

GOVERNANCE AND FISHERIES CO-MANAGEMENT ON LAKE VICTORIA: Challenges to the Adaptive Governance Approach

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ABSTRACT Fisheries co-management approaches have been widely adopted internationally in response to the ineffectiveness of government to prevent the devastation of fish stocks witnessed across the world. Increasingly, the nature and performance of governance within fisheries has come to be seen as essential, providing a framework within which fisheries can be more sustainably and effectively managed. This paper identifies how improving governance on Lake Victoria is supported in the design of co-management through mechanisms including representation, inclusiveness and the integration of nested co-management structures and processes within existing structures of government. Questions remain, however, regarding the capacity of governance in the lake fisheries to be responsive and so the paper identifies challenges in a situation of limited resources and capacity for an adaptive governance agenda to be pursued.

Introduction

Co-management has been promoted as a way of improving the effectiveness and efficiency of fisheries management for at least the last twenty years, recognising that the inclusion of resource users in management should promote understanding, ownership and commitment (Berkes 2007, 2009; Pomeroy 2007). Fisheries co-management is a well-established concept and practice, with many examples of co-management arrangements across the world, and, with more evidence and understanding emerging, the complexities of co-management have 'unfolded' (Berkes 2007:19). Building on this experience, in recent years increasing emphasis has been given to governance concerns within fisheries, recognising the need for stakeholders to come together to develop policies and make decisions concerning public life (Kooiman *et al.* 2005, 2008; Symes 2006). Both the concepts of co-management and governance have been further built on by bringing in concerns about the ability of co-management and governance arrangements and processes to respond to, and cope with, sources of uncertainty and system complexities and diversity (both ecological and social), common features of natural resource systems. Adaptive co-management and adaptive governance are approaches that bring to the fore concerns about uncertainty, and dynamic, complex and diverse systems, highlighting the need for institutions that are flexible and responsive (Armitage *et al.* 2007a).

The agenda raised by adaptive co-management and adaptive governance is challenging. The two approaches are closely interlinked, with Folke *et al.* (2005)

suggesting that adaptive co-management is a way through which adaptive governance can be operationalised. Key defining features of adaptive co-management have been identified by Olsson *et al.* (2004), Folke *et al.* (2005), Armitage *et al.* (2007b) and others, such as learning-by-doing, dealing with uncertainty and complexity, collaboration and power sharing, and management flexibility. In addition to an increasing interest in adaptive co-management and adaptive governance, research by Kooiman *et al.* (2005, 2008) emphasises the importance of interaction in governance, referring to *interactive governance* as the way forward, to increase the governability of the 'system-to-be-governed'. An assessment of governability can be helpful in identifying constraints on effective governance and enabling improvements in governance to be made.

These approaches to co-management and governance raise conceptual and practical challenges in developing appropriate systems and processes that can be flexible, responsive, power sharing and able to draw, and act, on multiple sources of knowledge. Such challenges are particularly relevant to fisheries in developing countries, which are often characterised by limited resources to support the learning and responsiveness required by an adaptive approach. How far, then, can an adaptive approach to management and governance be developed in a developing country context to enable decision-making that is responsive? Why should an adaptive approach be encouraged?

This paper examines how the co-management arrangements of Lake Victoria fisheries in East Africa have been designed to facilitate improved governance and, from this, identifies key challenges that would be faced on Lake Victoria in moving towards adaptive co-management and governance. In doing so, greater clarification between the concepts of co-management and governance is sought. The analysis of the co-management approach focuses on the challenges of scale and regional structures for developing a more flexible and responsive approach, the nature and extent of power sharing and the scope for, and challenges of, a more learning orientation to be developed. The paper concludes that whilst an adaptive approach would bring a more flexible, responsive approach to governance of Lake Victoria fisheries, through co-management structures and processes, many challenges remain. These include the division of management responsibility between fisheries and broader lake basin issues that affect the fisheries, the regional nature of decision-making and management, requiring extensive and expensive consultations and negotiations to reach regional agreement and implementation, and the scale of the fisheries, including the multiple and diverse sources of knowledge and information.

Co-management and Governance: Interactive and Adaptive?

In recent years, ideas and approaches to co-management have evolved to combine collaborative management with adaptive management, which is concerned with 'learning by doing in a scientific way to deal with uncertainty' (Armitage *et al.* 2007:1). Olsson *et al.* (2004:75) observe that adaptive co-management 'combines the dynamic learning characteristic of adaptive management ... with the linkage

characteristic of cooperative management ... and with collaborative management'. The innovation of this combination of management approaches is recognised by Armitage *et al.* (2007b:5) who suggest that "*adaptive co-management*" may represent an important innovation in natural resource governance under conditions of change, uncertainty, and complexity'. Complexity and uncertainty are identified as key concerns contributing to the rationale for an adaptive approach to governance and management of natural resources, as confirmed by Fennell *et al.* (2008:64) who suggest that the *raison d'être* for adaptive co-management is 'dealing with complexity and uncertainty'. In terms of coping with change and uncertainty in complex adaptive systems, Carpenter and Gunderson (2001) emphasise that continuous testing, learning and development of knowledge and understanding is needed. Olsson *et al.* (2004) also note that the combination of different knowledge systems should benefit the management of complex adaptive systems. Learning and the use of knowledge are therefore essential to an adaptive approach. The focus on learning and adaptation reflects the emphasis given to co-management as a *process* by Carlsson and Berkes (2005), who advocate that co-management should be viewed as a process rather than as an arrangement, with a consequential shift to an emphasis on functions rather than structures.

Other key features of an adaptive approach include a shared vision, goal and/or problem definition, a high degree of dialogue, interaction, and collaboration among multi-scaled actors and a degree of autonomy (Armitage *et al.* 2007b:6). Olsson *et al.* (2004) also point to the emphasis on collaboration and power sharing among community, regional and national levels, and management flexibility. What does being flexible mean though in a co-management context? Folke *et al.* (2005:448) suggests that being flexible implies that a structure 'allows for learning and ways to respond to and shape change', which presents challenges when co-management is also endeavouring to be representative, inclusive and empowering (Jentoft 2003).

In terms of building capacity for flexibility, Armitage (2008) suggests that resilience thinking could inform the focus of such efforts. Armitage suggests that management objectives should not be concerned with outcomes such as sustainable yield or maximised output, but rather should be concerned about the 'capacity of the social-ecological system(s) to cope with and respond to change' (2008:15). This suggests a significant shift in thinking with a much greater focus on building the management and governance *capacity* of systems than on measures to control fishing effort, for example. This then would lead to a capacity building approach with a strong emphasis on assessing and building capacity, supporting the building of working relationships, sharing of information and knowledge, over a long period of time, so that the structures and processes have the capacity to be flexible and responsive.

It has also been suggested that governance can be adaptive, through adopting the same learning orientation. Folke *et al.* (2005:444) argue that adaptive governance is operationalised through adaptive co-management systems, recognising the strong interrelationship between the concepts and practice of governance and co-management. The critical role of adaptive governance is recognised by Gunderson and Light (2006:325), who conclude that 'adaptive governance deals

with the complex human interactions that have been obstacles to the implementation of adaptive management’.

In addition to conceptual work on adaptive governance, further work on governance in fisheries has emphasised the ‘interactive’ nature of governance. Kooiman *et al.* (2005, 2008) introduced the concept of ‘interactive governance’ from their research on fisheries governance, which they define as ‘the whole of interactions taken to solve societal problems and to create societal opportunities; including the formulation and application of principles guiding those interactions and care for institutions that enable and control them’ (Kooiman *et al.* 2005:17). Kooiman *et al.* (2005, 2008) also promote the concept of ‘governability’ as part of the interactive governance approach, referring to ‘the overall capacity for governance of any societal entity or system’ (2008:3), noting that the conditions of governability of any system are continuously changing. Kooiman *et al.* (2005, 2008) go on to note that three sets of variables contribute to governability: the ‘system to be governed’, ‘the governing system’ and ‘governance interactions’. The question then raised is how governable is a system over time, recognising that different components of a system may change and thereby increase or reduce the overall governability of a system.

Jentoft and Chuenpagdee (2009:557) note that an assessment of governability starts from ‘the assumption that there are barriers that may inhibit a system to be brought from an actual to a preferred state’. Jentoft (2007b:367-368) asks how governable are systems-to-be-governed, noting that interactive governance theory offers three opportunities for increased governability: the governing system could be empowered; governability could be enhanced within the system-to-be-governed; and, the interaction between the two systems could be arranged differently. In an assessment of the governability of capture fisheries, aquaculture and coastal zones, Chuenpagdee *et al.* (2008:1) conclude that ‘resource systems that are highly diverse, complex and dynamic, and that encompass large ranges of spatial scale, are expected to be difficult to govern’. They (2008:2) also argue that an assessment of the governability of a resource system can ‘provide insights into factors that enhance or limit their governance’, thereby enabling better understanding of a system and perhaps changes to be made. Chuenpagdee and Jentoft (2009:112) observe that ‘governability depends on the ability of these systems [system-to-be-governed and the governing system] to respond – individually and in concert – to the challenges and demands that their diversity, complexity, dynamics and scale bring up’. They go on to observe that the ‘aim of governance is basically about promoting governability’, recognising that governability changes over time and that governance must learn how to cope ‘with uncertainty and risk, and how to be flexible enough to change with demand’ (2009:112). Adaptive governance is envisaged as being an approach designed to cope with these very characteristics that may lead to an assessment of low or moderate governability, being charged with governance of systems that are diverse, complex and dynamic.

The capacity of co-management and governance to adapt in situations of uncertainty, complexity and change, therefore, has increasingly been the subject of conceptual and empirical investigation. Key characteristics of adaptive co-management have emerged, including a learning orientation, power sharing

and flexibility, drawing on the characteristics of both co-management and adaptive management. Some of the challenges for operationalising such an approach have already been identified, including scale and sharing of knowledge. In moving towards an adaptive governance approach, the conceptual debate between co-management and governance can contribute to a better understanding of how a shift towards adaptive governance can be made.

Governance and Co-management: The Same, but Different?

Governance is, as is widely recognised, a slippery concept (Symes 2006; Kooiman and Bavinck 2005). Hyden *et al.* (2004:16) define governance as ‘the formation and stewardship of the formal and informal rules that regulate the public realm, the arena in which state as well as economic and societal actors interact to make decisions’, implying that interaction is implicit within the concept of governance. Kooiman *et al.* (2008:2) argue that ‘governance ... is qualitatively different from the related task of management in directing societal and environmental processes. Governance adds dimensions that are absent in a hands-on management approach’. Jentoft and Chuenpagdee (2009:555) concur that governance is ‘broader than management. Management is a technical issue, something that involves a set of tools that can be applied to solve a concrete task, where the goal is clear and the outcome measurable’.

Whilst management and governance are accepted as being different, but related, tasks, governance within fisheries has, at times, been equated with co-management. Kooiman *et al.* (2008), for example, equate the concept of co-governance with co-management, arguing that co-management is a form of co-governance, with other forms being public-private partnerships, networks and regimes. In their review of the concepts of governance, co-management and participation, and their implementation in small-scale inland fisheries in developing countries, Béné and Neiland (2006) question whether fisheries governance is synonymous with fisheries management. They argue that the two terms are related but different and are not interchangeable, and a clear distinction must be made between the two terms. They conclude that

management is about action, governance is about politics. Management is about the implementation – in a technocratic sense – of decisions and actions in accordance with rules ... Governance is about sharing responsibility and power; it is about setting the policy agenda and objectives and about the processes of implementing management actions. (2006:10)

They illustrate their contention by observing that ‘a ‘perfect’ governance system – that is, one with total accountability, full participation, and absolute transparency – can also lead to the complete depletion or destruction of (natural) resources if this is the objective initially agreed by society’ (2006:11).

The concepts are, though, closely linked, as Symes (2006:114) observes, ‘co-management is held to embody several attributes of ‘good governance’: democ-

racy, transparency, legitimacy, accountability and subsidiarity', implying that co-management and governance are not the same thing, but that co-management has the potential to provide the kind of institutional arrangements and structures that enable better governance, though this cannot be guaranteed in practice. Co-management and governance share many characteristics and guiding principles, notably government sharing management and governing with non-state actors, principally resource users in the case of fisheries. The two concepts do not have the same meaning and it may be more useful to refer to governance through, or in, co-management, reflecting Folke *et al.*'s (2005) contention that adaptive governance is operationalised through adaptive co-management.

Before concluding, a further consideration within the co-management and governance literature, and one that has been deemed as receiving insufficient attention (Jentoft 2007a), is power. Power is fundamental to both concepts, with co-management being concerned with power sharing and empowering those who had previously been without power, or with little power, in terms of managing a fishery. Béné and Neiland (2006:1) argue that 'governance is about politics and the way power is distributed between different actors within society. It is about how people share decision-making and how this affects their abilities to empower themselves and others'. Jentoft (2007a:428) observes that co-management and interactive governance of fisheries is concerned with the 'restructuring of relations and moving towards a more equal sharing of power among interested stakeholders' and notes that 'indeed, co-management is defined as power sharing'. He cautions, however, that co-management does not necessarily eliminate power games or challenge existing power structures, and suggests that questions should be asked about how power is shared in fisheries co-management institutions. Power is then a fundamental aspect of co-management and governance, and the way that power is shared may well influence the capacity and ability of a system to be adaptive.

Co-management and governance are not, then, the same thing, with clear differences between management and governance. Co-management as a concept and an approach is widely understood and accepted, though cannot necessarily be relied on to deliver the much wanted and needed improvements in fisheries management. Improving the governance of fisheries through co-management may well strengthen the capacity of co-management to deliver through improving accountability, transparency and participation.

Lake Victoria Experience: The Design of Co-management Structures and Processes

The review of existing literature on adaptive co-management and governance provides a framework for analysing why and how Lake Victoria could move towards a more adaptive approach and what the constraints to such a move might be.

Lake Victoria is the second largest freshwater lake in the world and is a major fisheries resource in East Africa, with three commercial fisheries dominating the sector: Nile perch, *tilapia* and the smaller *dagaa*. The fisheries remain

artisanal and are estimated to provide the household income source for around two million people, and generate around 600 million US dollar a year in wealth, at the beach level and through exports (MRAG *et al.* 2008). Since the late 1990s, the fisheries departments of the three countries bordering the lake, Kenya, Tanzania and Uganda, have been introducing a co-management approach to the fisheries. This process has involved the formation of community-based organisations to enable fisherfolk to get involved in fisheries management, which are known in the region as Beach Management Units (BMUs), together with BMU Networks and Co-management Committees at sub-district, district, national and regional levels to support the coordination and coherence of decision-making and implementation. The three fisheries departments come together with the three national fisheries research institutes under the Lake Victoria Fisheries Organization (LVFO), which was formed under a Convention in 1994 and came into being in 1997. The LVFO has its Secretariat in Jinja, Uganda, and an elaborate working group and committee system to facilitate policy-making and review of implementation and indicators of fish productivity and fisherfolk livelihoods.

The design and implementation of lake wide fisheries co-management is supported through the EU-funded Implementation of a Fisheries Management Plan (IFMP) project, 2003-2010, supporting the implementation of LVFO's Fisheries Management Plan (LVFO 2001). This plan was reviewed and updated in 2008, and approved in 2009 (LVFO 2009), and clearly sets out the management approach for the fisheries. The plan is based on a number of underpinning principles, including ecosystem-based management, good governance and precaution. It also supports the continued development and capacity building of co-management structures and processes, and the generation of knowledge and information. The plan, however, operates within a system of considerable uncertainty, contributing to challenges in generating, collating and using diverse knowledge sources.

The analysis of co-management of Lake Victoria fisheries focuses on the challenges for cross-level interactions due to the scale and need for regional cooperation, constraining the potential for greater flexibility and responsiveness. Cross- and within-level interactions are essential for promoting interactive governance, where communication and coordination is enabled through regular and effective interaction. Sources of knowledge and the potential for a move towards a learning orientation are then explored, followed by an assessment of the extent and nature of power sharing within the co-management arrangement. The extent and nature of power sharing will have consequences for the responsiveness and flexibility of a co-management arrangement, and for governance through co-management. An assessment of the 'performance' of co-management within the first few years of implementation is then provided to highlight concerns for governance and an adaptive approach.

The paper draws on a number of studies conducted with support from IFMP, including two quantitative socio-economic monitoring surveys, conducted in 2007 and 2008 to monitor socio-economic impacts of movement towards a co-management approach within the fisheries, using largely the same questions to enable analysis of changes in attitude and practice over time (LVFO 2007b and 2008b). These were carried out at seventy and ninety landing sites in all three

countries bordering the lake respectively, interviewing around 1800 boat owners, boat crew and women. The paper also draws on a qualitative study carried out in 2007 that employed the use of semi-structured interviews and focus group discussions at ninety-eight landing sites lake-wide to explore the nature of governance within the evolving co-management approach, providing more attitudinal data to complement the quantitative data (Luomba and Mhagana 2007; Odongkara *et al.* 2007). The studies were carried out by the Fisheries Research Institutes of Kenya, Tanzania and Uganda, in conjunction with the Lake Victoria Fisheries Organisation Secretariat, led by the author. Finally, data was also obtained from an analysis of BMU election results collated by LVFO, which provided data on the occupation and sex of BMU Committee members.

These studies provide a baseline from which further research could be conducted on changing livelihoods, attitudes and behaviour as a result of the implementation of co-management. They were carried out over a matter of months and so there is a need for more longitudinal studies which would provide a deeper understanding of how co-management is proceeding, whether livelihoods are really improving and whether co-management has had any impact on power relations within fisheries communities. Case studies of individual fisherfolk and of particular BMUs would be particularly useful. Past research has explored changing livelihoods on Lake Victoria (see, for example, Geheb and Binns 1997; Geheb and Crean 2000; Pringle 2005), providing a base from which the impacts of co-management on livelihoods can be explored.

Is an Adaptive Governance Approach Needed for Lake Victoria Fisheries?

An adaptive approach to co-management and governance is seen as essential for natural resource systems of complexity, uncertainty and change. Is this the situation on Lake Victoria fisheries? The fisheries of Lake Victoria are certainly complex, with three major fisheries, around 200,000 fishers, landing at around 1,400 sites around the lake in three countries with thirtyfour district governments and many other lower level local governments. In addition, there are thousands of small-scale traders and processors, fish agents selling onto the processing factories, markets and value chains reaching into Europe, Southern Africa, the Middle East and the us. The lake basin incorporates another two countries – Burundi and Rwanda – bringing in additional interests to basin concerns affecting the fisheries. There are, then, many dimensions of complexity, with the different countries and sectors having different priorities, policies, legislation and governing systems, with implications for fisheries management and governance on Lake Victoria.

There are also numerous sources of uncertainty, including the interplay between factors influencing stock decline of the Nile perch fisheries, such as ecosystem influences, overfishing and illegal fishing, levels of illegalities across the lake and the potential impacts of climate change. Whilst there are numerous sources of information and knowledge across the lake, there is a major challenge in collating and using this, due to capacity constraints of people, time, financial resources and incentives to share information.

In terms of change, Lake Victoria fisheries has experienced significant change over at least the last fifty years, with the introduction of Nile perch and Nile *tilapia*, and rapid rise from the mid 1980s to early 1990s, of a commercial processing industry exporting Nile perch internationally, the destruction of the cichlid and other species due to the Nile perch introduction, fluctuating water levels and increasing urbanisation around the lake (LVFO 2009; Pringle 2005). The revised Fisheries Management Plan of 2009 attempts to respond to these changes, whilst also anticipating future changes, such as resulting from increasing demand for eco-labelled fish in international markets and climate change leading to uncertain outcomes for the fisheries and fisherfolk livelihoods.

The variables of complexity and uncertainty contribute to a low or moderate level of governability found in many capture fisheries situations (Chuenpagdee *et al.* 2008). The level of governability is influenced by individual behaviour, attitudes and practices, along the entire fish chain, as well as by the management and governance arrangements, which have only recently changed with the introduction of a co-management approach. The level of governability may therefore have scope to increase as co-management further evolves and becomes more established over time.

There is, then, a strong case for a more adaptive approach, building on the progress already made in introducing a co-management approach to the lake fisheries. The section below looks at the scope for, and challenges that may be faced, in moving towards a more adaptive approach, including a review of the co-management structures and system, knowledge sources and sharing, and of power sharing through co-management. A further challenge in adopting an adaptive approach is the organizational complexity involved in taking a more integrated, ecosystem approach to fisheries management on Lake Victoria. Environmental and lake-basin issues are beyond the remit of the LVFO and are within the remit of the Lake Victoria Basin Commission, formed in 2007. This means that a more integrated, ecosystem approach would require inter-organisational coordination and cooperation. Such a requirement could pose a considerable challenge to a more adaptive, flexible and responsive mode of management and governance for Lake Victoria fisheries.

Governance Through Co-management: Issues of Scale and Flexibility

This section explores how the structures, processes and principles of co-management on Lake Victoria have been designed to enable effective governance. The size of Lake Victoria and the complexity of the fisheries raise concerns about scale, which are addressed through cross- and within-level interactions between co-management structures, as described below. The section goes on to discuss how the structures developed to facilitate co-management have the potential to be flexible and responsive, whilst recognising constraints to achieving this.

Co-management on Lake Victoria is founded on the community-based VMUS, of which there are 1,069 around the lake. The process of forming VMUS began in the late 1990s in Tanzania with support from the World Bank fund-

ed Lake Victoria Environmental Management Project (LVEMP). This project also assisted the formation of BMUs in Kenya and a few in Uganda, though the BMUs were different in structure in each country. This led to confusion about what a BMU was and concern arose about representation, with male boat owners dominating the BMUs, as they had with previous fisheries organisations, such as Landing Site Committees in Uganda. In 2003, the LVFO received funding from the EU, through the IFMP project, which supported the harmonisation of BMU formation, structures and functions around the lake, with a few agreed differences between the three countries to reflect different government structures and legislation.

Everyone working in fisheries at the beach level should now be registered with a BMU in accordance with national regulations and, once registered, is a member of the BMU Assembly, with the right to vote, be nominated for the Committee and speak at BMU Assembly meetings. The BMU regulations and associated guidelines in each country set out which stakeholder groups should be represented on the BMU Committees, to ensure fair and agreed representation, though this may not always be effective in practice. Boat crew and women were particularly poorly represented in previous community-based fisheries organisations and are now well represented on the BMU Committees. The regulations and guidelines require thirty percent of places to go to boat crew, with a further thirty percent to boat owners, ten percent to fishmongers and thirty to others (including local processors and net repairers, for example). In addition, at least three members should be women.

The 1,069 BMUs are located across 1,400 landing sites, with some landing site communities coming together to form BMUs, because of the few boats at these sites. Co-management, though, is being implemented at all levels of government, to link policy and practice from the community to regional levels. There was, then, a need to develop cross-level linkages to enable communication, coordination and resource flows between and within the many levels. The question of scale is recognised within the co-management and broader natural resource literature (Cash *et al.* 2006). Raakjær Nielsen *et al.* (2004:158) ask whether co-management can handle large-scale fisheries systems and, if it can, what institutional arrangements are required. They go on to suggest that representation within nested systems may be needed to scale-up co-management from the community level, confirming the same recommendation from Agarwal and Gibson (1999), that nested structures are needed to cope with the challenge of scale in natural resource management.

On Lake Victoria, the question of scale is indeed addressed through nested structures. BMUs at the beach level nominate representatives to move to the next level, which is determined by the number of BMUs within a geographical area. The next level is a sub-district level, normally Sub-County in Uganda, Ward level in Tanzania and location level in Kenya. Representatives are then nominated to the District level, going upwards to the provincial level (Tanzania only), national and regional levels. At each of these same levels, Co-management Committees have been formed, bringing representatives of the BMU Committee at that level together with at least the appropriate fisheries staff and with other government staff, fish traders, fish processing plant staff and NGOs if possible. By the end of

2008, 243 BMU Networks had been formed at sub-district level and thirty-one at district level.

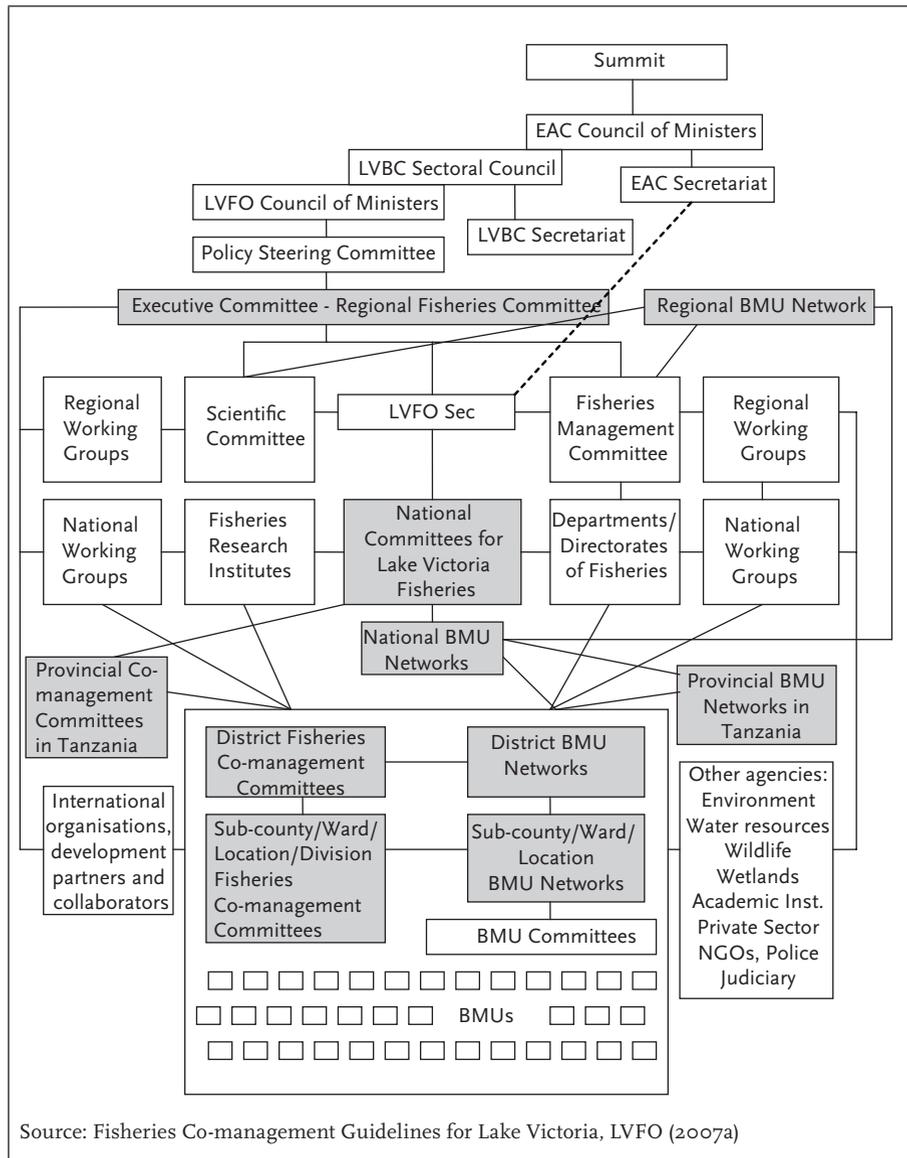
The purpose of this elaborate system is to encourage coordination, for example of actions to tackle illegal fishing so that neighbouring BMUs undertake the same kind of actions or perhaps carry out joint patrols. Harmonization of measures such as local by-laws proposed to local government so that fishers within a parish or district operate within the same rules and regulations, for example on where and when to land fish. Joint planning can help neighbouring BMUs share ideas, seek support from the same local government, perhaps strengthening their advocacy, and pool resources to fund particular activities or purchases. Participation in government planning and budgeting is also essential for BMUs and BMU Networks for having some chance of resource allocation, as there are no dedicated funds for fisheries management at the local level in most cases, and so general or other funds, such as those for infrastructure development, must be lobbied for.

The system of nested structures, all situated within the existing committee structure of the LVFO, and thereby becoming an integral part of the LVFO system, brings a number of challenges, including representation, participation, legitimacy, communication and funding. Figure 1 illustrates how the structures link together with the LVFO working groups and committees. The transformation of the regional structures to incorporate BMU, private sector, NGO and trader representatives has yet to take place, although the guidelines for this to be operationalised were passed in 2008.

Representation of all stakeholder groups, including women, is less secure and guaranteed at the higher levels of BMU Networks and Co-management Committees, which is due to only two or three BMU members being nominated by each BMU, including the Chair, which in the majority of cases, is a male boat owner. This is something that requires monitoring and support over the coming years. Representation should facilitate participation in decision-making and, though this works well in some cases, with people attending, and speaking at, BMU Assembly meetings, there is a long way to go to making representation truly effective.

Cross- and within-level linkages are therefore essential for coordinated and effective decision-making and implementation, but are not easy to generate and maintain in practice, largely due to the resources needed to support transport and meetings. The 2007 Fisheries Co-management Guidelines for Lake Victoria (LVFO 2007a) envisage that the co-management structures will be supported by contributions from all stakeholders, that is, BMUs will contribute to a district fund to support BMU representation at higher levels, government would support its own officers, and NGOs and the private sector pay for their own participation. This is yet to happen in practice and is challenged in several respects: firstly, the commitment of government, central and local, to supporting co-management financially in the absence of donor funds; secondly, the willingness and ability of all BMUs to contribute to a district level fund, particularly if clear results are not visible in a fairly short period of time; and, finally, the willingness and ability of other stakeholder groups to pay for their own participation. Vision and support for co-management is therefore needed from all levels, particularly from the top, with central government giving clear support, including financial. Very few funds have, however,

been forthcoming from central government to support the co-management process on Lake Victoria.



Source: Fisheries Co-management Guidelines for Lake Victoria, LVFO (2007a)

Figure 1 Organizational Structure of LVFO

An adaptive approach to co-management and governance requires structures and processes to have the capacity to be flexible and responsive. The degree of, and scope for, flexibility within the LVFO co-management system may, however, be limited. Lake Victoria fisheries are co-managed through the LVFO, which is a Regional

Fisheries Body and a structure of the East African Community. It has an elaborate structure, with requirements for national positions to be developed before a regional position can be negotiated, which may then require more national consideration before implementation of a policy or measure can begin. National legislation may be needed in some situations, which can also lead to a lengthy, drawn out process. On first inspection then, LVFO provides a far from flexible structure, with implications for how responsive the organisation can be. Drawing on the adaptive co-management literature, scope for building flexibility can be developed from recognition of sources of uncertainty and adoption of a learning orientation, where multiple sources of knowledge are recognised and used, and learning-by-doing is seen as legitimate by all key stakeholder groups. The revised Fisheries Management Plan does, however, have a strong technical focus on managing the fisheries, particularly through monitoring stock levels and enforcing regulations. There is, perhaps, insufficient emphasis on building capacity to enable the structures to be flexible and responsive.

Flexibility, then, is currently limited by formal structures, the need for national agreement before commencing regional negotiations and the costs incurred in national and regional consultations and negotiations, of both time and money. It is also constrained by the lack of attention given to the need for further capacity development of co-management structures and processes, as the current organisational arrangement has only been in place for the last few years and, at regional level, the co-management dimension of management and governance, is yet to be realised in practice. A focus on capacity development would need to be more focused on enabling stakeholders to recognise and use sources of knowledge, share information and learn how to act on information in a coordinated, harmonised and effective way. Given the scale of Lake Victoria fisheries, and the involvement of three countries, timely decision-making is not easy, but ways must be found to enable more effective knowledge sharing and ensure that power sharing is effective in delivering appropriate co-management and governance.

Developing a Learning Orientation: Sources and Use of Knowledge

The generation and sharing of knowledge from multiple sources is essential to adaptive co-management, as is building a culture of learning and informed decision-making. Fisheries co-management on Lake Victoria currently relies on knowledge generation by the three fisheries research institutes of the partner states. The importance of indigenous knowledge and the role of co-management structures and systems in enabling the sharing and use of both scientific and indigenous knowledge is, however, recognised in the 2009 Fisheries Management Plan, where one action area is set out as to 'develop, guide and implement participatory research and monitoring, using co-management structures and systems, and making use of indigenous knowledge' (LVFO 2009:90). To date, however, governance structures have looked to the formal scientific sector for answers to questions such as stock size and biological characteristics.

There is, though, significant scope for more knowledge sources to be recognised, combined, analysed and acted on, not only from communities, but also from traders and fish processing factories. There is a wealth of information available, but collating, analysing and interpreting such information requires substantial resources, also needed to enable the sharing of, and acting on, this information.

The development of a learning culture, recognising the existence of sources of uncertainty, the need for learning-by-doing and the wealth of opportunities for knowledge collation and sharing from, and by, many stakeholder groups should be given greater emphasis. The co-management arrangement on Lake Victoria does provide the opportunities for such knowledge and information sharing but capacity building is needed to enable this to happen in way that is harmonised, consistent and useful. This requires resources. Financing co-management is a major challenge in developing countries, where the approach has, in the majority of cases, relied on donor support for initiation. Despite commitment to pursuing financial sustainability for the co-management of Lake Victoria fisheries through the IFMP project, little progress was made (MRAG *et al.* 2008). Changing government revenue flows is a challenging prospect, though there is potential within the fisheries to capture more rent for management purposes. Without more sustainable financing, efforts to draw on, and bring together, multiple sources of knowledge will remain piecemeal and limited.

In addition to financial resources, attitudes may need to change so that indigenous knowledge and experience is sought and recognised as legitimate through the scientific process. Bringing together sources of information and knowledge is challenging and would require different approaches to gathering information and monitoring changes over time.

Power Sharing and Adaptive Governance

The sharing of power is implicit within co-management and governance. This does not mean, however, that power is, or should be, necessarily equally shared (Jentoft 2007). Power sharing is enabled on Lake Victoria through the agreement of functions of BMUS, government fisheries staff and other stakeholders, and of Co-management Committees and BMU Networks, and should imply participation of all major stakeholder groups in decision-making. As the higher level co-management structures have only recently been established, their role in facilitating effective participation in decision-making at policy level is yet to be assessed. BMUS receive their mandate from national regulations, which, together with the associated guidelines, set out the functions of BMUS. These were amplified in 2007 with the development of the Fisheries Co-management Guidelines for Lake Victoria (LVFO 2007a), which sets out in more detail the functions and roles of all major stakeholder groups and of the BMU Networks and Co-management Committees. The functions of the BMUS encompass both fisheries management and beach development tasks, including keeping registers of fishers, boats, gears and other fisheries stakeholders, raising awareness about fisheries regulations and working with government and police to increase compliance, and advocating for their plans

to be incorporated into government plans for financial support for infrastructure such as access roads, drinking water supplies and schools.

On Lake Victoria, progress has been made in establishing the place of resource users in decision-making and management functions, but there is a need for more research into how effective this has been and whether the efforts made to empower certain stakeholder groups, notably women and boat crew, have affected power relationships at the community and other levels. Certainly there is evidence that the governments do not see the community-based BMUS as equal partners, but, as co-management is a dynamic process, the nature of power sharing may change over time. What is perhaps pertinent at this early stage in co-management is that power sharing has begun and should evolve over time, through interaction, joint working, capacity building and experience. It is of course possible that power sharing does not evolve in an effective way and certainly the nature and degree of power sharing needs more analysis and understanding on the lake.

In lake-wide surveys in 2007 and 2008, many boat crew and women, previously more marginalised in fisheries management, responded that they believed that they do have more say in decision-making since the BMUS were reformed. In early 2007, not long after the reformation of the BMUS had been completed, almost half of all women interviewed around the lake confirmed that they had a greater say in fisheries decision-making, compared to sixty-four percent of boat crew (LVFO 2007b). This leapt up to seventy percent of women in 2008 and seventy-seven percent of boat crew in 2008, largely due to participation in BMU Assembly meetings (LVFO 2008b). This demonstrates that meaningful participation in co-management can be developed, but only monitoring over time and other indicators, such as effective action and strengthened governance, will demonstrate whether such participation and voice can be sustained.

There are, then, indications that there has been some empowerment and that power sharing has begun. The relationship between the nature and extent of power sharing and the ability of co-management structures to be flexible and responsive requires further investigation. Without sufficient power, the ability of co-management structures to be responsive may be constrained, but the scope of flexibility and responsiveness at the different levels is also something that should be considered and negotiated.

Does Co-management Facilitate 'Good' Governance in Practice?

The potential for the co-management structures to facilitate 'good' governance and a move towards more adaptive governance has been considered, and potential constraints on such a move identified. This section reviews some of the evidence to date on the 'performance' of governance within the fisheries co-management system of Lake Victoria, focusing on issues of representation, participation, accountability and transparency. Such defining features of 'good governance' would assist in more effective adaptive governance and an assessment of the nature of governance on Lake Victoria enables remaining challenges to be identified. In addition, an assessment of the 'performance' of governance contributes to an assess-

ment of the governability of a fishery, including of the capacity of the governing system to govern effectively.

The BMU regulations and associated guidelines, together with training given to BMU Committee members under the IFMP, provide a framework for creating and enabling accountability and transparency in decision-making, budgeting and reporting on finance. Within a co-management system however, accountability and transparency is needed at all levels, including between the Co-management Committees and BMUs and between government, the private sector and the BMUs. This requires regular information sharing, trust and honesty. While there is a BMU performance monitoring system in place on the lake (LVFO 2008a), a co-management performance monitoring system is needed to monitor and promote better governance practice by all stakeholder groups and structures.

In terms of compliance with requirements on representation, an analysis of data on BMU membership and committee composition after the first round of elections between 2005 and 2006 revealed that seventy-five percent of committees complied with the requirement for thirty percent of members being women, though there is variation between countries, with Kenya achieving only forty-eight percent of BMU Committees, compared to seventy-two percent in Uganda and ninety-five percent in Tanzania. For boat crew representation, the figures are much more comparable between the three countries and average out at eighty-two percent of BMU Committees with thirty percent of members being boat crew. In the vast majority of cases, BMU Chairs are men and many of these are boat owners, ranging from fifty-six percent in the case of Tanzania and eighty percent in Kenya. Subsequent initial analysis of BMU Network membership at higher levels revealed that such levels of representation are amplified at higher levels, with fewer women nominated as representatives in Kenya especially (MRAG *et al.* 2008). There is then a concern that if appropriate representation is not achieved at the grassroots level it will be very difficult to achieve at higher levels. The dominance of male boat owners may well not have been significantly challenged in practice.

Of course, effective representation requires more than being voted onto a committee. Qualitative research into the effectiveness of co-management on Lake Victoria in 2007 revealed that many ordinary members did not believe they were consulted by their representatives or that decisions made, or any other information, was fed back to them (Luomba and Mhagana 2007; Odongkara *et al.* 2007). Training was provided to most committee members under the IFMP, with mentoring and monitoring carried out by fisheries staff, but still, it must take time to build up competency in representation, though this requires effective support. Other findings from the same study and from more quantitative surveys (LVFO 2007b, 2008b) indicate that the co-management structures in place are seen as legitimate by fisherfolk, though it is, of course, possible that some individuals elected onto committees may not have everyone's support, for positive or negative reasons.

In terms of the performance of other stakeholders and structures within co-management, the study revealed that, on the whole, relationships between fishing communities and fisheries staff had improved, though there must inevitably be varied experiences around the lake (Luomba and Mhagana 2007; Odongkara *et*

al. 2007). Concerns were raised, however, about the limited involvement of community members in monitoring, control and surveillance activities of government and the lack of opportunities for fishing communities to participate in government planning. Both Uganda and Tanzania have a system of participatory planning within local government and so there should be scope for effective participation in the government planning processes. The study did confirm that where there is substantial support for VMUS from the government, VMUS are more likely to be effective in their fisheries management roles. There was a mixed picture of cooperation between VMUS and government at the local level, with some cooperating effectively with joint meetings and joint activities, but in other places there was no cooperation, with examples of conflict, particularly over revenue collection.

The performance of governance of fisheries must be influenced by the nature and 'performance' of governance within the wider societies of Kenya, Tanzania and Uganda. If governance is not functioning well beyond fisheries, how can 'good' governance be expected within fisheries? All three countries ranked fairly well in the Ibrahim Index of African Governance in 2008, coming within the top twenty, with Uganda ranking nineteen, Kenya seventeen and Tanzania fifteen. However, with the violence and difficulties after the 2007 elections in Kenya and with neopatrimonial politics dominating Uganda's political system (Cammack *et al.* 2007), the region may well pose some substantial challenges to effective governance.

The structures of co-management can, then, facilitate a shift to better governance, or at least enable an assessment to be made of the nature of governance. There is scope for monitoring and research over the years to come to assess how governance is developed and performs in terms of accountability, representation, participation and transparency. The nature and extent of interactions between and within stakeholder groups and structures will indicate how power relations are influencing governance within the co-management arrangement and the scope for a more adaptive approach to be developed. The co-management structures in place are relatively young and really require support and advice to undertake a greater learning orientation that would enable more flexibility and responsiveness. The foundations have been built, however, and should be supported to enable a move in this direction.

Conclusions

The concept and practice of co-management has come a long way over at least the last two decades. The close relationship co-management shares with the concept of governance is appreciated within the fisheries literature, but it is important to note that co-management is not the same as governance. Co-management should, however, have the potential to provide the structures and processes that can assist in promoting better governance, and even adaptive governance, for sustainable fisheries.

The co-management structures and systems in place on Lake Victoria have the capacity to be more responsive and flexible, but would really require more sup-

port, technical and financial, and a Fisheries Management Plan and approach, that supports adaptive governance. Constraints to a more adaptive approach on Lake Victoria include the division of management responsibility between fisheries and broader lake basin issues that affect the fisheries, the regional nature of decision-making and management, requiring extensive and expensive consultations and negotiations to reach regional agreement and implementation, and the scale of the fisheries, including the multiple and diverse sources of knowledge and information. Yet a more adaptive approach to co-management and governance on Lake Victoria would enable a more flexible and responsive approach to decision-making and action given the conditions of uncertainty and complexity within the lake fisheries.

These constraints are not assisted by the financial insecurity that pervades co-management approaches in developing countries. Most initiatives are supported by donor funds and the ongoing financial sustainability of approaches is far from secure. There is potential for greater financial sustainability of fisheries management and governance on Lake Victoria, but progress in making this a reality is slow. Resources would be particularly needed in an adaptive approach to enable information and knowledge sharing, collating information and knowledge from a wide range of sources, and interpreting such knowledge and information for, and by, those involved in decision-making.

The sharing of power is an evolving process and steps have been taken through legislation, the formation of structures and training in the three countries to begin the process of power sharing. More understanding is needed, however, of whether and how co-management on Lake Victoria has challenged established patterns and relationships of power, which would influence the scope and potential for an adaptive co-management and governance approach. In addition, more analysis is needed of the extent and nature of power sharing between government and other stakeholder groups and between the different co-management structures and levels.

Recognition that co-management is a process, rather than a static arrangement, is fundamental to designing and implementing any co-management approach, as so many aspects of co-management are dynamic and the fundamental principles of co-management can only evolve in practice over time. These include effective representation and participation, accountability and transparency, and the degree and nature of power sharing.

Finally, good governance through co-management should also be promoted in developing countries by drawing on, and linking to, the wider governance debates and initiatives to improve accountability, transparency and representation in decision-making.

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