MODULE 1

Fundamentals of fisheries co-management in Indonesia

Introduction to fisheries co-management

The concept of fisheries governance and fisheries management

Kooiman *et al.* (2005) define governance as the interaction between the public and private sectors to solve societal problems and create social opportunities. In the context of fisheries, governance can be defined as the sum of the legal, social, economic and political arrangements used to manage fisheries. It has international, national and local dimensions and includes legally binding rules as well as customary social arrangements (FAO, 2001).

Therefore, fisheries governance may be defined as a process of interaction between the public and private sectors that endeavours to solve fisheries problems and create social opportunities in the fisheries sector. These opportunities might include creating jobs, generating income or conserving fisheries resources. Generally, public sector involvement means the participation of government, whereas private sector involvement means the participation of fishing communities including traditional fishers, fisheries entrepreneurs, fish farmers, fish processors, the fishing industry and fish traders, etc.

Fisheries management can be defined as the integrated process of information gathering, analysis, planning, consultation, decision-making, resource allocation, formulation and implementation that is followed by the enforcement of rules which govern all fisheries activities in order to ensure the continued productivity of the resources (FAO, 1995) (Box 1.1).

BOX 1.1

Important elements of fisheries management

1. Define fisheries goals.
2. Identify a strategy to achieve fisheries goals.
3. Consult with stakeholders around the strategy to achieve fisheries goals.
4. Monitor and evaluate the implementation of the defined strategy in partnership with stakeholders.
5. Convey reports to the government and stakeholders about the condition of fisheries.

Sources: FAO, 1995

During the past few decades there has been a global shift in approach to fisheries management to one that recognizes the importance of fishers' participation and shared decision-making in the management of fisheries. This approach can be defined as co-management, a type of management that is characterized by the pivotal interaction between government and fisheries users, through consensus building and the sharing of different management

roles and responsibilities. In other words, co-management constitutes a promising alternative that seeks to enhance the effectiveness of fisheries management itself.

THE RELATIONSHIP BETWEEN FISHERIES RESOURCES AND HUMAN RESOURCES

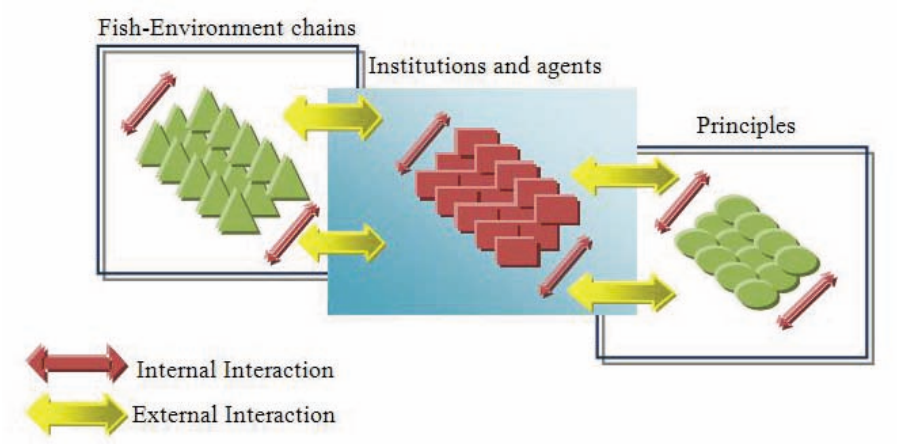
Fisheries management should take into consideration the interconnection between aquatic ecosystems, fisheries resources and human resources. For example, fisheries management cannot exist if fisheries resources are extinct and the ecosystems upon which they depend are degraded.

In this context, the principles governing the interactions between aquatic ecosystems and society need to be understood. By understanding these interactions, we can lay the foundation for fisheries governance and appreciate the importance of achieving equilibrium between the sustainability of fishery resources, ecosystem health and the socio-economic conditions that determine the quality of life of resource users.

Figure 1.1 illustrates the interaction between the ecosystem and fisheries resources, in which the management institution and its principles become the main elements of interface between both components.

FIGURE 1.1

Interaction between the environment, resources and humans. Adapted from Kooiman *et al.* (2005).



WHAT IS CO-MANAGEMENT?

Borrini-Feyerabend *et al.* (2004) define co-management as "a situation in which two or more social actors negotiate, define and guarantee amongst themselves a fair sharing of the management functions, entitlements and responsibilities for a

given territory, area or set of natural resources". Pinkerton (2003) discusses seven aspects that she believes are key to co-management arrangements. They are: (1) government as a co-manager should play a key and desirable role, and ideally should be engaged in the co-management arrangement as a partner rather than as an institution that delegates authorities; (2) co-management, like management itself, involves far more than the control of fisheries effort; (3) sustainable co-management arrangements involve some control by community partners over the terms and condition for selling the fish to buyers; (4) the successful exercise of rights on one level depends on the exercise of rights at higher and lower levels, including communities' right to participate in data collection/analysis and in setting policy agendas at the highest level; (5) co-management will ideally involve multiple horizontal negotiations leading to cooperative activities with other players and potentially greater democratization of civil society; (6) the power to exclude users from some defined territory is optimal; and (7) complete co-management is based more on the collective rights of a group than on individual rights (Pinkerton, 2003).

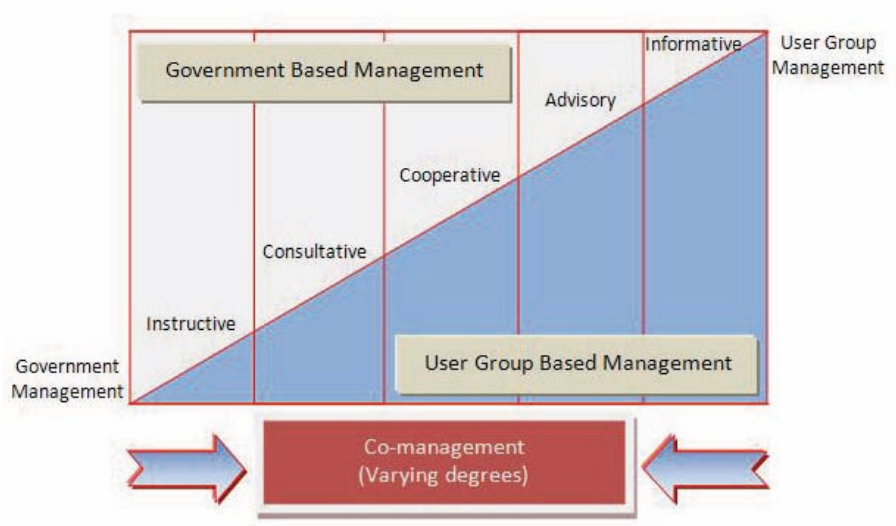
Key words in resources co-management are (1) a pluralistic approach to management; (2) a political and cultural process with the main goal of achieving social prosperity and democracy in natural resource management; and (3) a process that needs basic conditions to develop, including, among many others, access to information on relevant choices and issues, organizational capacity, freedom of speech and a non-discriminatory social environment.

In the fishery context, fisheries co-management is defined as the management arrangement whereby government and the user groups share responsibility for the management and utilization of fisheries resources, with the goal of achieving a balance between economic and social goals, within the framework of preserving the ecosystem and fisheries resources (Nielsen, 1996).

The sharing of responsibility varies, from the instructive to the informative. According to Pomeroy and Rivera-Guieb (2006), there are five major types of co-management according to the role of government and the fisheries user groups, namely (1) instructive; (2) consultative; (3) cooperative; (4) advisory; and (5) informative. Figure 1.2 illustrates the spectrum of co-management based on the distribution of responsibility between government and community.

FIGURE 1.2

Degrees of stakeholders involvement in fisheries co-management



Consultative

There is a mechanism of dialogue between the government and the fisheries user groups, where government consults with fishers but the decision-making process is conducted by the government.

Cooperative

In this type of co-management, the government and the fisheries user groups cooperate in decision-making as equal partners. Nevertheless, it is still very useful to identify the level of "equal" between users and government especially in terms of powersharing.

Advisory

In this type, the fisheries user groups advise government in the decision-making process and government approves the decisions.

Informative

The government delegates the decision-making process to the fisheries user groups, which will inform government of the results.

The difference between "collaboration" and "cooperation" in co-management should be noted. Lessons learned revealed that the term "co" in co-management means sharing not only responsibilities but also power between users and government. In order to share responsibilities, both users and government should understand their capacity as well as their authority in fisheries governance and management. Power-sharing means that both parties should have a common and acceptable balance of power to enable fisheries management to work effectively.

WHY IS CO-MANAGEMENT NECESSARY?

Historically in Indonesia, local peoples' traditional/local ecological knowledge (see Box 1.2) has been embedded into customary laws. For example, customary laws such as *Sasi* in Maluku, *Admiral Laot* in Aceh and *Awig-Awig* in Bali and West Nusa Tenggara, have been included in fisheries management in Indonesia. A detailed explanation of traditional/local ecological knowledge can be seen in Module 2, Topic 2.2.

BOX 1.2

What is traditional/local ecological knowledge?

Berkes (1999) define traditional/local ecological knowledge as a cumulative body of knowledge, practice and belief about the relationship among individuals in a community or between a community and its environment that evolves by adaptive processes and is transferred through generations by cultural means.

For example, based on traditional/local ecological knowledge management decisions were devised by Gambus Villagers in Asahan District, North Sumatra Province to determine when crabs may be caught using *jaring pinggir* (edge net) and *jaring hanyut* (drift gillnet). *Jaring pinggir* is used between the sixth and tenth day of every month, while *jaring hanyut* is used on the eleventh to twentieth day, and so on. The use of fishing gear is based on the Islamic calendar.

Nevertheless, over time, the practice of using local people's traditional/local ecological knowledge in fisheries management was replaced by command and control management regimes, especially between 1966 and 1998. This change was not only experienced in the fishery sector, but also in other sectors that depend on natural resources, such as the forestry and agriculture sectors. During this period, everything was determined by the state. This included the change in the concept associated with the name of a "village". For instance, as government started to use the term "*desa*" to define villages for all regions throughout the country instead of using the local names that had existed for a very long time such as *Meunasah* in Aceh, *Nagari* in West Sumatra and so forth. As a result, the role of the local community in management was reduced. It became the object of development rather than the subject of it.

The decline in the role of the community in fisheries management created inefficiencies in the system. As a result of centralization, conflicts between fishing communities and government officials erupted and a depletion of fisheries resources was observed. The imbalance between the role of the state and the role of the community in fishery management became an important topic of discussion. It highlighted the importance of collaboration between all the stakeholders in fishery management.

Literature suggests that the emergence of co-management systems is often associated with a crisis in fisheries resources, usually as a consequence of open access regimes. Obviously, depletion of fisheries resources and their ecosystems becomes the main feature of the tragedy of the fisheries commons (see Box 1.3

and Box 1.4).

BOX 1.3

The tragedy of the commons

Hardin's theory claims to demonstrate how free access and unrestricted demand for a finite resource ultimately dooms the resource through over-exploitation. This occurs because the benefits of exploitation accrue to individuals, each of whom is motivated to maximise his/her own use of the resource, while the costs of exploitation are distributed between all those to whom the resource is available (this may be a wider class of individuals than those who are exploiting it).

Hardin's example refers to the grazing of animals in communally owned land used by individuals. As Hardin sees it, the utility to each individual of adding a single animal to the common herd is, more or less, the value of that animal; while the cost to the individual is the consumption of the resources by that animal divided by the number of communal owners of the common. That is, the benefit to an individual of "hogging" a resource inevitably outweighs the cost where communal resources are concerned. All economically rational herdsman in the community will add as many animals as they can to the herds and as quickly as they can (before other herdsmen do), meaning that the finite resources of the communal land will quickly become exhausted.

> "Therein is the tragedy. Each man is locked into a system that compels him to increase his herd without limit – in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all."

Controversy

Hardin's essay, the Tragedy of the Commons is a source of controversy. Some of the controversy stems from disagreement about whether individuals will always behave in the selfish fashion proposed by Hardin.

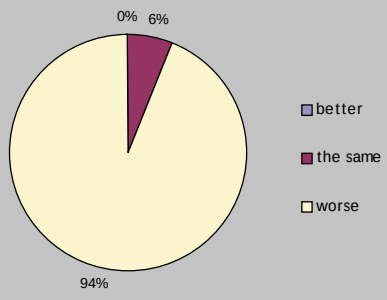
The common property theory counter attacks the arguments associated with Hardin's tragedy of the commons, arguments that attribute little value to the community's organization, their knowledge and ability to deal with the use of natural resources by developing management systems embedded in their own environmental and social context. This theory offers a set of principles, present in some locally-based institutions, that help determine the success of managing common pool resources over time. According to Ostrom (1990) the following seven design principles are key to explaining most of the robust institutions that successfully manage common pool resources:

1. Group boundaries are clearly defined.
2. Rules governing the use of collective goods are well matched to local needs and conditions.
3. Most individuals affected by these rules can participate in modifying the rules.
4. The rights of community members to devise their own rules is respected by external authorities.
5. A system for monitoring members' behaviour exists; the community members themselves undertake this monitoring.
6. A graduated system of sanctions is used.
7. Community members have access to low-cost conflict resolution mechanisms.
8. For common pool resources that are part of larger systems: appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities are organized in multiple layers of nested enterprises.

BOX 1.4

Perception of the tragedy of marine resources in Indonesia *

What is your opinion about the condition of marine waters at Panggang Island in the present time, compared with their condition in the past?

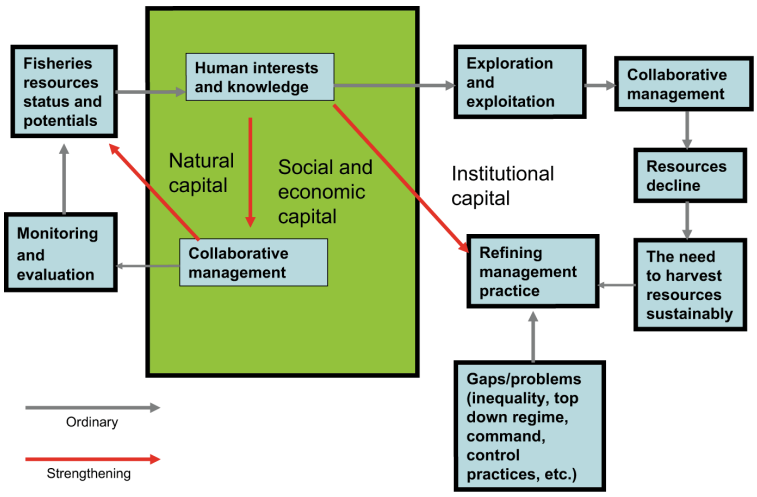


* Perceptions of the community at Panggang Island on the damage to marine resources at Panggang Island, Seribu Island Administration District, Jakarta Province.

As is shown in Figure 1.3, the status of fishery resources and the potential for their exploitation is a complex matter. Human involvement in the use of, and demand for, fish resources leads to fisheries exploration and exploitation. In situations where fisheries management is lacking, exploitation may lead to the collapse of the fishery resource. This may raise awareness within the fishing community of the importance of using fisheries resources sustainably. On the other hand, improved awareness may trigger action towards the restoration of fisheries resources through the establishment of a fishery management system. Fisheries co-management is an alternative model for restoring the condition of resources and resolving issues of fishing rights. The involvement and partnership of all stakeholders in the fishery management process is key.

FIGURE 1.3

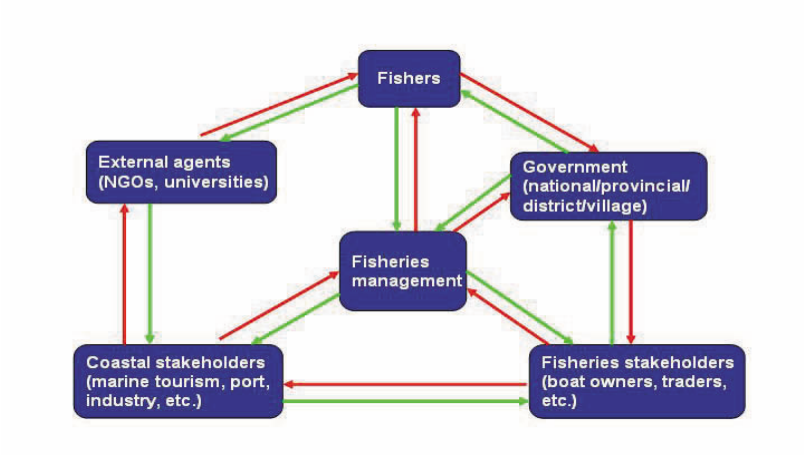
The functional flow of fishery co-management (Adrianto, 2006)



As we can see in Figure 1.4, fisheries management involves many parties, such as fishers, government, non-governmental institutions, academics and other fisheries user groups (traders, boat owners, etc). An understanding of their needs and interests is crucial. Co-management is an approach that encourages links between different parties and between human and natural systems. It recognizes the need for a management approach that addresses these links, as well as the needs of various fisheries stakeholders.

FIGURE 1.4

The involvement of many parties in fisheries management (adapted from Berkes *et al.* 2001)



CO-MANAGEMENT IS A PROCESS

Co-management should not be viewed simply as a tool for fisheries management, but as a fisheries management process that is adaptive to changing conditions over time. Co-management is a process that involves democratization and decentralization mechanisms through collaboration and powersharing between resource users and government officials (Pomeroy and Rivera-Guieb, 2006). Co-management is not a regulatory tool; nonetheless regulation is part of the implementation of co-management systems, i.e. regulations that are devised according to agreements made among stakeholders (e.g. government and fisheries user groups). The planning and implementation of a co-management process can be complex, costly and time consuming and varies according to the context in which it is established (Pomeroy and Rivera-Guieb, 2006). Accordingly, it should be noted by the initiators that co-management is a process and all parties should define a strategic plan which includes ways to deal with the dynamics of developing and implementing a fisheries co-management process.

WHO SHOULD GET INVOLVED IN FISHERIES CO-MANAGEMENT?

Fisheries stakeholders can be defined as individuals, groups or organizations that have interests and/or can influence positively or negatively the management of fisheries resources. In a co-management regime, a balance of representation among stakeholders is a key factor for the success of its implementation (Adrianto, 2005; Pomeroy and Rivera-Guieb, 2006). Consequently, a pertinent question is which stakeholders should be involved and how should they be chosen when initiating and implementing a co-management arrangement? This question will be answered by using the stakeholders' analysis which is explained in Module 4. Nevertheless, an aspect that must be emphasized at this point is that co-management should involve a variety of stakeholders representing different needs and interests.

In general, four types of key stakeholders may be identified in fisheries co-management. They include (1) resource users, including fishers and fish farmers; (2) government, including central and local government; (3) other stakeholders, including other community members, fishing boat owners, fisheries traders, fish processors, among others; and (4) change agents or community organizers including non-governmental organizations, universities, research institutions, among others. Table 1.1 summarizes the role of the four key stakeholder groups discussed above.

TABLE 1.1

The role of key stakeholders in fisheries co-management

No	Key stakeholder	Role
1	Resources users	Identify the issues related to the community;
		Lead and mobilize activities in co-management;
		Participate in required research activities, data gathering and analysis in a co-management framework;
		Conduct monitoring and evaluation;
		Advocate the community's interests in decision-making.
2	Government	Provide legislation to ensure the community's right to participate in a co-management framework;
		Define the form and process of decentralized management;
		Provide legitimate tools for the existing management system in the community;
		Provide technical assistance, financial access, and an extension programme to initiate co-management;
		Provide the mechanisms for conflict resolution among stakeholders;
		Provide the mechanism for monitoring and evaluation based on local capacity;
		Facilitate training and education for local communities;
		Coordinate a local forum for stakeholder partnership in the co-management regime.
3	Other stakeholders	Identify issues in the community, particularly issues that emerge outside the fisheries community;
		Participate in planning and implementation of co-management;
		Disseminate information;
		Conduct conflict resolution;
		Conduct facilitation with the community.
4	Change agent/community organizer	Become a facilitator for stakeholders in the planning and implementation of fisheries co-management;
		Organize the community in the initiation and implementation of fisheries co-management;
		Provide the consultation service for the planning and implementation of fisheries co-management;
		Provide data and information required for planning and implementation of fisheries co-management.

Source: Adapted from Pomeroy and Rivera-Guieb (2006)

CO-MANAGEMENT AND PROPERTY RIGHTS REGIMES

The theory of fisheries co-management is drawn from a set of literature that deals with common-pool resources in which the exploitation by a given user directly affects the availability of the resources to other users who are difficult to exclude.

In the literature that deals with common property rights, four types of property rights regimes are identified (1) state property, where the resources are owned by the state and only the government has the right to regulate the utilization of the resources; (2) private property, where the resources are owned privately through enterprise institutions; (3) communal property, whereby the resource is controlled and managed by an identifiable community of users and regulations are made and enforced locally; and (4) open access, where there is an absence of property rights.

In reality, fisheries resources are generally held through a combination of two or more property rights regimes. In the case of fisheries co-management in Indonesia, the combination of sharing management rights between the state and communities represents the ideal.

Box 1.4

Property rights in Indonesia

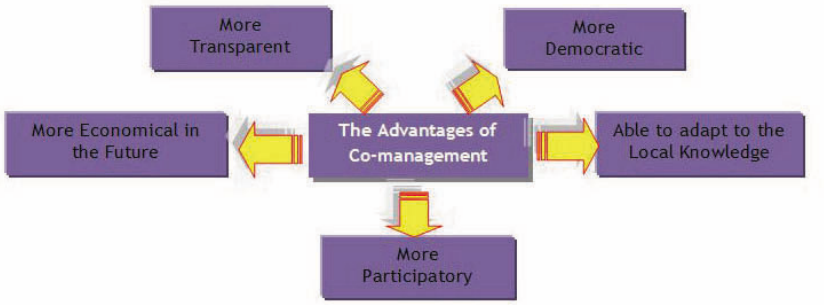
In Indonesia, the ownership of fisheries resources rests with the government (state property). However, through the provision of article No. 18 of the regional government law No. 32/2004, management rights for resources which occur within 12 nautical miles of the coast are delegated to the provincial government, while management rights for resources that are found up to four nautical miles from the coastline are delegated to the district/municipal government. Thus, Article No. 18 does not constitute a property right but rather a management right.

ADVANTAGES AND DISADVANTAGES OF CO-MANAGEMENT

Pomeroy and Rivera-Guieb, 2006 highlight the following as potential advantages and disadvantages of co-management. The advantages of co-management, are (1) co-management may lead to a more transparent management process between the government and the fisheries user groups; (2) it may lead to a more democratic and participatory governance of fisheries resources; (3) in the future, it has economic advantages compared to centralized management, since it reduces the administration cost and enforcement of rules and regulations that usually become the biggest cost components of centralized management; (4) through the involvement of the user groups, resource users become more responsible; and (5) co-management maximizes the contribution of local knowledge and scientific information to resource management. The advantages of co-management can be seen in Figure 1.5 below.

FIGURE 1.5

The advantages of co-management arrangement (Berkes *et al.* 2001; Pomeroy and Rivera-Guieb, 2006)

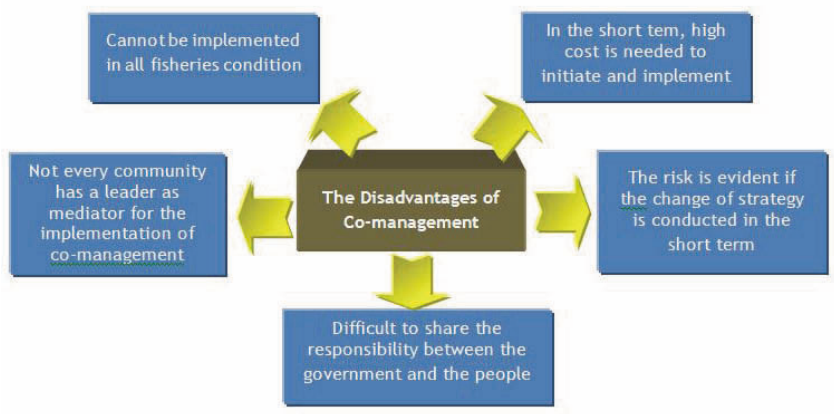


However, there are also disadvantages associated with co-management, namely (1) co-management may not be suitable for all fishing communities because there is a wide range of capabilities among the user groups; (2) initiating a co-management approach requires a substantial investment in the form of time and human resources in the short term; (3) poor leadership and a lack of community organization may reduce the effectiveness and sustainability of co-management; (4) changes in fisheries management strategy can be high risk for some of the fisheries stakeholders; and (5) in some areas, it is difficult to share responsibility between the government and the local people.

The disadvantages and important problems pertaining to co-management can be seen in Figure 1.6 below.

FIGURE 1.6

The disadvantages of co-management (Berkes *et al.* 2001; Pomeroy and Rivera-Guieb, 2006)

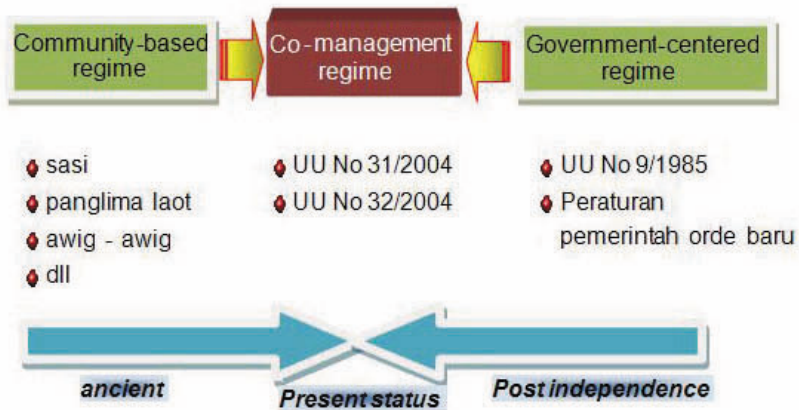


THE STATUS OF FISHERIES CO-MANAGEMENT IN INDONESIA

Since 2004, when Fisheries Law No. 31 came into effect, a shift in the fisheries management regime has occurred in Indonesia. This shift has changed the emphasis from a top-down, centralized management regime to a bottom-up, decentralized regime (examples of community-based management systems include *Sasi*, *Panglima lao*, *Awig-awig* and *Dll*), as stipulated in articles No. 2 and 6 of the Fisheries Law. These articles set out the principles of co-management and acknowledge the role of local/traditional ecological knowledge in managing fisheries. As a result, Fisheries Law No. 31/2004 (see Box 1.5 and 1.6) is the fundamental law pertaining to the implementation of fisheries co-management in Indonesia. The others (UU No. 9/1985 and Peraturan pemerintah orde baru) refer to centralized regimes (Figure 1.7).

FIGURE 1.7

The figure shows the shift in the fisheries management regime in Indonesia.



BOX 1.5

Article No. 2 of Fisheries Law No. 31/2004

Fisheries management is carried out under the principles of benefit, equality, partnership, equal distribution, integration, transparency, efficiency, and sustainable preservation.

The principles stated in Article 2 are essentially the fundamentals of fisheries co-management objectives, particularly those pertaining to partnership, equality and integration.

In the empirical context, fisheries co-management in Indonesia has moved towards the process of implementation through the initiation of several fisheries co-management projects. For example, the fisheries management regime based on local law (*awig-awig*) (Box 1.7) has been implemented at Taman Wisata Alat Laut Gili Indah in West Nusa Tenggara province.

Box 1.6

Article No. 6 of Fisheries Law No. 31/2004

Fisheries management for capture fisheries and fish-culture should take into account *adat* law (custom) and indigenous knowledge, including community participation.

From the perspective of Article 6 (2) above, the adoption of *adat* law and local knowledge constitutes one of the imperatives for strengthening fisheries co-management in Indonesia.

Box 1.7

***Awig-Awig* in fisheries management**

On Lombok Island, co-management may be implemented by using the system of customary law called *awig-awig* as a management tool. *Awig-awig* is a customary law that is applicable to anybody within a defined region; for example in a village or management area. *Awig-awig* is an agreement within local communities about social values. It is a way of controlling behaviour in order to achieve a harmonious society. *Awig-awig* is traditionally aimed at reducing conflicts in the community. Although the concept of *awig-awig* was originally imported from Bali during the colonial era, most villages in Lombok Island have their own *awig-awig*s. The *awig-awig* is usually concerned with regulations pertaining to marriage and security. Some villages, however, may also have an *awig-awig* relating to traditional ceremonies, for instance. The *awig-awig* was traditionally formulated by a community of an island, village, or sub-village; and the *awig-awig* only applied to them. Many villages, however, have the same or similar *awig-awig*. This applies particularly to the *awig-awig* that deals with marriage ceremony. Using *Awig-awig* to implement coastal resource management is not new for Lombok Island. Similar strategies have been adopted in Maluku and Sulawesi. In the district of Lombok Barat, several villages in two sub-districts (Kecamatan Bayan and Kecamatan Gangga) applied an *awig-awig* to fisheries management in the colonial era. This particular *awig-awig* prohibits fishing for one month every year, although it is unclear whether the rationale for this law is to protect the fisheries resource or to protect the safety of fishers. However, as the authority of formal institutions gained strength in the decade between 1960 and 1970, this *awig-awig* slowly disappeared and it declined more quickly than the *sasi* of Maluku. Since 1998, modern *awig-awig*s have been made for coastal resource management in the west and east of Lombok Island. Most of the *awig-awig*s are made by external intervention through government projects, such as the Co-fish project in the district of Lombok Timur (east Lombok) and the COREMAP and MCRMP in the district of Lombok Barat (west Lombok). Some *awig-awig*s are also independently made by local communities through community organization. Several *awig-awig*s show very positive results, while others have failed.

ETHICAL AND NORMATIVE ASPECTS OF CO-MANAGEMENT IN INDONESIA

According to the consensus reached by the founding fathers of the modern Indonesian state on a set of principles which were incorporated into the 1945 Constitution of the Republic of Indonesia, the country is governed in accordance with five fundamental principles or *Pancasila* (Box 1.8). It should be noted that there are a number of similarities between the principles of *Pancasila* and the principles underpinning the co-management of fisheries.

For instance, in the co-management approach, the government shares authority and responsibility with the users of aquatic resources which is consistent with two principles of *Pancasila*, namely that "democratic life led by wisdom of thoughts in deliberation amongst representatives of the people, and achieving social justice for all the people of Indonesia"[3] [sic].

Box 1.8

The five principles of Pancasila

The Preamble of the 1945 Constitution of the Republic of Indonesia states the following:

"Subsequent thereto, to form a government of the state of Indonesia which shall protect all the people of Indonesia and all the independence and the land that has been struggled for, and to improve public welfare, to educate the life of the people and to participate toward the establishment of a world order based on freedom, perpetual peace and social justice, therefore the independence of Indonesia shall be formulated into a constitution of the Republic of Indonesia which shall be built into a sovereign state based on a belief in the One and Only God, just and civilised humanity, the unity of Indonesia, and democratic life led by wisdom of thoughts in deliberation amongst representatives of the people, and achieving social justice for all the people of Indonesia."

Fisheries management must be viewed as human activities interacting with natural resources, particularly fisheries resources. Therefore, in order to create a balanced interaction between people, and between people and their natural environment, fisheries management requires an ethical component that should be jointly devised with stakeholders. Therefore, it is important to develop an ethical and moral system as a basis upon which fisheries co-management in Indonesia may be built (Box 1.9)

[3] Unofficial translation the Preamble of the Constitution of the Republic of Indonesia found at: (www.indonesia.nl/articles.php?rank=2&art_cat_id=22)

BOX 1.9

An ethical and moral basis for fisheries co-management in Indonesia

1. **Recognition of the ownership of the universe:** fisheries resources are common pool resources. Humankind must exercise great care in the stewardship of these resources.
2. **Recognition that nature has a certain "perfection":** we cannot regard the vast set of inter-related complex natural systems that make our natural world as faulty.
3. **Need for a system of rights and duties towards natural resource use:** people have the right to use natural resources for their prosperity and have the responsibility to ensure that current use will not jeopardize the rights of future generations to benefit from these resources.
4. **The obligation to work towards equitable use of natural resources:** so as to provide for many as opposed to the greed of a few and to avoid the dilemmas in which people, following their own short-term interests, produce outcomes that are not in anyone's long-term interest.
5. **Learning from nature**: understanding nature is the basis of the science and technology that underpin fisheries management.
6. **The entrepreneurial spirit:** managing fisheries to obtain sustainable economic and social benefits from resources and to improve the long-term development status of Indonesia's fisheries.

Note that according to FAO (2005) fisheries ethics deals with the values, rules, duties and virtues of relevance to both human and ecosystem well-being. Fishing policies and practices affect fishing livelihoods, the living conditions and interests of fishing communities, as well as the well-being of the ecosystem.

THE PURPOSE OF FISHERIES MANAGEMENT IN INDONESIA

One of the purposes of fisheries management in Indonesia, as mandated by the Fisheries Law No. 31/2004, is to improve the living standard of small-scale fishers and fish farmers (Box 1.10).

Within the framework of fisheries co-management, the nine purposes of Indonesian fisheries management can be broadly aligned with the current socio-economic and cultural system. All fisheries management purposes (Box 1.10) have a relationship with government, as well as communities using natural resources. Therefore, in the long term, co-management will be a more effective way of achieving these purposes, especially when compared with the other management systems that have been implemented in Indonesia.

THE LEGALITY OF FISHERIES CO-MANAGEMENT IN INDONESIA

Fisheries Law No. 31 of 2004 provides a new framework for fisheries management in Indonesia (Box 1.10) and a mandate to implement fisheries co-management.

BOX 1.10

Purposes of fisheries management in Indonesia

1. To enhance the living conditions of small scale fishers and fish farmers.
2. To increase the government's income and foreign exchange.
3. To drive the growth of job opportunities.
4. To enhance the supply and consumption of fish protein.
5. To optimize the management of fisheries resources.
6. To increase productivity, quality, added value, and competitiveness.
7. To increase the supply of basic commodities for the fish processing industry.
8. To achieve the optimum utilization of fisheries resources and aquatic environments.
9. To ensure the preservation of fisheries resources, areas for fish culture, and spatial management.

Source: Article 3 of Fisheries Law no. 31/2004

The development of fisheries co-management in Indonesia is also encouraged by Law No. 32 of 2004 on regional government, which delegates the majority of governmental issues to the district or regency level (*Kabupaten*). This law provides for public services to be closer to the people. According to Law No. 32 of 2004, the government institutions that handle fisheries matters in the districts or municipalities are acting as partners of the people and to conduct fisheries co-management.

BOX 1.11

A new paradigm in fisheries management in Indonesia as per Fisheries Law No. 31 of 2004

1. Sustainable farming (Article 6, Chapter 1).
2. An important goal is to improve the living standards of fishers and the small-scale fish farmer(Articles 65 and 67)
3. Fishery management must be democratic (Articles 65 and 67) and co-management principles must be implemented (Article 6, Chapter 2).
4. Implementation of the ecosystem conservation principles in natural resource management for the prosperity of human beings (Article 13, Chapter 1 and 2; Article 14, Chapter 1 to 4; Articles 15 and 16).
5. Implementation of conservation principles, including protection, mitigation and rehabilitation, in the utilization of natural resources (Article 7, Chapter 1).
6. Utilization of the best information available in the fields of science and technology (Article 46, Chapter 1 and 2; Articles 52 and 53), as well as the state of local ecology (Article 52).
7. The existence of strict sentences and clear jurisprudence where regulations are violated and crimes are committed against the fishery (Articles 72-109).

Fisheries co-management will develop strongly and rapidly provided there is cooperation between fisheries resource users and the government. The cooperation will be adaptive, depending on the balance between people's capacity to grasp knowledge and government's willingness to delegate responsibility and authority for fisheries management.

Fisheries co-management is also essentially a realization of sustainable development principles, which are characterized by the existence of three facets (Hartoto, 2002). These are economic viability, socio-political acceptability and ecological compatibility. Economic viability means that fisheries management must create activities that provide economic benefits. Socio-political acceptability implies that fisheries management must be applied and adapted within the existing social, cultural, legal and political systems in Indonesia. Ecological compatibility implies that management decisions should not compromise the sustainability and ecological continuity of fisheries resources (Hartoto, 2000b).

CODE OF CONDUCT FOR RESPONSIBLE FISHERIES: A WISE INTERNATIONAL AGREEMENT

Prompted by the poor state of the world's most valuable fisheries, the FAO developed the Code Conduct for Responsible Fisheries (CCRF). The CCRF was agreed to in 1995 by the FAO's member countries. It was designed to encourage responsible fishing practices, for the purpose of ensuring that future generations may also enjoy the benefits of fisheries activities. The objectives of the CCRF are to enhance the institutional and legal frameworks of the member states, thereby ensuring the effectiveness of conservation activities, fisheries management and the development of aquatic resources.

The detailed objectives of the CCRF are outlined in Box 1.12. The Code is voluntary and not enforced by international law. However, its scope and impact are far wider than the legal instruments that were negotiated through the UN Fish Stocks Agreement.

Fisheries co-management is an example of the Code's implementation plan for capture fisheries activities and inland aquaculture (Hartoto 2003). This is especially true for the principles relevant to capture fisheries activities such as participation of users in ecosystems with multiple activities (hydroelectric, aquaculture, harbour, etc), implementation of sustainable development principles, transparency in the decision-making process, support from the government to assist in resolving disputes and support to conduct training on responsible fisheries activities.

In managing aquaculture, the CCRF advises consultation around potential culture species, monitoring the impacts of aquaculture production, ensuring the involvement of stakeholders and developing aquaculture so that it supports the rural community.

BOX 1.12

Ten objectives of the FAO Code of Conduct for Responsible Fisheries

1. Establish principles, in accordance with the relevant rules of international law, for responsible fishing and fisheries activities, taking into account all their relevant biological, technological, economic, environmental and commercial aspects.
2. Establish principles and criteria for the elaboration and implementation of national policies for responsible conservation of fisheries resources and fisheries management and development.
3. Serve as an instrument of reference to help States to establish or to improve the legal and institutional framework required for the exercise of responsible fisheries and in the formulation and implementation of appropriate measures.
4. Provide guidance which may be used where appropriate in the formulation and implementation of international agreements and other legal instruments both binding and voluntary.
5. Facilitate and promote technical, financial and other cooperation in conservation of fisheries resources and fisheries management and developments.
6. Promote the contribution of fisheries to food security, giving priority to the nutritional needs of local communities.
7. Promote protection of living aquatic resources and their environments and coastal areas.
8. Promote the trade of fish and fishery products in conformity with relevant international rules and avoid the use of measures that constitute hidden barriers to such trade.
9. Promote research on fisheries as well as on associated ecosystems and relevant environmental factors.
10. Provide standards of conduct for all persons involved in the fisheries sector.

Source: FAO, 1995

CONCLUSION

There has been a global shift in fisheries management, to one that recognizes the importance of fishers' participation and shared decision-making in the management of fisheries. This approach can be defined as co-management, a type of management that is characterized by the pivotal interaction between government and fisheries users, through consensus building and the sharing of different management roles and responsibilities.

Fisheries co-management is an approach that seeks to balance economic activities with social justice and the health of the environment. By implementing a co-management approach, the allocation of the roles and responsibilities of the relevant parties can be accomplished with a view to reaching consensus and reducing conflict. In this framework, co-management is expected to encourage efficient and sustainable fisheries.

Since 2004, when Fisheries Law No. 31 came into effect, a similar shift in approach has taken place in Indonesia. This shift changed the emphasis from a from top-down, centralized management regime to a bottom-up, decentralized

regime, as stipulated in Articles No. 2 and 6 of the Fisheries Law. Interestingly, the co-management approach to fisheries management is also aligned to the FAO's Code of Conduct for Responsible Fisheries.