



## Enhancing Fisheries Management for Poverty Alleviation and Resources Conservation: The Community Fisheries of Cambodia

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Cambodia is situated in Indochina Peninsula of Southeast Asia with a total area of 181,035 km<sup>2</sup> and water area of 4,869.84 km<sup>2</sup> with about 30% of its land area seasonally flooded, which is a very important factor for inland capture



Fig. 1. Map of Cambodia showing the four coastal areas: Kep, Kampot, Sihanoukville, and Koh Kong

fisheries. Lying between 10°-15° N latitude and 102°-108° E longitude, Cambodia is bounded on the southeast by Vietnam, on the north by Lao PDR and on the northwest by Thailand (Fig. 1). The country's EEZ extending from the shoreline to 200 nautical miles is 55,600 km<sup>2</sup> and its coastline stretches about 435 km in the Gulf of Thailand, where four provinces/cities are located, namely: Kep Municipality (26 km), Kampot Province (67 km), Sihanouk Ville (105 km), and Koh Kong Province (237 km).

The country has a tropical monsoon climate with two distinct seasons: dry season (November to April) and wet season (May to September or October). The country's total population in 2008 was recorded at 14,241,640. The fisheries sector in Cambodia constitutes an integral part of rural livelihood and a major contributor to the national economy and food security. Fish provides more than 75% of the total animal protein intake in the people's diet. The freshwater and marine fisheries sub-sectors provide employment to over 2 million people, many of whom are living in the poor rural areas. Of the country's total production from capture fisheries of 482,500 mt in 2006 (FAO Fishstat Plus 2008), 422,000 mt (88%) came from inland capture fisheries, while only 60,500 mt was contributed by marine capture fisheries. The country's aquaculture production in 2006 was 50,200 mt (FAO Fishstat Plus 2008).

### Box 1. Inland Fisheries Management Systems in Cambodia (1950-present)

#### 1950-1975: Fishing lot system

During this period, the fisheries resource was managed and controlled by the Department of Fisheries (DOF<sup>1</sup>). The fishing lot system, developed by French experts put into practice since 1940, was applied through a bidding process.

#### 1975-1979: No fisheries management system

Although there was no individual and large scale extraction of the fisheries resource, partial fishing for the Khmer Rouge elites was carried out. The Khmer Rouge regime focused only on rice production while the fisheries resource was left to flourish.

#### 1979-1982: Public-fishing areas

The Pol Pot regime had just ended its rule in the country and the people could fish freely in all fishing domains (public fishing areas). Fisheries management in the country had not yet been organized and the DOF was not yet established. The abundance of fish was remarkably noticed. However, dynamite fishing was commonly practiced by soldiers and citizens.

#### 1982-1989: Solidarity group

The DOF was organized and fisheries resource and exploitation were managed through a solidarity group in Khmer called the “Krom Samaki”, practicing a form of a state own-enterprise. The Krom Samaki fished collectively in commercial scale and shared the benefits equally with its members. The main objectives of Krom Samaki were to protect the village area from intrusion by the Khmer Rouge forces and to purchase fish products (mainly dried and smoked fish) to supply the food requirements of the soldiers at the frontier.

#### 1989-1998: Fishing auction

During this period, the fisheries law had been promulgated based on the fisheries law of 1950 which has been modified and upgraded. The fishing activities were divided into three categories, namely: large-scale fishing (fishing lot and Dai fishing), medium-scale fishing, and small-scale fishing (subsistence fishing or family-scale fishing).

#### 1998-2000: Fishing lot with total sub-leasing and research fishing lot

During this period, most of fishing lot owners after successful bidding, divided and leased their fishing lot areas to different fishing operators. Although this was illegal according to the fisheries law, enforcement was not exercised. In 1998-2000 research fishing was also introduced but rather as an excuse for taking commissions, while conflicts and disputes arose between the fishing lot owners and fishermen. Due to the increasing population of fishermen, encroachment of the public fishing areas and indiscriminate control by fishing lot owners had also increased dramatically. Thus, the policy reform of fisheries was carried out starting in October 2000.

#### 2000-Present: Reform of the fisheries management system

The Royal Government of Cambodia through the DOF released the fishing lots and gave these to adjacent communities for them to manage, where the local people are expected to use and manage the resources in sustainable manner.

#### Remarks:

<sup>1</sup> DOF until June 2006, henceforth DOF was changed to Fisheries Administration (FiA)

Cambodia has a wide freshwater ecosystem from the Mekong River, which is about 500 km long with water that flows into four main tributaries, namely: the Great Lake, the Tonle Sap River, the Lower Cambodian Mekong River, and the Bassac River (APIP, 2001). The Great Lake, located in the center of the country and the Tonle Sap River drain to the western part of the country. As a natural flood reservoir of the Mekong River, the Great Lake supports the country's major inland capture fisheries. In the flood season the lake has a water area of 10,000 km<sup>2</sup> and water depth about 10-14 m, and during the dry season it reduces to an area of about 3,000 km<sup>2</sup> with an average depth of less than one meter. During the monsoon, the Great Lake expands to more than 6,000 km<sup>2</sup> area inside the inundated forest creating an enormous and effective breeding, spawning, nursing and feeding grounds of various aquatic species. Almost 60% of the country's freshwater fishes are produced in the Tonle Sap Great Lake.

## The Inland Fisheries Management System of Cambodia

The country's inland fisheries resource management has been influenced and determined by the different political

### Box 2. Main elements of the enhanced fisheries management of Cambodia

- Creation of job opportunities and upgrading the livelihoods of people in local communities
- Ensuring equitable access to and distribution of fisheries benefits including export earnings
- Extending institutional responsibilities of fisheries management to community fisheries
- Protection and sustainable use of fishery resources
- Promotion of aquaculture to fulfill the nutritional requirements of the people in order to reduce the catch of wild aquatic resources
- Promotion of integrative fisheries management with overall rural development in community fisheries
- Conservation, management and development of fisheries resources for sustainability through cooperation with local authorities and community fisheries such as in fishing areas, fish habitats, inundated forest, etc.

and management regimes of Cambodia. Each management system (**Box 1**) has had both good and negative implications on the fisheries livelihood and the status of the aquatic resources, with the fisheries resource having been managed and exploited following different arrangements from the past to present (Tonle Sap Environmental Management Project, 2003).



### Box 3. Fisheries management strategies of Cambodia

- Establishing and maintaining the institutional and administrative framework, which is necessary to make community-based fisheries management a feasible and effective alternative to the existing management systems. Activities in these strategic areas include the introduction of the new law, necessary sub-laws, new administrative systems and procedures for DOF to effectively support local communities.
- Conduct of research, assessment and evaluation activities to provide information to support the operation and management of the local fisheries councils. As the custodian of Cambodia's living aquatic resources, the DOF is responsible for establishing and maintaining the national fisheries policy framework and ensuring that fisheries activities at the local level are carried out in conformity with sound biological and ecological principles.
- Training local fisheries councils and communities to effectively execute their administrative and managerial responsibilities. DOF has worked closely with various learning institutions and promoted the use of modern technologies to ensure that local fisheries communities can access to and participate in learning and skills enhancement activities in order to broaden their capacity to effectively manage and administer the local fisheries.
- Exchanging of fisheries related information with local fisheries councils, local administrations and the general public. As an integrated part of its operations, DOF ensures the timely and effective sharing of all information related to management and administration of Cambodia's fisheries and fisheries in general.

## Policy Reforms in Fisheries Management

In November 2000, the Royal Government of Cambodia started to undertake fishery policy reform as part of the country's poverty reduction strategy. The key elements of the reform included: the reduction of 53 concession fishing lots with a total area of 536,302 ha or about 56% of the total fishing lots area for small-scale fishing, promotion of community fisheries establishment in areas where some parts or whole parts of fishing lots were released, abolishing license fees for medium-scale fishing in inland fisheries, and reducing the license fees for some selected coastal fishing gears.

The Government also introduced a new fisheries management system, which empowered the local people to manage and use the fisheries resource. Some of the fishing lots were released for the communities adjacent to the fishing grounds to be managed by them. Community fisheries were promoted with the aim of protecting the sustainable fishery resources and providing fishing rights to local people in order to improve their living conditions. In this connection, the Ministry of Agriculture, Forestry and Fisheries (MAFF) established the Community Fisheries Development Office (CFDO) under the Fisheries Administration (FiA), specifically tasked with supporting communities to manage

the newly released fishing areas and encouraging more participatory management of fisheries country-wide. In particular, the CFDO was established to provide technical assistance particularly on socio-economic and community development issues. The main elements of the reformed management system for the fisheries resources are shown in **Box 2**.

## Fisheries Management Strategies

The DOF paid strong attention to community fishery

### Box 4. The inland fishing grounds of Cambodia (Fisheries Law, 2006)

- **Fishing Lot Areas:** Reserved for investments in large-scale fishing operations
- **Fish Sanctuary Areas:** Habitat of inland aquatic animals and plants
- **Open Access Area:** Reserved for small-scale fishing operations
- **Inundated Forest Area:** Habitat for spawning of aquatic species and feeding habitat
- **Floodplain Area during Rising Water:** Habitat for spawning and feeding of aquatic species and fishing ground for small-scale fishing operations

### Box 5. The marine fishing grounds of Cambodia (Fisheries Law, 2006)

- **Coastal Area:** For small-scale and medium-scale fishing operations, and extends from shoreline up to less than 20 m water depth also called "Fishing Zone One"
- **Offshore Area:** For commercial-scale fishing operations, and extends from 20 m depth up to the EEZ also called "Fishing Zone Two"
- **Sanctuary Area:** Consists of coral reef areas and sea grass beds reserved for habitats of marine aquatic animals and plants
- **Mangroves Protected Area:** Mangrove and forest areas which are covered with tidal waters and important feeding, spawning and breeding habitats for marine aquatic animals and inundated protected area

### Box 6. Fisheries domain

Domain assigned by group

- Fishing areas defined as fishing lots, fishing barrages, and bag net fishing (or Dai fisheries) reserved as resources monopoly for a person or enterprise for large-scale fishing operations
- Flooded forest areas including all forest ranges flooded during monsoon, and are necessary shelters of aquatic species feeding and spawning
- Fish sanctuaries reserved for fish species reproduction or for conducting experimental works on techniques and scientific research of fisheries within which all fishing is prohibited

Fisheries protected domain

- All other areas not mentioned in any criteria of the fishing domain assigned by group, for which the general rules apply and where fishing is allowed for both small-scale and medium-scale operations

**Table 1.** Range of annual production from freshwater capture fisheries of Cambodia (1994 -2000)

Source of Catch	Annual catch range (mt)	Percentage (%)
Large-Scale Fisheries		18
• Fishing Lots	25,000-75,000	
• Dai Fisheries	14,000-16,0000	
Middle-Scale Fisheries	85,000-100,000	26
Small-Scale Fisheries	115,000-40,000	56
Rice Field Fisheries	50,000-100,000	
Total Catch	289,000-431,000	100

Source: Van Zaling *et al.* (2000)

management specifically in managing and using the fisheries resources in sustainable manner. The strategies of DOF (**Box 3**) focused on carrying out a broad range of consolidated activities aimed at providing effective and timely support to the smooth introduction of community fisheries management as provided for in the Master Plan for Fisheries 2001-2011 (APIP, 2001a).

## Fisheries Domain

The fisheries sector of Cambodia includes the inland and marine fisheries sub-sectors. Inland fishing is done in floodplain areas, fishing lots, and in rice fields (**Box 4**) while marine fishing is operated in the fishing zone from the coast up to less than 20 m depth waters (**Box 5**). The country's fisheries domain is divided into two types based on the set of regulations applied. These are the fisheries domain assigned by group and the protected fisheries domain (**Box 6**).

### Inland Fisheries Sub-sector

Fishing operations in inland fisheries include small-scale, medium-scale and large-scale. Small-scale fishing operation is done whole year round, and is also a form of family/household fishing for family consumption/livelihood and using traditional fishing gear. Medium-scale fishing requires license through a fixed license per gear and can be operated only during the fishing season from 1st October to June 30th of succeeding year. The cost of license is fixed based on an estimate of the expected gear type such as gill net longer than 10 m, seine net, fishing trap associated (Lop Nor or Rav) not longer that 500 m of bamboo fence, etc.

One main type of medium-scale fishing is called “dai fisheries”, using a bag net or stationary trawl positioned in the river to capture fishes migrating downstream (Van Zalinge *et al.*, 2000). Large-scale fishing consists of fishing lot operations, barrage fishing and bag net fishing (dai) which are larger than the “dai” in medium-scale, and licensed through an auction system for a period of two years lease term. The system provides monopoly of resource utilization within a given area or at a defined

site in the lake or river to a private individual fisherman/company with some restrictions on the operation such as closed season before which all fixed installations must be dismantled. The catch from the fishing lots, if too large may be reserved for subsistence fishing. The “fishing lot” (loh nesaat) is a concession auctioned by the government to the highest bidder for exclusive exploitation over a two-year period. This was one of the main instruments used by the government to generate revenues from the rental of the fisheries resources (Van Zalinge *et al.*, 2001). Inland fisheries contribute more than 70% of total capture of the country's annual production from capture fisheries. The annual inland production from capture fisheries are ranged from 300,000-400,000 mt/year with small-scale fisheries contributing about 56% (**Table 1**).

### Marine Fisheries Sub-sector

Marine fishing operations of the country also comprised the small-scale, medium-scale and large-scale. Small-scale or artisanal fisheries, characterized by open access fishing, operate in fishing zone which extends from the coast to a

#### Box 7. Events related to fisheries domain assigned by groups

- **1994:** A community fisheries was established in Svay Rieng Province specifically for a community fish refuge management in areas where there was no fisheries domain in cooperation with the Asian Institute of Technology (AIT). The main objective was to promote the participation of the local people to conserve the fish refuge during dry season.
- **1995:** A community management of flood forest was established in Siem Reap Province with the objective of promoting sustainable management of the natural resources within the Tonle Sap Great Lake through local community participation. This activity was implemented by the Provincial Department of Agriculture (PDoA) and the Provincial Office of Fisheries with support from the Food and Agriculture Organization (FAO) of the United Nations.
- **1997:** Deep pool co-management was set up in Kratie and Stung Treng Provinces supported by the Community Aid Abroad (CAA) organization and the country's Culture and Environment Preservation Association (CEPA). These organizations have supported the development of community fisheries regulations by each village with technical support provided by the Provincial Fisheries Office (PFO).
- **1999:** Reservoir co-management project was started in Kandal and Kampong Cham Provinces supported by the Mekong River Commission (MRC/MRRF). In mid 1999, community co-management of fisheries was established in Ream National Park of Sihanouk Ville supported by the Wetlands International Organization. This project was implemented by the Ministry of Environment (MoE).
- **2000:** The Royal Government of Cambodia, through the DOF/ FiA reformed the fisheries policy of the whole country by empowering the local communities to manage the resources by themselves known as the “community fisheries” or CF.
- **2006:** 509 community fisheries (CFs) have been developed: 469 are inland community fisheries and the rest are coastal community fisheries. Of these, 309 CFs have their own regulations, 197 CFs have mapping systems, 58 CFs have agreements, 65 CFs have management plans, 142 CF have action plans, and 95 CFs have established fish sanctuary areas.

depth of 20 m. It is a year round fishing activity by family/ household with fish production directly consumed by the fishing family, with the surplus or high quality fish sold for additional income of the fishing family. Boats used are without engines or with engine of less than 33 Hp, which do not require any license. Fishing activities such as trawling, light fishing and using illegal fishing gear not listed in the fishery law are not allowed.

Medium-scale fisheries make use of relatively efficient fishing gear having the capacity to fish offshore. Boats used are with engine more that 33 Hp but less than 50 Hp. The fishermen using this scale are required to pay a fishing fee to the government according the fishery law. Commercial fishery on the other hand, is characterized by large-scale fishing operations from 20 m depth to the limit of the country's EEZ. The boats used are with engines more than 50 Hp, and required to pay a fee following the fishery law. Different kinds of fishing gears are used including single trawling. Fishing gear and fishing method such as pair trawling, light fishing and other fishing gears not listed in the fishery law are prohibited.

## Establishment of Community Fisheries

Community fisheries (CF) management in Cambodia has been initiated but the process of CF establishment and implementation varies depending upon the guidelines set by the supporting organizations and government agencies (Box 7).

## Implementation of Community Fisheries Management

Community fisheries management was initiated in Stung Treng Province in 1997 (Gum, 2000). The (CAA) has supported the development of community fisheries regulations by each village with technical support provided by the PFO. The regulations focus on reducing illegal fishing such as the use of explosives and electric fishing, minimizing the clearing of inundated forests and protection of selected species. These regulations have been recognized by the PDoA and the PFO, and the project has demonstrated a promising model for cooperation between community



fisheries and local authorities facilitated by NGOs but requires strong institutional support from the DOF and MAFF. The experience in community fisheries management used in Siem Reap Province which was developed by the Participatory Natural Resource Management under the Tonle Sap Region Project (Box 8) has been used as model throughout the country (Somony, 2002).

## Issues and Concerns in Community Fisheries Management

The country's declining natural fish stocks including species composition is well recognized. About 300 to 500 fish species have already disappeared from the Tone Sap Great Lake (Mak, 2000). Excess fishing effort and the associated decline in abundance of target species are serious problems confronting the fisheries of Cambodia. The key causes appear to be the increasing population coupled with an economy that is not expanding rapidly enough to cater to the rising needs, and the policy of the Government allowing everyone to fish for subsistence or income.

### Box 8. Processes in community fisheries development and management

- **Contact with local authorities** (Letters of authorization from the province delivered to the district governor by the facilitation team, where objectives and work involved were explained. The District Governor and other authorities (military/police) are kept informed and are involved in the process)
- **Identification of users** (Primary and secondary users are identified through local authorities, village chief and local fishermen, while discussions are held to ensure accuracy of information)
- **Participatory resources assessment** (For each site, a PRA is conducted with all the primary and secondary users regarding resources use, supply and demand conflict, etc.)
- **Village meeting** (in each village to discuss PRA result and review sketch map, identify the resources area that individual village use and want to manage, elect village representatives to a village level community fishery committee, and identify the objectives of the resources management and to draft the rules and regulations)
- **Central workshop** (with village committee members, commune and provincial authorities to elect a central management committee with representatives from each village, clearly defining the resources boundary, and identify those responsible for the protection activities and extension work)
- **Demarcation and mapping** (community fishery resources are defined and mapped using GPS, demarcation is carried out)
- **Rules and regulations** (finalized for each community fishery site by their central committees and made public with corresponding map to inform all potential users as to the location and users obligation for the given resources. These are endorsed and signed by the central committee, the district governor, the provincial director of fisheries, and by the provincial director of MAFF)
- **Management plan** (central management committee in consultation with village committee and fishermen draft a 5-year operation plan defining the activities and actions related to resources protection, management and enhancement, as well as distribution of benefits)



## Way Forward

Inland and marine fisheries are the main contributors for the country's livelihood needs and food security. Fish is an important source of nutrients for Cambodians and fisheries provide income generation for both the government through taxation of fishing operations and the households through fishing. However, the fisheries resources suffer from both unsustainable management and over exploitation. Even though there are no scientific evidence on the declining natural fish resources of Cambodia, its production trend suggested that the resources are suffering from both human activities and natural disasters.

Co-decentralization through open access for fisheries management based on community fisheries is on the way out while small-scale community fisheries management is already in place. In order to address the issues and concerns, the country through the FiA is exerting efforts to sustain a number of activities, that include the following:

- a. Boundary demarcation between fishing lots and fishing areas of community fisheries (not yet been completely marked)
- b. Prevention and cracking down on illegal fishing gears (e.g. use of electrocuting equipment, fine-mesh nets (mosquito nets), push netting, etc.)
- c. Minimizing controversial issues among stakeholders on the CFs (still no clear legal framework regarding sub-decree on community fisheries, sample by-laws and other provisions for Community Fisheries Management)
- d. Increasing awareness and understanding on community fisheries by community fisheries officers and local authorities
- e. Minimizing controversies between community fisheries and CF regulations (CF asking for the right to crack down and fine illegal fishing activities, and specifically for the right to do commercial fishing in their community fishing areas contradictory to the Sub-decree on removal and release of fishing lots for family-scale fishing)
- f. Encouraging the local authorities (Commune Councils and Sangkats) to fully support the CF activities (in some cases community fishing areas are sold to businessmen in the name of the CF)
- g. Alleviating poverty among fishers (poverty being an obstacle for the organization and management of community fisheries)
- h. Sourcing of funds for necessary materials, budgets and other means for dissemination and extension, organization, strengthening, monitoring and evaluation of community fisheries
- i. Finding solutions on why community fisheries organized by the Provincial and National Fisheries Department

seem not to function (due to budget constraints and technical limitations?) while most community fisheries supported by NGOs and IOs in cooperation with fisheries technical provincial and national departments are functioning well.

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