing fish production in *beels* (floodplain lakes) is the availability of credit and the quality of fingerlings (Murshed - e- Jahan *et al.*, 2001). For the poor fishermen in oxbow lakes the majority of their operating costs came from fingerling stocking (62%). Co-management, through the increased access to credit coupled with clear exclusivity of use-rights, promoted investment in fingerling stocking and improved poly-culture, increasing production and thus revenues, especially for poor fishermen.

In capture fisheries where artificial stock-enhancement is not practiced, co-management may not lead to increased levels of production. In cases where environmental factors are significant in determining inter-annual changes in fish production, the benefits of co-management may be difficult to determine. Where fish stock-fluctuations are driven by climatic factors rather than fishing effort, management based on effort-limitation may not be a relevant objective and may

decrease efficiency by foregoing potential benefits in good years, for example (Allison and Ellis, 2001). Since the impact of fishing activities on the productivity of the stock have proven limited in several African lakes - Lakes Chilwa, Kariba and Malombe, for example - assessing management success in terms of changes in CPUE and production is of limited utility in these cases (Jul-Larsen *et al*., 2003).

Management costs

Interest in co-management often appears to be motivated by recognition that state-based management of resources is both ineffective and expensive. Transferring the costs of management to resource users is compatible with the on-going neo-liberal agenda to 'roll back' the state and introduce greater 'market discipline' to the fisheries sector (Allison, 2001). In principle, compliance with regulations leads to reduced enforcement costs and compliance should be greater when communities participate in management because, it is argued, community members are bound by a moral economy that seldom characterises their dealings with government (Raakjær Nielsen, 2003, p.429). This is not always the case. In the Brazilian case-study, the communities are even requesting more government involvement in the regulation of the fishery on the basis that local enforcement was proven inefficient (Hartmann and Campelo, 1998). Local control does not always generate increased compliance to regulations if the form of user-group involvement in management lacks legitimacy or capacity (Raakjær Nielsen, 2003).

Raakjær Nielsen (2003, p.429) suggests that the co-management approach might lead to lower transaction costs at the planning and implementation phase in situations where there is very limited information upon which to base management decisions, as fishermen can provide information on fishing patterns, catches and the status of the resource at lower cost than the scientific surveys required by state-based management. Co-management projects can, however, be expensive and time consuming in the setting up phase. Capacity-building activities and changes in institutional arrangements can become costly and often require external (donor) funding. Many co-management projects have been supported by donors for extended periods –a decade in the cases of ICLARM's programme in Bangladesh, and multi-donor projects in Lake Malombe (Malawi), and Tonle Sap (Cambodia). A key question for SFLP is whether the 'set up costs' can be reduced in time within a three-year project. Realistic

budget planning and financing mechanisms will soon be required for the post-project phase. Communities will effectively be asked to contribute to financing the co-management experiment at a stage when success may not yet have been demonstrated. The lower the transaction costs, the more adaptable actors will be and, thus, more willing to experiment and innovate (Rudd, 2004); it is therefore important to establish how transaction costs can be diminished, not just transferred, in order to ensure that the success of the project is not short-lived.

3.2.2 Equity

Representation and democracy

One of the rationales for co-management is the belief that increased participation will enhance the efficiency and perhaps the equity of the common property resource management and the social systems that rely on it (Castro & Raakjær Nielsen, 2001). "Co-management is considered to represent a more democratic governance system [than state based management], because it implies increased involvement of users and delegation of decisions to be taken as close to the users as possible." (Raakjær Nielsen *et al* (2004; p154). However, the creation of partnership does not always imply the sharing of power and the causality between co-management and increased representation and democracy is highly debatable. Furthermore 'democracy' and 'increased representation' are seldom the impetus for governments to implement co-management, where efficiency and reduction of transaction costs are often the overriding goals (Raakjær Nielsen *et al.*, 2004).

Improving access to fisheries by the poor or socially marginalised has, however, been a clear goal of recent co-management projects. For example, women's participation in co-management was one of the goals of the CBFM project in Bangladesh. In Goakhola-Hatiara Beel a Beel Management Committee was created in 1997 and became operational in 1999 through the help of the NGO Banchte Sheka. It promoted access of women to decision-making in fishery management and maintained their access to fishing activities (8 female group members from a total of 27) so that one of the main positive outcomes of co-management in this beel was that women were empowered. However, Til and Banda (1998) observed that in the Bangweulu fishery

(Zambia) co-management was perceived as an essentially political process and hence as a male preoccupation. Despite the role played by women as traders, processors and fishers, they were excluded from discussions related to co-management arrangements. It is worth nothing that the main difference between the two examples presented lies in the fact that in Bangladesh the NGO specifically targeted women's empowerment as a goal whereas in Zambia it was not in the goal-setting phase, and the issue of women's participation in co-management appeared only in the first evaluation of the project.

In the Kainji Lakes fishery community-based project (Nigeria) the enforcement of a licensing system by communities themselves empowered the fishers (Ayeni and Mdhaili, 1998). Before they were not recognised by the government as valid representatives in discussions on fisheries management since they did not respect the law (they did not pay the appropriate licensing fees). The community-based licensing enforcement system gave status to fishermen and their leaders, and access to alternative income opportunities, loans and revenue to invest in village infrastructure (Ayeni and Mdhaili, 1998). Indeed 10% of the fees went to the community management committee. It is worth noting that the licensing system in this case was a success because careful thought was put into what type of licensing (gear, craft, fishermen) could be enforced, taking into account failures of the past system.

Aiming to improve equity in terms of democracy and representation often challenges the role of traditional authorities and leaders as regulators. Til and Banda (1998) point out that democracy should be inherent to the co-management process but in the case of the Bangweulu fishery (Zambia) it was difficult to apply because of the power of traditional leaders. The project realised that if it was to meet its equity goals, it was of uttermost importance to: "ensure that measures are in place to effectively control the powers of the traditional chiefs, and to structurally empower the powerless." (Til and Banda 1998, p39).

The issue of 'elite capture' has become a major concern in attempts to devolve natural resource management rights and responsibilities to community level (reviewed in Ellis & Allison, 2004). In the West African context, Neiland *et al* (1996) point out that local elites often have exclusive control of the inland fisheries, and it has been

observed that equity can diminish with increased commercialisation of the fishery and the increasing social differentiation resulting from uneven penetration of the market. In the case of N.E. Nigeria's inland fisheries, a mixed management system that included elements of both the 'traditional' community-based and 'modern' state-led systems appeared to be the best solution to avoid conflict and generate revenues (Neiland *et al.*, 1996, Neiland *et al.*, 2000b). Thus, with rapid change in the fisheries sector, traditional fisheries need to adapt/change to ensure equity, and mixed systems appear to be the way forward. As Jentoft (2004, p.41) reminds us, institutions are hardly ever built from scratch, but are frequently developed on the basis of other institutions.

Sverdrup-Jensen and Raakjær Nielsen (1997) in their review of co-management in small-scale fisheries in Southern and West Africa, concluded that co-management institutions were often closely linked to existing traditional power structures. In this context, co-management can be seen as just another top-down model where traditional authorities are the centre of decision-making, rather than the state fisheries department. Either way, the majority of fishers are still excluded from decision-making and control over rights of access and resource use. This is not necessarily the case, however, as traditional authority may not be autocratic and often relies on broad community support for its continued relevance. Traditional authority, especially in Africa, plays an important role socially (establishing rules and norms) and should not be excluded from co-management plans. However instruments may need to be devised to control their power and ensure that they do not exclude the marginal members of the community such as the poor, migrants and women. Platteau and Gaspart (2003) have suggested a 'leader disciplining mechanism', based on incremental support, conditional on project performance, to ensure that community development funds reach their intended beneficiaries.

Two conclusions can thus be drawn from the literature on equity and the commons:

- Traditional management systems are not necessarily equitable and democratic, and should not be 'romanticised'
- Traditional management systems still have a role to play in fisheries management but need to adapt to new constraints

To expand on the latter point, it should be remembered that 'traditions' are merely cultural adaptations to social, economic and environmental conditions. As these change, so too, do traditions. The custom of holding a blessing ceremony when acquiring a new car, widespread in West Africa, is an example of a 'new tradition'. Likewise, old traditions that have no further relevance will quickly die, and artificial resuscitation seldom results in further productive life.

Expectations

The commons literature often suggests that homogeneity (in the sense of having similar social and economical objectives) is an important pre-condition for establishment of successful common property management regimes. In the fisheries context it has been stated that "if efficiency is the objective, fisheries communities should, to the extent possible, be composed of fishermen only. Other members of the community should not be included. If they are, that is liable to reduce the efficiency of the fisheries operation" (Arnason, 2002, p9). But if exclusion is a tool for success in fisheries management, how can this be reconciled with the inclusionary discourses of co-management? In the Cambodian case study, seasonal migrants, low entry barriers and the number of landless people have all led to an increased number of people entering the fishery, leading to increased conflict over resource use. Yet access by these groups supports livelihoods of the poor and these groups have come to expect access to resources that enable them to sustain their livelihoods. In the Zambia case studies, the management plans exposed conflicts between local fishermen and immigrant fishers. By trying to be either more 'inclusive' and more democratic or more 'exclusive', co-management arrangements imposed externally are likely to create, rather than attenuate conflicts. To avoid creating conflict, co-management must consider all claims to inclusion on an equitable basis – i.e. to address different groups' expectations relative to any new management regime.

Beck and Nesmith (2001) illustrate this exclusion dilemma by presenting the case of coastal and river fisheries in Nigeria (Olomola, 1998). For the resolution of conflict in this area there is a heavy reliance on local traditional leadership and management of the commons is based on exclusion of immigrants. Beck and Nesmith (2001) ask whether "exclusion amounts to a 'successful' community strategy- who are the

strangers, how do they attempt to negotiate access, and what are their options?" (p. 127). In this case traditional management is not equitable for the migrant populations, but should it be? When we talk about equity in co-management, equity for whom remains the question; for the poor, the women, the residents or the migrants? Is it possible to improve access to the livelihood opportunities presented by common property resources for all these groups at the same time? Coming back to Arnason's observation, trying to increase equity in terms of access, or representation in the decision-making process - at all costs - can impede efficiency. In setting up a project it is important to identify target groups (poor, women, migrants) and to understand that management structures might not be able to addresses the needs of all these groups. This is why participatory goal-setting, perhaps facilitated by trade-off analysis (Brown *et al.*, 2001) is so important in reconciling divergent expectations.

Process clarity and transparency

A review of the inland fisheries co-management literature reveals that the objectives of co-management are not always clearly communicated, or are treated implicitly, rather than explicitly. While enhancement of fish production or increased participation in management is often cited as reason to support co-management, poverty reduction is seldom presented as a goal. Nevertheless, poverty and its association with inequality of access to the resources often becomes the central issue in the management process (e.g.. Brazil and Lake Chad case studies).

Several authors have emphasised the need for a clear "goal-seeking" process in order for co-management to be successful (Noble, 2000; Mitchell, 1997). When contemplating a co-management initiative, stakeholders must address the question of *why* co-management is needed, not only *how* can co-management be implemented. Noble (2000) and Jentoft (2004) point out that accounting for the compatibility and variations of goals among the various interests (*i*.e. meeting expectations, see previous section) is as important as identifying goals and desired ends for fishery co-management. Furthermore, institutions can develop their own 'unofficial' goals that can conflict with those prescribed by external agents (Jentoft, 2004). This can lead to what Hara (2000) and Jentoft (2004) called the phenomena of 'hidden agendas' in fisheries management. Such hidden agendas may undermine institutional change

initiatives and need to be understood and overcome to ensure successful co-management.

In several of the case studies reviewed, goal-setting has been the monopoly of a government agency, often under the influence of donor-led policy agendas. Nevertheless, the spread of stakeholder analysis methods and rural appraisal approaches allow projects to identify and take into account the divergent objectives of resources users and the different levels of government. Several international agencies are recognizing the importance of stakeholder involvement, for instance FAO, in its "Code of Conduct for Responsible Fisheries", outlines the need to involve stakeholders and promote greater transparency in management decision-making (Mikalsen and Jentoft, 2001). A step-by-step process for including stakeholders, from early planning and goal-setting onwards, is outlined in Annex 2 of this report.

Poverty reduction – distributive effects

With concern for resource sustainability and the inefficiency of state-based management driving the devolution of management responsibility in fisheries, distributional issues may have been considered a secondary objective in many early co-management projects. Beck and Nesmith (2001), exploring the role of poor people in the management of common property resources in India and West Africa, have highlighted that equity concerns are often only implicit and seldom prioritised in the literature on rural West Africa (in contrast to India). They observe that "…unless management regimes are specifically designed to include poor people, and particularly poor women, then "community"-based natural resource management may [in practice] simply turn out to be externally-supported control by elites." (Beck and Nesmith, 2001, p130). This is reinforced in the case of the North East Nigeria inland fisheries, where it has been suggested that the major objective of the existing management systems is the generation of revenues for the regulator controlling access to the resources. Equity of the system is thus dependent on whether the regulator is willing or not to redistribute the benefits (Neiland *et al*, 1996).

In Bangladesh 'water lords' appropriated most of the benefits of early co-management initiatives (Ahmed *et al*, 1997). Toufique (1997) highlights the case of the beel

fisheries in Dhaka and Haoda (Bangladesh) where the property rights structure was altered with the privatisation of the most fertile beels, marginalising the poor. The Community Based Fisheries Management project (World Fish Centre) in Bangladesh, with a management plan that clearly stated their pro-poor approach, has aimed to develop and test models for sustainable and *equitable* fishery management that specifically addresses this inequitable distribution of rights (Thompson *et al*, 2003). Partner NGOs specifically targeted poor fishing households, providing them with training, credit and support to organise themselves, resulting in yield and income increases for the poor.

In Savannakhet Province, Laos, the goal of community fisheries was that fisheries were exploited by and for the community to generate income (Lorenzen *et al*, 1998), again with a clear equity-orientated objective. According to Garaway *et al* (2000) the benefits of community fisheries in Savannakhet province were available to all members of the community; no groups were excluded. Surplus revenue generated due to increased efficiency of production also allowed the creation of hardship funds for the poorest members of the community. Furthermore, the community management system did not rely on leases or access fees, ensuring that the poorest sections of the community could still access the resource.

This latter finding highlights the fact that leasing systems have the potential to marginalize the poorest section of a community. In Bangladesh in the 1970s preference for leasing fishery estates to fisher-co-operatives was established (Thompson *et al*, 2003). This measure failed because fisher co-operatives tended to be under the control of moneylenders and wealthy 'water lords' (Ahmed *et al*, 1997) and the policy was reoriented in the late 1980s to emphasise equitable distribution of benefits.

Béné and Neiland's (2003) analysis of fisheries arrangements around Lake Chad substantiates the hypothesis that access restrictions can increase inequality. Their study aimed to determine whether households of different wealth levels accessed the same fishing grounds in the south west part of the Lake Chad area (Nigeria), the Delta of the Chari River (Chad) and the Yaéré floodplain (Cameroon and Chad). In Nigeria and Chad, the livelihood analysis revealed that fishing was the dominant activity of

the better off, while the poorest relied mainly on woodcutting activities (Béné and Neiland, 2003). Direct restrictions to fishing grounds were legitimised through illegal taxes and/or fees. Households also faced indirect (technical) restriction because of their lack of adequate fishing gear. The poorest section of the community was thus excluded from the more profitable fishing activities. In the Yaéré floodplain, the open access situation for fisheries allowed the poor access to the resources and ensured them a livelihood since in this area arable land is rare and privately owned (Béné *et al*, 2000). However, the authors point out that open access in Yaéré goes against the adage that the pattern of wealth distribution reflects the distribution of rights of access to the water-bodies (Béné *et al*, 2000). This is due to the fact that the Mousgoum people, inhabitants of the plain, are a highly egalitarian society. This"(…) is rather unusual for rural African societies where kin systems, ethnic groups, and/or religious affiliation usually play a major role in social status and distribution of wealth endowment." (Béné *et al*, 2000; p.7). The question of whether open or restricted access is most beneficial for improving access of the poor to inland fisheries therefore seems to be highly dependent on the prevalent social system.

In contrast to the Lake Chad case study, the Lubuk Larangan system of Northern Sumatra, (Indonesia) benefited the poor despite a fee system to restrict access because the licence fee income was reinvested in community projects (e.g. teacher's salary, schools) that would also benefit the poor (Ferrari, 2002). This illustrates that a licensing/fee system operated by communities, not government agents, can indirectly benefit the marginalised sections of a community through providing improved services. There is a growing consensus that poverty-targeted development must also accept that the wealthy in small communities must also benefit in some ways if they are to lend support to such initiatives.

The tensions between improving access to fishing livelihoods for the poor and marginal, while effectively managing the resources, lie at the heart of the co-management debate, and in the resolution of these tensions comes the hope for sustainable economy-society-environment systems.

3.2.3. Sustainability

> "The problems the fishing communities are facing are (…) not necessarily a result of an absence of management institutions, but rather the result of the inadequacy of these institutions to deal with recent developments. Revitalisation of such existing institutions will therefore not lead to solutions to the problems. They may have lost their significance exactly because they were set up to solve other problems and are thus inadequate to deal with the present situation."
>
> (Raakjær Nielsen *et al* 2004; p154)

Sustainability of co-management arrangements is a key concern of projects that aim to promote improved participation of fisherfolk in management.

Resilience

Co-management institutions may have to survive, among other things, increased commoditisation of formally subsistence economies, demographic change, global warming and the HIV/AIDS epidemic. A system that is able to adapt to such external changes and maintain its core functions - efficiency of resource use and equitable distribution of the benefits of that use - would be termed resilient. Studies of informal institutions for resource management in developing countries have revealed flexibility, reciprocity and adaptive capacity (Allison & Ellis, 2001; Jul-Larsen *et al*., 2003). A key challenge to new co-management systems is whether resilience is reduced when collaborative management based on continual, informal social negotiation is formalised in law. There is a balance to be struck between ensuring clarity of property rights, roles and responsibilities on the one hand and avoiding prescriptive planning on the other. Genuinely collaborative management organisations should retain the adaptability of 'traditional' management systems. The risks of loss of resilience are likely to be greater where the management policy agenda is strongly determined by government or other external agents.

Stewardship

Many traditional systems of resource management evolved as much to address allocation disputes and to stabilise individual or group claims over resources as to conserve natural resources. In other cases, experience of resource scarcity in the historical past and the consequent need to consider resource renewability has led to a stewardship or conservation ethic (Sillitoe *et al*., 2002). Although many resource management projects in the past have included an environmental education message to try to foster a conservation ethic, the lack of such as ethic – or perception of the need for conservation - is not always the primary reason for a lack of stewardship (Allison, 2002). Lack of ownership, in the literal sense of insecure or inadequate property rights, has already been discussed as a common reason for resource depletion. Co-management that is genuinely participatory and grants clear, appropriate and functional property rights to resource users (outlined in Section 2.5) is likely to successfully foster a sense of stewardship among fisherfolk. Dependence on a resource can also foster stewardship, as can cultural identification with fishing as a way of life.

Governance

Key areas of effective governance are maintaining trust between partners, ensuring compliance with rules and stability of property rights, financing of cooperative management and developing successful conflict resolution mechanisms.

The Brazilian case study provides an example of the type of governance problems that can hinder sustainability of co-management programmes that might be otherwise considered fairly successful on equity and efficiency grounds. The sustainability of the Ceará Reservoir fisheries co-management project is hindered by the rise of conflicts in the community. The main controversy and conflict in the reservoir revolves around the use of a fishery known as *betide*, where fish are actively driven into gillnets by fishermen (Hartmann and Campelo, 1998). *Betide* fishers are characterized as young, without land, fishing in any area of the reservoir, and not participating in community activities. They often own limited fishing gear and the use of the gillnet as an ‘active’ capture method compensates for this. On the other hand, fishers using ‘passive’ gillnets are generally older peasant fishers who own fishing

gear and participate in community associations (Hartmann and Campelo, 1998). Both types of fishers recognize that the *betide* method is harmful for the fishery and the conflict is rooted in the fact that for some members of the community it is their only way of gaining their livelihood since they do not have access to land, and have little capital to invest in gear. Under Brazilian law fisheries are open access but ownership of land around the reservoir is a significant problem, despite land reform projects underway. This differential access to environmental goods influences the choice of resource use strategy.

Co-management was designed to involve resource users in rule formulation so that harmful techniques could be banned and the social commitment by resource users to maintain productivity could be increased, but the complexity of institutional arrangements that endows and entitles people to natural resources is hindering the process. Despite the use of local members of the community as enforcers, compliance with a ban on *betide* was low. Participatory enforcement also caused tensions in the communities. Furthermore, the confusing and often contradictory flow of rules and regulations has weakened the impact of co-management. Thus, in terms of governance and stewardship, the Ceará case study can be considered a disappointment, the co-management process having turning into a 'crisis management' one (Hartmann & Campelo, 1998).

In the Cambodian case study lack of good governance also hindered the success of co-management. Although equity of access has improved under the new management arrangements, competition is still fierce and people come from outside to fish in these areas by paying gratuities to the local authorities and armed militia (Evans, 2003a). A disproportionate number of people enter fishing due to low entry barriers, decreasing agricultural productivity and increased landlessness (Gum, 2000). Migrants are of growing importance due to failing crops in the upland/highland areas and they put immense pressure on the fisheries during the crucial fishing season, often doubling village populations (Nettleton and Baran, 2003). Added pressure on the resource has come about as a result of the recent shift towards an export driven free market economy providing further incentives for over fishing in the commercial fishing lots (Mareth *et al,* 2001). As a result of growing competition there is widespread use of damaging and illegal fishing practices by all stakeholder groups (Gum, 2000) and

enforcement is problematic. In April 2000 three fisheries officers were beaten to death and a fourth severely injured after they confiscated illegally sized nets (FACT, 2002). Migrants, owing to their lack of ownership over the resource, are often implicated in destructive fishing activities. Inconsiderate illegal activities such as drag netting that destroys small gillnets cause conflict with local communities and armed protection for illegal fishing is therefore common. Often these large scale illegal activities are in collusion with local fishing authorities (Nettleton and Baran, 2003). The removal of the Department of Fisheries personnel from the field has resulted in increased armed protection of illegal fishers and the lack of general protection that was provided by the previous private leasehold or 'auction lot' system has led to increased degradation of the inundated forests of Tonle Sap. This case demonstrates that, for co-management to be sustainable, communities need to have the right to control access to resources from outsiders, the authority and capacity to suppress destructive fishing activities and to generate revenue themselves (Evans, 2003a).

Sustainability of co-management projects is often an issue when they are donor-driven and heavily dependent on external funding. The Community Based Fisheries Management Project (CBFMP) in Bangladesh has been portrayed as a success (Table 4). However it has been funded and assisted by ICLARM (now known as the World Fish Centre) and the Ford Foundation for a decade, and despite the fact that results have so far been positive the question of the sustainability of the project remains (Thompson *et al,* 2003). One can also argue that the involvement of NGOs can hamper sustainability by creating dependency in communities in terms of capacity-building and organisational skills.

In the Malombe fishery, Malawi, project reliance on outside (funding) assistance has hindered sustainability of the project. For instance GTZ (German development agency) policy reversal concerning gear compensation resulted in a set back in relations between the communities and government departments as well as stalling progress on change of illegal nets. Nevertheless foreign donor assistance is still required for the programme to continue since the government cannot afford to fund the programme on its own and means of self-financing have not yet been identified. (Hara, 2000; Hara *et al.,* 2002)

It is easier to self-finance a pro-rich development than a pro-poor one. The mutual support between rich entrepreneurs and government fishery officials and security personnel in Cambodia's Auction Lot system is an example of self-financed co-management that helped the rich become richer (FACT, 2002). Funding pro-poor development that has the backing of local-level elites is proving much more challenging. The problems of the need for outside assistance bring into focus the issue of sustainability of the new co-management regimes; how long will outside assistance continue to be required before the two partners, government and communities, can take over overall financial responsibility? Can the programmes be sustained without outside assistance?

4. DISCUSSION

4.1 Key factors associated with success and failure in co-management

> "Comparison of empirical studies of sustainability on the commons is difficult since few of these studies provide careful and generalizable measures of their dependent variables. Most, however, have an implicit sense of successful institutions as those that last over time, constrain users to safeguard the resource and produce fair outcomes"
>
> (Agrawal, 2001, p1650)

The synthesis of inland fisheries co-management experiences in Tables 5 and 6, developed from case-studies, attributes individual successes and failures to a number of conditions and processes. In this section, we discuss whether such experiences can generate transferable lessons. Although formal, comparative evaluations are difficult to conduct, as individual studies collect information in different ways, the common-property literature contains several attempts to draw out a series of lists and 'design principles' for successful community-based natural resources management from the available case study material. We attempt to fit inland fisheries case-study experiences into these discussions.

Agrawal (2001) synthesises generalizations made in the key reviews by Wade (1988), Ostrom (1990) and Baland and Platteau (1996) about the conditions under which groups of self-organized users are successful in managing their commons dilemmas.

He contends that the existing studies of sustainable institutions around common-pool resources suffer from two problems. The first problem is that they focus on the structure and nature of local institutions only, and not how other factors (e.g. the external social, biophysical and policy environment) might affect the sustainability of local commons. One of the benefits of a livelihoods approach is that specifically addresses this concern with the external environment through its incorporation of vulnerability context and policies, institutions and processes affecting households. The second problem is that, given the large number of factors (about 35, typically[5]) that have been highlighted as being critical to the organization, adaptability and sustainability of common property, existing work has yet to develop fully a theory of what makes for sustainable CPR management. Empirical testing of these 35 or more factors will require a large number of comprehensively analysed and reported case studies to be compared.

The three major reviews analysed by Agrawal (2001) all agree that members of small local groups can design institutional arrangement to help manage resources sustainability. They identify factors that relate to one of four sets of variables: (a) characteristics of resources, (b) nature of groups that depend on resources (c) particulars of institutional regimes through which resources are managed and (d) the nature of the relationship between a group, and external forces and authorities such as markets, states and technology. As Blaikie (2003; p7) points out, the attempt to identify initial conditions for a satisfactory establishment of local institutions has led to "an ever-growing number of ever-growing lists". The latest of such lists is reproduced in Table 6, overleaf.

[5] Ostrom (1990) proposes 8 design principles, based on an amalgam of many of the factors identified in Agrawal (2001) and additionally stresses that these principles do not provide a blueprint.

Table 6 Critical enabling conditions for sustainability on the commons, as proposed in the literature on the commons (from Agrawal, 2001)

1. Resource system characteristics

- Small size
- Well-defined boundaries
- Low levels of mobility
- Possibilities of storage of benefits from the resource
- Predictability

2.Resource user group characteristics

- Small size
- Well-defined boundaries
- Shared norms
- Past successful experiences/collaboration – social capital
- Appropriate leadership – young, familiar with changing external environments, connected to local traditional elite
- Interdependence among group members
- Heterogeneity of endowments, homogeneity of identities and interests
- Low levels of poverty

1 & 2. Relationship between resource system characteristics and user group characteristics.

- Overlap between user group residential location and resource location
- High levels of dependence by group members on resource system
- Fairness in allocation of benefits from common resources
- Low levels of user demand (overall)
- Gradual (rather than rapid) changes in user demand

3. Institutional arrangements

- Rules are simple and easy to understand
- Locally devised access and management rules
- Ease in enforcement of rules
- Graduated sanctions (become more severe with more severe transgressions or repeated infringements)
- Availability of low-cost adjudication
- Accountability of monitors and other officials to users

1 and 3. Relationship between resource system and institutional arrangements

- Match restrictions on harvest to regeneration of resources (e.g. effort corresponding to MSY)

4. External environment

Technology:

- Low-cost exclusion technology
- Time for adaptation to introduction of new technologies (e.g. new fishing gear)
- Gradual change in articulation with eternal markets

State

- Central governments should not undermine local authority
- Supportive external sanctioning institutions
- Appropriate levels of external aid to compensate local users for conservation activities
- Nested levels of appropriation, provision, enforcement, governance

It will quickly be seen that many of the conditions proposed as 'critical' for sustainability of commons (Table 6) are unlikely to apply to West Africa's inland fisheries. It would therefore be easy to conclude that any co-management initiative is doomed to failure unless project resources are channelled into institutional change and organisational design that aims to put these conditions into place. There is insufficient empirical evidence to support such a course of action and it would be better to move away from trying to identify and replicate pre-conditions associated with 'mythic' communities (based on size, space, shared norms) and focus instead on processes: strengthening the ability of communities to create and enforce rules that support co-management (Agrawal & Gibson, 1999).

Agrawal and Gibson (1999) go on to propose that community-based management is best founded on:

- principles of checks and balances among various parties (local groups, government actors, NGOs and aid agencies etc, rather than unchecked authority by any one of them;
- empowerment of local groups, which are usually the least powerful actors through formation of user groups;
- implementation of reasonable processes of decision-making rather than focusing upon guarantees about outcomes ('reasonable' means that different interests are represented in decision-making - including those usually marginal - and decisions are consistent and under periodic review);
- adequate funding for rules that are created, the sources of which are local, and raised through contributions of users rather than granted by central governments or aid agencies.

There is little agreement with even these more generic propositions, with Mosse (2003) contending that informal shared norms are often more effective and relevant than rules (such as formal property rights) and Wilson (2003b) proposing that developing shared understanding is more important in defining a community-based system than in identifying shared norms.

Within this continuing discussion, the literature on fisheries co-management has developed its own lists of pre-conditions and processes. Based on experiences in Asia, Pomeroy *et al.,* (2001) have attempted to reduce to a minimum the number of critical facilitating factors for successful co-management. We have further modified this analysis to try to differentiate important enabling conditions that need to be identified and supported by programmes (and which may already exist) from processes that project-type interventions can deal with (Table 7).

Table 7 Factors associated with successful co-management projects (adapted from Pomeroy *et al.,* 2001)

Enabling conditions

Supra-community (national and district level):

- Supportive policies, legislation
- Production and livelihood systems able to deal with adverse trends & shocks
- External agents of change – facilitation, finance, ideas

Community:

- Property rights, scale and boundary issues clearly defined
- Participation, leadership, local government support, functional CBOs
- Adequate resources, accountability

Individuals/households:

- Incentive structures for participation can be identified

Processes

Supra-community (national and district level):

- Clearly defined, realistic goals and objectives agreed among key stakeholders
- Stakeholder ownership – transparency of process, shared understanding of different groups claims on the resource
- Ensuring institutional 'fit' with existing livelihoods, culture, ecology

Community

- Institutional capacity for implementation -political will, organisational structures, financial viability

Individuals/households

- Equitable representation

Of the conditions and processes outlined in Table 7, most are self-evident or have already been discussed, but two merit further explanation:

The existence of an incentive to participate in co-management is a fundamental pre-requisite. This is usually, but not always, an economic incentive – there must be some advantage to be gained by foregoing individual strategies in favour of collective ones. This applies to all participants in co-management, whether they are fisherfolk, traditional leaders or government officials. Co-management usually requires some participants to relinquish current benefits and powers and grant them to others; government departments are effectively being asked to participate in their own down-sizing and local elites may be asked to devolve more of their power over resource allocation decisions to people they may regard as their social inferiors (the poor, women, youths etc). Fisherfolk are often asked to cut back their fishing effort. In all of these cases, the incentives to comply need to be identified and communicated to all participants and ways to secure future benefits devised. Where there are no incentives for compliance, it may have to be externally enforced. This may be the case where resources have become degraded to the point where the poor cannot imagine that their share of any increased benefit would make it worth all the effort of organising for joint NR management or where power relations are such that the elite-capture of any rehabilitated resource is a very real prospect (Baumann & Farrington, 2003).

Institutional 'fit' is also an important consideration for project design. Co-management has tended to follow idealised 'blueprints', whereas historical context and local ecology may require more individualised design than nationally or internationally promoted programmes have allowed. An example of a poor institutional fit to ecological conditions comes from Lake Chilwa, Malawi, where 'beach village committees' are encouraged to take charge over territorial waters and implement management for sustained yields in a lake that dries up periodically and whose fish stocks seem resilient to these climate-driven variations and fluctuate independently of fishing effort, thereby negating the need for effort management for long-term sustainability (Sarch & Allison, 2000; Allison & Mvula, 2002; Jul-Larsen *et al.*, 2003).

In practice, co-management has to be developed in many less than ideal situations and not all idealised pre-conditions to success can be addressed. Some case studies also inconveniently contradict 'design principles' (e.g. Mosse, 2003, for tank irrigation systems in Tamil Nadu, India). Attention to process issues becomes particularly important in these instances.

In summary, there is a lack of formal comparative analyses of the relative importance and degree of association between factors such as those identified in Tables 7 and 8 and successful co-management outcomes (Agrawal, 2001). Such an analysis is hampered by the difficulty in identifying in the project and programme evaluation literature a common set of dependent and independent variables for the analysis. Thus, lists of factors associated with success emerge from theoretically-informed general observation and the informal accumulation of experiences. PP1 will add to that accumulation of experience, but these limitations must be borne in mind when using PP1 as a lesson-learning tool. Standardised monitoring and evaluation tools can help in comparative analysis between the four countries; work from Bangladesh that compares many different projects using a standard set of indicators provides a useful monitoring framework (Thompson *et al*., 2003).

4.2. Key issues and challenges for inland fisheries co-management in West Africa

A workshop to launch SFLP PP1 identified a number of key challenges to the development of inland fisheries co-management in West Africa (reported in Allison and Turay, 2004). The workshop discussion of these challenges is here combined with the lessons drawn from the review presented above and a review of the non-fishery literature that includes a strong strand of critical analysis of CBNRM programmes.

4.2.1 Ensuring participatory rhetoric is reflected in practice

All contemporary development projects claim to be participatory, but not all live up to the ideals set out in their project documents. The gap between participatory rhetoric and practice has undermined the power of the participatory vision in development programmes (Cooke & Kothari, 2001). If this is not to happen in the case of SFLP's pilot projects, then careful attention to participatory processes will be required. A cautionary note is sounded by the review of 59 case studies of CBNRM in S/SE Asia and sub-Saharan Africa by Shackleton *et al.* (2002, p3) who conclude that:

> "…despite rhetoric to the contrary, central authorities continued to drive the NRM agenda. Government departments, except where NGOs or donors played a strong role, determined the nature of the shifts in control and the types of power that were transferred. In most instances they retained key aspects of management authority, placing tight constraints on local decision-making and sometimes rendering it meaningless."

Processes of stakeholder identification and engagement (see Annex 2), together with appropriate attention to equity and capacity-building considerations (see below) can help to ensure that positive experiences of empowerment of fishing communities in West Africa are built upon.

4.2.2 Maintaining a pro-poor focus and preventing elite capture

The shift from state- to community-managed resources does not necessarily imply improved resource access and livelihood security for the poor. Although the inland fisheries literature contains a number of positive experiences (e.g. Laos, Bangladesh), there are also many warnings against taking devolution of resource management rights to communities as being synonymous with the redistribution of wealth and power in favour of the poor and the marginal. Kumar (2002), for example, shows that while joint forest management (JFM, equivalent to fisheries co-management) has succeeded in halting forest degradation in India, analysis of the net social benefits to different groups of local villagers shows that the JFM regime reflects the social preferences of the rural non-poor, and the poor have been net losers over a 40-year time horizon. This process has become known as elite-capture and is frequently

mentioned as a factor undermining the success of CBNRM programmes (Beck & Nesmith, 2001; Ellis & Allison, 2004).

The pro-poor focus of SFLP places particular importance on the equity dimension of co-management success. Ensuring that the interests of the poor are represented is therefore paramount to the design of PP1. The experiences with co-management reviewed above suggest that unless new interventions challenge the often-inequitable nature of existing institutions governing resource access and distribution of benefits, then poverty and marginalisation will persist (Beck & Nesmith, 2001). Although traditional leadership is lauded in some quarters and maligned in others, such leadership has a long history of co-operation with governments in development planning in Africa (e.g. Ribot, 1999; Allison *et al.*, 2002)[6] and, after a recent period of centralised authority, is returning to prominence under devolved government and community-based development initiatives. The quality of traditional leadership may be highly variable, from autocratic and self-serving, through paternalistic and benevolent, to democratic and egalitarian; this may determine the extent to which it is seen as desirable to build new institutions regulating access to fisheries on existing social norms.

One of the areas frequently criticised in CBNRM institutions built on informal social norms is that they tend to be gender-inequitable. Gender relations are highly variable from place to place and it cannot be assumed that women always have economically and socially subordinate roles to men in fishing communities. Nevertheless, empirical evidence, certainly in East Africa, suggests that women tend to be found in less profitable fish-trading activities than men and are less involved in decision-making over resource allocation and management than men (Allison, 2003). Such findings have typically led to promotion of women's involvement in co-management structures. For example, Uganda's new (2002) fisheries policy clearly specifies the requirement for women's representation on 'beach management units' (Allison, 2003). There is a risk, however, that such participation is tokenistic. Agarwal (2000) observes that women usually constituted less than 10% of community forest groups

[6] Indeed, as Ribot (1999) outlines in the West African context, partnership between governments and so-called traditional leadership have been a feature of rural governance since colonial policies of 'indirect rule', with many ' traditional' institutions in fact being colonial or post-colonial creations.

(CFG) membership in India and Nepal in the late 1990s, despite being more involved than men in harvesting forest products. Development programmes promoting CFGs typically allowed only one member per household and it was usually the male head so that the customary exclusion of women from village decision-making bodies was replicated in the CFGs. Women's presence on executive committees was also typically low or there was often an incongruity created by the mandatory inclusion of one or two women on the executive committee with very few women in the general body of membership, so that they constituted a nominal rather than an effective presence.

Agarwal (2000) goes on to make a strong case why women should be included in community natural resource user groups and their management committees. This case is worth considering the context of West African fisheries co-management:

- Institutions for NRM (e.g. community forestry groups) which appear to be participative, equitable and efficient can be found lacking on all three counts from a gender perspective.
- Although there is nothing to suggest women are inherently more conservationist than men (the nurturing thesis), the distinctness of women's social networks embody prior experience of successful cooperation
- Women's material circumstances are typically more restricted than men's which makes them much more dependent on localised networks and everyday forms of cooperation and increases the cost they may incur from non-cooperation (p291)
- Women are more socially homogenous and less connected than men to local power structures, again increasing the prospects for cooperation.
- Women have potentially more effective conflict resolution mechanisms - "men have bigger fights, get angrier" (p294)
- Gender discrimination in CBNRM not only compromises equity outcomes but also efficiency and sustainability (e.g. rule enforcement problems, information flow imperfections along gender lines, conflict resolution, non-incorporation of women's specific knowledge)
- Despite limited involvement in decision-making, women were often active in monitoring and enforcement activities

Uganda's new fisheries policy, strongly influenced by the DFID-funded 'Integrated Lake Management Project' (ILM)[7], also aims to ensure that the interests of other marginalized or less powerful groups are also represented – the youth, and crew labourers. Traditional Ugandan fishery management institutions have tended to represent the elite in fishing communities: older men who are also boat and gear owners. Once again, legislating for their inclusion on management committees may not be sufficient to ensure that marginalised groups' interests are represented, if the social norms or economic conditions that led to their exclusion in the first place are not addressed.

While equity is an important goal of fisheries co-management, its impact on other dimensions of success (efficiency and sustainability) may be ambiguous. No fishery will be found to be totally egalitarian. Some CPR users enjoy better access to resources because they possess a relatively large amount of the production factors required to exploit the resources - capital equipment, control over labour power, better skills and knowledge etc.. This advantage may originate in past accumulation of wealth, greater network of social relations, better education *etc*. Baland and Platteau (1999) used a game-theoretic analysis to address the question: Does inequality promote or discourage collective action to prevent overexploitation of natural resources? The ambiguities they identified were:

1) Inequality of assets leads to inequality of time horizons – the relatively well-off may be in a position to consider conservation today for better yields tomorrow. The fishery-dependent poor may not. Thus, CPR management may be easier to implement with wealthier individuals.
2) But – the rich may have alternatives should lack of regulation lead to overexploitation, and therefore relatively little incentive to reduce involvement in currently profitable activities, for uncertain future benefits. The poor may be more CPR dependent, and therefore show more interest in the future of the resource.

[7] The ILM project aims to pilot co-management on Lakes George and Kyoga as part of a wider project to reform fisheries governance in Uganda. ILM's final reports are not yet widely available but some of the internal reports from which these findings are taken are cited in Allison (2003a).

The authors show how both the income for poor fisherfolk and the social optimum of maximum overall benefits are most likely to be met when there is the highest inequality between resource users (e.g. 1 powerful fisherman with 7 boats, 3 others with 1 each). Users with the large endowment have a strong incentive to exercise self-restraint, while smaller users, bound by their credit constraints, cannot increase their rates of use. This conclusion is, however, strongly dependent on technology/payoff structure- hence the ambiguities. In unequal agrarian societies, weaker categories of users are frequently excluded by dominant groups to achieve more efficient use of the CPRs that have high market value. Once a regulatory agency is set up, inequality among resource users tends to make the functioning of regulation become more difficult, whether it involves transfers, quotas or taxes. Thus, economic theory predicts that the introduction of formalised co-management can destabilise functional commons based on social inequalities, an observation also made from an empirical, anthropological perspective by Mosse (2003).

The whole experience of community-driven development under decentralization has been subjected to a highly critical analysis by Platteau and Gaspart (2003), who contend that elites have moved sideways from government into NGOs to capture the shifting revenues of donor agencies and that new political alliances between state and traditional elites have often captured resources intended for poverty eradication. Thus, a rush to community-based development by donors risks creating and reinforcing an opportunistic rent-seeking elite in rural areas. Project accountability processes and performance-based funding are the main short-term strategies for preventing elite capture, but long-term solutions lie in broader citizen empowerment and in transformation of the institutional cultures of political representation and government service. These are strategic goals well outside the remit of the fisheries sector[8] although some progress at local level can be made through targeted capacity building programmes aimed at building social capital among relevant local government and community actors.

[8] Such as goal is the essence of the New Partnership for African Development (NEPAD) which can be seen as a promise by African leaders to deliver good governance, peace and security in return for increased foreign investment (Owusu, 2003, p1662)

4.2.3 Capacity building in government and community

Requirements for capacity building for co-management are often presented as technical in nature – providing literacy and business management skills, designing representative organisations with legally defensible rights *etc*[9]. While these are important components of capacity-building, they tend to ignore citizen's existing abilities to develop functional institutions in the most unpromising contexts (i.e. they ignore the SLA premise of 'building on strengths') and they minimise the importance of politics and power relations.

While there is much emphasis in co-management programmes on building community-level institutions, the government role in co-management involves more than just getting out of the way (e.g see Box 2, overleaf). Government fishery agencies have new roles as partners in local development that may differ from their previous functions that were largely in assessing fish stocks, providing technological advice and enforcing fishing regulations. In many cases, staff training, technical skills and knowledge bases are not well fitted to the new roles that fisheries professionals find themselves in (Allison & McBride, 2003). Any co-management project therefore has to contend with potentially limited relevant capacity in government partners, as well as limited organisational capacity in communities.

Capacity-building in government is not just a case of technical reorientation in fishery departments at national and local level, particularly when so much emphasis is placed on integrating fisheries co-management planning with local government development programmes. Local government's role in service provision and political representation in recent decentralisation initiatives has often fallen short of expectations (e.g. Ellis and Freeman, 2004) and it has been stated that "decentralization cannot work in a country characterized by a weak state because when a weak state devolves power, it is more often than not simply making accommodations with local strongmen rather than expanding democratic spaces" (Heller, 2001, p139). In these circumstances, one may question whether better integration with local government processes is beneficial to

[9] We make no attempt in this paper to prescribe technical requirements for capacity building, as there need to be determined on a case-by-case basis following analysis of technical constraints to improved co-management.

fishing communities. One lesson for co-management design might be not to insist on close ties with government in circumstances where government cannot demonstrate that it can be helpful, and to facilitate partnership in circumstances where governments have demonstrated commitment and integrity in their dealings with their citizens.

Box 2 – Some potential roles for government in community-based natural resource management (modified from Shackleton *et al*., 2002, p2).

Devolution involves the transfer of authority over NR decision-making and benefits from central state to local actors. The state, however, maintains important roles in co-management systems which may include:

- Protecting wider 'public goods' (watersheds, biodiversity, carbon sinks and other ecological services)
- Establishing the policy, legal and social frameworks and conditions needed for local management to succeed
- Facilitating and regulating private activity including the defence of property rights
- Mediating conflict
- Helping local organisations enforce locally designed and monitored regulations and sanctions
- Providing legal recourse in the event of violation of rights and non-compliance with regulations
- Providing technical assistance
- Addressing local inequality and ensuring representation of marginal groups so that downward accountability of organisations receiving devolved authority is assured
- Helping communities to defend their rights, including protection against powerful external groups such as multinational companies and organised traders
- Supporting local capacity building

Community-building programmes can in themselves be an indirect route to building responsive and accountable local governments: "… as long as the grassroots are not sufficiently empowered through suitable training programs and processes aimed at making them aware of their rights and confident enough to assert them, benefits [of community driven development] are likely to be largely pre-empted by local elites acting on their behalf" (Platteau & Gaspart, 2003: p1687) . There may be a fine line between facilitating empowerment and providing outside support that unwittingly erodes autonomous organisation-building based on accountability of leadership to local communities. Community-building and empowerment need to be considered together as it is difficult for powerful local groups to acknowledge the potential gains of co-operating with weaker and vulnerable groups (Bastiaensen *et al.,* 2002).

A vital element of building organisational capacity within user-groups or communities and in government is trust-building. In many cases, it cannot be assumed that government (even local government) and user-groups trust each other sufficiently to cooperate. The ability and willingness of government and private sector actors to support devolved NRM, social inclusion and poverty eradication is a vital factor in ensuring the success of any government-fisherfolk partnerhip. In the case of one of the oft-quoted successes of co-management, the CAMPFIRE wildlife management programme in Zimbabwe, it has become clear that the programme cannot effectively achieve the goal of poverty alleviation without first addressing the administrative and legal structures that underlie the country's political ecology (Logan & Moseley, 2002).

The important conclusion from the current critique of co-management is that. Mosse (2003) points out that this process takes the implicit view that the problems of resource management are local ones with local solutions, while evidence suggests that many of the problems are created externally, and may require solutions that address these externalities. This supports a concern that in the fisheries, community management is a government strategy to transfer the burden of larger-scale governance failures to fisherfolk themselves (Allison, 2001). Co-management, should, in theory address these issues by appropriate allocation of rights and responsibilities between state and user-groups. In this vein, Baland and Platteau (1996, p178) argue that where agents are not fully aware of ecological processes or are unable to protect

their resources against intruders, or are mired in levels of poverty that drive them to overexploit environmental resources, state intervention may be needed to support both private and common property. The above observations are a direct challenge to the grassroots, local-focus of many development programmes and the implicit sense that natural resource problems are local in origin and that the state has a limited role in management.

Perhaps paradoxically, a strong, supportive state is as important to the success of co-management as a strong, enforcing state was to the success of old-style 'command and control' fisheries management. Conversely, where citizens are up against unsupportive states, the potential of CBNRM to empower them is very limited. Older vocabularies about peasant struggles, class conflict and democracy are better able to name the problems and indicate the forms of collective actions through which they might be addressed (Li, 2002).

4.2.4 Financing and benefit sharing mechanisms

Co-management may look cost-effective from a government point of view, but it is not cost-free for any of its participants. Funds are required for cross-sectoral and geographical coordination, monitoring and enforcement, service provision by government or NGOs and the private sector, for various other recurrent operational expenses and for capacity building activities. Under liberalisation programmes the fisheries sector is coming under increased pressure to reduce the cost-burden on government of providing management support to communities. Extension services to production sectors are being privatised in many countries in sub-Saharan Africa (Ellis & Freeman, 2004). The inland fisheries literature contains several examples of cost and benefit sharing mechanisms for sustainable co-management, principally centred around the management of small 'community' ponds for extensive aquaculture (see Section 3). For larger-scale co-management, for which coordination and enforcement costs are likely to be much higher, there are a number of possible funding mechanisms (e.g. COMPASS, 2000):

Donor funding: not sustainable in the long-run. Often tied to projects of short-term duration or limited coverage. Can be useful to kick/start cover transaction costs in a limited number of places

Trust funds and endowments: Designed to generate sufficient income from investments to cover operating costs, offset inflation and currency depreciation and generate additional capital to fund development activities. E.g. USAID trust funds for biodiversity conservation-related programmes.

Public funding – taxes, fees and royalties: A weak tax base and inefficiencies in the collection and management of public funds constrain the government's ability to support even essential public services. The reinvestment of fish taxes in fisheries service provision is not always achieved[10]. Currently, taxes are a flat rate, based on licences and transport, with a variable element related to the volume of catch. A graduated tax, based around the value of asset ownership may be more equitable.

Fee-for service arrangements: Government's involvement in co-management can be funded by fees charged to provide services (e.g. advice on optimum mesh size, annual stock assessments etc). Uganda's agricultural extension service now operates on this principle, and this model is being pursued in OECD country fisheries as part of government cost-recovery schemes (Allison, 2001).

Private sector funding – tends to be associated with larger commercial firms (although strictly, all fisherfolk, as small-scale entrepreneurs, can be regarded as part of the private sector).

Self-financing – income from membership fees paid by rights-holders in a co-management system. Cost-benefit analysis based on projected benefits of co-management may be useful in setting appropriate fee levels. Similarly, royalties for licences, landing station fees etc, can be collected by user-groups, rather than governments. New fisheries legislation now allows this in many countries.

[10] For a useful analysis of the impact of local taxation systems in fisheries in Uganda, see the ILM project reports, e.g. Wilson (2002)

Although self-funding through membership subscription is probably the favoured model for sustaining community contribution to co-management systems, there programmes may only be self-sustaining when the resource is valuable: implementing formal rule-based systems comes with considerable transaction costs – in some cases the resources we are dealing with may have insufficient value to support such systems (e.g. Campbell *et al*., 2001; Baumann & Farrington, 2003)

4.2.5. Managing migration and diversified livelihoods in co-management arrangements

Peoples' geographical and occupational mobility poses considerable challenges to the design of co-management institutions. The central question is: how can equitable, exclusionary rights of access be designed and defended when mobility makes the user-community so heterogeneous and dynamic? One solution is to aim for stability by introducing regulations that have the long-term effect of reducing the heterogeneity and mobility of fisherfolk. This is effectively the management tactic adopted by UK and Irish inshore fisheries regulators, who have sought to ban part-time fisherfolk and limit mobility through creation of territorial boundaries (Allison, 2004b). If, however, migration and diversification are seen as rational livelihood strategies whereby people make the most of the biological, social and economic resources within their reach (Ellis, 2000; Övera, 2001), then such strategies risk undermining the strength and resilience of livelihood systems, forcing dependency on single resource systems and fixed territories, to the detriment of resource sustainability (Allison & Ellis, 2001).

A more appropriate solution is to build on existing norms governing access of part-time and migrant fisherfolk to resources, even if it means rejecting idealised stable commons with clear boundaries in favour of flexible institutions with porous boundaries. Including migrants in these institutions is not necessarily in conflict with some form of access limitation. Migrants often carry institutions to new locations – these might include kinship ideologies, religious practices, marriage customs, credit

institutions, gender roles and relations and mechanisms for benefit sharing (Övera, 2001). These informal institutions are generally 'enabling' towards building livelihoods and reducing vulnerability. Migrants in temporary fishing camps are thus not disordered bands of vagabonds, but coherent social units, often people from the same village, bound by a set of institutions. (Övera, 2001; see also Jul-Larsen & Kassibo, 2003) In cases where migration has taken place over generations, compliance by migrants with their host-community rules is often good, and relationships of reciprocity (e.g. access in exchange for a proportion of the catch) are the norm, as is the case in East and Southern Africa and indeed in many small-scale fisheries worldwide (Allison & Ellis, 2001; Allison & Mvula, 2002). In these cases, there is scope for developing co-management systems where migrants have conditional rights of access to resources, negotiated with resident communities. The fear arises that resident communities may wish to exclude migrants but in most cases that we have looked at migrants are at least partially welcome because they enhance economic opportunities by increasing the volume of fish trade, attracting more buyers, and by spending their earnings on food and services in the communities they are visiting.

In cases where migration is new and migrants do not comply with local regulations, conflicts can arise between migrants and residents and empowering and supporting residents in efforts to restrict or exclude such migrants may be required. It would be a useful starting point to distinguish the extent and nature of migration and the migrant-resident economic and social relations as part of the stakeholder analysis procedure that might identify whether migrants can be granted the status of rights-holders in co-management or not.

Although total exclusion of migrants from resource access is not the norm in Africa's inland fisheries, they usually have weaker property rights than residents. In Nigeria's inland waters, Olomola (1998) observed that immigrants, regardless of length or residence in an area, remained 'strangers' that were unable to access the communal or lineage rights to use of local fisheries, although they may rent fishery sites. Under pressure of decreasing catches, strangers have recently found it harder to rent such sites and find themselves excluded from fishing opportunities. This might be seen as

a successful dynamic exclusionary mechanism, at least from the resident community point of view.

Although the differential claims of migrants and residents are recognised as being a key issue in defining rights of access to fishery resources in West Africa, the differential rights of part-time and full-time fisherfolk are less often analysed. Many small-scale fisherfolk in Africa are part-timers, fishing seasonally or sporadically (reviewed in Allison & Ellis, 2001; Béné & Neiland, 2003) and can be thought of as fisher-farmers or farmer-fishers, according to the balance of their activities (Geheb & Binns, 1997). If rights are allocated according to degree of dependence on the fishery, then part-timers will be less well represented. However, part-time fishing may be desirable from the resource management point of view as it reduces dependency on resources and may allow greater flexibility in introducing short-term restrictive management to enhance future livelihood contributions. Diversification of rural livelihoods to spread risks, escape subsistence-level production modes, reduce resource dependency and promote 'virtuous spirals' of asset accumulation can be regarded as being positive and worthy of policy support (Ellis & Allison, 2004).

The diversification and fisheries management dilemma can thus be summarised as:

Should policies and co-management designs support diversification to reduce dependency on fishery resources and increase opportunity incomes, thereby allowing pressure on resources in time of scarcity to be relieved?

Or…

Does support for diversification reduce individual incentives to manage fishery resources as they are only turned to periodically, as part of a diversified set of income-generating opportunities?

The policy choice is one of a smaller, more efficient, but more dependent 'professional' fishing fleet, or a larger, fleet of apparently inefficient part-timers. Modernisation policies focused on improving production, incomes and yields have tended to support the former (Allison, 2003; 2004b) while adaptive livelihood strategies of small-scale fisherfolk that have not been targeted by development programmes are characterised by the latter. The resolution of these questions is

critical in deciding on the boundaries of inclusion and exclusion for co-management and therefore they merit serious consideration.

Related to this question of diversification and migration is the identification of the livelihood strategies of the poor and less poor in lakeshore villages. It has often been assumed that those most dependent on fishing are the poorest, who turn to fishing as an occupation of last resort (see Béné, 2003 for a review and critique), but empirical work on incomes and occupational choices suggests that fisherfolk, particularly those who own fishing gear and control rights of access to resources, are among the wealthier members of fishing communities (Pollnac *et al*., 2001; Allison & Mvula, 2002; Allison, 2003; 2004a; Béné & Neiland, 2003; Freeman *et al* 2004), with migrant fisherfolk often having better (or larger, more destructive) fishing gear than residents and thereby achieving greater incomes from fishing.

The associations between different livelihood strategies, asset ownership and poverty status is a critical area for research feeding into the allocation of rights to the poor in co-management systems. The poverty profiles conducted by SFLP in the pilot project locations (Pittaluga, 2004) are thus an important means of identifying potential project beneficiaries and ensuring that the needs of the poorest fisherfolk are addressed in the design and promotion of co-management institutions.

4.3 Summary

This review has tried to navigate through the tangled thickets of discourse around community-based resource natural resource management. We have sought to identify the principal clearings and blockages on the path to sustainable fisheries co-management and to provide a critical discussion of success and failure and the reasons used to explain it.

The rationale and opportunities for co-management are well-documented in recent literature, notably the book edited by Wilson *et al.* (2003) on fisheries co-management experiences. There are good examples of co-management systems that have succeeded in a variety of situations. The extraction of design principles and ‘best

practice' from these examples is complicated by the pervading influence of historical, social, political and environmental context, but in general it can be said that careful adherence to participatory procedures, inclusion of all interest groups in management discussion and the existence of strong political, legal, technical and financial support, will lead to improved local-level governance of fishery resources.

In their review of fisheries co-management, Raakjær Nielsen *et al*., (2004) identify challenges ahead as:

- Developing co-management institutions on a larger scale than the local community:
- Reconciling local and global agendas
- Identifying a knowledge base for management which is considered valid by stakeholders
- Developing approaches to manage conflicts between resource users who have acquired exclusion rights through the co-management process and those who are excluded

To us, these appear, with the exception of the second one, to be both too technically focused and too narrow. We contend that there are more significant conceptual and political issues to address, certainly in the context of Africa's inland waters. To effectively mobilise support for co-management and to ensure successful design and implementation of co-management programmes it is essential to develop a comprehensive understanding of four inter-related topics: **property rights**, **power relations**, the occupational, geographical and social structure of '**communities**' and issues around **trust** as an element of social capital.

A more nuanced understanding of property is likely to be couched in terms of characteristics such as excludability, use designation, duration of use, allotment type, size, transferability, fees, operational requirements, control and security (Campbell *et al*., 2001). This report has provided a typology and framework for the analysis of property rights to promote these types of analysis.

Institutional change is rarely a win-win situation. Those who find themselves on the losing side (e.g. government agencies who lose resources and power, local elites who no longer control access and revenue flows) will not necessarily give up easily and

may instead make efforts to disrupt or channel decision-making in ways that are acceptable and beneficial to them (Jentoft, 2004). This is why power is such a critical dimension of the co-management discussion, and why power is among the key defining attributes of institutions. As Levi (1990, p407) puts it:

> " Some institutions serve the interests of the many, some the interests of the few, but all facilitate and regulate the resources of power. A definition of institutions that ignores this fact fails to capture part of what is distinct about institutions, namely that the mechanisms for limiting choices, including the contractual choices, reflect the distribution of power"

If we want to understand common property management institutions from the poor person's viewpoint than we need to examine power relations in more detail, both processes of exclusion, how the poor negotiate for resources, and how these negotiation capabilities can be built upon:

> "it is the branches of the tree cut down at night, the stolen fruit, the cow impounded for eating a standing crop while grazing on the field boundaries, the imputed stains on the reputations of the rich for disallowing access to 'traditional' resources, that are central to poor people's experiences of their local natural resource base"
>
> (Beck and Nesmith, 2001; p 129)

Critiques of CBNRM, reviewed in this paper, have pointed to a tendency for the 'intended beneficiaries' to be treated as passive, undifferentiated recipients of project activities, while in fact gender, caste, wealth, age, origins and other aspects of social identify both divide and crosscut so-called 'community' boundaries – ideas and beliefs are not shared in 'communities' they are struggled and bargained over (Leach *et al.*, 1999). Critiques of 'community' do not, as Wilson (2003b) implies, completely reject the notion but aim to contextualise communities as describing more or less temporary unities of situation, interest or purpose. Less nuanced concepts of community are typically representations that are actively created and manipulated by powerful people for particular purposes, or are the contingent and temporary outcome of dynamic interactions between differentiated social actors (Leach *et al.*, 1999; p230). This being so, the 'community' as the basic unit of management begins to look less viable.

As alternatives to CBNRM, Agrawal and Gibson (1999) propose looking at user groups in terms of their abilities to negotiate, define and enforce rules; *i.e.* theirs is an institutional perspective. Leach *et al.* (1999) prefer to use the concept of ***environmental entitlements*** (EEs) as an alternative to thinking about community-based rights. They define EEs as "alternative sets of utilities derived from environmental goods and services over which social actors have legitimate effective command and which are instrumental in achieving well-being" (p233). Entitlements enhance people's ***capabilities***, defined as what people can do or be with their entitlements. For example, command over fish resources derived from rights to fish on a lake gives food and a source of income and so contributes to well-being. The notion of building peoples' capabilities is reflected in SLA emphasis on livelihood strengthening, while the concept of entitlements is derived from generic concepts of universal human rights. The rejection of community-based in favour of rights-based approaches is expressed thus:

> "Conventional approaches to CBNRM are frequently centred on community organisation as the main vehicle for their activities. Environmental entitlements analysis shows that these may be a very poor reflection of the real institutional matrix within which resources are locally used managed and contested. Considerable caution is therefore needed before assuming that new formal organizations will replicate the assumed successes of indigenous systems, or enhance community involvement effectively"
>
> (Leach *et al*., 1999, p240)

EE analysis therefore implies that because many institutions are informal, consist more in the regularized practices of particular groups of people than in any fixed set of rules and change over time to suit new social, political or ecological circumstances, then introduced, formal organizations may miss or reduce this flexibility. EE goes beyond seeing management as a set of rules and operational principles implemented by organisations to advocate a rights-based approach to development, informed by concepts of citizenship, representation and social and environmental justice. Turning this theory into practice means lessening the focus on creating management institutions and organisations at community level and increasing the focus on political mobilisation of the poor to claim their entitlements to social justice. This more politicised view of development challenges the neo-liberal orthodoxy with notions of Marxist origin, such as class struggle.

The last of the four critical issues for co-management is trust. We have discussed the issue of trust-building extensively in the context of building social capital to reduce the costs of transactions between actors at all levels. In practice, techniques for trust-building may be needed both for conflict reduction and consensus-building in the early stages of the project, but may need reinforcing in the day-to-day operation of co-management, where, for example, beach village committees must be trusted to fairly represent the interests of all members of fishing groups and governments must be trusted to enforce rules consistently and refrain from unofficial exercise of power. As trust increases, the cost of defending individual and group rights goes down. Thus, trust is an important element in contributing to management efficiency.

It has often proved to be a time-consuming process to introduce co-management as a replacement for state-led fishery management systems, particularly where there is little trust between state fishery officials and fisherfolk and other principal stakeholders. Co-management represents a major institutional transformation (change in policies, laws, organisations and social and cultural norms). Successful examples of co-management have typically required several phases of donor-assistance or long-term NGO support, often covering a decade or more. As the acceptance of participatory approaches to natural resource management grows and policy and legal support is put into place, the speed of institutional change is likely to increase. It remains an ambitious undertaking to put sustainable management systems into place within the pilot project's timeframe. Processes fostering sustainability – including, most crucially, trust-building, must not be sacrificed to meet short-term project objective indicators (e.g. number of co-management committees established)

In addition to the four factors explained above, CPR research needs to pay more attention to historical contexts, and to draw on more ecological results on the state of the commons and not just perceptions of change. There are important roles for regionally-based researchers in contributing to understanding of the context and impact of PP1's interventions.

Amid this complexity, it is useful to return to the reason that co-management is advocated – the perception that institutional failure has led to resource degradation and loss of access to livelihood opportunity by the poor. Institutions fail when the

pillars on which they rest are weak (Jentoft, 2004). The rules that regulate behaviour may be underdeveloped or poorly enforced. The normative standards may provide few incentives and little guidance. The knowledge that could inform decision-making may be inadequate. Thus, governance should improve if these pillars are strengthened. Any diagnosis of the problems and opportunities of institutions and how to improve them should therefore start here. However, institutional failure may also result from conditions outside the co-management initiative, in situations in which they are embedded or 'nested' in wider institutions. Fisheries management intuitions may also fail because of unsupportive legislation, inadequate financing, poorly organized user-groups etc. Thus, an investigation into the causes of intuitional deficiencies must broaden the perspective to include exogenous conditions – this paper has tried to do that in order to draw out recommendations to inform on-going efforts to introduce co-management through SFLP.

5. CONCLUSIONS AND RECOMMENDATIONS

> "Success in creating a more just world is measured not by the effectiveness with which a policy idea is sold, or the passing of legislation or regulations which pertain to it, but in the effects on peoples' lives"
>
> (Li, 2002, p266)

Despite their variety and complexity, CBNRM project have a number of shared objectives (e.g. Kellert *et al*., 2000):

- Commitment to involve community members and local institutions in the management and conservation of natural resources
- Interest in devolving power and authority from central and/or state government to more local and often indigenous institutions and peoples
- Desire to link and reconcile socio-economic development and environmental conservation and protection
- Tendency to defend and legitimise local and/or indigenous resource and property rights
- Belief in the desirability of including traditional values and ecological knowledge in modern resource management

Thus, CBNRM contains a mixture of political, organizational, socio-economic, environmental and epistemological/institutional features, and despite the many possible obstacles to successful implementation, the idea of some form of partnership or dialogue between relevant citizen-groups and their government and of devolution of rights and responsibility to local-level actors is likely to remain the dominant form of fisheries governance in Africa for some time. Co-management therefore represents the only real way forward. Although moving from state-based management to co-management is not always an easy process, the range of positive experiences from around the world (reviewed above and in Pomeroy et al., 2001; Raakjær Nielsen *et al.*, 2004 and Wilson *et al.*, 2003) are encouraging. Some of the key issues and challenges that emerge from these reviews are:

1. Support from government is critical. Legislative and policy support is only the first step – if there is little political will and incentive for fisheries departments to relinquish control over resource management, then project interventions will not result in sustainable outcomes

2. Elite capture of community-based development initiatives is a widely-recognised problem and there are many cases where the poor have not benefited from a transition from state to community-based natural resource management. Mechanisms for ensuring equitable outcomes of co-management are critical to achieving PP1s pro-poor orientation.

3. Few West-African common-property systems are based on total exclusion of outsiders. Often, access regimes are filters rather than barriers, allowing partial access to outsiders on the basis of kinship, perceived need, or under historical reciprocal access or trading arrangements. Building co-management on these traditions may be more widely acceptable and enforceable than emphasising total exclusion of particular groups (e.g. migrant fisherfolk).

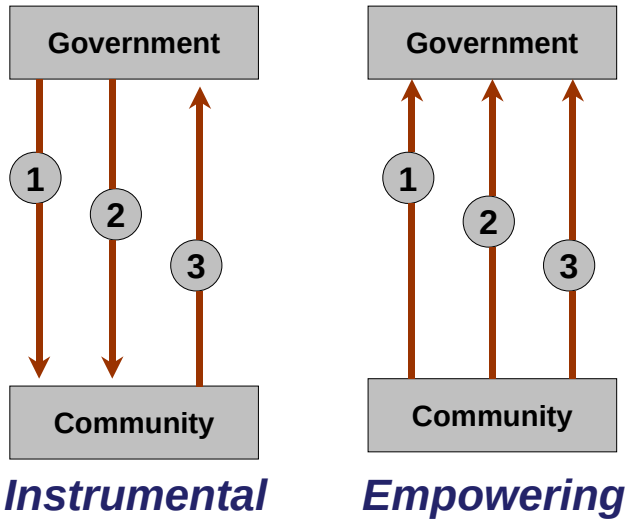
4. Financing co-management beyond donor or government-assisted transition periods can be difficult. Often, resource users are reluctant to commit funds to management until they can see returns from their investment. This has meant

that successful donor-funded co-management projects have tended to require commitments of typically 6-12 years before they have been judged to be self-sustaining. Fortunately, PP1 does not start from the beginning, as, for example, there has been a 10-year effort promoting co-management arrangements in Burkina Faso and similar efforts throughout the 1990s in other countries.

5. Building trust between stakeholders is a key issue for project success. Trust-building exercises between groups that may have had conflictual relationships in the past (e.g. government fishery enforcement agents and resource users, migrant and resident fisherfolk) is an essential activity before inclusive, multi-stakeholder management becomes a realistic option. Where there are known to be serious disputes over resource access that might overwhelm existing capacities for self-reorganisation, conflict management assessment (CMA) can help to determine what form of intervention is appropriate (see Jones & Warner, 1998).

6. Co-management is a political project that involves the redistribution of power alongside the reallocation of use rights and control over resources. When the political dimension of co-management is not explicitly recognised then unexpected outcomes can occur, such as new conflicts or the exacerbation of existing ones. The rhetoric of co-management often refers to empowerment but seldom considers that one group gaining power often means that another group has their power and influence diminished. If an empowering vision of co-management is the aim (Figure 3) then the process needs to be explicitly connected to decentralisation initiatives. Decentralisation, however, is itself often conceived in technocratic rather than political terms – as a means of improving efficiency of government service delivery and collecting tax revenues more efficiently rather than as a means of giving citizens a stronger voice in government and making government more accountable for their actions.

Figure 3 – Alternative visions of co-management (Adapted from Raakjær Nielsen *et al*, 2004)



1 = setting objectives
2 = knowledge base
3 = Implementing decisions

7. Critics of the 'design principles' approach to understanding CPR success suggest that historical and ecological context are so influential in the emergence of CPR management systems that the search for rules or design principles is fruitless (Mosse, 2003). In a similar vein, Hara and Raakjær Nielsen (2003) argue that, for Africa, each specific fishery will require co-management design to be tailor-made. Thus, the very relevance of the transferability of 'lessons learned' and therefore the 'pilot project' approach of FAO is a subject of continued debate in the commons literature. Our own view is that lessons on good practice in institutional change are transferable, while technical design features of individual commons management systems are likely to require locally adapted designs.

With these considerations in mind, we make a series of recommendations for good practice in co-management, building on the experiences reviewed in this document, and on a similar list in Kellert *et al.*, (2000). This review is not intended to establish blueprint, technocratic recommendations. It is presented in the spirit of 'lessons

learned' and in providing guidance on processes that could lead to successful co-management outcomes.

Recommendations in support of PP1 Co-management projects

10. Ensure that the objectives of co-management are clearly defined and that the trade-offs between achieving equity, efficiency and sustainability are clearly understood by all participants. Trade-off analysis can be used if it seems necessary to reconcile conflicting objectives.

11. Defining objectives should be done by stakeholders, not imposed by others, but stakeholders' objectives should be compatible with government policy (national fisheries policy, PRSP etc). This should create enough space for local actors to define their own objectives for NRM while ensuring that national interests in poverty eradication and resource conservation prevail over local elite's personal interests, for example.

12. In building new management institutions, start with what resource-users know and do already ('building on strengths'). This will involve investigating and building upon local-level institutions rather than replacing them, while remaining aware that such institutions may need to change to accommodate changed objectives for resource management

13. Create opportunities for pluralistic decision-making by establishing platforms for discussion, debate and planning. Assist with conflict resolution.

14. Create fuller and clearer property rights at a local level, but, in granting rights to user-groups, promote flexible approaches rather than tightly worded contractual agreements. At the same time, it may be necessary to improve legal literacy so that local people can make informed responses to existing policy

15. SFLP can promote social inclusion and empowerment of marginalised groups in a number of ways. This might include: encouraging the formation of federations (e.g. Federation of canoe-fishermen, Federation of Women fish traders etc) to

promote popular mobilisation around NR issues, assisting with conflict management, making livelihood enhancement central to local-level fisheries policy and supporting the use of accountable management procedures in local organisations and addressing local inequalities and exploitative social relations.

16. Capacity building in both local government and community contexts could include the development of skills in technical areas, marketing, organisational development, communications, and political mobilisation.

17. Assist in promoting state and NGO interventions that address issues of political process rather than technical and managerial aspects of co-management. Support the building of democratic organisations that are representative, accountable and transparent. Technical choice in NR management should be left to users.

18. There is a need to build a set of clear indicators that address the efficiency-equity-sustainability framework and to develop a strategy for monitoring process issues as well as outcomes. This will strengthen the learning environment around the pilot projects and aid transferability of good practice.

This document has deliberately taken a critical stance on co-management and has challenged the simplifications of CBNRM. In doing so we are mindful that there is a strategic value in CBNRM's simplifications, since a bold and resolute insistence upon a few, clear axioms is crucial for making headway in the policy arena. The use of a loaded phrase such as CBNRM serves to capture the commitment to justice for rural people and, simultaneously, indicate the broader outline of a significant mechanism by which it can be achieved (Li, 1996). To change commitment and broad policy goals into specific laws, programs and projects, however, requires more critical analysis. It has been our intention to foster this type of analysis among those currently designing co-management projects.

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ANNEX 1 – NARRATIVE SUMMARY OF A RANGE OF INLAND FISHERIES CO-MANAGEMENT CASE STUDIES

1.1 Bangladesh:

In Bangladesh, floodplain agro-eco zones (FAO agro-ecological zone scheme) occupy 80% of the territory (Craig *et al,* 2003). In 1997, the inland fishery employed some 1.3 million full time fishers, producing around 1 million metric ton (Murshed-e- Jahan *et al,* 2000). Fish is an important source of animal protein in the country, representing 60% of the total supply (Murshed-e- Jahan *et al,* 2000), and fisheries are essential for the livelihoods of floodplain inhabitants with over 70% of them catching fish for food or income (Thompson *et al,* 2003). Bangladesh floodplain fisheries are characterised by a complex property right system. Seasonally flooded lands are mostly privately owned and cultivated. However, open access is allowed during the monsoon season for nearby residents. River and beels (permanent water bodies) are government owned and divided into jalmohals (fishery estates) since the 1950s. The Ministry of Land Revenue (MLR) historically managed fishing rights, where a lease (1-3 years) was given to the highest bidder. As a result, access was usually controlled by a wealthy and powerful class of non-fishermen, creating unequal power structures that kept poor fishing communities at the mercy of leaseholders (Toufique, 1997; Thompson *et al* 2003; Murshed -e- Jahan *et al,* 2000). It has been argued that the short-term leases promoted over-exploitation in the absence of conservation incentives and control instruments (Craig *et al,* 2003), and a total disincentive for any long-term investment in fisheries management (Ahmed *et al*, 1997).

Considerable fishery management costs due to a centralised approach, decline in catches and consequently fishing incomes (Murshed-e- Jahan *et al,* 2000), as well as the inadequacy of the leasing policy to protect the poor from exploitation (Ahmed *et al*, 1997) have contributed to the development of a new management system. In the 1970's a preference for leasing fishery estates to fisher co-operatives was established (Thompson *et al,* 2003). However, this measure failed because fisher co-operatives tended to be under the control of moneylenders and wealthy 'waterlords' (Ahmed *et al*, 1997).

In 1986, the Ministry of Fisheries and Livestock (MOFL) put forward the New Fisheries Management Policy (NFMP). The strategy of the NFMP was to gradually abolish the system of leasing fishing rights in public water bodies to intermediaries and replace it with direct access rights (Ahmed *et al*, 1997), giving more control and decision-making power to the 'genuine' fishermen. The responsibility of water bodies was transferred from the Ministry of Land and Revenue to the Department of Fisheries (DOF).

An increased emphasis has since been put on devolution of power, responsible fishing practices, equitable distribution of benefits, co-operation between government department and fishing communities in policies related to fisheries management, with a number of pilot projects around the country being initiated.

The Community Based Fisheries Management Project (CBFM):

CBFM was tested in 19 water bodies (rivers and beels) during 1996-2000. The project aimed to develop and test models for sustainable and equitable fishery management based on the support for communities from non-governmental organisations (NGOs) and the DOF (Sultana *et al*, 2000). This can be classified as a cooperative type of arrangement, which, in some water-bodies was 'advisory' (communities taking the leading role). The focus of the CBFM was to strengthen the role of full time fishermen while maintaining access for subsistence fishing and limiting the role of moneylenders. Table 8 presents the project stakeholders and some of the institutional arrangements. Co-management has been achieved by establishing local user management committees with fisher executives answerable to the community through the participants group that they represent, and in some cases through regular elections (Thompson, *et al* 2003).

A characteristic feature of the CBFM project was that each NGO had its own approach and objectives while the overall target was to improve livelihoods. For instance Banchte Sheka worked only with women, CRED (Corporate Resonsability for the Environment and Development) worked mainly with local leaders and elected council members while BRAC (Bangladesh Rural Advancement Committee) mainly focused on poor fishermen. In Goakhola-Hatiara Beel, a Beel Management

Committee (BMC) was created in 1997 and became operational in 1999 through the help of the NGO Banchte Sheka (Sultana *et al*, 2002). It promoted access of women to decision-making in fishery management and maintained their access to fishing activities (8 female group members of total of 27). One of the main positive outcomes of co-management in this beel was that women were empowered.

Table 8 Community Based Fisheries Management (CBFM) Project, Bangladesh

	Stakeholder roles			
Stated objectives	**Fishing communities**	**Government**	**NGOs**	**Institutional Arrangements**
To develop and test models for sustainable and equitable fishery management based on the support for communities from NGOs and the Government.	There are three types of participants in floodplain fishing (Craig *et al*, 2003): 1) Professional: traditionally Hindu, use costly gear. 2) Seasonal: monsoon season, supplement their fishing income with agricultural work 3) Subsistence: landless labourers, small farmers, women and children These, depending on the water body, organised in management committees.	DOF[11]; ensures the availability of inland open waters, the involvement of its staff in the project and facilitates local administrative support as well as providing technical advice.	• 5 NGOs . They help to form groups of fishers; support these groups with education, training and credit and raise awareness of fishery management problems. • An international research centre (World Fish Centre) and the Ford Foundation, both providing technical and financial assistance.	Access was not controlled anymore by MLR[12] but by DOF. In beels, BMC[13]s, among other tasks, observe a close season and restriction access and gear use and share equally in guarding, team fishing and income.

[11] Department of Fisheries
[12] Ministry of Lands and Revenues
[13] Beel Management Committees

Different models of co-operation existed between the stakeholders during the project. It was originally expected that:

1. NGOs would act as intermediary between DOF and communities or
2. DOF and NGO would give separate support to the communities or
3. Three way co-management might be formed

However, more complex interactions occurred where local fishery management committees played an important role. Furthermore, the research centre was not limited to an advisory role during the project, playing an important role as intermediary/buffer between government and NGOs. It was also noticed that NGOs flexibility in their approach and community organisations were not as expected (Thompson *et al,* 2003).

The major lessons drawn from the project were that (Thompson *et al,* 2003):

- It was essential that communities obtained rights over the fisheries.
- Strong facilitation was necessary, i.e. skilled staff for capacity building in resource management is essential.
- Taking up visible resource management actions greatly helped.
- Success was more likely in homogenous communities.
- External threats are a limiting factor, i.e. powerful individuals or groups or conflicting uses of wetlands.
- Evidences from the CBFM project are ambiguous regarding the adage that clear boundaries and small fisheries are more successful in the adoption of co-management. The CBFM project was unsuccessful in two closed beels despite the fact that resource users and boundaries were clearly defined. Furthermore, if more open and unbounded rivers were generally unsuccessful this is attributed to the fact that in 1995 rivers were made lease free, hence open access, than to the characteristics of the resource. Indeed, this new policy meant that the fisher groups organised under the CBFM project had no specific or exclusive rights. As a result DOF and NGOs were dissuaded to promote local fisheries in rivers (Thompson *et al,* 2003), illustrating how the complexity of fishery administration and inadequate national policies affect co-management. Thompson *et al* (2003)

thus put forward that correlation between scale and boundaries and success of co-management arrangements could not be made in the case of the CBFM project.

1.2 Sri Lanka

The inland fisheries in Sri Lanka are essentially artisanal and take place in perennial reservoirs, many of them constructed hundred years ago. In 1979 the government provided subsidies of 90% for fibreglass canoes and gill nets (Nathanael and Edirinsinghe, 2002). Those were only available through fisheries co-operatives. As a result, most of the fishermen organised themselves into co-operative societies to benefit from these subsidies. A by-product of this reorganisation into co-operatives was that fishery management costs were reduced and implementation of regulations was made easier. In 1990, government subsidies and an associated government-funded fish-stocking program were ended. The fishery was left uncontrolled, leading to an increase in illegal fishing and a decline in catch per unit effort (CPUE) due to over fishing. Production dropped by more than half (Amarasinghe and De Silva, 1999). As a result, in 1994 the state support for inland fisheries was restored, along with the re-centralisation of management, controlled by the Ministry of Fisheries and Aquatic Resources Development (MoFARD). Government staffs monitor fisheries, provide boat subsidies and implement regulations

Co-management in Muthukandyia

Muthukandyia is a poor rural area where the primary and major source of income is fishing. According to Amarasinghe and De Silva (1999) the type of co-management implemented in the region falls somewhere between advisory and co-operative, where the community plays an important role in enforcement (Table 9). After review, we argue that the type of arrangements is more consultative-cooperative than advisory. The central government still plays a significant role in the management of the fishery through the presence of a fisheries officer and the provision of subsidies.

Table 9 Co-management in Muthukandyia

	Stakeholder roles		
Stated objectives	**Fishing communities**	**Government**	**Institutional arrangements**
None specified in the literature reviewed.	Fishermen. Co-operative societies created in the 1980's with the government's help. The fishermen learnt how to manage it themselves (i.e. bookkeeping). It was their own initiative to obtain training in financial management.	Government through MoFARD[1]. They helped set up the co-operatives in the 1980's.	Societies imposed a 'tax' of one Sri Lankan Rupee/kg of fish landed to provide a welfare fund. This fund is used to give low-interest loans. The fishing community made a decision not to use gill nets of size < 10.2 cm. Access to fishing in the reservoir limited to members of the co-operative society. Regulations imposed through consensus of society members.

1 Ministry of Fisheries and Aquatic Resource Development

In this community cultural similarity facilitated the achievement of collective decisions. Moreover, the community was conscious of the need to protect environmental quality, i.e. put pressure on the government to control the nuisance of aquatic weed. The community described is what the authors refer to as an 'organised' fishing community. It has observed higher CPUE values where higher than in the 'unorganised' ones, resulting in higher incomes.

1.3 Laos

In Laos, fish is the main source of animal protein (Lorenzen *et al*, 1998) and a majority of the country's population is composed of subsistence rural-based farmers and fishers (Baird, 2003). The Mekong River and its tributaries are the main source of capture fisheries, representing over 60% of all landings (FAO, 1999a). Capture fisheries are also important in small water bodies; playing a significant role in income generation (Garaway *et al*, 2000). However, they are heavily exploited. The government and some NGOs have promoted 'active' management (e.g. improving water quality) and stocking to remedy the situation (Lorenzen *et al*, 1998).

The Department of Livestock and Fisheries (DLF), which is part of the Ministry of Agriculture and Forestry, is responsible for fisheries development. The present policy is to give priority to the training and extension of fish culture. The promotion of the conservation of natural resources is based on a decentralized system, using locally acceptable initiatives (FAO, 1999a).

Co-management in Savannakhet Province

Stocking of small water bodies (oxbow lakes, natural depressions and man-made reservoirs) in the province has been promoted by the government. In the majority of the province, fisheries are under the *de facto* control of local communities, who harvest the ponds collectively, rather than acting as individual fishers (Lorenzen *et al*, 1998; Garaway *et al*, 2000). Licensing is not common and fishing by individuals is often prohibited or restricted. While Lorenzen *et al* (1998) identified four types of management in the province this section will focus on the community fisheries. This type of co-management arrangement in the province can be described as advisory (Table 10).

Table 10 Co-management in Savannakhet Province

	Stakeholder roles		
Stated objectives	**Fishing communities**	**Government**	**Institutional arrangements**
Fisheries exploited by and for the community to generate community income.	Management committee: sets operational management rules, monitors and enforces these rules.	Government: provides technical advice, part-payment of fingerlings and facilitates 'study tours' to villages directly involved with stocking.	Typically jurisdiction over more than one water body, with one dedicated for individual fishing (subsistence) . Restriction in size of gill net. Stocking legitimises community management system = communal investment and encourages shift from subsistence to market oriented fishery.

Lorenzen *et al* (1998) conclude that open-access fisheries were primarily used for subsistence, while restricted access fisheries generated income. Yields resulting form stocking programmes were also found to be heavily dependent on what type of

management the resource was under, and in the case of co-management, increased yields were observed. The average yield and effort figures in the study show that CPUE values were over four times higher in community fisheries where access was restricted than in fisheries under (de facto) open access. Fisheries that had been rented out to corporate entities were also showing higher CPUE values than open access ones, but lower ones than community fisheries.

1.4 Indonesia

In Indonesia the fishing industry makes a very important contribution to the national diet, providing nearly two-third of the supply of animal protein (FAO, 2000a). Over five million people are directly involved in fishing and fish farming (FAO, 2000a). After independence, traditional fisheries management systems have been replaced by a government-centralised type of management. Since the mid-1960s, management has been governed by a Decree of the Ministry of Agriculture or, where the impact is likely to be high, fisheries regulations promulgated by Presidential Decree. In general, effective management of fisheries is difficult to achieve, particularly because of the lack of enforcement capabilities within the government. An additional problem is that, at the provincial level, fisheries management matters tend to be dealt with by staff in production divisions as an additional, rather than a prime, responsibility (FAO, 2000a).

Co-management in Mandailing, North Sumatra

Traditionally, the Mandailing people practiced conservation methods known as rarangan, which means prohibition. These were closely linked to their land use system, which was managed by the traditional authority (Ferrari, 2002). In the 1980's, the Maindling were able to revert to their traditional management techniques under the Lubuk Laragan (river protected area) system. This practice prohibits the harvesting of fisheries close to human settlements for a period of between 6 months to a year. At the end of that period the ban is lifted and fishing is open for one day. The participants pay a fee which goes back to the community (Table 11). Implemented in 70 settlements, the district of Madina has the largest river protection scheme in the

province of North Sumatra. This management arrangement could be classified as informative.

Table 11 Lubuk Larangan, North Sumatra, Indonesia

	Stakeholder roles		
Stated objectives	**Fishing communities**	**Government**	**Institutional arrangements**
Not specified in the literature reviewed. It is assumed that transaction costs reduction was the major incentive for the government while income generation and conservation was the community's objective.	Manage the river and regulates enforcement. Carry conservation monitoring.	Not involved the management. Endorses the community decisions. The district government passed a decree to regulate the Lubuk Larangan system in 1988.	Community imposes closed season on the river. When lifted for one day fees are requested for fishing. Benefits during the 'fishing festival' are re-invested in the community (i.e. teacher's salary, schools).

1.5 Cambodia

Cambodia is the fourth largest producer of freshwater fish in the world with recent estimates of the total inland annual catch at 300,000 to 400,000 tonnes (Mareth *et al*, 2001), and an annual commercial value of US$150-200 million (Gum, 2000). Around 90% of Cambodia's population lives within the Mekong river catchments (FACT, 2002) and 75% of the animal protein consumed are supplied by this sector. The fisheries are thought to represent more important resources in terms of food security in Cambodia than any other country and hence their sustainable management is of overriding importance to the livelihoods of Cambodian people (Nettleton and Baran, 2003).

There is an auction lot system in fisheries management of Tonle Sap (Great Lake) that has been formally practised since 1900. The system remained largely intact until the advent of Pol Pot's Democratic Kampuchea (1975-1979) that abolished commercial fisheries. In 1979, they were reintroduced by the government and legal structures for the lots were developed over the next decade. Commercial lots covered 80% of the shoreline in 2000 (Nettleton and Baran, 2003). Every two years these domains are

publicly auctioned and the winning bidders (invariably the rich) are granted exclusive access for the period of lease. Members of the military, police and local militias are commonly employed to guard the areas. The lots are important as a source of revenue for the state and a source of employment but this system has led to numerous conflicts between commercial and subsistence fishers, who due to lack of capital, have been denied access to traditional fishing grounds.

In 2001 the government ordered large sections of the commercial lots to be returned to the local communities. However, there is no legal framework for community fisheries in Cambodia. The sub-decree granting communities a management mandate was due to be submitted by the Department of Fisheries (DoF) to the Ministry in early September 2003. The concept of co-management has been introduced to Cambodia through community forestry but also exists in other areas such as in water user groups, with regard to irrigation projects. In these types of projects, the stakeholders (community groups and relevant authorities) have shown that they are able to manage common resources provided that they have legally-recognised exclusive rights to them (Gum 2000).

Co-management in Tonle Sap Great Lake

Tonle Sap Great Lake is the largest inland water body in Southeast Asia and provides around 60% of the annual commercial fisheries production for Cambodia. A combination of cyclic flooding, nutrient rich soil and natural vegetation creates a diverse ecosystem that is one of the most productive inland fisheries of the world (Nettleton and Baran, 2003). Over one million people live on the floodplain of the Tonle Sap, 25% of which are landless and there is a high dependency on this fishery resource for income, subsistence and national food security (FACT, 2002; Shams and Ahmed, 2000).

Boosted by the fisheries reform in 2001, community fisheries projects have been initiated to improve governance and ensure more equitable and sustainable natural resource management by involving all stakeholders in decision-making. The project implemented by FAO in Siem Reap since 1995 has been held as a model for its pioneering role in piloting community fisheries (Table 12). This type of management

could be classified as consultative. Twelve community-managed fish sanctuaries have been established and the training of government officials has accompanied this project (Evans, 2003a). Significant progress has been made in Siem Reap and the government is now committed to expand into all other provinces around the lake. This will be covered under the new Asian Development Bank Tonle Sap Environmental Management Program (Evans, 2003b).

Table 12 Siem Rep Co-management project in Tonle Sap Great Lake

	Stakeholder roles			
Stated Objectives	**Fishing communities**	**Government**	**Other**	**Institutional arrangements**
To establish responsible, productive, and sustainable management of flood forest and fishery resources by local communities to meet local needs and to stimulate local development (FAO).	Majority are non-commercial family fishers composed of floodplain farmers and migrant fishers. Mainly seasonal subsistence fishers. Community Fisheries Organisations are established to manage the resource.	The Royal Government of Cambodia (RGC) initiated the fishery reform to improve food security for the rural population. The RGC has also established a community fisheries development office within the DoF[1] and there is ongoing preparation of a subdecree on community fisheries.	FAO works with these organisations to prepare rules and regulations for protection and management of their resources. FAO have trained additional staff from the provincial fisheries department to work as facilitators and to assist.	Release of 56% of privately owned fishing lots to local communities. Seasonally inundated forest land and open lake are now under the management of 116 villages organized into ten community fisheries organisations, officially recognised at the provincial level.

1 Department of fisheries

1.6 Nigeria

In Nigeria the inland capture fishery is artisanal, exploiting the major rivers, their tributaries, natural lakes and various reservoirs. Fish alone contributes on average 20 to 25% of per capita animal protein intake, and could be as high as 80% in coastal and riverine communities (FAO, 2000b). By law, the federal government of Nigeria has control over fisheries. The implementation of the national policy at the local level is the responsibility of state government but in reality the latter is more concerned with the generation of additional revenues through the taxation of economic activities like fisheries (Neiland *et al*, 2000).

Three forms of fisheries management have been identified by Nieland *et al* (1996, 2000a, 2000b) in the Upper River Benue (URB), Lake Chad (LC) and the Ngururu-Gashua wetlands (NGW). In the latter, a traditional management system is present and can be classified as an informative type of arrangement (Table 13). In the Upper River Benue a cooperative management system (Table 14) can be observed while in Lake Chad an instructive management system exists (Table 15). In north east Nigeria the fisheries management systems are mostly based on the traditional type (Nieland *et al*, 1996). The major objective of the management systems is the generation of revenue for the regulator through the control of access to the resources (Neiland *et a1*, 1996). Sustaining livelihoods and fish stocks is considered secondary. Neiland *et al* (1996, 2000a, 2000b) observed that the mixed type of management arrangement were the most effective. Mixed systems (Table 14) occur when the traditional and the local governments cooperate in the control and licensing of fishing areas (Neiland *et al*, 1996). These arrangements are relatively new and have emerged with the establishment of *dumba* (or fish fence) fishing methods by recent migrants (Neiland *et al*, 1996). The mixed system was put in place to ensure that conflict would not occur in the allocation of fishing sites. Compliance with government-based management (Table 15) was low and fisheries had assumed a state of *de facto* open access, leading to overexploitation and inefficiency.

Table 13 Dogana Village, Ngururu Gashua wetlands management system

	Stakeholder roles		
Stated objectives	**Fishing communities**	**Government**	**Institutional arrangements**
Generation of food and income for the community, members of which all have right of access.	Fisheries managed by traditional government administration through village and district heads. Traditional leaders (Lawan) control access, deciding whether or not fishing is allowed, receive payment for allocating fishing rights. Enforcement of management measures is undertaken within the community.	Government not involved.	The district head or Lawan has jurisdiction over local fisheries; fisheries are managed for the benefit of the community. Regulations are implemented by village master fisher, including gear and access restrictions. Fishers (mostly migrants) must pay a fee to fish; proceeds are re-distributed within the community. Poachers will be fined and have catches confiscated. Some floodplain pools are owned privately by local families; fishers must pay a fee and also give proportion of their catch to the Lawan.

Table 14 Wuro Bokki Village, Upper River Benue management system

	Stakeholder roles		
Stated objectives	**Fishing communities**	**Government**	**Institutional arrangements**
Generation of revenue and to avoid conflict. Adaptive responses of community to the establishment of fish-fence fishing methods by recent migrant fishers.	Fisheries are managed by a combination of traditional and modern systems of administration, either intentionally or inadvertently. Payments for fishing rights may be made to private individuals, or traditional leaders.	State and local government officials receive payments for fishing rights and occasional cooperation in the enforcement of management measures.	Fishing under the jurisdiction of village head (Bulama);.For dumba sites (fish fences made form rows of basket traps which catch retreating fish) a fee is negotiated between fisher and Bulama; a proportion of this is passed to the Local Government. Previously, the Bulama had licenced dumba sites under the authority of the Lawan and the Joint Patrol (join army operation of the four riparian countries of the Chad Basin). Fishing rights to isolated pools are sold before they begin to dry completely (fishing is banned up to this point). Part of the revenue is passed to the Lawan.

Table 15 Kwatan Dawashi Village, Lake Chad management system

	Stakeholder roles		
Objective	**Fishing communities**	**Government**	**Institutional arrangements**
Officially, to conserve fisheries resources and sustain fisher livelihoods but in practice government objectives are often oriented towards generation of revenues through licensing fees.	The traditional administration has no influence on the exploitation of the fisheries.	Fisheries are state property. Government-led management. Fishers may require licenses from State or Local Government for some aspects of fishing. Enforcement of State or Local Government fishing restrictions is dependent on field officers; they are the interface between the fishers and the federal and state governments.	Fishing monitored by officers of the State Fisheries Department (ASFD). Methods include mesh-size limitations as part of a "good fishing" campaign. Licensing system. Fishers found not to be complying will have their gears and catch confiscated by the fisheries officers. Traditional management systems have broken down as the village has enlarged and become more commercially-active as an entry-port for nearby Cameroon.

1.7 Malawi

Malawi's inland waters cover about 25 000 km^2. Lake Malawi produces almost 50% of the total catch (FAO, 1999b); the rest comes from Lakes Chilwa, Chiuta and Malombe and the Shire river and associated floodplains (FAO, 1999b).The fisheries sector in Malawi plays an important role in terms of employment: the primary sector employs about 43 000 people and the secondary sector around 100 000 - 150 000 people (Njaya, 2002). While contributing to about 4% of the country's Gross Domestic Product (GDP), fish products are an important source of animal protein in the country (Njaya, 2002).

Co-management in Lake Malombe

The Lake Malombe Participatory Fisheries Management Program (PFMP) started in 1993. The initial motivation of the project was the decline of the '*chambo*' (*Oreochromis*) fishery and the failure of the existing management regime based on centralised government control and regulation (Hara, 2000). The Malombe participatory programme was launched and implemented as a multi-donor funded project. The main donors were; the German Technical Foundation (GTZ), the United

Nations Development Programme (UNDP), the Overseas Development Administration (ODA) and the World Bank (WB). The Lake Malombe co-management arrangements can be classified as consultative, the government ultimately controlling the decision-making process (Table 16). Beach village committees (BVCs) were created with the intent to serve as a two-way channel of communication between user groups and the Fisheries Department (Njaya, 2002). However some fishers argue that the composition of the BVCs was influenced by the Fisheries Department and donor agency agendas and timetables. The BVCs have thus been seen as representing government interest rather than the ones of the communities (Hara *et al*, 2002). This struggle for power and authority has been a recurrent problem in the Lake Malombe co-management project.

Table 16 Lake Malombe Co-management Project

	Stakeholder roles			
Stated objectives	**Fishing communities**	**Government**	**Other**	**Institutional Arrangements**
To allow fish stocks to recover to levels experienced in the mid 1980s and to revert the recovered fishery to one based mainly on the high value chambo which should be harvested sustainably.	Organised into associations called Beach Village Committees (BVCs) with support from local traditional leaders.	Mangochi District Fisheries Office is the key representative of the government and major actor in the management arrangement. The Fisheries Department facilitated the creation of community level institutions, i.e. BVCs and the training of the committees for their new role.	Funders; German Technical Foundation (GTZ), the United Nations Development Programme (UNDP), the Overseas Development Administration (ODA) and the World Bank (WB).	Village headmen were made ex-officio members of the committees in their areas of jurisdiction. An umbrella organisation for all the committees, the Lake Malombe/Upper Shire River Fishermen's Association was formed in 1997, following donor/government directives. The fishers association and the BVCs collect license fees from fishers, and have sometimes organised patrols in areas where illegal fishing is known to occur.

1.8 Brazil

About 12% of Brazil total area is semi-arid. The damming of rivers and the creation of reservoirs is the government's major policy instrument against drought and today about 60, 000 reservoirs can be found around the country (Hartmann and Campelo, 1998). The National Department of Works Against Droughts (DNOCS) is the federal

organisation responsible for constructing and operating as well as managing the natural resources associated with the reservoirs. Due to limited funds and personnel, the emphasis is now given by the government on participatory management (Hartmann and Campelo, 1998).

Ceará Reservoir Fisheries Project

In Ceará Reservoir, in Northeast Brazil, a co-management project was established in 1990 on the River Curu. It was extended to five other reservoirs. Organisations involving communities living around reservoirs had already existed since the 1940's but initially management objectives were set by government and were focused on improving the fishery production potential of the reservoirs. The recent co-management initiative illustrates the shift in objectives of the environmental agency responsible for reservoir management (IBAMA) from mainly technical to institutional development, and from predominantly fisheries-oriented to integrated reservoir resource management (Hartmann and Campelo, 1998). Reservoir co-management in Ceará is of the advisory type (Table 17), where users advise the concerned authorities on decisions to be taken, which are subsequently endorsed by the government (Hartmann and Campelo, 1998).

Table 17 Ceará fisheries co-management project

	Stakeholders			
Stated objectives	**Fishing communities**	**Government**	**Other**	**Institutional arrangements**
Integrated reservoir resource management.	Fishers are partly or wholly, thought mostly informally, involved in policy decision making, data gathering, regulating fishery access, rule enforcement and resource use coordination and protection.	Government promotes community management and local institutions through the Environmental Agency and DNOCS[1]. Provides training in aspects of community organisation and environmental awareness programs.	Program funded by the German development agency (GTZ) who mainly facilitates the implementation of the project.	Stakeholders represented on a joint Committee. Community associations hold regular meetings and draft community management proposals to submit to the government agencies. These are ratified as local fisheries bye-laws.

1 National Department of Works Against Droughts

ANNEX 2 – AN OUTLINE GUIDE TO STAKEHOLDER ANALYSIS FOR CO-MANAGEMENT

Stakeholders can be defined as any group or individual who can affect or be affected by the achievement of management objectives. The stakeholder approach emerged in the field of management sciences in the 1980s to deal with increasingly complex social systems in which modern corporations had to operate (Grimble and Chan, 1995). The essence of the stakeholder approach in business management lies in the concept of expanding the traditional narrow view of the firm, extending the scope of management beyond the interests of owners, managers or stockholders (Mikalsen and Jentoft, 2001). Stakeholders are thus recognized as any group who are affected or can influence the actions and policies of the firm (Freeman, 1984; Carroll, 1989). The stakeholder approach as been widely applied in natural resource management and more broadly in the area of development. This can be attributed to the fact that conventional economic methods of evaluating the impact of project and management policies (e.g cost benefit analysis) have failed to adequately consider the distribution of costs and benefits among different stakeholders (Grimble and Chan, 1995). Concurrently the development of participatory methods and promotion of community-based natural resource management has given impetus to the stakeholder approach in the 1990s. Box 3 highlights why the stakeholder approach is particularly relevant for application to fisheries management. The stakeholder approach can be used both to improve the effectiveness of policies and projects and also to address their social and distributional impacts (Grimble and Chan, 1995, p119). In the context of development projects, ODA (1995) defines stakeholder analysis as "the identification of a project's key stakeholders, an assessment of their interest, and the way in which these interests affect project risk and viability". Brown *et al.* (2001) enriched this definition by highlighting that stakeholder analysis is not only a system for collecting information about groups or individuals who are affected by decisions, it is also about explaining the possible conflicts that may exist between important groups, and identifying areas where trade-offs may be possible (Brown *et al*., 2001, p17).

Box 3 Why use a stakeholder approach to fisheries co-management

- Effective fisheries management is important to improve the well-being of communities who use the resources
- Management involves decision-making over claims by different interest groups
- Effective management can be hindered by conflict and disagreement
- Conflicts and disagreements are best resolved by dialogue
- A stakeholder approach to management involves all parties in decision making
- With everyone involved, people can discuss how their interests fit with or affect the interests of other groups
- Out of mutual understanding can come compromise – reduced conflict and more effective management

The stakeholder management process

Stakeholder analysis is sometimes used only to identify who should be involved in the project, but this is only really the first step in a stakeholder-based management process. An action-research approach to institutional change projects, appropriate in a pilot-project or lesson-learning project, could use a stakeholder approach that can be broken down into five main processes, which have a sequential element, but should not be regarded as strictly linear (e.g. monitoring and evaluation, although usually taken as the final step of the process, should be initiated right from the start). These five steps are:

Step 1: Identify stakeholders and begin monitoring and evaluation (see step 5)

Step 2: Engage stakeholders in the management and institution-building process

Step 3: Use conflict resolution and consensus-building tools to support stakeholder-based management decision-making (e.g. trade-off analysis, Multi-criteria analysis)

Step 4: Develop appropriate institutional and organisational arrangements for implementing management

Step 5: Monitor and evaluate management performance - repeat steps 1-4 as required

Step 1: Classifying stakeholders according to importance and influence

Various methods of classifying stakeholders are available. The most common uses two criteria – influence and importance - to classify stakeholders into four categories (Fig 4a). Brown *et al.* (2001, p24) define importance as the degree to which the stakeholder is considered a focus of a decision to be made, while influence is presented as the level of power a stakeholder has to control the outcome of a decision. The level of influence stems from the power which stakeholders have to control, persuade or coerce others into making a decision and following a certain course of action. As Slancick and Pfeffer (1974, p3) have said: "power may be tricky to define, but it is not difficult to recognize: [it is] the ability of those who possess it to bring about the outcomes they desire". Importance is often relational rather than absolute and can vary according to the objectives of the decision makers. Groups or issues can also rise in importance under certain circumstances (Brown *et al*., 2001). A slight modification to this classification matrix uses the influence and importance criteria to classify stakeholders as primary, secondary and external (Fig 4b), where:

Primary stakeholders: people directly affected by management - they are important beneficiaries of management - may have low influence e.g. fisherfolk, migrants, fish traders

Secondary stakeholders: people not directly affected by management, but directly involved in the process – may have high influence e.g. traditional authorities, landlords, government officials, SFLP project personnel.

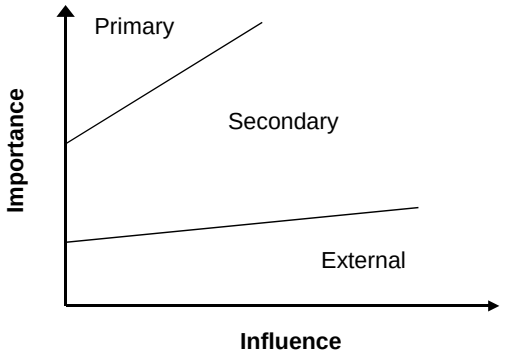
External stakeholders: not directly involved, but can be influential e.g. fish consumers, scientists, and conservation and development interests (national and international)

Figure 4 Classification of the relative importance and influence of the different stakeholder groups

a)

High Importance Low Influence	High Importance High Influence
Low Importance Low Influence	Low Importance High Influence

b)



In their discussion on issues emanating from the use of a stakeholder approach in fisheries management, Mikalsen and Jentoft (2001, p283) use Mitchell's classification of legitimacy, power and urgency in a business studies context to suggest that stakeholders can be differentiated between (1) groups that have a legal, moral or presumed claim on the firm [**legitimacy**], (2) groups that are in position to influence the firm's decisions [**power**], and (3) groups whose claims demand immediate attention from managers [**urgency**] . Using these three dimensions or attributes, stakeholders can be divided into three categories:

Definitive stakeholders: groups or individuals whose demands and needs managers must attend to because they possess legitimacy, power and urgency. e.g. fisherfolk, fish-processors, enforcement agencies.

Expectant stakeholders: groups or individual that only possess two of the three attributes. e.g. local communities, environmental groups.

Latent stakeholders: groups or individuals who possess only one of the attributes and to whom there is little incentive for the manager to respond to their claims until, for instance, they demonstrate legitimacy or acquire power. e.g. the media, future generations.

At the moment, the importance-influence criteria are being used to classify stakeholders in PP1, but the power-legitimacy-urgency framework may prove to be analytically and operationally useful in other cases.

Step 2: Engaging stakeholders

The stakeholder classification can be used to determine the extent and nature of involvement of each identified group in subsequent management activities. To get these groups involved in the appropriate processes first requires their engagement, so that their views are articulated and represented in decision-making processes. A basic outline of engagement techniques for different types of groups is presented in Table 18.

Table 18 Stakeholder engagement techniques (modified from Brown *et al*., 2001)

Type of stakeholder group	Example	Method of engagement
Cohesive group with formal structure	Village council	Focus Group
Cohesive group with informal structure	Informal fish traders group	Focus Group
Mobile individuals	Migrant fisherfolk	Individual interviews
Heterogeneous groups	Resident farmer/fishers	Questionnaire
Leaders of formal organisations	Head of Department of Fisheries	Briefing and interview
Workers within formal organisations	Fisheries Officials	Structured group interviews

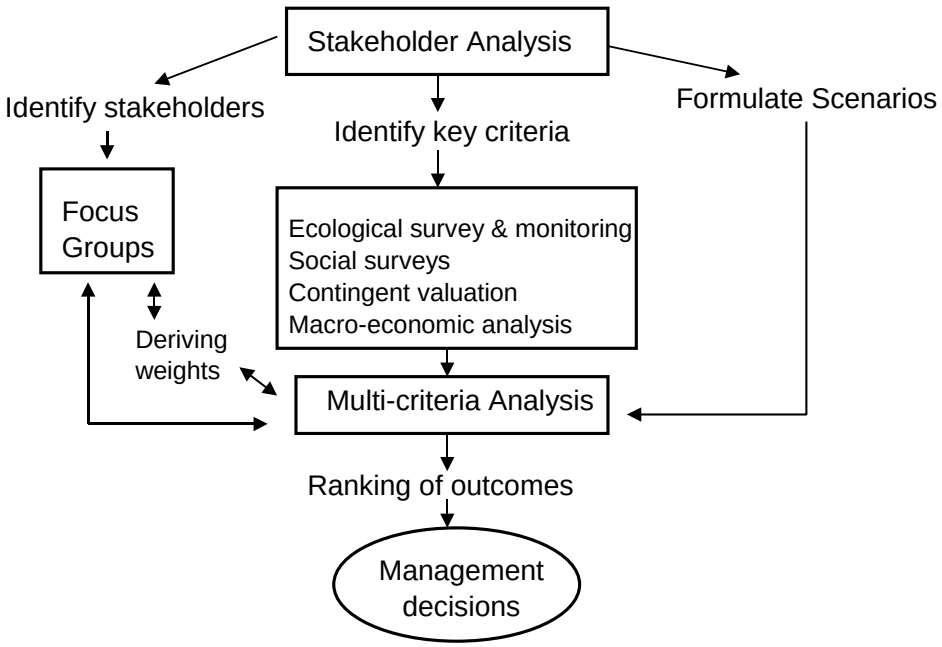
Primary and secondary stakeholders need to be involved in all stages of the process. External stakeholders should be kept informed, but do not need to be directly involved It may be necessary to spend time building trust before key stakeholders are willing to be involved at appropriate levels, e.g. influential but unimportant or external stakeholders need to trust the primary and secondary stakeholders to make decisions

by reducing their interference; secondary stakeholders may need to be prepared not to use their power over primary stakeholders and legitimise their claims.

<u>Step 3:</u> Consensus-building to support management decision-making

It is very likely that different stakeholders will have different priorities for management. Consensus-building processes identify common goals (e.g. continued existence of the fishery resource) and trade-offs required to reconcile differing interests in the achievement of overall goals. Consensus-building processes should foster understanding of different claims and entitlements to resources and, if used with analytical procedures such as trade-off or multi-criteria analysis (Figure 5), can confer broad legitimacy to agreed goals and objectives and the subsequent management plan designed to meet them.

Figure 5 An example of a consensus-building method to support management decision-making (from Brown *et al*., 2001).



Step 4: Developing appropriate implementation arrangements

Once management vision and objectives have been developed (output of step 3), stakeholders have to agree management roles. Much of this paper has discussed what those roles might be and it is necessary only to reiterate that clear definitions of roles, responsibilities and rights are needed

e.g. Fisheries Department Head agrees to present a proposal to the Minister for legal and policy change

e.g. Representatives of migrant fishing group agree to ensure members of the group do not use destructive fishing gear

Step 5: Monitoring and evaluation

Although M&E is presented as the last step in the process, it should begin at Step 1, so that the experiences of the early stages in the process are incorporated and acted upon (i.e. an 'action research' approach):

- At the consensus-building and planning stage, develop suitable indicators, based on the identified criteria for successful co-management (i.e. indicators of efficiency, equity, sustainability).
- At the planning stage, agree roles in monitoring and evaluation and reporting procedures.
- Involve primary stakeholders in monitoring and evaluation as much as possible.
- Maintain communication among key stakeholder groups (e.g. annual 'fishing festival' and meeting).
- Revise vision, goals, stakeholder roles etc., in response to continual review.