

Local-scale governance: a review of the Zambian approach to fisheries management

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Abstract

Despite recent policies for optimizing sustainable management of fisheries, their success has been modest in practice. Excessive fishing effort and use of unsustainable fishing methods attributed to common-property of and free access to the resources by local and industrial fleets leading to decline in fish catches has continued in the presence of currently prescribed (co-)management possibilities. The country adopted co-management approach to fisheries management in the 1990s with a view to improve the fisheries stocks through community enforcement of fishery management regulations. Co-management success has not been that easy to measure or its results appreciated. In retrospect of overfishing, need is sought to continue providing a range of empirical evidence of co-management interventions as basis for designing realistic and innovative solutions for the nation. New policies and institutions need to be informed by research developed to understand fisheries systems in order to better promote sustainable trajectories. The after review recommendation to central government is a coherent approach that uses and crystallizes multiple interests and skills of co-management stakeholders. Most stakeholder groups have been involved in an ad hoc fashion through workshops, public meetings and consultative processes mainly organised by Department of Fisheries or projects. Stakeholders should be involved from the design of the process to contributing at each step in the process, including the ongoing monitoring and evaluation. A form of Memorandum of Understanding is suggested to formally set out a process that acknowledges each stakeholder's interests providing forums to facilitate discussion, consultation and monitoring of management activities.

Key words: Co-management, community, government, overfishing, participation, stakeholder

Résumé

Malgré les récentes politiques d'optimisation de la gestion durable de la pêche, leur succès a été modeste dans la pratique. Effort de pêche excessif et l'utilisation de méthodes de pêche non durables attribués à des biens communs et le libre accès aux ressources par les flottes locales et industriels conduisant à diminuer dans les prises de poissons a continué en présence de possibilités actuellement prescrits (co) de gestion. Le pays a adopté une approche de gestion de la gestion des pêches dans les années 1990 en vue d'améliorer les stocks de poissons à travers l'application de la réglementation communautaire de la gestion des pêches. Succès Co-gestion n'a pas été aussi facile de mesurer ou de ses résultats apprécié. En

rétrospective de la surpêche, nécessité cherche à continuer à fournir une gamme de preuves empiriques des interventions co-gestion comme base pour la conception de solutions réalistes et novatrices pour la nation. De nouvelles politiques et institutions doivent être informés par la recherche mis au point pour comprendre les systèmes de pêche afin de mieux promouvoir les trajectoires durables. La recommandation après examen au gouvernement central est une approche cohérente qui utilise et cristallise de multiples intérêts et compétences des acteurs co-gestion. La plupart des groupes de parties prenantes ont été impliquées dans un mode ad hoc par le biais d'ateliers, de réunions publiques et de processus de consultation principalement organisées par le ministère des Pêches et des projets. Les parties prenantes doivent être impliquées dès la conception du processus de contribuer à chaque étape du processus, y compris le suivi et l'évaluation continue. Une forme de protocole d'accord est suggéré de mettre officiellement un processus qui reconnaît les intérêts de chaque acteur organise des forums pour faciliter la discussion, la consultation et le suivi des activités de gestion.

Mots clés: Co-gestion, de la communauté, du gouvernement, de la surpêche, de la participation, les parties prenantes

Introduction

The rich endowment of water resources, accounting for approximately 145,194 Km², provides Zambia with the potential for supporting significant economic growth and development (Musumali *et al.*, 2009). More so because these water resource catchments contain human establishments ranging from small villages to towns and cities. These highly populated centres host a variety of human activities, including: farming, factories, commercial fishing industries and power generating stations.

Zambia has eleven major fisheries of which four are within the Congo Basin (Bangweulu, Mweru-Luapula, Mweru-Wantipa and Tanganyika) and seven are in the Zambezi Basin (Kafue, Kariba, Lukanga, Upper Zambezi, Lower Zambezi, Itezhi-Tezhi and Lusiwashi). Zambia is a landlocked country and shares most of the fishery areas with other riparian states (see Fig. 1).

The main species of fish in these fishery areas include *Tilapia* species commonly known as breams and a number of small pelagic sardine-like species known as Kapenta (*Limnothrissa miodon* and *Stolothrissa tanganicae*) and Chisense (*Angraulicypris* species and *Poecilothrissa moeruensis*) as well as Buka buka (*lates stappersii*). These species are targeted by both artisanal and commercial fishers, and have broad market acceptance throughout the country and in the region (Musumali, 2009; Molsa, 2008).

However, overfishing and use of unsustainable fishing methods by local and industrial fleets (Paffen *et al.*, 1997) leading to decline in catches has continued in the presence of currently prescribed management possibilities. As a consequence much of the fleet has been faced with declining profitability. This is contrary to anticipated benefits measured against high program design costs of co-management in the rhythm of decentralization. Despite all this,

fisheries still play an important role in local food security by providing food, income and employment.

There is need to build a co-managed future today. This calls for shopping around anywhere and everywhere but perhaps never to buy the first policies that are offered. Researchers are free to search and explore anywhere for ideas. However, they are expected to further research to suit their own circumstances (such as social, economic, cultural, political, technological and ecological). What then is referred to as adoption of ideologies such as co-management?

This review was undertaken for two reasons: (i) to provide a better understanding of the fisheries management arrangements in use, how they operate at different levels, and any benefits for their establishment; and (ii) to provide updated information to central government to assist in policy development around co-management.

Conceptual genesis

Co-management was first introduced in Zambia in the early 1990s (West, 2001). A number of factors inform the manner in which this management arrangement was instituted; the inability of Department of Fisheries (DoF) to effectively manage the fishery in the face of budgetary cuts by the treasury, the liberalized political situation that brought about a multi-party political dispensation in 1991, etc (Malasha, 2007). These were compounded by the enabling political environment created by the formation of Southern Africa Development Community (SADC) that provided an opportunity to use the experience gained from Community Based Natural Resources Management (CBNRM) programmes to expand these initiatives across borders (Malasha, 2005). Co-management emerged as a governance reform in fisheries but at different times in different localities with some yet to begin implementing it.

Co-management Initiatives in major fishery areas. On Lake Kariba, Village Management Committees (VMCs) and Zonal Management Committees (ZMCs) were established in 1993/94 by the DoF, operating under the auspices of a donor-funded programme, the Zambia/Zimbabwe SADC Fisheries Project. The project instituted a fisheries co-management arrangement which facilitated the decentralisation of management to include fishers and traditional leaders in local level structures (Malasha 2007; Malasha, 2005). Besides fishers and Traditional Authorities, co-management of Lake Kariba attracted the interest and cooperation of commercial Kapenta fishers, District Councils, non-governmental organizations (NGOs) and local businessmen. The involvement of stakeholders in fisheries management was widely accepted as a desirable policy goal (Wilson *et al.*, 1999).

Within the co-management arrangements on Lake Kariba, provisions were made for the user committees to collect money in the form of levies from fishers and fish traders. The benefits thereof were shared among the entire community around the fishing areas. Artisan fishers were also delegated authority to control access and enforce regulations within designated fishing villages. Njaya (2007) describes Lake Kariba as having demonstrated a

shift towards cooperative or advisory co-management types. Objectives of this co-management included reduction of conflict, reduction of number of foreign fishers, and stoppage of theft of Kapenta from commercial vessels by inshore fishers. However, many ambiguities and unresolved issues can still be noticed among offshore fishermen and local government.

On Lake Mweru-Luapula, a Fishing Association was formed by fishermen themselves in 1986. Contrary to the case of Kariba, DoF did not take an active role and membership was limited to fisher folk, not even Traditional Authorities and District Councils. The objectives for the formation included stoppage of gear theft, conservation and social functions. Several challenges have since been faced – limited support from relevant institutions e.g. Local Authorities declined to give up any revenue generated from fish trade levies claiming that the Association had no legal backing. In 1992, the Conservation and Management Action Programme (CAMAP) was initiated by DoF to spearhead co-management activities such as promotion of conservation dialogue (Kapasa *et al.* 2005). At this point, the institutional set-up is similar to that of Lake Kariba. However, tensions between various stakeholders remain the main challenge. For example, while the CAMAP had a deliberate policy of inclusive management, Malasha (2007) reports that a survey carried out in 2002/3 in the Mweru-Luapula fishery reveals that about 60% of the respondents acknowledged good representation on the VMCs while 40% cited the interference of traditional authorities and witchcraft in the running of these VMCs as a reason for their non-participation.

On Lake Tanganyika, Village Conservation and Development Committees (VCDCs), were formed under the auspices of the Lake Tanganyika Biodiversity Project (LTBP) (UNDP/GEF) in 1998 with a view to improve the fish stocks through local resource user enforcement of fishery management regulations (Molsa, 2008; West, 2001). In 2000, Stratum Committees and a Fishery Committee were initiated by DoF working in conjunction with the Traditional Authorities with a view to complement efforts by the VCDCs. District Councils have been involved on matters of by-laws. Nevertheless, the local-level structures have not been consistent in their operations.

On the Bangweulu and the Upper Zambezi fisheries, the co-management arrangements are for such reasons as; deliberate effort to reduce the role of TAs in the affairs of VMCs, and formation of parallel management institutions in the same fishery competing for recognition; not functional.

Despite recent policies for optimizing sustainable management of fisheries, their success has been modest in practice. Evidence of decline in per capita supply of fish from 12kg/year in 1985 to 7kg/year in 2000 (Malasha, 2007) and 6.4kg in 2003 (Musumali *et al.*, 2009) is quite alarming for Zambia. The contribution of fish to the Zambian economy was estimated at 3.8% by 2000 and 1.24% on average in 2007 (Musumali *et al.*, 2009). This could be attributed to the introduction of various innovative harvest technologies and existence of social, economic or legal conditions, such as the existence of ready market outlets or the absence of legal restrictions besides population growth. Additionally, Malasha (2007) observed

that most of the people who lost their formal employment as a result of Structural Adjustment Programmes (SAP) took up fishing as one way of reducing their vulnerability to poverty.

Compelling forces. Local authorities are charged with both the day-to-day and long-term responsibilities for the management and governance of physical resources within their boundaries. They have several roles, which are guided by such statutes like the Local Government Act. It is argued that implementation of co-management is an innovative response to challenges in practice and theoretical advancements (Plummer and Fitzgibbon, 2004). However, like most developing countries in Africa, Zambia is also compelled by pressure from international donor agencies to introduce co-management or at least establish a more democratic process in the formulation of fisheries policy objectives (Svendrup-Jensen and Nielsen, 1998).

The argument. Berkes *et al.* (2001) revealed that there is a strong argument in the co-management literature that the term co-management should be reserved to situations in which there is a sharing of power and responsibility between the users of a resource and the government manager. Merely informing or consulting does not constitute co-management. This is one of the reasons why Njaya (2002) pointed out that it is imperative to use the term “co-management” in context as there is no “one size fits all” model co-management.

However, in essence, co-management in the resource management context, involves the following attributes: (i) involvement of the community in decision-making; (ii) sharing of responsibility for a resource between the resource manager and the community; (iii) drawing on a range of knowledge systems to inform management; and (iv) focusing on negotiation and consensus. It is argued that significant effort is required to achieve the afore-stated attributes as humanity is expected to adjust to sustainable ways of conduct.

Borrini-Feyerabend *et al.* (2007) advance some of the critical issues arising among fisheries participants with regards arguments pertaining to co-management at either national or international level. Figure 2 summarises the said arguments.

The main argument for co-management is that it can result in more efficient management, while allowing greater involvement of resource users in management decisions. Co-management is generally considered to be more democratic (Nielsen *et al.* 2004), more accountable, functioning at local level where self-interest and responsibility for sustainable resource management are potentially greater (Hara *et al.*, 2002), with lower transaction costs, and possibly more sustainable than top-down management, due to better communication and less conflict amongst participating stakeholders (Jentoft 2005). However, Nemarundwe (2004) observes that the local-level management regimes are generally weak, and that they have overlapping and inconsistent rules that are widely ignored and poorly enforced. By appropriating control over fisheries management, the Zambian government has underestimated the capacities of fishing communities to manage local fisheries resource systems to meet their needs. Reasons advanced for this skepticism include the lack of know-how among fisher communities and their general inability to organize themselves to manage for long-

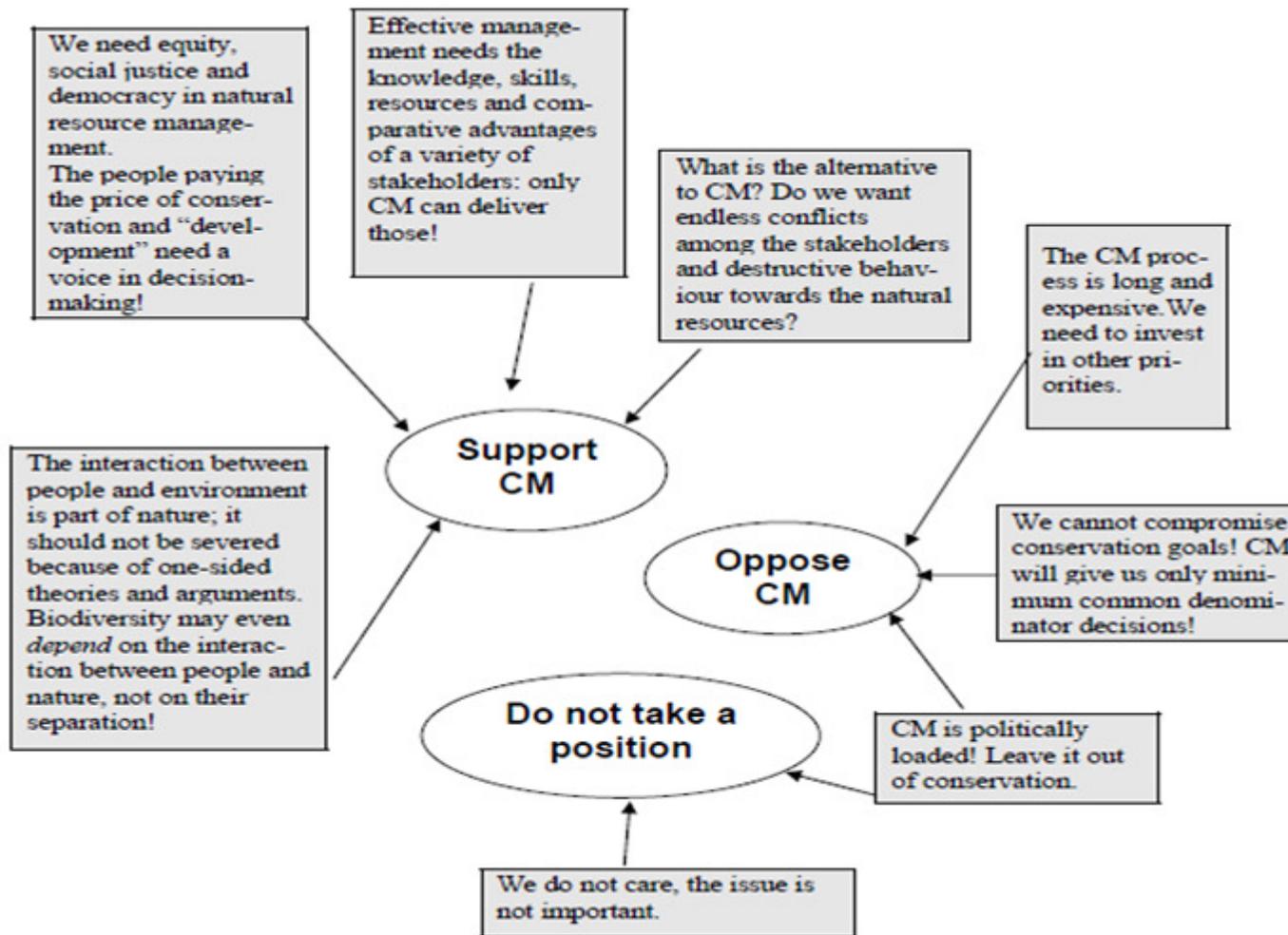


Figure 2. Some arguments for and against co-management (CM). Adapted from Borrini-Feyerabend *et al.* (2007).

term sustainability. Unless the government and decision-makers are convinced of the desire and the ability of users to manage themselves, little progress will be made in co-management.

Conceptual evolution

Fisheries management in Zambia has evolved from a traditional system to a centralized regime followed by the introduction of co-management fisheries systems. The concept of co-management has on the basis of research and experience evolved with early definitions and representations focusing on dualistic power-sharing between the state and local resource users (Plummer, 2009). Co-management has been endorsed and is actively promoted by central government as a key management tool. While success also brings challenges, co-management has evolving challenges in its implementation in sub-Saharan Africa as whole. Selective over-fishing of fish stocks is increasing, due mainly to population growth and increasing dependence on fisheries (O'Reilly *et al.*, 2003). Co-management is dynamic and has been faced with the imprecise and often indiscriminant use of the term co-management rendering it synonymous with collaboration, partnership, and community-based management (Plummer and Fitzgibbon, 2004).

Special problems. Even if decentralization reforms, as a policy, apply to all locations in principle, the process of implementation is often asynchronous as most occurs in the context of site-specific donor supported programs or pilot programs. This has led to differential influence over the management of fisheries resources in Zambia.

Due to extreme mobility, to a large extent fish populations are resources of an open-access nature, regardless of management or resource tenure regime. Many fishermen are not particularly attached to one fishery, they migrate to other areas in pursuit of better fishing (West, 2001). Haambiya *et al* (2013) pointed out that migratory movements around the fishery areas tends to increase with diminishing fish stocks in fisher's respective localities. Moreover many fish stocks are highly migratory and fishers along the shores have developed migratory work patterns to enable them to follow the fish or move to locations where fishing can be carried out most effectively and efficiently. Molsa *et al.* (1999) cite an example where the attractions of fisheries work may be quite strong because conditions of entry seem relatively easy in times when the overall rural economy offers very limited opportunities for gainful employment. A case in point for Zambia is in the decline in mining and other urban activities that resulted in migrations by people seeking livelihoods in fishing. This brings up the question of carrying capacity of the attractive fishery areas especially that studies to determine the appropriate amount of fishing effort for most if not all areas have not been done.

While there are many similarities between the concepts of co-management and CBRM, it should be noted that there are differences in the focus of each strategy. Most decentralized approaches are commonly referred to as community-based natural resource management programs (Nemarundwe, 2004). For this reason, most cases in Zambia would possibly better be considered as 'community-based co-management' because it has been difficult to draw a dividing line between them.

Government officials frequently resist moves to legitimize local resource use. Khan *et al.* (2004) note that devolution of some authority to manage fisheries away from central administrations to user groups may be one of the most difficult tasks of co-management. Government resource managers are often reluctant to share their authority or even part of it in ways that undermine local authority. Wilson *et al.* (2009) also note that only limited empowerment of the local fishing population can be observed in existing co-management efforts in Africa. From the cases reviewed, government still reserves the power to modify or create rules, power to make decisions, power to implement and ensure compliance, and to a larger extent power to adjudicate disputes.

Scholars argue that devolution of functions is necessary for effective participation and accountability of the communities and resource user groups in resource management (Pomeroy *et al.*, 2001). Co-management is, however, contested by the many interested and in several of the examples from Southern Africa, powerful local authorities have used the programs to serve themselves rather than the fishers they represent (Nielsen *et al.*, 2004). Ideally all partners must be held equally accountable for upholding the co-management agreement. In as much as decentralization lowers government expenses by shifting responsibility for monitoring and enforcement to local residents, experience has also shown that local people will not take on new responsibilities unless they gain legal recognition, a process that normally would take a very long time to be fulfilled by policy makers.

Ethical Dilemma. Ethical dilemmas in perpetuating fisheries management come when all choices are deemed undesirable because of potentially negative ethical consequences or more than one choice appear correct making it difficult to select the course of action. This would often arise when a person such as a fisheries extension personnel or traditional authority (TA) has responsibility towards more than one entity and they are on conflicting course. In the day to day situations, think of the two who are supposed to support the welfare of both the fishers and the fish. Which side do they take in this battle? Either way, they are betraying one entity. It is an ethical dilemma that they face on a daily basis. A TA has responsibility towards his subjects, his community, his family, and so on. Quite often TAs or even village heads find themselves do something which may be against larger interests of the society in order to conserve the resource. Policy must therefore conform to society's prevailing codes of ethical behaviour.

Who's Justification? and Objectives? Like Svendrup-Jensen and Nielsen (1998) note, wherever initiatives to establish co-management have been taken by government authorities, they have been met with profound scepticism by fishers who with good reason are suspicious of the motives and sincerity of government authorities when they propose collaboration and the sharing of management responsibilities. In their analysis of case studies in Africa, Svendrup-Jensen and Nielsen (1998) noted that co-management is used mainly as a mechanism for conflict resolution rather than for achieving sustainability of resources. They further noted that co-management in the African context is mainly government-based and that control and law enforcement is mainly left to government that always sets the rules and regulations (Hara, 2000; Svendrup-Jensen and Nielsen, 1998).

The co-management approach in Zambia is partly inspired by the thinking embodied in the Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) programme relating to the wildlife sector, which was established in order to ensure that local communities would benefit from wildlife management policies. The CAMPFIRE concept has been adapted to fisheries with little success. Reasons could be sought in findings by Virtanen (2003) who concluded that in most cases the local CAMPFIRE rule systems had no link to local values and priorities, and consequently they enjoyed limited local legitimacy. However, the government has a strong incentive for co-management to succeed in community fisheries. Such incentives include the threat of overexploitation and non sustainability in the fishery, poor levels of compliance with regulations, and the lack of resources for monitoring, control and enforcement under top-down management.

Therefore, the co-management process is seemingly inherently adaptive, relying on systematic learning and the progressive accumulation of knowledge among the stakeholders for improved resource management (Pomeroy *et al.*, 2011). Nonetheless, co-management must be examined not only in terms of how it works but also in view of the problems with which it works.

Operation design. Historically, the DoF was the only institution with the mandate to manage fisheries resources. This meant sole responsibility for policing the resource besides monitoring activities and enforcing regulations over extensive and highly scattered fishing villages. However, over the last 15-20 years, the DoF started to share responsibility through co-management initiatives. Communities, traditional leaders and associations were assumed to have taken on most management roles in a number of fisheries.

Government's limited financial resources resulted in many initiatives spearheaded by DoF, being supported by donor funding. These include the Zambia-Zimbabwe SADC Fisheries Project on Lake Kariba (NORAD and DANIDA), the Conservation and Management Action Programme on Lake Mweru/Luapula (SNV), Lake Tanganyika Biodiversity Project (LTBP) on Lake Tanganyika (UNDP/GEF) and the fisheries component under the Programme for Luapula Agriculture and Rural Development (PLARD) (FINIDA). In most of the cases, the short spans of the projects have had a negative impact on overall operational designs of co-management initiatives especially that capacity building components have not been able to substitute for long-term capacity building in strategic areas within DoF and beyond.

Roles, rights and responsibilities of resource users. The fisheries regulations in the existing laws are placed under the responsibility of the DoF. For this reason, although centralized management has been widely criticized as a primary reason for the overexploitation of fisheries resources, fishers have done little to monitor and enforce regulations in widely dispersed fishing grounds. The most common functions of the committees are the implementation of by-laws; monitoring of fishing regulations; and sanctioning those who break the by-laws (Malasha, 2007). However, the implementation rate of key provisions in the Act, especially on conservation and management, still remains unsatisfactory as noted in increasing anthropogenic effects on stock levels and biodiversity.

A crucial factor limiting management success is the lack of relevant enabling legislation. Currently, the community of fishers can create rules, but with limited scope - to gear restrictions. The power to control access remains with government. Besides, most of the rules created by the community depend on the other institutions, such as the Police, DoF, etc for enforcement. Regardless of contextual use, Svendrup-Jensen and Nielsen (1998), and Pomeroy *et al.*, (2011) suggest that the design of co-management systems should strike a balance between the responsibilities given to institutions, groups and individuals, and the means put at their disposal.

Attained heights and limitations

Conflicting interests of use. First and foremost, property rights to all fisheries in Zambia are not clearly assigned to resource users. The fisheries are still under open-access management and worse still local resource users have no greater right to the resource than outsiders. As Pomeroy *et al.* (2001) state, without property rights it is difficult to greatly change user attitude and behaviour towards conservation.

All states of postcolonial Africa lay claim to fisheries resources as their property. It has been argued that state property being superimposed on common property and traditional management has often resulted in unclear and contradictory competences, mutual undermining of authority and absence of effective management (COFAD, 2002).

Governance and power relations. Co-management means that some or all management responsibilities are formally shared between government management agencies and user-organizations as well as other stakeholder groups (Jentoft, 1989). Sutton and Anderson (2010) note that political ecology is concerned with power relations and specifically with the day-to-day conflicts, alliances, and negotiations that ultimately result in some sort of definitive behavior.

The Fisheries Act, No. 21 of 1974 was the first post-independence principal legal instrument governing development and control of the national fisheries sector. It provided for: authorization and prohibition of specific fishing methods; designation of areas (for recreational, subsistence, research, or commercial fishing); registration of fishers and fishing craft in commercial fishing areas; prohibition of non-native fish introduction to any water, or import of live fish without authorization. In 2007, the Government passed the Fisheries Amendment Act of 2007 with the objective to improve the involvement of riparian communities in fisheries management, promote development of the aquaculture sector, and establish a Fisheries Development Fund. Under this Act, each fishery would be designated a Fisheries Management Area, and run by a Fisheries Management Committee. The Committee would oversee the development and implementation of a Fisheries Management Plan at the level of the fishery and would administer a fund to increase the welfare of riparian communities. Zambia has further amended the Act to No. 22 of 2011 which simply clarifies a few gray areas in the previous one though with limited emphasis on powers of management actors.

Njaya *et al* (2011) cites Agrawal and Ribot (1999) emphasizing that “without an understanding of the powers of various actors, the domains in which they exercise their powers, and to whom and how they are accountable, it is impossible to learn the extent to which meaningful decentralization has taken place” They emphasize identification of the key stakeholders, positioning of these stakeholders in relation to the types of power they hold and categorizing power thereof into power to modify or create rules, power to make decisions, power to implement and ensure compliance, and power to adjudicate disputes.

Community vitality and solidarity. Not only are viable fish stocks necessary for the vitality of fishing communities, but the reverse also holds true: “viable fish stocks require viable fishing communities” (Jentoft, 2000 in Berkes *et al* 2001). The complex interactions of attributes, both of the resource and resource users, are fundamental to theoretical understanding of commons institutions (Plummer and Fitzgibbon, 2004) that are designed to support co-management. Conflict Theory argues that society is not about solidarity or social consensus but competition over limited resources. Xinshan (2000) points out that intense competition among fishermen inevitably erodes the accomplishments of biological regulations to achieve conservation objectives. Ostrom (2012), however, argues that if the rules for resource management are to be successful, there is need to reflect socio-cultural variety.

Fishing in Zambian fisheries is predominantly a men’s job. While it is acknowledged that fishermen, who are the resource extractors, are generally the main players in this management, Nielsen *et al.* (2004) argue that special care must be taken to ensure that voiceless and disadvantaged groups that may include women, youth, the elderly and poor people, are not excluded from the membership (Pomeroy *et al.*, 2011).

Threats to the survival of commercial fish species result when the norms of self-restraint, prudence and community solidarity have eroded. This occurs when fishermen and the other community members do not care about the resource, their community and about each other. When such accrues, their ability to communicate among themselves, to agree and cooperate is lost (Jentoft, 2000 in Berkes *et al* 2001). However, empirical evidence shows that self governance of common pool resources is possible. People are capable of creating institutions to overcome the commons dilemma. For instance, Donda, (2000) argues that in the face of uncertainty in resource availability, fishers are more willing to group together to trade-off some benefit from individual use of the resource for the collective assurance that the resource will be used in a more equitable and sustainable manner.

While privatization of the common-pool resource would be a form of enclosure of the commons, it would have tremendous negative impacts on vulnerable socioeconomic groups, especially the poorest and largely women. These rely more heavily on these resources to sustain their livelihoods through subsistence harvesting, generally under informal communal access rights.

The co-management challenge. The major challenge lies in the fact that human populations are growing, the standard of living increasing, fishery products attracting a relative high market value and lack of alternative livelihoods among the poor resource dependent fishers.

Currently, there are few incentives for fishing community members to participate in community fishery management. This has led to reluctance to invest time and effort in it because they see no tangible benefits especially in the short-run. Few benefits are perceived from co-management because it is not yet achieving one of the main objectives - which is, increased and sustained catches.

The other constraint to management relates to the indistinct physical boundaries to the resource. The physical characteristics of Zambian fisheries do not lend themselves well to small-scale co-management arrangements. Nevertheless, literature suggests that boundaries are important in shaping rights of access and use of natural resources (Nemarundwe, 2004). Also, there are no sustained financial resources to support future management and enforcement considering that government funding represents a fairly unreliable source in the midst of budgetary cuts to DoF.

The sense of ownership of most communities is quite low amongst members, and this also hinders the co-management process. Objectives guiding implementation of co-management were not jointly developed by all stakeholders. Corruption also undermines the co-management process, and makes the establishment of trust worth relationships difficult. Like McConney (2003) states, at individual level, if open access overfishing causes demand to exceed supply and keeps prices high, despite declining catches, fishers may not see the benefit of co-management unless the long term damage is highlighted to them. There is also need to support small scale artisanal fishers by ensuring food security and poverty alleviation through other feasible livelihood alternatives especially during closed fishing periods and in heavily exploited fishery areas. Experience reveals that a general lack of alternative development opportunities would lead people to encroach on the natural resource base in an often illegal, uncontrollable and unsustainable manner.

The support problem

National policies. The Fisheries Policy falls within the draft National Agricultural Policy 2004-2015 whose aim is to increase fish production and promotion of sustainable utilization of fishery resources in order to enhance contribution to the economy through generation of employment, income, and improved availability of fish. The policy emphasizes sustainable fisheries management through stakeholder participation in capture fisheries.

The principal legislation governing fisheries is the Fisheries Act of 1974 which was emended in 2007. The 2007 Act introduced the creation of fisheries management areas (FMA) and corresponding establishment of management plans with an aim of promoting sustainable utilization of fisheries resources. The recent Zambian Fisheries Act No. 22 of 2011 provides for the establishment of Fisheries Management committees, Zonal committees and Village committees in order to promote local participation. Sections 53 and 55 of Fisheries Act No. 22 of 2011 provide for the establishment of a Fisheries and Aquaculture Development Fund stipulate the application of the fund among others towards facilitating a community-based approach to fisheries management and development (Government of Zambia, 2011). The Fifth National Development Plan (FNDP) (GRZ, 2009) also outlines the Government's

strategy for inclusive growth and development whose specific goals for the fisheries sub-sector aim at promoting community-based resource management of capture fisheries. Management of all fisheries in Zambia is the responsibility of the Ministry of Agriculture and Livestock (MAL), administered through the DoF. The current primary legal framework for fisheries classifies all water bodies as the property of the state and it is widely considered as such. Therefore despite the provisions supporting participation, state functionaries' reluctance to take decisions on critical issues with immediate social consequences is one of the constraints responsible for over-fishing around the world (FAO, 2002). Hence since co-management is a social phenomenon, it requires re-measurement overtime and across space in order to correctly implement it.

Balancing the pros and cons. It is now necessary to balance the pros and cons. Co-management regimes are dynamic, and a variety of arrangements can be found in practice. Nonetheless, setting objectives for the co-management arrangements is still primarily done by government representatives who show little or no consideration for the traditional practices and local knowledge of the resource users (Njaya, 2007).

Almost all the fishery areas in Zambia, somewhat seem to lack a systematic and clear mechanism of tracking progress on co-management since its inception, a situation that limits the extent to which the current context of the concept in use is clearly defined among the stakeholders. A form of Memorandum of Understanding (MoU) is suggested to formally set out a process that acknowledges each stakeholder's interests and provides a forum to facilitate discussion, consultation and monitoring of management activities.

Lessons and recommendations for the way forward

Although it is not unusual for researchers to have different opinions as to how co-management should be evaluated, the procedures used in this process should always be reported in order to allow for independent judgment on the basis of the researcher's assumptions. This review agrees with sentiments by Sen and Nielsen (1996) that the type of co-management regime in place is determined by the aspirations and capabilities of co-management partners, and the most appropriate type of arrangement depends on the specific characteristics of an individual fishery. This implies that the efficiency and implementability of the management measures are often highly dependent on the support gained from the parties interested in the initiative (FAO, 1997). It is for this reason that the government should step in and support the user communities by approving the formulation and enforcement of fishery specific by-laws. Within the boundaries of justification, Zambia needs to ensure that national laws pertaining to co-management keep pace with changing trends. This could be through consultations at the community and national levels to re-focus management objectives and activities. It, however, should be borne in mind that for a number of reasons, co-management may not be suitable for every fishing community.

Government's limited financial resources resulted in many initiatives spearheaded by DoF, being supported by donor funding. These include the Zambia-Zimbabwe SADC Fisheries Project on Lake Kariba (NORAD and DANIDA), the Conservation and Management

Action Programme on Lake Mweru-Luapula (SNV), Lake Tanganyika Biodiversity Project (LTBP) on Lake Tanganyika (UNDP/GEF) and the fisheries component under the Programme for Luapula Agriculture and Rural Development (PLARD) (FINIDA). In most of the cases, the short spans of the projects have had a negative impact on overall operational designs of co-management initiatives especially that capacity building components have not been able to substitute for long-term capacity building in strategic areas within DoF and other stakes.

Despite the differences in existing local institutional and ecological realities, Zambian fisheries are governed under the same Act and regulations. It is difficult to make generic recommendations with respect to governance of fisheries in Zambia because each management context is different and the impacts are experienced differently as well (Fluharty, 2011). Co-management systems and processes vary in terms of the nature of power sharing, composition and functions.

However, Zambian fisheries seem to lack a systematic and clear mechanism of tracking progress on co-management since its inception, a situation that limits the extent to which the current context of the concept in use is clearly defined among the stakeholders. A form of Memorandum of Understanding (MoU) is suggested to formally set out a process that acknowledges each stakeholder's interests and provides a forum to facilitate discussion, consultation and monitoring of management activities. This will facilitate understanding of power relations among sectors which can affect the consultative process and institutional linkages.

While these recommendations inspire thinking out-of-the-box about alternative governance approaches and how they could be strengthened, Verelst (2013) rightly notes that governance is about understanding human societies and the environment, scientific findings and technologies, acceptable management approaches, political and economic prerogatives, and location-specific understandings. One of the crucial causes of fishery management failure in Zambia could be attributed to failure to implement needed restrictions on fishing in a timely manner due to social or economic pressures (Dudley, 2008) compounded by an absence of sufficient and appropriate information. This implies that there is need for awareness creation, through active multi-stakeholder platforms, on environmental and resource management issues in fishery specific areas.

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