



Two to tango: the role of government in fisheries co-management

Robert S Pomeroy and Fikret Berkes

Introduction

The purpose of this paper is discuss the role of government, primarily national government, in fisheries co-management. This paper investigates the critical role of decentralization in a strategy of co-management using a number of international cases. The experiences of co-management and decentralization provide for a number of policy implications to be drawn concerning the role of government. © 1997 Elsevier Science Ltd.

Key words—fisheries co-management, decentralization, government

Robert S Pomeroy is at the International Center for Living Aquatic Resources Management, MC PO Box 2631, Makati City 0718, Philippines.

Fikret Berkes is at the Natural Resources Institute, University of Manitoba, Winnipeg, Manitoba, Canada R3T 2N2.

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Fisheries managers increasingly recognize that a fishery cannot be managed effectively without the cooperation and participation of fishers to make laws and regulations work. The growing realization of the need for increased participation by resource users in fisheries management can be seen in a wide range of policies and programs worldwide [1-3]. Community-based coastal resource management (CBCRM) systems have become a way to activate social processes and involve resource users in resource management. Co-management systems have emerged as a partnership arrangement using the capacities and interests of the local fishers and community, complemented by the ability of the government to provide enabling legislation, enforcement and conflict resolution, and other assistance.

The last decade has seen the proliferation of literature on CBCRM and co-management e.g. [4-7]. Much of what has been written has focused on the community level regarding issues of local organization, community-based management processes and development interventions. Much less has been written, however, about the role and activities of government. Yet, it takes two parties to have co-management, and the government is a crucial partner. If co-management initiatives are to be successful, basic issues of government legislation and policy to establish supportive legal rights and authority frameworks must be addressed. The establishment of an appropriate government administrative structure and an enabling legal environment are essential in efforts to promote and sustain existing local-level fisheries management systems and/or to develop new co-management systems.

The purpose of this paper is to discuss the role of government, primarily national government, in fisheries co-management. More specifically, this paper investigates the critical role of decentralization in a strategy for co-management. Following the typology generally used in the public administration literature e.g. [8], vertical decentralization is considered to take four forms: deconcentration, delegation, devolution,

and privatization. This paper starts with a review of some of the concepts behind co-management, followed by a discussion of conditions for co-management, and an expansion of the notion of decentralization. It then deals with a number of international cases that provide examples of the four different kinds of decentralization, and ends with some concluding comments based on this international experience.

Co-management and common property

Fisheries co-management is defined as the sharing of responsibility and authority between the government and the community of local fishers to manage a fishery [9]. Co-management covers various partnership arrangements and degrees of power-sharing and integration of local and centralized management systems. There is a hierarchy of co-management arrangements from those in which the fishers are merely consulted by the government before regulations are introduced, to those in which fishers design, implement and enforce laws and regulations with advice and assistance from the government (Figure 1).

Many authors agree that the analysis of co-management falls in the area of common property theory [5,10-12]. Co-management arrangements can be analyzed in terms of who holds what kind of property-rights over a resource, or who controls the fishery. Common property (or common pool) resources such as fisheries are non-exclusive by nature. As a class, they have two characteristics that distinguish them from other kinds of resources: (a) the difficulty of exclusion, that is, the control of access to the resource; and (b) subtractability, that is, the capability of each user of subtracting from the welfare of others. These two problems often create a divergence between individual and collective economic rationality which, unless mitigated, leads to a “tragedy of the commons”, a situation that typically occurs in the absence of property rights to the resource [13,14].

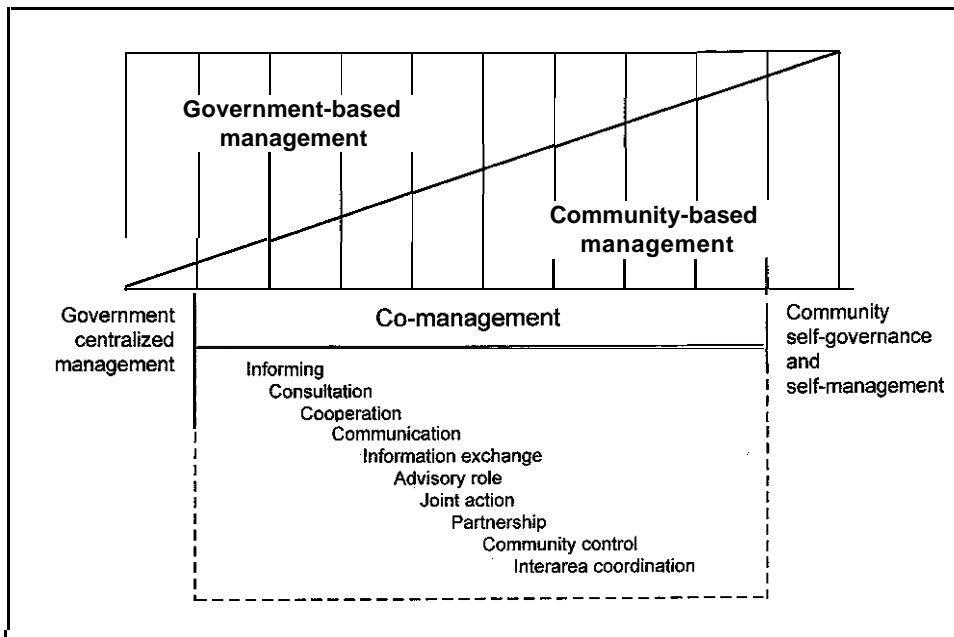


Figure 1. A hierarchy of co-management arrangements (after Berkes [15])

Solutions to the commons problem necessarily involve some form of access control and some form of institutional design to regulate use and to minimize the subtractability problem. The literature on common property regimes recognizes that solutions exist through three basic kinds of property rights regimes: (i) state property or state governance indicates that rights to the resource are controlled exclusively by government agencies on behalf of all the citizens; (ii) communal property or common property means that the resource is held by an identifiable community of users who can exclude others and regulate their own use; and (iii) private property refers to a situation in which an individual or a corporate body has the right to exclude others and regulate the use of the resource [14,16,17].

As Jentoft [10] put it, "how then is co-management to be distinguished from other common property management systems, such as government regulation or community-initiated regulation?" The answer is that co-management is a middle course between pure state property and pure communal property regimes. The three property rights regimes mentioned above (plus the open access regime or the absence of property rights) are ideal, analytical types; they do not exist in the real world. Rather, resources tend to be held in overlapping combinations of these four regimes. Strictly speaking, pure communal property systems and CBCRM are always embedded in state property systems and derive their strength from them. Co-management involves the recognition and legitimization of traditional or informal local-level management systems. A certain degree of community-based resource management is a central element of co-management. Hence, as used in this paper, the term co-management subsumes CBCRM, unless otherwise stated.

One fundamental debate in co-management is whether resource users can be entrusted to manage their resources [18]. Unless governments and decision-makers who implement government policies can be convinced of the desire and the ability of users to manage themselves, not much progress can be made in co-management. It is often pointed out that government resource managers are reluctant to share authority. However, it would be a mistake to interpret this solely as a self-serving motive to hang onto political power. Many managers have well-considered reasons to be skeptical about local-level management. To convince managers that local-level management is possible, part of the responsibility falls on the resource users themselves. The ability for self-management, in turn, partially depends on the ability of the local community to control the resource in question.

Managers' reasons for skepticism include the lack of appropriate knowledge and know-how on the part of the fishers, and the ability of fishers to organize themselves to manage for long-term sustainability. Each of these points opens up its own debate. Even in countries with high standards of education, it is true that fishers tend to have lower levels of formal education than the general population. But the relevant knowledge of the fishers is not the same as formal education. It is well known that the knowledge held by fishers in many areas of the world, especially in traditional societies in which such knowledge accumulates by **cultural** transmission, may be extremely detailed and **relevant** for resource management [19-21]. Indeed, it is the complementarity between such local knowledge and scientific knowledge that makes co-management stronger than either community-based management or government management,

Fishers' ability to organize for collective action has a number of prerequisites, essentially involving the question of local institutions, defined here as the set of rules actually used (rules-in-use) by a group of individuals to organize their activities [17,22]. Not all groups of fishers have appropriate local institutions; in such cases, any, co-management initiative will necessarily start with institution-building. But institution-building is a long-term and costly process. Community organizing can take from 3 to 5 years before a self-sufficient organization is in place, on the basis of cases in the Philippines [23], and 5 to 10 years on the basis of a case in St Lucia, West Indies [24]. In the coastal fishery of Alanya on the Mediterranean coast of Turkey, locally designed rules for resource allocation and conflict reduction, by means of rotating and taking turns at fishing sites, were developed over a period of 10 to 15 years in the absence of government support or any other intervention for institution-building [25].

Such experiences indicate that there often is a readiness and willingness on behalf of some groups of resource users to take responsibility for management. Thus, a key question for co-management is what management functions are best handled at the local or communal level, as opposed to the national government level. Pinkerton [5] identified seven resource management functions that may be enhanced by the joint action of users and government resource managers at the local level: (i) data gathering; (ii) logistical decisions such as who can harvest and when; (iii) allocation decisions; (iv) protection of resource from environmental damage; (v) enforcement of regulations; (vi) enhancement of long-term planning; and (vii) more inclusive decision-making. No single formula exists to implement a co-management arrangement to cover these functions. The answer depends on country-specific and site-specific conditions, and is ultimately a political decision.

The benefits sought by all actors in co-management are more appropriate, more efficient, and more equitable management. These benefits become concrete when considered in association with the following processes and goals: (i) co-management for community-based economic and social development; (ii) co-management to decentralize resource management decisions; and (iii) co-management as a mechanism for reducing conflict through a process of participatory democracy. Resource users have the benefit of participating in management decisions that affect their welfare; government has the benefit of reduced challenge to its authority [5, 10].

The establishment of conditions for co-management

Increasingly, government policies and programs stress the need for greater resource user participation and the development of local organizations to handle some aspect of resource management. In the area of fisheries, this trend is international in scope and can be observed in a number of countries in the Americas, Europe and Asia [1,3,26]. A review of the international experience shows that policies favoring co-management are a necessary but not sufficient condition for successful co-management. There are only two well-documented cases of long-standing marine fishery co-management arrangements that work, in Norway [4, 10] and in Japan [27,28], and both of them have a legal basis. This suggests that it may be insufficient for governments simply to call for more community involvement and fisher participation; they

must also establish commensurate legal rights and authorities and devolve some of their powers. The delegation of authority and power sharing to manage the fisheries may be one of the most difficult tasks in establishing co-management. Government must not only foster conditions for fisher participation but sustain it.

As a first step, the government must establish conditions for (or at least not impede) co-management systems to originate and prosper. At a minimum, government must not challenge fishers rights to hold meetings to discuss problems and solutions, and to develop organizations and institutional arrangements (rights and rules) for management. Fishers must feel safe to openly meet at their own initiative and discuss problems and solutions in public forums. They must not feel threatened if they criticize existing government policies and management methods. As a second step, fishers must be given access to government and government officials to express their concerns and ideas. Fishers should feel that government officials will listen to them. As a third step, fishers should be given the right to develop their own organizations and to form networks and coalitions for cooperation and coordination. Too often there has been the formation of government-sponsored organizations that are officially recognized but ineffective since they do not represent the fishers; however, these may be the only type of organization a government may allow. Fishers must be free to develop organizations on their own initiative that meet their needs.

Fishers often develop their own rules for management in addition to those created by government. For example, fishers may establish rules defining who has access to a fishing ground and what fishing gear can be used. The fishers may be able to enforce the rules as long as there is at least a minimal recognition of the legitimacy of these rules by the government. This can be formal, as through a municipal ordinance, or informal, as through police patrols to back-stop the local enforcement arrangements. If government does not recognize the legitimacy of the rules, then it will be difficult for the fishers to maintain the rules in the long run [29]. Thus, the role of government in establishing conditions for co-management is the creation of legitimacy and accountability for the local organization and institutional arrangements. The government, through legislative and policy instruments, defines power sharing and decision-making arrangements. Only government can legally establish and defend user rights and security of tenure. One means of establishing these conditions is through decentralization.

Decentralization and co-management

Decentralization refers to the systematic and rational dispersal of power, authority and responsibility from the central government to lower or local level institutions—to states or provinces in the case of federal countries, for example, and then further down to regional and local governments, or even to community associations. The approach of decentralization is for the center to delegate some measure of its power to the lower levels or smaller units in the government system. Increasing local autonomy is a focal point in the decentralization process. Generally, power and authority are transferred or withdrawn by laws enacted in the center.

Co-management requires a clear commitment on the part of government to the sharing of power and authority with local

government and local fisher and community organizations. In many countries, government programs and projects stress the development of local organizations and autonomy to handle some aspect of fisheries management. Seldom, however, is adequate attention given to the establishment of administrative and policy structures, that define the legal status, rights and authorities essential for the effective performance of local organizations. Many attempts at decentralization have not delivered a real sharing of resource management power.

Initiatives in community-based resource management in Asia, for example, have been popular throughout most of this century under different names. However, as Korten [30] explains it:

none of these approaches to stimulating local initiatives provided a fundamental challenge to the idea that the government does development for the people, who are expected to respond with grateful acceptance of whatever guidance and assistance government chooses to offer. None challenged the nature of the government's role or the appropriateness of the structures and procedures through which government conducts its business. None confronted basic issues of local social structures and resource control.

If new fisheries co-management initiatives are to be successful, these basic issues of government policy to establish supportive legislation, rights and authority structures must be recognized. The devolution of fishery management authority from the central government to local level governments and organizations is an issue that is not easily resolved. Legislation and policy for co-management are embedded in a broader network of laws, policies and administrative procedures, at both national and local government levels. Consequently they will be difficult to change. Government administrative and institutional structures, and fisheries laws and policies will, in most cases, require restructuring to support these initiatives.

In some cases, it may be more feasible and desirable to draw up completely new legislation, rather than to modify existing acts. A case in point is the establishment of Mafia Island Marine Park in Tanzania. This was the idea of a marine protected area that was developed in the course of an environmental assessment process with regard to petroleum exploration. Local fishers were involved in the assessment process to provide information on resources. Initially, a reserve was set up to protect fishery resources; by 1991 it had evolved into a locally managed marine park. But it became soon obvious that the needs of the local people could not be met under the existing fisheries legislation. New legislation was developed with support from international conservation organizations, and the FAO, and the Tanzania Marine Parks and Reserves Act came into being in 1994. This act provided for the formal inclusion of village council representatives on the technical committee for the Mafia Island Marine Park for co-management and for the sharing of benefits [31,32].

As the Tanzania case illustrates, the actual form of co-management will depend upon the type of government and the political will for decentralization. In general, co-management is consistent with the aims of democratization and empowerment. In the first place, the goals of co-management include the greater participation of fishers in the fisheries management process, more self-reliance of local level institutions, and a more responsive decision-making process. The ultimate goal of decentralization is greater participation and efficiency by getting people at lower levels more involved in the decision-making

processes and procedures that affect them. One assumption of decentralization is that the deployment of power and resources to the community will enhance community and economic development. Thus, the promise of decentralization is greater democratization and development of local communities. In this assumption, an important concern is the significance of intervening variables such as leadership, skills of fishers, resources, and capabilities of local institutions.

In detailing the specifics of the decentralization strategy, questions of implementation become crucial points of debate. What powers and functions, for instance, can be properly entrusted to local institutions? What are those that should be left to the central government? How is the sharing of resources to be administered? What should be the role of non-government organizations and people's organizations? What is the proper and appropriate mix of government and private sector participation? Will decentralization occur only for the fisheries bureaucracy, or will it be a government-wide initiative? This collection of issues impinges on decentralization strategies and drives the political debate associated with decentralization.

Decentralization may be operationalized in varying degrees and may take a number of forms, depending upon to what extent and to whom power and authority are transferred. Vertical decentralization of government can itself take four forms [8,33]:

- Deconcentration is the transfer of authority and responsibility from the national government departments and agencies to regional, district and field offices of national government offices. This is referred to as administrative decentralization.
- Delegation is the passing of some authority and decision-making powers to local officials, but central government retains the right to overturn local decisions and can, at any time, take these powers back.
- Devolution is the transfer of power and responsibility for the performance of specified functions from the national to the local governments without reference back to central government. The nature of transfer is political (by legislation), in contrast to deconcentration's administrative; and the approach is territorial or geographical, in contrast to sectoral.
- Privatization is the transfer of responsibility for certain governmental functions to non-governmental organizations, voluntary organizations, community associations and private enterprises.

International experience in fisheries co-management at the national government level can be used to illustrate these four forms of decentralization, and recognizes that examples do not always fall cleanly into any one category.

Example of deconcentration

United States

Under the Fishery Conservation and Management Act of 1977 (Magnuson Act) eight regional fishery management councils were created in the major fishing regions of the United States. The Magnuson Act has been identified as a co-management system since a part of the Federal Government's authority to manage fishery resources has been given to the regional councils. A power-sharing arrangement for resource conservation and management between government and fishers, and resource stakeholders, occurs through the councils. The

regional councils have the primary functions to develop, monitor, and evaluate fishery management plans for various fisheries needing conservation and/or management within the council's area of responsibility. Plans must be approved by the federal government before implementation. Public hearings are held by the councils throughout the planning process to provide public input. The councils are composed of persons "knowledgeable concerning fisheries and the fishing industry". Members range from commercial and recreational fishers, to consumers, to seafood processors and to environmentalists. Members of the councils are appointed through a highly politicized process where they are nominated by the governors of the states within a council's area of responsibility and appointed by US Secretary of Commerce [34]. The Act has brought about the deconcentration of management authority that was previously under the central government, but this has not necessarily resulted in effective co-management. Resource management under the Act has received mixed reviews. A number of studies have examined the performance of the various councils. For example, Hanna [35] reported on three cases of groundfish management within the Pacific Fishery Management Council, and concluded that the effect of user participation on management performance was mixed.

Examples of delegation

Zimbabwe

A decentralization process for the co-management of the inshore fishery of Lake Kariba Recreational Park has been occurring within a policy framework analogous to the CAMPFIRE (Communal Area Management Project for Indigenous Resources) program, which sought to confer benefits and responsibilities of proprietorship over wildlife to the inhabitants of communal lands [36,37]. Under the Lake Kariba program, fishers are to receive proprietorship over inshore resources in defined "exclusive fishing zones". Fishing camps/communities will be empowered to take over the responsibilities of managing the fisheries resources and to develop and implement their own regulatory measures in these areas [38].

The 1975 Parks and Wildlife Act states that the legal ownership of wildlife is with the State. In 1982, the Parks and Wildlife Act was amended with the provision that the Ministry of Environment and Tourism could grant "appropriate authority" for wildlife on lands under the responsibility of rural district councils [39]. Within the institutional structure proposed for managing Lake Kariba, the government can define and designate appropriate authority for waters and controlled fishing waters under section 95.1 of the Parks and Wildlife Act to rural district councils. National Parks and Wildlife Management plans to allocate this authority to communities below the rural district council [39]. Management control of portions of Lake Kariba will be delegated from the State to the rural district councils. Based on existing fishery concessions and with some possible redefinition of boundaries, authority and proprietorship over "controlled waters" will be given to the rural district councils. The councils can further delegate authority to fishers in the fishing camps/communities [39].

Atlantic Canada

Another example of decentralization by delegation of powers comes from Canada's Atlantic coast fishery. Kearney [40] showed that the

involvement of fishers in decision-making can be traced to a Canadian government policy dated 1976. But in the years that followed, an “advisory model” of decision-making became dominant, one in which fishers and other stakeholders generated advice for the decision-makers but did not actually participate in decision-making. The self-determination model of decision-making was referred to as “co-management” as early as 1978 in a speech by Canada’s Minister of Fisheries and Environment. As quoted by Kearney [40], the speech offered fishers the opportunity to co-manage the fishery “so they could take over their fishery, own their boats, run their business, negotiate prices and working conditions, and become partners fully equal with those who buy, process and market fish”.

The principles of co-management proposed by the Government of Canada were subsequently described in more detail in a government discussion paper in 1981. Co-management was designed to address two objectives: to delegate certain responsibilities to fishers, such as arbitrating and policing, and as a mechanism to tailor resource management measures according to local needs. But the discussion paper was ambiguous and did not make it clear whether co-management was merely a mechanism for consultation or involved the delegation of substantive areas of decision-making to fishers [40]. In the years that followed, the Canadian government tried to open up the fisheries policy process as well. In the provinces of Eastern Canada, the principal approach was consultative: user groups were consulted about their concerns and opinions, but decisions were made by the Ministry. The consultative process, which began modestly in the 1970s with a handful of advisory committees, multiplied into tens of committees covering every sector and major marine resource species. In the Scotia Fundy region alone, there were as many as 28 committees in the 1990s [1]. With this development came the delegation of decision-making powers to regional offices of the Ministry, even though there was no devolution of powers by legislation to lower levels of government and to organizations of fishers.

Examples of devolution

Canada

Successful cases of co-management in Canada are related to aboriginal peoples and land claims agreements, not because native groups and governments work particularly well together, but because land claims agreements provide legally defined management rights of local resource users—a feature missing in other kinds of co-management arrangements in Canada involving non-aboriginal fishers. Co-management in the North started with the 1975 James Bay and Northern Quebec Agreement, which was the first of the modern comprehensive land claims agreements in Canada, followed by the Inuvialuit Final Agreement of 1984, the Nunavut Agreement of 1993, and others. Each of these agreements has a chapter (Section 24 in the case of the James Bay and Northern Quebec Agreement) that specifies the sharing of jurisdiction for fisheries and wildlife management, and establishes an institutional structure (in the form of management boards and joint committees) to implement co-management. Each of these boards are empowered through legislation that gives effect to the particular agreement.

Prior to these agreements, aboriginal people in Canada had no legislated rights except through the original treaties that were signed in

the 1880s and the early 1900s. Many of these treaties were superseded by conservation legislation passed by the Canadian Federal Government and the provincial governments, leaving aboriginal people as “poachers on their own land” [18]. With the new agreements, the rights of aboriginal fishers and hunters are established in law, although aboriginal resource rights continue to be an issue of major public debate [41,42]. Additional agreements are likely to be negotiated and enacted in the coming years, also through a process of devolution of powers from the Federal and Provincial Governments to regional governments representing aboriginal people [43].

Norway

Jentoft’s [4, 10] work provides a detailed description of what might be the earliest co-management arrangement in Europe that involves devolution: Norway’s Lofoten Islands cod fishery. As with almost all cases of co-management, it started as a solution of last resort to a resource conflict case, but continued to survive for over a century. Located on cod migration routes and providing lucrative catches, the Lofoten Islands in northwest Norway has supported a major cod fishery since ancient times. Norway’s most important cod fishery, the Lofoten fishery, takes place from early January until late April, and provides the main income source for many small-scale fishers.

In historical times, the high numbers of fishers attracted to the area caused crowding problems and conflict among fishers, especially among those using different kinds of gear. During the 19th century, various kinds of regulatory systems were tried, but none could resolve the problems of the fishery until co-management principles were introduced in the 1890s through the Lofoten Act. Under co-management, the Norwegian government formally gave the responsibility for regulation of the fishery to the fishers. Different gear group representatives formed special district committees, and made rules for allowable fishing times, type of gear allowed, and the amount of space allocated for the different gear types. There were elected fishers acting as inspectors, and a public agency was formed to oversee enforcement. With a few changes in modern times, the system has evolved and continued to operate. Jentoft [4] remarks that “this (devolution of management power to fishers) has been so successful that there has not been even a suggestion that the state should take over this role.”

Philippines

In 1991, the Philippine government enacted into law the Local Government Code (LGC), which sought to decentralize government functions and operations to local governments. The LGC granted local governments (municipalities) a number of powers including the management of municipal or nearshore waters. Under the LGC, municipal waters were defined as all waters within 15 kilometers of the coastline. A general operative principle is a provision that the local government units (LGU) may group themselves, consolidate or coordinate their efforts, services and resources for purposes commonly beneficial to them. Section 35 specifically states that LGUs may enter into joint ventures and such other cooperative arrangements with people’s organizations and non-governmental organizations to engage in the delivery of certain basic services, capability building and livelihood projects, and to develop local enterprises designed to diversify fisheries, among others. The LGUs and

local communities are also given certain privileges and/or preferential rights. Municipalities shall have the exclusive authority to grant fishery privileges in municipal waters and impose rentals, fees and charges. In terms of fishery rights, the organizations or cooperatives of marginal fishers shall have preferential rights to fishery privileges within the municipal waters such as the erection of fish corrals and gathering fish fry free of any rental, fee or charge [44,45].

Japan

The Japanese coastal fishery is co-managed using a system that provides regulatory authority at national and regional levels, and decision-making power mainly at the local level. Under the Fisheries Law of 1901 (which was updated in 1949), the hereditary fishing rights and privileges bestowed by feudal lords were converted into “exclusive fishing rights” or sea tenure [46]. The fishing guild evolved into local village-based fishing cooperatives. All coastal waters except port areas and industrial zones are owned by fishing cooperative associations (FCA) or federations thereof. The FCAs control many aspects of the coastal fishing activity within their immediate jurisdiction by implementing and enforcing national fishery laws and regulations, which are supplemented or complemented by those made locally. For example, the national government establishes total allowable catch (TAC) for the offshore and coastal fishing areas. The division of the total quota for a particular FCA is done by the prefecture. The FCA then has the responsibility to allocate their specific fish quota. The FCA has close interaction with the national, prefecture and municipal governments on a number of fishing related matters including design and implementation of management plans, approval of regulations, fishery projects, budgets, subsidies, and licenses and other rights [28].

Examples of privatization

Netherlands

The Dutch use an individual quota management system, developed over the last 20 years, for managing different groups of fish species based on a national quota. In the early 1990s, the fisheries Directorate felt it had become too highly involved in the management of the fishery sector, and that there was a need to give fishers more responsibility for management. In 1992, a working group composed of representatives from government, fishers and the marketing and processing industry developed a co-management system in which responsibility for the management of the annual quota was devolved to “management groups” of fishers. The objective of the management groups is to control the quota of its members in a flexible and economically responsible way. Fishers work together to prepare a plan for allocation of the pooled quota, which must be approved by the group management board. While fishers are now more involved in fisheries management, ultimate control still rests with the government. The government still has responsibility for controlling national quotas, implementing aspects of the common fisheries policy of the European Union, and establishing the conditions under which the management groups operate [47, 48].

Bangladesh

Transferable quotas are not the only mechanism by which privatization can be implemented. The management system used in the inland

openwater fisheries of Bangladesh provides an example of an alternative way in which the responsibility for certain government functions can be transferred to individuals and corporations. Some 10 000 fishing spots in Bangladesh's inland openwater fishery are allocated by leasing in an open auction, apparently a continuation of the revenue-generating system from the colonial times. Those who purchase the leases in the auction can then fish the area and manage the fishery, and establish their own security force that can close access to other potential fishers.

The system has been criticized from an equity point of view because lease-holders tend to be middlemen-entrepreneurs who do not fish the area themselves but in turn sell fishing rights to others [49]. This creates a situation in which the main beneficiaries of the fishery are not the fishers themselves but the middlemen. However, the system tends to perpetuate itself because the real fishers (who are typically poor) tend to owe money to middlemen and can never get out of a cycle of debt; they have little chance of buying fishing rights directly from the government. The Government of Bangladesh has tried a number of pilot projects in an effort to channel more of the fishing income to the genuine fishers, some aiming at institution-building through the involvement of NGOs [49, 50]. Bangladesh is not the only country in which fishing spots are allocated by auction. A similar fishery takes place in the floodplain of the Mekong River in Cambodia, with auctioned fishing areas and similar problems of equity [51].

Discussion

International experience suggests that fisheries co-management does not come about automatically but requires some impetus. Most commonly, it is the recognition of a resource management problem that triggers co-management. Problem recognition may be related to resource deterioration (as in the case of the Philippines and the Tanzanian marine protected area), conflicts between stakeholders (e.g. Norway's Lofoten cod fishery and Philippines coastal fisheries), conflicts between management agencies and local fishers (e.g. Canada's Atlantic coast fishery), and governance problems in general (e.g. Philippines, the United States Fishery Conservation and Management Act, and northern aboriginal land claims in Canada). In this regard, the experience with fisheries co-management is similar to the international experience with the co-management of protected areas [52, 53], forests [54], wildlife [36] and other resources.

In each case, governments have turned to co-management as a means of responding to a management crisis, and sometimes to a management opportunity, as in the case of resource rehabilitation projects and perhaps also in some land claims agreements. Various types of decentralization can be used by governments to establish conditions that are conducive to co-management. Decentralization and co-management often go together, and there are a number of similarities between their goals. The strategies of decentralization and co-management not only respond to management crises, they also offer the promise of increased democratization, and empowerment and development of regional and local communities. The goals of both co-management and decentralization are the mobilization and strengthening of people's participation in government and more equitable distribution of power and resources to local-level groups of people and communities [5].

The form and process of decentralization and co-management can be seen as a focus for user participation in management. Decentralization in a governmental context may proceed in the logical sequence of: (i) organizational and physical deconcentration; (ii) administrative delegation; (iii) political devolution; and (iv) popular privatization [33]. These modes of decentralization may occur separately or in a cumulative package. Thus, decentralization can be seen as a continuum ranging from deconcentration to privatization where more power and authority is delegated to local-level institutions as one moves along the continuum. Co-management can also be viewed as a continuum, similar to that of decentralization, based on the role(s) played by government and resource users [3, 9, 15]. In both decentralization and co-management, the central government acts to transfer power and authority to local-level institutions.

The form of decentralization will depend, like the form of co-management, on country-specific conditions. As can be seen from the examples above, there is no one "best" form of decentralization to support co-management, as there is no one "best" form of co-management. Decentralization can occur as a broad administrative mandate in which fisheries is included, as in the case of the Philippines, or it may occur for specific management functions, as is the case in Japan and Tanzania. Both co-management and decentralization should be viewed as an evolving process that adjusts and matures over time. For example, the process of decentralizations may proceed over time from deconcentration to devolution as more knowledge and experience is gained by the government, and as the political will for decentralization increases; as was the case in the Philippines [8]. In a similar fashion, co-management systems may evolve through experience through the delegation of more and more power and authority by the government, as in the case of the Lofoten fishery in Norway [4, 10].

The decentralization process, however, is laced with potential roadblocks and pitfalls. Politicians may be reluctant to allow *greater* democratization of the political system. Politicians and government agency administrators may be reluctant to relinquish their authority or portions of it in order to protect their power and positions of their own agencies. The local power and authority may fall into the hands of leaders and groups who are not committed to its basic values and goals. An important concern for the success of both decentralization and co-management are variables such as leadership, skills, resources, and capabilities of local-level organizations and institutions.

The process of developing a co-management system will likely involve the restructuring of national laws and policies, as well as national fisheries agencies and bureaucracies. Existing national laws and policies usually do not include specific reference to such functions of co-management as the security of local-level tenure and property rights over coastal resources, people's participation, and the recognition and incorporation of local traditional/informal/folk management systems. New laws and policies may need to be developed and/or existing laws and policies amended or reinterpreted to authorize and legitimize these functions of co-management. Both the Philippines and Thailand, for example, are undertaking such a process [26]. New laws and policies may need to be reviewed to identify compatibility and inconsistency with laws and policies for resource management in other sectors and with overall administrative laws and policies. National fisheries agencies

and bureaucracies may require restructuring to take on the new responsibilities and functions required of them under co-management and decentralization. Issues of coordination, communication and roles must be addressed. The government agencies must be shielded from short-term political pressures to change or dilute goals of the power-sharing arrangements under co-management.

The role of the government in co-management is to provide enabling legislation to authorize and legitimize the right to organize and to make and enforce institutional arrangements at the local level. In the case of protected marine area co-management in Tanzania, it is important to note that a series of enabling legislation was passed in the 1970s and the 1980s in support of decentralization. Although it is generally thought that the Tanzanian experiment in self-reliance and local democracy did not live up to its potential [55], this legislation nevertheless enabled districts and villages to manage their own affairs, and served as the basis of new legislation for marine parks and co-management.

In addition to its role in providing enabling legislation, the government may act to address problems and issues beyond the scope of local arrangements, and to provide assistance and services (administrative, technical and financial) to support the sustainability of the local organizations and institutional arrangements. More specifically, the role of government includes overseeing local arrangements and dealing with abuses of local authority, conflict management, appeal mechanism, backstopping local monitoring and enforcement mechanisms, and applying regulatory standards. Government may also serve a coordinating role in order to maintain a forum or formal administrative structure for various parties in the co-management system to interact. Within a co-management system, government and fishers jointly develop an agreement on the objectives of co-management including the aims, the form, and the means. A clear understanding of the long-term goals of power-sharing is established in which the differing interests and needs of government and fishers are reconciled.

The decision on what fisheries management functions should be handled at which level are best handled jointly by local-level organizations and national government fisheries agencies, and they will be location specific. The decision will be based on the capabilities of local-level organizations to handle certain management functions and the locus of user participation. It may be more appropriate to phase-in management functions over time as local-level organizations gain more experience and capability, rather than give them a defined set of functions. The phasing in will also depend on the form of both co-management and decentralization, but adaptive management or "learning-by-doing" in the evolution of co-management, and feedback learning in general, is likely to be critically important [56].

Ultimately, whatever form of decentralization arrangement for co-management is arrived at, the process is political, involving mobilized interests and struggle for power. The government, however, holds the final authority. Co-management will not work everywhere in a country. Co-management should be viewed by government as an alternative management strategy to the centralized management system, which in many cases does not work effectively anyway. Governments may not want to develop laws and policies that completely shift away from the centralized form of fisheries management, as many areas and resources

within a country may still require this type of management strategy. Governments may want to consider developing a general policy within the existing legal and policy framework of the country, which allows for the existence of co-management in areas and communities that are capable of taking on the responsibility and authority for management. Laws and policies may then be developed under a framework of decentralization that legitimizes and authorizes co-management. There is no blueprint formula for either co-management or decentralization. Each country will need to develop a strategy based on its own needs and conditions. Several decades of international experience provide some directions for developing a co-management strategy based on decentralization.

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